

Main catalogue 2016/17  
International edition

# LAPP



**LAPP GROUP**

# DEAR BUSINESS PARTNERS,

Reliably connecting the world – in line with this motto, the Lapp Group has been successfully operating on the international market for many years. The new main catalogue 2016/17 documents the entire spectrum of our comprehensive range of products and solutions on over 1,200 pages and also provides interesting insights into our family company and its long tradition.

Lapp has always placed the utmost importance on customer focus. We hope that you approve of our redesigned and updated main catalogue and that you feel very well informed. Delve into “The World of Lapp” and look forward to millions of tried and tested products, intelligent special solutions and the next generation of highly innovative cable and connection technology, which will enable you to be more successful in the future of Industry 4.0.

I would like to thank you for the interest you have shown and I hope you enjoy looking through the catalogue and discovering our products. Let's stay connected!

Best wishes,



Andreas Lapp



# LEGEND FOR ICONS

## INDUSTRIES

	Automation
	e-Mobility
	Food & Beverage
	Mechanical and Plant Engineering
	Oil & Gas
	Rail
	Solar Energy
	Wind Energy

## PRODUCT CHARACTERISTICS


	Suitable for outdoor use		Space requirement
	Good chemical resistance		Power chain
	Flame-retardant		Clean room
	Wide clamping range		Robust
	Halogen-free		Acid-resistant
	Heat-resistant		Reliability
	Cold-resistant		Integrated SKINTOP® cable gland
	Corrosion-resistant		Voltage
	Maximum vibration protection		Connector with standard housing unit
	Mechanical resistance		Interference signals
	Quantity		Temperature-resistant
	Minimum lever action		Torsion-resistant
	Assembly time		Torsion load
	Low weight		UV-resistant
	Oil-resistant		Waterproof
	Optimum strain relief		Variety of approval certifications

**Please note:** the purpose of the icons is to provide you with a quick overview and a rough indication of the product features to which the corresponding information relates. You can find details of product characteristics in the “technical data” sections on the product pages.

# NEWS

<b>Power and control cables</b>	<b>Page</b>			<b>Protective cable conduit systems and cable carrier systems</b>	
ÖLFLEX® CLASSIC 100 300/500V . . . . .	26	ETHERLINE® EC FD Cat.5e M12-RJ45 . . . . .	447	SILVYN® EL . . . . .	849
ÖLFLEX® CLASSIC 100 450/750V . . . . .	28	ETHERLINE® EC FD Cat.5e RJ45 . . . . .	448	SILVYN® ELU . . . . .	850
ÖLFLEX® CLASSIC 110 . . . . .	37	ETHERLINE® EC FD Cat.5e M12F. . . . .	449	SILVYN® ELÖ . . . . .	851
ÖLFLEX® CLASSIC 110 LT . . . . .	38	ETHERLINE® PN Cat.5 M12-RJ45 . . . . .	451	SILVYN® ELT . . . . .	852
ÖLFLEX® 408 P . . . . .	79	ETHERLINE® PN Flex Cat.5 M12-RJ45 . . . . .	454	SILVYN® ELR . . . . .	853
ÖLFLEX® 409 P . . . . .	80	ETHERLINE® PN FD Cat.5 M12-RJ45 . . . . .	457	SILVYN® MPC 45° M . . . . .	855
ÖLFLEX® SERVO 2YSLCY-JB. . . . .	102	ETHERLINE® PN FD Cat.5 RJ45 . . . . .	458	SILVYN® KLICK-RH. . . . .	873
ÖLFLEX® SERVO 719 CY . . . . .	103	ETHERLINE® PN Flex Cat.5 M12-RJ45 . . . . .	455	SILVYN® FPAS . . . . .	875
ÖLFLEX® SERVO 7DSL. . . . .	105	ETHERLINE® PN FD Cat.5 M12-RJ45 . . . . .	457	SILVYN® FPAX-M . . . . .	876
ÖLFLEX® SERVO FD 7DSL . . . . .	113	ETHERLINE® FD Cat.6 <sub>A</sub> M12 . . . . .	459	SILVYN® FPAX 90° M. . . . .	877
ÖLFLEX® CHAIN 809 SC CY . . . . .	122	ETHERLINE® TORSION Cat.6 <sub>A</sub> M12 . . . . .	460	SILVYN® FPAX T. . . . .	878
ÖLFLEX® FD 855 P. . . . .	135	EPIC® DATA PN 90 RJ45. . . . .	461	SILVYN® FPAX R. . . . .	878
ÖLFLEX® FD 855 CP . . . . .	136	EPIC® DATA 90 RJ45 Cat.6 <sub>A</sub> . . . . .	463	SILVYN® FPAX P. . . . .	878
ÖLFLEX® SOLAR XLR WP. . . . .	153	EPIC® DATA M12X . . . . .	465	SILVYN® FLEXILOK M. . . . .	882
ÖLFLEX® CHARGE . . . . .	156	EPIC® DATA CCR FA. . . . .	466	SILVYN® FLEXILOK 90° M . . . . .	882
ÖLFLEX® HEAT 125 MC . . . . .	174			SILVYN® FLEXILOK PG . . . . .	883
ÖLFLEX® HEAT 125 C MC . . . . .	175	<b>Optical transmission systems</b>		SILVYN® FLEXILOK 90° PG . . . . .	883
ÖLFLEX® HEAT 125 SC . . . . .	189	HITRONIC® POF cables		SILVYN® EC . . . . .	887
ÖLFLEX® HEAT 180 SIF A. . . . .	192	for PROFINET Applications . . . . .	492	SILVYN® TC . . . . .	892
ÖLFLEX® HEAT 650 SC . . . . .	199	HITRONIC® PCF cables		SILVYN® SPLIT . . . . .	893
N2XH . . . . .	225	for PROFINET Applications . . . . .	502	SILVYN® FPS-EDU . . . . .	900
N2XCH. . . . .	227	HITRONIC® HMDC Micro Cable. . . . .	510	SILVYN® MSK-M BRUSH . . . . .	902
ÖLFLEX® SERVO Basic Line				SILVYN® MSK-M ATEX . . . . .	903
according to Siemens 6FX5002 (PVC). . . . .	231	<b>Industrial connectors</b>		SILVYN® MSK-M ATEX BRUSH . . . . .	904
ÖLFLEX® SERVO Core Line		Power H-S . . . . .	560	SILVYN® US-M . . . . .	905
according to Siemens (PUR) . . . . .	232	Power Module HC2 . . . . .	564	SILVYN® US . . . . .	906
ÖLFLEX® SERVO Extended Line		Power Module HHC1 . . . . .	566	SILVYN® LGEP . . . . .	911
according to Siemens 6FX8002 (PUR) . . . . .	233	EPIC® H-D 1,6 stamped contacts-on-reel	580	SILVYN® UI COMPACT M . . . . .	913
Socket outlet Type 2 IP54 up to 63A		EPIC® MC 2,5 stamped contacts-on-reel	584	SILVYN® HIPROJACKET AMG . . . . .	915
and connector locking flat . . . . .	262	EPIC® MC Coax-Contacts . . . . .	588	SILVYN® COMPACT M . . . . .	920
		EPIC® H-B 10 AGS-LB. . . . .	625	SILVYN® COMPACT PG . . . . .	921
<b>Data communication systems</b>		EPIC® SOLAR PL008 . . . . .	702	SILVYN® COMPACT NPT . . . . .	922
UNITRONIC® ROBUST . . . . .	294	EPIC® SOLAR 4 M . . . . .	703	SILVYN® FG . . . . .	923
UNITRONIC® ROBUST C. . . . .	295	EPIC® SOLAR 4 Splitter . . . . .	704	SILVYN® FG NM . . . . .	924
UNITRONIC® ROBUST C (TP) . . . . .	296	EPIC® SOLAR 4 Built in socket . . . . .	706	SILVYN® HYGIENIC . . . . .	925
UNITRONIC® 300 STP . . . . .	304			SILVYN® LCC coupler. . . . .	930
UNITRONIC® FD P plus . . . . .	307	<b>Cable glands</b>		SILVYN® LCC-E. . . . .	931
UNITRONIC® FD CP plus . . . . .	308	SKINTOP® ST-M SORTIMO® T-BOXX. . . . .	714	SILVYN® LTP coupler . . . . .	934
UNITRONIC® FD CP (TP) plus. . . . .	309	SKINTOP® CLICK . . . . .	715	SILVYN® LTP-E . . . . .	934
UNITRONIC® BUS PB TRAY . . . . .	328	SKINTOP® CLICK-R . . . . .	715	SILVYN® SEALING WASHER. . . . .	935
UNITRONIC® BUS PB 105 plus . . . . .	331	SKINTOP® CLICK SORTIMO® T-BOXX. . . . .	716		
UNITRONIC® BUS PB HEAT 180. . . . .	332	SKINTOP® ST-HF-M . . . . .	718		
UNITRONIC® BUS PB Y 7-W FC BK . . . . .	337	SKINTOP® CLICK BS . . . . .	720		
EPIC® DATA PB CCR. . . . .	355	SKINTOP® K-M ATEX plus. . . . .	722	<b>Marking systems</b>	
UNITRONIC® BUS CAN TRAY . . . . .	360	SKINTOP® KR-M ATEX plus . . . . .	722	FLEXIMARK® Cablelabel PUR FCC. . . . .	945
UNITRONIC® BUS CAN BURIAL . . . . .	361	SKINTOP® K-M ATEX plus blue. . . . .	723	FLEXIMARK® Cablelabel PUR. . . . .	952
EPIC® DATA CAN CCR . . . . .	367	SKINTOP® KR-M ATEX plus blue. . . . .	723	FLEXIMARK® Organized shrink tube . . . . .	953
UNITRONIC® BUS IS . . . . .	368	SKINTOP® MS-M . . . . .	724	FLEXIMARK® Micro Kit. . . . .	958
UNITRONIC® SENSOR PVC M8 . . . . .	381	SKINTOP® MSR-M . . . . .	724	FLEXIMARK® Thermoprint A4+M	
UNITRONIC® SENSOR PVC M12		SKINTOP® MS-M ATEX BRUSH. . . . .	730	and EOS4*. . . . .	980
M12-M12 . . . . .	389	SKINTOP® INOX/SKINTOP® INOX-R. . . . .	735	DYMO® Industry Rhino Pro 4200. . . . .	990
UNITRONIC® SENSOR HD M12 . . . . .	390	SKINTOP® INOX SC/SKINTOP® INOX-R SC	736		
EPIC® SENSOR CCR. . . . .	394	SKINTOP® HYGIENIC/ SKINTOP® HYGIENIC-R . . . . .	737	<b>Tools and cable accessories</b>	
		SKINTOP® DIX-M AUTOMATION. . . . .	741	KT cable shears . . . . .	999
<b>Data communication systems for ETHERNET technology</b>		SKINTOP® CUBE . . . . .	743	SENSOR STRIP stripping tool. . . . .	1003
ETHERLINE® HEAT 6722 . . . . .	433	SKINTOP® CUBE SORTIMO® T-BOXX . . . . .	744	PEW 8.185 crimping pliers. . . . .	1015
ETHERLINE® TRAY . . . . .	434	SKINTOP® CUBE MULTI. . . . .	745	PEW 8.186 crimping pliers. . . . .	1015
ETHERLINE® FIRE Cat.5e PH120 . . . . .	434	SKINTOP® CLICK BLK . . . . .	765	Tube cable lugs KRFN . . . . .	1029
ETHERLINE® ROBUST . . . . .	435	SKINDICHT® VENT STAINLESS STEEL . . . . .	768	Pneumatic crimping machine UP 35 . . . . .	1036
ETHERLINE® ROBUST FR . . . . .	436	SKINDICHT® VENT PLASTIC . . . . .	769	Flexible wiring duct . . . . .	1056
ETHERLINE® EC FD Cat.5e M8 . . . . .	444	SKINMATIC® QUICK Set 1 . . . . .	782	Detectable Cable ties . . . . .	1059
ETHERLINE® EC FD Cat.5e M8-RJ45 . . . . .	445	SKINMATIC® MH Set . . . . .	782	Standard cable ties with steel nose. . . . .	1060
ETHERLINE® EC FD Cat.5e M12 . . . . .	446	SKINTOP® MS-NPT BRUSH . . . . .	787		

# CONTENT

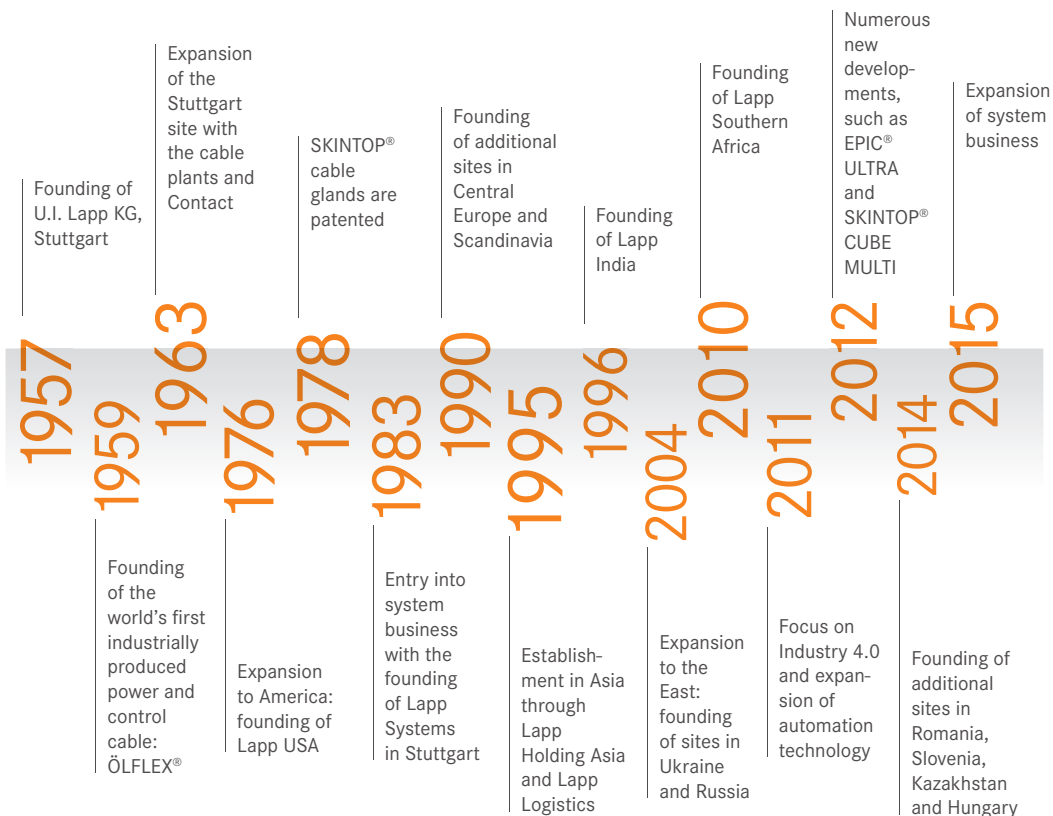
	Company information	2
	ÖLFLEX® Power and control cables	21
	UNITRONIC® Data communication systems	271
	ETHERLINE® Data communication systems for ETHERNET technology	407
	HITRONIC® Optical transmission systems	483
	EPIC® Industrial connectors	529
	SKINTOP® Cable glands	707
	SILVYN® Protective cable conduit systems and cable carrier systems	833
	FLEXIMARK® Marking systems	939
	Tools and cable accessories	993
	Appendix: selection tables technical tables index of products glossary	1079

# FROM SMALL START-UP TO GLOBAL PLAYER

The name Lapp not only stands for innovative strength and quality, it also stands for continuity. The Lapp company was founded by Ursula Ida and Oskar Lapp in 1957 as an ambitious family company – and to this day has remained as such.

The desire to actively shape the future and the courage to embrace change and to think in a visionary way that is focused on solutions and customers are what make the company great. Our relationships with our employees, suppliers and customers which are based on partnership have always played a central role here. In less than 50 years, the small Stuttgart-based family business has evolved into a global player with around 3,200 employees – and into an international market leader for cable technology.

All the signs are pointing towards the future. This has not only become clear at Lapp's new, state-of-the-art European headquarters in Stuttgart-Vaihingen. The third generation of the Lapp family has now taken on responsibilities within the company. Thinking and acting in a value-oriented way is and remains an important component of the company philosophy. After all, the name Lapp also stands for this.





Andreas Lapp,  
Matthias Lapp,  
Ursula Ida Lapp,  
Alexander Lapp,  
Siegbert E. Lapp.

# FAMILY VALUES AND INNOVATIVE IDEAS

From the very start, the company founders Oskar and Ursula Ida Lapp had a clear vision of the company's orientation. It has never just been about developing and producing innovative products. Family values have always been important too. Values that promote cooperation and enable relationships with employees, suppliers and customers based on partnership and trust. This sense of appreciation is firmly anchored in the business culture – and is a cornerstone of company policy.

## SHAPING THE FUTURE

With its headquarters in Stuttgart, Germany, the Lapp Group is a leading supplier of integrated solutions and branded products in the field of cable and connection technology. To make sure that it stays that way in the future, we always keep a very close eye on the markets. Furthermore, over the years we have demonstrated a keen perception for individual customer needs. We are constantly further developing our products and system solutions and are setting standards in safety, quality and functionality.

## TAILOR-MADE INDUSTRY SOLUTIONS

Whether it's wind energy, Industry 4.0 or electric mobility – pioneering innovations for different sectors and markets are a significant driving force behind our company's success. One of the many sophisticated, high-tech connection solutions for special applications is, for example, the SKINTOP® HYGIENIC. The stainless steel cable gland was specially developed for the food and beverage industry and, in addition to being ECOLAB® certified, also fulfils the stringent EHEDG guidelines for Hygienic Design.

The Lapp Group also has a competitive edge in organic photovoltaics (OPV) and is earning plaudits thanks to its innovative connection technology. Perhaps the best example is the solar trees in the German pavilion at EXPO 2015 in Milan. For the film-integrated and extremely delicate OPV modules used there, the Lapp Group developed a new connection and cabling process of its own and as a result attracted international attention.





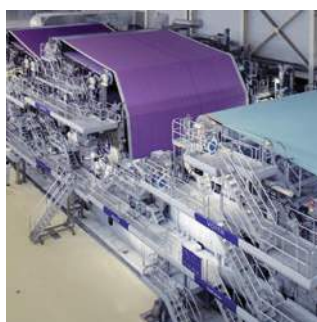


WHATEVER  
THE FUTURE  
HOLDS –  
LAPP HAS  
THE PERFECT  
CONNECTION  
SOLUTION!

And one that is great value for money too. One reason for this is the short pathways that international manufacturing facilities, locations and logistics centres have enabled.

# CLOSE TO CUSTOMERS, CLOSE TO THE MARKET

Our perception of trends, sectors and markets allows us to develop products today that will be used all over the world tomorrow. The Lapp Group offers the ideal solution for every complex solution - from tried and tested standard products to sophisticated customized production. Through international production sites and local storage of Lapp branded products, we ensure that we are able to supply all around the world. With our 18 production plants, over 40 sales companies, around 100 sales partners and many competent consultation teams, we offer comprehensive service on every continent.



**8** strong brands

more than  
**40,000**  
standard products

over  
**40**  
of its own sales companies

employees from  
**152**  
countries

**1** innovation after another

around  
**100**  
sales partners

**3,200**  
employees



# SPECIAL EXPERTISE FOR SPECIAL SECTORS

## AUTOMATION

## INDUSTRY

(machinery and plant engineering, food and beverage industry)

## MOBILITY

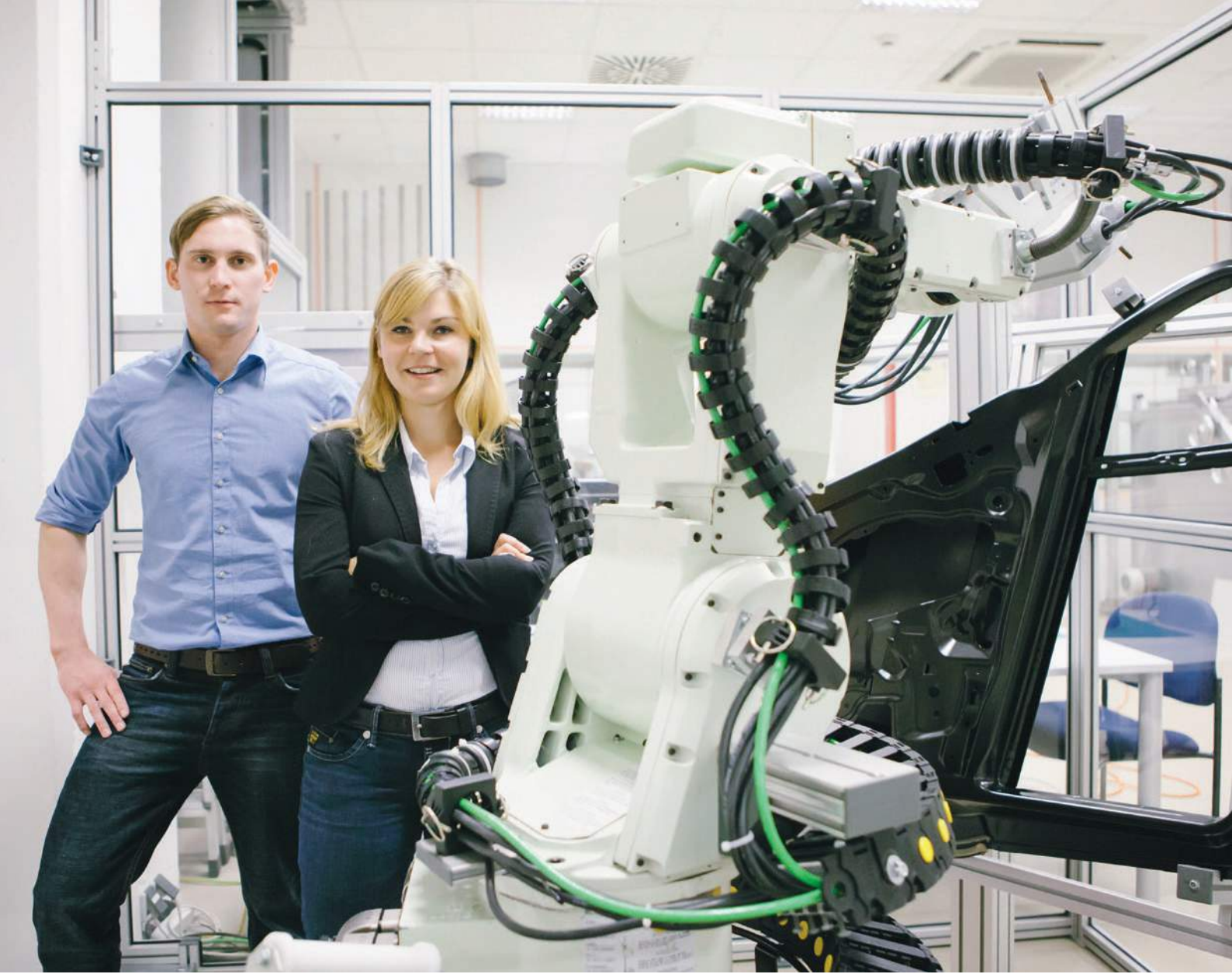
(e-mobility, railway technology, transport, commercial vehicles)

## POWER SUPPLY

(solar, wind, oil & gas, petrochemistry, maritime energy)

## INFRASTRUCTURE

(telecommunication, energy distribution, airports, ports, railway stations, tunnels)



# MAKING QUALITY A PRIORITY

You will always be on the safe side with branded products from Lapp. Whether it's a standard product or a customised special production: every product launched has undergone a demanding development process. It is only once the prototypes have been thoroughly tried and tested that production begins.

## TRIAL AND TEST CENTRE IN STUTT GART

In the trial and test centre in Stuttgart, thorough testing is performed with constant monitoring of electrical and mechanical parameters. Specialised teams also test all products in their intended field of use – sometimes in extremely hot or cold conditions or with particular environmental influences. It's not rare for the knowledge gained in testing procedures to result in pioneering developments. This culture of putting innovation into practice is beneficial to our customers.

# EIGHT BRANDS, ONE PROMISE: UNCOMPROMISING QUALITY – WORLDWIDE



 **ÖLFLEX®**  
Power and control cables

ÖLFLEX® has become synonymous with power and control cables. Our flexible and oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions.



 **UNITRONIC®**  
Data communication systems

Our high-quality UNITRONIC® data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures – we offer a dependable cabling and connection solution for almost every situation.



 **ETHERLINE®**  
Data communication systems for ETHERNET technology

Our ETHERLINE® branded products open up a secure, fast and reliable path to the future of Ethernet applications. The systems are made up of durable and robust cables and connection components for passive network technology, and deliver an effective solution for almost any application, particularly in an industrial environment.



 **HITRONIC®**  
Optical transmission systems

HITRONIC® fibre optic cables make transmitting large data volumes easy: fault free, bug proof and at almost light speed. Even electromagnetic radiation does not interfere with the transmission. The HITRONIC® range includes the ideal solution for indoor or outdoor use, for demanding conditions, and even for use in power chains.



 **EPIC®**  
Industrial connectors

EPIC® industrial connectors can be found everywhere in industrial machinery and plant engineering, for measuring, control and drives. EPIC® is a flexible system of housings, inserts and contacts: all extremely robust, absolutely safe and simplicity itself to assemble.



 **SKINTOP®**  
Cable glands

Simply feed in the cable and twist. That's it. Our SKINTOP® cable glands provide secure connections in no time. The universal systems are simple but effective. They secure and centre the cable, hermetically seal it and guarantee optimum strain relief.



 **SILVYN®**  
Protective cable conduit systems and cable carrier systems

The universal range of SILVYN® protection and guidance systems protect cables effectively against dust, moisture, mechanical, thermal and chemical influences. The versatile SILVYN® CHAIN range of energy supply chains also protects and guides cables in dynamic applications.



 **FLEXIMARK®**  
Marking systems

The requirement: permanent marking. The solution: FLEXIMARK®. These sophisticated systems mean that a clear overview inside a control cabinet is no longer just a pipe dream. From simple labels for manual marking through to electronic markings, the FLEXIMARK® range is guaranteed to be permanent.

# CENTRE OF LOGISTICAL MASTER PERFORMANCE

Who actually likes waiting for a product, service or solution? We won't leave you waiting – we guarantee quick delivery. All over the world. After all, we have a close-knit network of logistics centres and professionally trained consulting experts. With the finest in high-tech quality, we guarantee a smooth delivery service.

Our logistics and service centre in Ludwigsburg is setting the benchmark in many ways: a fully automated high-rack facility with an area of 30,000 m<sup>2</sup>, 120 logistics employees, 30 truck loading ramps, over 90,000 articles and nearly 1 million cables delivered every year.

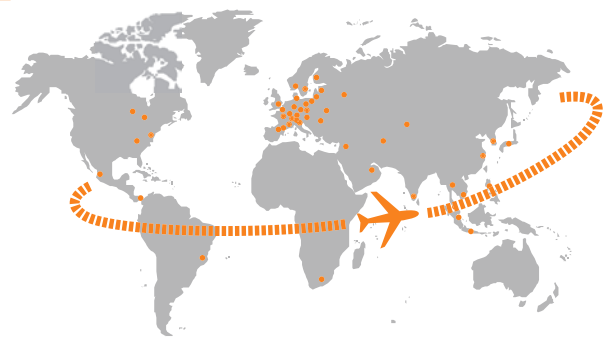
## SUSTAINABLE AND ENERGY-EFFICIENT

When the Lapp logistics centre was constructed, great importance was placed on sustainability and energy saving. The photovoltaic system on the roof, for instance, generates 1,000 MWh of energy per year, thus reducing annual CO<sub>2</sub> emissions by around 650 tonnes!

# 70,000 m<sup>2</sup>

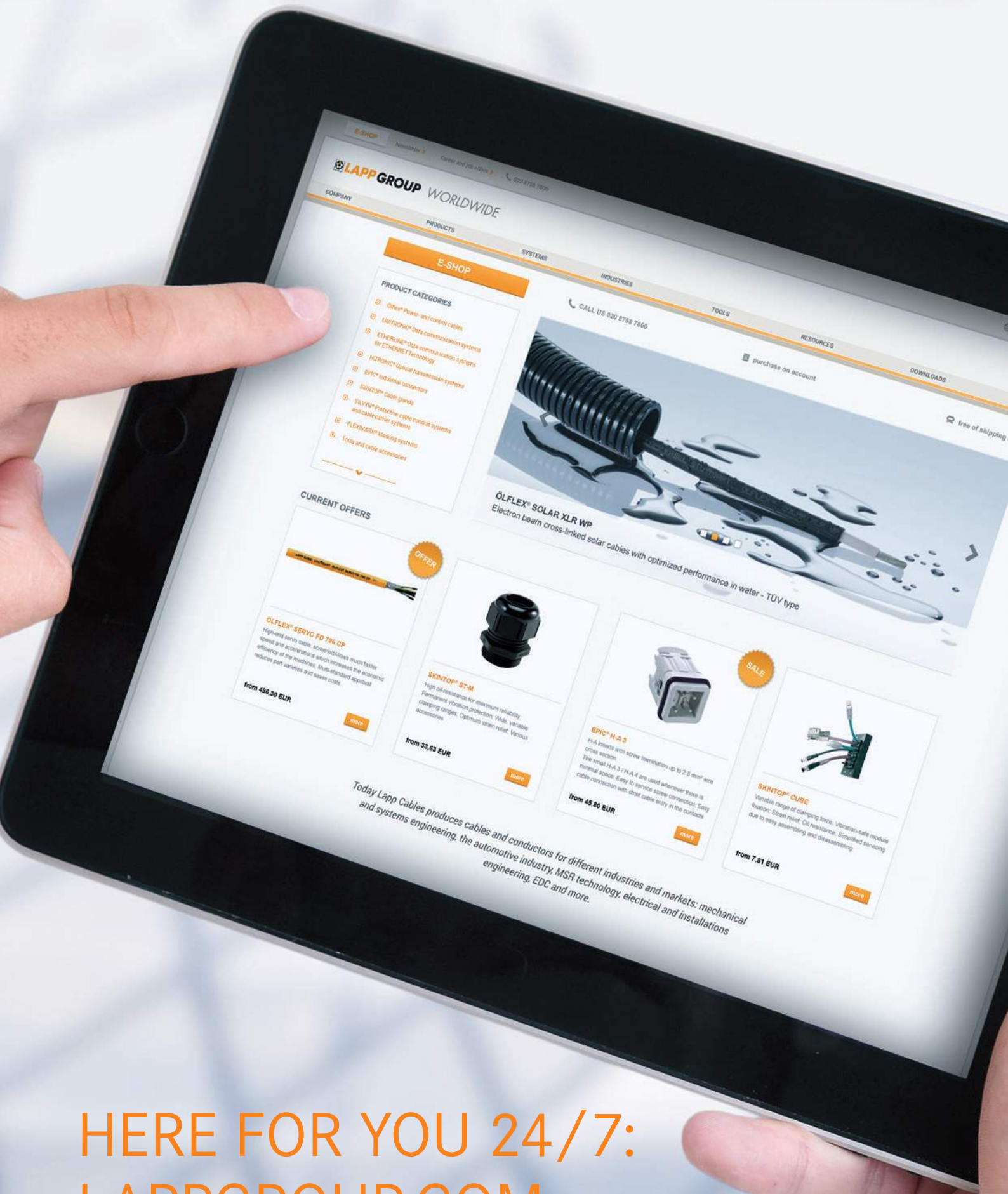
of storage space in Germany alone enables us to keep 48,000 km of ÖLFLEX® constantly in stock.

This is 1.2 times greater than the length of the equator line.





Patented mandrel gripper in the LC6 logistics centre



HERE FOR YOU 24/7:  
LAPPGROUP.COM



# LAPP e-SERVICES FOR YOUR SUCCESS

It's never been easier to get in touch with us. Contact us online, via the App or order directly from the e-Shop (available in various countries). You can even connect your inventory management system to our SAP interface to ensure a flawless procurement process – it's all part of the service. [www.lappgroup.com](http://www.lappgroup.com)

## CABLE FINDER

Make short work of searching for cables.

[www.lappgroup.com/cablefinder](http://www.lappgroup.com/cablefinder)

## CONNECTOR FINDER

Configure your EPIC® square, circular or solar plugs online, with only a few clicks of the mouse.

[www.lappgroup.com/connectorfinder](http://www.lappgroup.com/connectorfinder)

## CABLE GLAND FINDER

Use the SKINTOP® Finder to help you identify the cable gland you need and the required accessories.

[www.lappgroup.com/cable-glandfinder](http://www.lappgroup.com/cable-glandfinder)

## CHARGING CABLE CONFIGURATOR

The Charging Cable Configurator enables you to find the cables and connectors you need to create the perfect charging cable in no time.

[www.lappgroup.com/emobility-cablefinder](http://www.lappgroup.com/emobility-cablefinder)

## CABLE ASSEMBLY FINDER

Based on criteria such as the number of pins, connector/female, sheath material and cable length, you are able to find the suitable cable assembly in a matter of moments from the following areas:

UNITRONIC® Sensor/actuator, ETHERLINE® Industrial Ethernet, UNITRONIC® Fieldbus, HITRONIC® Fibre optic cable

[www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder)

## CONNECTOR HOUSING CONFIGURATOR

Configure your own individual industrial connector housing with locking concept and cable entries.

[www.lappgroup.com/connector-housing](http://www.lappgroup.com/connector-housing)

## CABLE MARKING FINDER

Use our FLEXIMARK® Cable Marking Finder to quickly identify the appropriate marking and labelling for your application. You can also view the corresponding accessories and more detailed product information.

[www.lappgroup.com/markfinder](http://www.lappgroup.com/markfinder)

## CAD PRODUCT CATALOGUE

Design time costs money. Our CAD Product Catalogue enables developers and planners to save both.

[www.lappgroup.com/3d-data](http://www.lappgroup.com/3d-data)

Enter the  
world of Lapp:



Our apps are available  
from the following stores:



# ALWAYS A PERFECT CONNECTION

## ÖLFLEX® CONNECT

Systems Solutions made by Lapp

With our systems service ÖLFLEX® CONNECT, we offer customized cabling solutions assembled exactly to your requirements.

Everything is possible – from cable assemblies to industry standard servo connections right up to sophisticated high-speed drag-chain systems. Do it all with ÖLFLEX® CONNECT.

**Systems Solutions made by Lapp.**

With our three distinctive offers, you get made-to-measure solutions, covering all your connectivity needs:



### ÖLFLEX® CONNECT CABLES

Cable Systems made by Lapp



### ÖLFLEX® CONNECT SERVO

Servo Systems made by Lapp



### ÖLFLEX® CONNECT CHAIN

Chain Systems made by Lapp

For more information, please see  
pages 24 - 25 and 838 - 839.

- **NO CAPITAL EXPENDITURE**

Avoid investing in your own production facilities – leverage our state-of-the-art equipment and tools.

- **LESS OPERATING EXPENDITURE**

Benefit from a simplified supplier base – Lapp supplies all cable connectivity components from a single source.

- **REDUCED INVENTORY**

No stocks of connectors, cables, conduits and hoses.  
No component scrap or cutting waste.

- **HIGHEST SCALABILITY**

With Lapp you can immediately respond to increases in demand. Ranging from individual pieces to whole series – with us you receive everything from one source.

- **TECHNICAL EXPERTISE**

Make use of our cabling technology expertise and get uncompromising brand products for maximum reliability and safety.

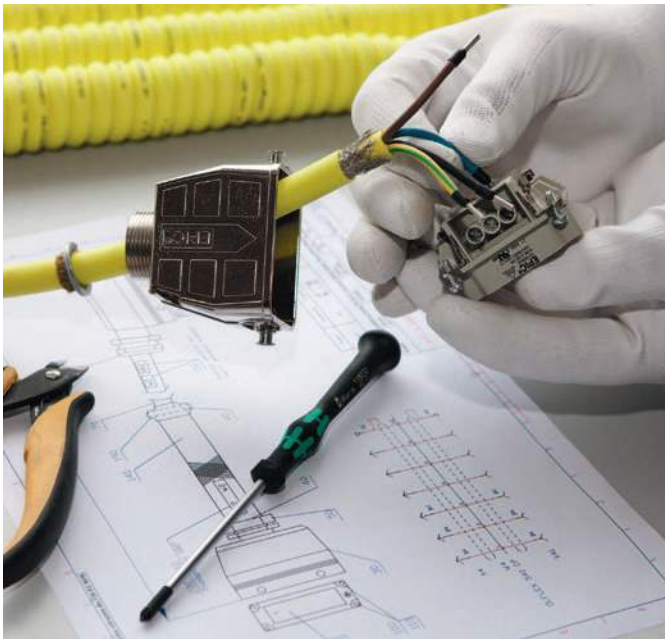
# START THINKING SMART TODAY

Focussing your precious resources and capital on your core product and leveraging Lapp for your connectivity needs will allow you to maximize your profitability.

**Systems Solutions made by Lapp.**



# ASSEMBLIES MADE TO ORDER



## ÖLFLEX® CONNECT CABLES

Cable Systems made by Lapp

We produce different cable types for fast cabling of CNC machinery, switch boxes, control cabinets and electrical assemblies. Our product range stretches from single cores and multi-core cables through to EMC-shielded cables, all of which can be fitted with a wide selection of crimp contacts, connectors and housings. We also supply highly flexible and exceptionally durable spiral cables in uncompromising premium quality. Another of our specialities: Glass fibre system solutions, which we stock in standard lengths but can also produce, test and supply in exactly the length you require.

### OUR COMPREHENSIVE RANGE OF SERVICES

- Cable cutting as required
- Unwinding with specified bending radius
- Stripping
- Crimping
- Heat shrinking
- Markings (labels, sleeves, marking rings, packing, stainless steel marking)
- Cable printing
- Crimp force monitoring (CFM)
- Push-pull tests
- Resistance testing



## ÖLFLEX® CONNECT SERVO

Servo Systems made by Lapp

As a leading manufacturer of assembled servo cable systems, we offer all industry standards for customers from different areas of industrial machinery and drive systems. From the cost-effective **basic line** servo solution for applications free of aggressive environmental influences, to the **core line**, specially designed for dynamic applications, right up to the highly dynamic **extended line** performance class – the Lapp Group offers the right solution for every requirements profile. All of our servo cables are put through their paces at our company owned laboratory with the application site in mind – for maximum quality and safety.

basic line

core line

extended line

### OUR INNOVATIVE SERVO CONCEPT

- Global quality standard thanks to automated production process
- 360 degree screen contact for optimum screening
- New servo cable design with all necessary approvals
- Optional RFID solutions available

# ÖLFLEX® CONNECT CHAIN

Chain Systems made by Lapp

When it comes to assembled drag chains, you can benefit from our extensive know-how and many years of experience. Our system engineers know our components right down to the smallest detail, but also have an in-depth understanding of your application. Our experts have an exact knowledge of all product specifications and make sure that everything runs perfectly for your application. Put your trust in innovative, reliable and highly efficient power chain solutions from Lapp.

## THREE SYSTEM PACKAGES – THE CHOICE IS YOURS

basic chain

core chain

extended chain

### basic chain

- Nylon or steel drag chains with highly flexible cables, cable protection conduits, hydraulic or pneumatic hoses with **no termination** such as connectors or flanges

### core chain

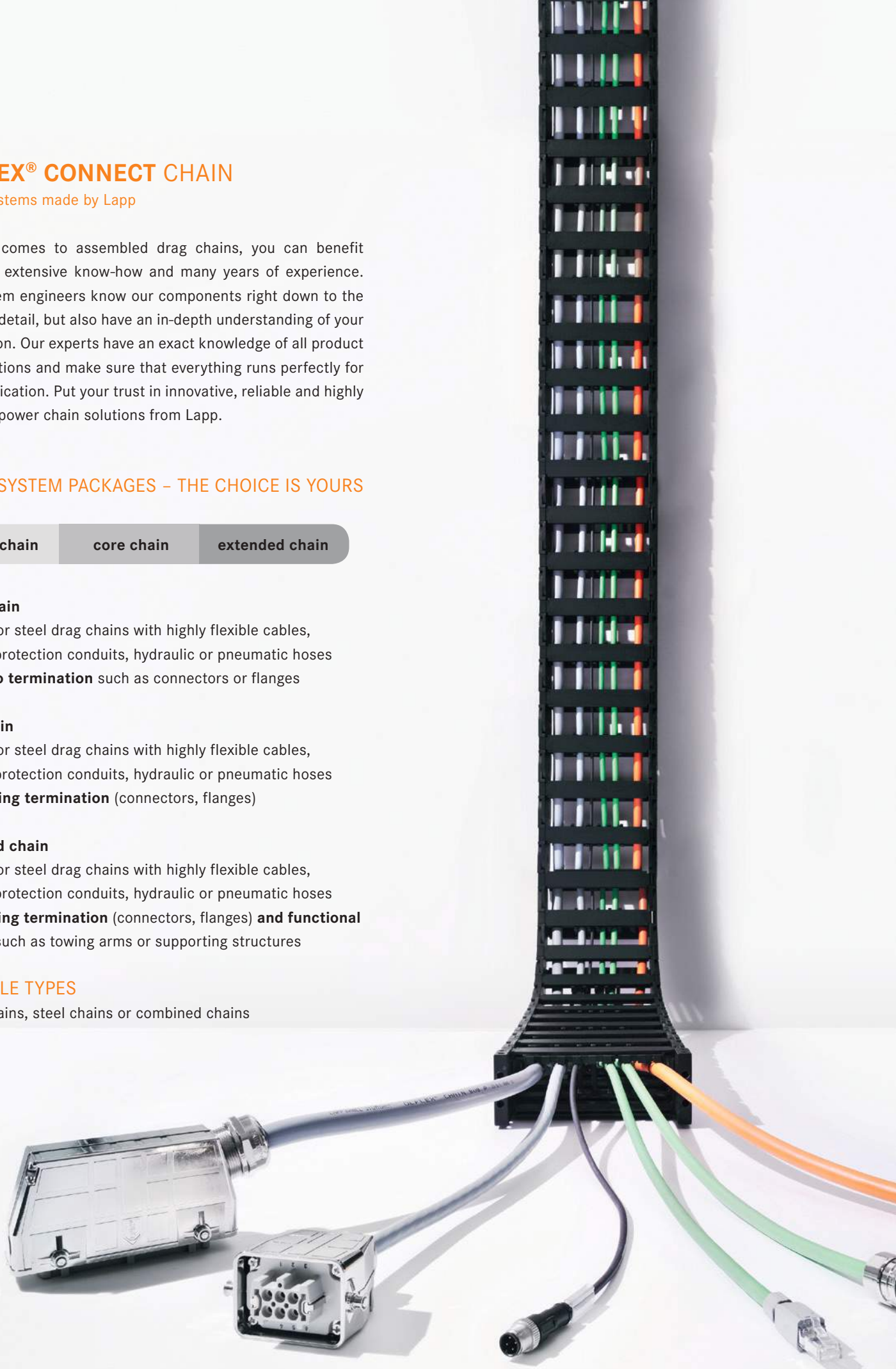
- Nylon or steel drag chains with highly flexible cables, cable protection conduits, hydraulic or pneumatic hoses **including termination** (connectors, flanges)

### extended chain

- Nylon or steel drag chains with highly flexible cables, cable protection conduits, hydraulic or pneumatic hoses **including termination** (connectors, flanges) **and functional units** such as towing arms or supporting structures

## POSSIBLE TYPES

Nylon chains, steel chains or combined chains



# WHEN GOOD ISN'T GOOD ENOUGH

## CABLES UNDER EXTREME CONDITIONS

Whether at the North Pole or in the Himalayas, in mines or in underwater caves, in biogas plants or at sporting events in ice and snow, cables and industrial connectors from Lapp often need to withstand extreme conditions. They must withstand very high or very low temperatures, must not disintegrate in aggressive media such as acids or alkalis, and must be particularly robust against mechanical loads.

“Off the shelf” cables won’t satisfy our most discerning users for long – there is the risk of failure after only a short time. This can lead to high losses and sometimes even endanger life, especially in areas or plants that are difficult to access.

## ÖLFLEX® HEAT FOR THE ARCTIC

For example, for use in the Arctic where temperatures of below  $-50^{\circ}\text{C}$  are sometimes recorded in winter. Therefore, seafaring in the Arctic regions of the Arctic Ocean also requires considerable technical outlay. Nautical devices need to function reliably on a permanent basis as the locations where they are used are often so difficult to reach that maintenance work can only be performed every two years.

The Russian company Technomarine, based in St. Petersburg and specialised in the development and production of radio navigation equipment for the maritime and aviation sector, therefore relies solely on products from Lapp for cabling its beacons and navigation systems in the Arctic. The company particularly orders cables from Lapp that are easy to install and are resistant to low temperatures. They are used for connecting solar power systems, batteries and power modules for beacons and navigation systems.





## EXTREME APPLICATION IN THE HIMALAYAS

ÖLFLEX® HEAT cables have also really proved themselves on the highest mountains where temperatures between  $-50^{\circ}\text{C}$  and, in sunlight, more than  $40^{\circ}\text{C}$  often prevail. A Polish mountain expedition packed the ÖLFLEX® HEAT 205 SC single-core cable for ascending the west side of the Annapurna massif (8,091 m) in the Himalayas and the Gasherbrum (8,035 m) in the Karakorum range. It was used for cabling the generator at the base camp. The ÖLFLEX® HEAT 180 EWKF silicone cables were used to connect the central switching station to the lights for the mess, kitchen and tents at an altitude of 5,100 metres. The switching station provided the power supply for the satellite phone and the radio station. Particularly robust EPIC® industrial connectors were also used.

## LIGHT FOR THE DEPTHS OF THE OCEAN

Taking light to the depths of the ocean – this is what the Polish company GRALmarine specialises in. ÖLFLEX® cables and SKINTOP® cable glands from Lapp are used for the connection technology within the underwater lamps. With SKINTOP® BS cable glands and ÖLFLEX® CLASSIC 440P or ÖLFLEX® CLASSIC 550P, lamps and systems from GRALmarine even work reliably at diving depths of more than 1,000 metres. Thanks to the special polyurethane sheath, these cables guarantee a long service life, even in rough operating conditions.



# Here is the solution. Where is the problem?



As far as the history of Lapp is concerned, it all began 55 years ago with cable solutions for industrial machinery and plant engineering – and to this day, industrial applications have remained our core expertise, as well as our favourite discipline. Whether it's wires or highly flexible cables, industrial connectors, cable glands or customised solutions – if you're faced with a challenge, Lapp has the solution. [www.lappgroup.com](http://www.lappgroup.com)





# ÖLFLEX®

## Power and control cables



ÖLFLEX® has become synonymous with power and control cables. Our flexible and oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions.

### Application range

- Industrial machinery, machine tools, plant and equipment engineering
- Measurement, control, heating and air conditioning systems
- Wind power and photovoltaic systems
- Public buildings, airports and stations.
- Medical technology, chemical industry, composting plants and sewage works
- Food and beverage industry
- Construction machinery, vehicles and agricultural equipment
- Stage technology
- Mobile electrical equipment (electric tools, power tools, domestic appliances)

## Various applications

### PVC outer sheath and coloured cores

ÖLFLEX® CLASSIC 100 300/500V	New	26
ÖLFLEX® CLASSIC 100 450/750V	New	28
ÖLFLEX® CLASSIC 100 YELLOW		29
ÖLFLEX® CLASSIC 100 CY		30
ÖLFLEX® CLASSIC 100 SY		31
ÖLFLEX® CLASSIC 100 BK 0,6/1 kV		32

### PVC outer sheath and numbered cores

ÖLFLEX® SMART 108		33
ÖLFLEX® CLASSIC 110		34
ÖLFLEX® CLASSIC 110	New	37
ÖLFLEX® CLASSIC 110 LT	New	38
ÖLFLEX® CLASSIC 110 ORANGE		39
ÖLFLEX® CLASSIC 110 CY		40
ÖLFLEX® CLASSIC 110 SY		41
ÖLFLEX® CLASSIC 110 BLACK 0,6/1 kV		42
ÖLFLEX® CLASSIC 110 CY BLACK 0,6/1 kV		43
ÖLFLEX® CLASSIC 115 CY		44

### Intrinsically safe circuits

ÖLFLEX® EB		46
ÖLFLEX® EB CY		47

### PVC sheath, certified

ÖLFLEX® 140*		48
ÖLFLEX® 140 CY*		49
ÖLFLEX® 150		50
ÖLFLEX® 150 CY		51
ÖLFLEX® 191		52
ÖLFLEX® 191 CY		53
ÖLFLEX® CONTROL TM		54
ÖLFLEX® CONTROL TM CY		56
ÖLFLEX® TRAY II		58
ÖLFLEX® TRAY II CY		60
ÖLFLEX® SF		62
<b>Halogen-free</b>		
ÖLFLEX® CLASSIC 100 H		63
ÖLFLEX® CLASSIC 110 H		64
ÖLFLEX® CLASSIC 110 CH		65
ÖLFLEX® CLASSIC 130 H		66
ÖLFLEX® CLASSIC 135 CH		67
ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV		69
ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV		70

## Harsh conditions

### High mechanical and chemical resistance

ÖLFLEX® PETRO C HFFR		71
ÖLFLEX® ROBUST 200		72
ÖLFLEX® ROBUST 210		73
ÖLFLEX® ROBUST 215 C		74
ÖLFLEX® CLASSIC 400 P		75
ÖLFLEX® CLASSIC 400 CP		77
ÖLFLEX® CLASSIC 415 CP		78
ÖLFLEX® 408 P	New	79
ÖLFLEX® 409 P	New	80
ÖLFLEX® 440 P		81
ÖLFLEX® 440 CP		82
ÖLFLEX® 491 P		83
ÖLFLEX® 450 P		84
ÖLFLEX® 500 P		85
ÖLFLEX® 540 P		86
ÖLFLEX® 540 CP		87
ÖLFLEX® 550 P*		88
<b>Rubber cables</b>		
H05RR-F		89
H05RN-F		90
H07RN-F		91
H07RN-F, enhanced version		92
H07ZZ-F		94
H01N2-D		95
NSSHÖU		96
NSGAFÖU 1,8/3 kV		97
NSHXAFÖ 1,8/3 kV		98
H07RN8-F		99

## Servo applications

### PVC sheath

ÖLFLEX® SERVO 700		100
ÖLFLEX® SERVO 720 CY		101
ÖLFLEX® SERVO 2YSLCY-JB	New	102

### PVC sheath, certified

ÖLFLEX® SERVO 719 CY	New	103
ÖLFLEX® SERVO 9YSLCY-JB		104
ÖLFLEX® SERVO 7DSL	New	105
SERVO cables in acc. to SIEMENS® Standard 6FX 5008-		106
SERVO Cables in acc. to SEW® Standard		107

## Power chain applications

### Servo applications - power drive systems

ÖLFLEX® SERVO FD 781 CY		108
-------------------------	--	-----

### Servo applications - power drive systems, certified

ÖLFLEX® SERVO FD 796 P		109
ÖLFLEX® SERVO FD 796 CP		110
ÖLFLEX® SERVO FD 798 CP		112
ÖLFLEX® SERVO FD 7DSL	New	113
SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS		114
SERVO cables in acc. to INDRAMAT® Standard INK		116
SERVO cables in acc. to LENZE® Standard		117
Special Encoder and resolver cables		118

### Various applications

ÖLFLEX® CLASSIC FD 810		119
ÖLFLEX® CLASSIC FD 810 CY		120

### Various applications, certified

ÖLFLEX® CHAIN 809 SC		121
ÖLFLEX® CHAIN 809 SC CY	New	122
ÖLFLEX® FD 90		123
ÖLFLEX® FD 90 CY		124
ÖLFLEX® CHAIN 809		125
ÖLFLEX® CHAIN 809 CY		126
ÖLFLEX® FD 891		127
ÖLFLEX® FD 891 CY		128

### Harsh conditions

ÖLFLEX® CHAIN 808 P		129
ÖLFLEX® CHAIN 808 CP		130
ÖLFLEX® CLASSIC FD 810 P		131
ÖLFLEX® CLASSIC FD 810 CP		132
ÖLFLEX® ROBUST FD		133
ÖLFLEX® ROBUST FD C		134

### Harsh conditions, certified

ÖLFLEX® FD 855 P	New	135
ÖLFLEX® FD 855 CP	New	136
ÖLFLEX® PETRO FD 865 CP		137
ÖLFLEX® FD 891 P		138
ÖLFLEX® CHAIN 896 P		139

### Torsion, articulated robot

ÖLFLEX® ROBOT 900 P		140
ÖLFLEX® ROBOT 900 DP		141

### Torsion, articulated robot, certified

ÖLFLEX® ROBOT F1		142
ÖLFLEX® ROBOT F1 ( C )		143

## Special applications

### Special single cores

LiFY		144
LiFY 1 kV		145
ESUY Copper Earthing Cable		146
X00V3-D Copper Earthing Cable		147

### Commercial vehicles

ÖLFLEX® TRUCK 170 FLRY		148
ÖLFLEX® TRUCK 470 P FLRY11Y		149
ÖLFLEX® TRUCK 170 TWIN		150

### Photovoltaic

ÖLFLEX® SOLAR XLR-R		151
ÖLFLEX® SOLAR XLS-R		152
ÖLFLEX® SOLAR XLR WP	New	153

### Wind energy

ÖLFLEX® TORSION FRNC		154
ÖLFLEX® TORSION D FRNC		154

### eMobility

ÖLFLEX® CHARGE	New	156
----------------	-----	-----

### Temperature measurement (extension and compensating cables)

Extension- and compensating cables, paired		157
Extension- and compensating cables, multi-paired		160

## Conveyor technology

### Reelable

ÖLFLEX® CRANE NSHTÖU		162
ÖLFLEX® CRANE VS (N)SHTÖU		163
ÖLFLEX® CRANE PUR		164

<b>With support element</b>		<b>VDE standard cables</b>	
ÖLFLEX® CRANE	165	NYM-J	221
<b>For push-button control units</b>		(N)HXMH	222
ÖLFLEX® CRANE 2S	166	<b>Cables for direct burial</b>	
<b>For lifts</b>		NYJ-J, NYJ-O	223
ÖLFLEX® LIFT	167	N2XH	New 225
ÖLFLEX® LIFT T	168	N2XCH	New 227
ÖLFLEX® LIFT S	169	NYCY	228
<b>Flat cables</b>		NYCWY	229
ÖLFLEX® CRANE F	170	NAYY-J	230
ÖLFLEX® CRANE CF	171		
ÖLFLEX® LIFT F	172		
<b>Expanded ambient temperatures</b>		<b>ÖLFLEX® CONNECT Systems Solutions</b>	
<b>PVC cables (-20°C to +90°C)</b>		<b>ÖLFLEX® CONNECT Servo assemblies</b>	
ÖLFLEX® HEAT 105 MC	173	ÖLFLEX® SERVO Basic Line according to Siemens 6FX5002 (PVC)	New 231
<b>Cross-linked cables (-55°C to +125°C)</b>		ÖLFLEX® SERVO Core Line according to Siemens (PUR)	New 232
ÖLFLEX® HEAT 125 MC	New 174	ÖLFLEX® SERVO Extended Line according to Siemens 6FX8002 (PUR)	New 233
ÖLFLEX® HEAT 125 C MC	New 175	Servo harnessing according to SIEMENS® 6FX5002-	235
<b>Silicone cables (-50°C to +180°C)</b>		Servo harnessing according to SIEMENS® 6FX 8002-	236
ÖLFLEX® HEAT 180 SiHF	176	Servo harnessing according to INDRAMAT® IKG / RKL	237
ÖLFLEX® HEAT 180 H05SS-F EWKF	177	Servo harnessing according to INDRAMAT® IKS / RKG	238
ÖLFLEX® HEAT 180 MS	178	Servo harnessing according to LENZE®	239
ÖLFLEX® HEAT 180 C MS	179	Servo harnessing according to SEW®	240
ÖLFLEX® HEAT 180 EWKF	180	<b>Spiralised</b>	
ÖLFLEX® HEAT 180 EWKF C	181	ÖLFLEX® SPIRAL 400 P	241
ÖLFLEX® HEAT 180 GLS	182	SPIRAL H07BQ-F BLACK	243
<b>FEP cables (-100°C to +205°C)</b>		ÖLFLEX® SPIRAL 540 P	244
ÖLFLEX® HEAT 205 MC	183	ÖLFLEX® SPIRAL 540 P with angular, isolated ground plug	246
ÖLFLEX® HEAT 205 PTFE/FEP	183	UNITRONIC® SPIRAL	247
<b>PTFE cables (-190°C to +260°C)</b>		<b>Connection and extension cables</b>	
ÖLFLEX® HEAT 260 MC	184	ÖLFLEX® PLUG H03VV-F Net Connection Cable*	248
ÖLFLEX® HEAT 260 C MC	185	ÖLFLEX® PLUG H05VV-F Net Connection Cable*	249
ÖLFLEX® HEAT 260 GLS	186	ÖLFLEX® PLUG 540 P Connection Cable	250
<b>Glass fibre cables (above +260°C)</b>		ÖLFLEX® PLUG Extension Cable 540 P safety yellow*	251
ÖLFLEX® HEAT 350 MC	187	ÖLFLEX® PLUG CEE Connection/ Extension Cable without phase shifter*	252
ÖLFLEX® HEAT 1565 MC	188	ÖLFLEX® PLUG CEE connecting cable with phase shifter*	253
<b>Cross-linked single cores (-55°C to +125°C)</b>		<b>Pre-wired front-end connector</b>	
ÖLFLEX® HEAT 125 SC	New 189	Pre-wired front plug for PLC SIMATIC® S7-300	254
<b>Silicone single cores (-50°C to +180°C)</b>		Pre-wired front plug for PLC SIMATIC® S7-400	255
ÖLFLEX® HEAT 180 SiF	191	<b>eMobility - Assembled charging cables</b>	
ÖLFLEX® HEAT 180 SiF A	New 192	CHARGE M3 —/T2C S	256
ÖLFLEX® HEAT 180 SiD	193	CHARGE M3 —/T1C S	256
ÖLFLEX® HEAT 180 SiF/GL	194	CHARGE M3 —/T2C C	257
ÖLFLEX® HEAT 180 SiZ	194	CHARGE M3 —/T1C C	257
ÖLFLEX® HEAT 180 FZLSi	194	CHARGE M3 T2P/T2C S	258
<b>FEP single cores (-100°C to +205°C)</b>		CHARGE M3 T2P/T2C C	258
ÖLFLEX® HEAT 205 SC	195	CHARGE M3 T2P/T2C H	258
<b>PTFE single cores (-190°C to +260°C)</b>		CHARGE M3 T2P/T1C S	259
ÖLFLEX® HEAT 260 SC	196	CHARGE M3 T2P/T1C C	259
<b>Glass fibre single cores (above +260°C)</b>		CHARGE M3 T2P/T1C H	259
ÖLFLEX® HEAT 350 SC	197	CHARGE M3 T3P/T2C S	260
ÖLFLEX® HEAT 1565 SC	198	CHARGE M3 T3P/T1C S	260
ÖLFLEX® HEAT 650 SC	New 199	CHARGE M2 TFP/T2C S	261
		CHARGE M2 TFP/T1C S	261
<b>Control Cabinet Single Cores</b>		<b>eMobility - System components</b>	
<b>Various applications</b>		Socket outlet Type 2 IP54 up to 63A and connector locking flat	262
LiY	200	Socket outlet Type 2 IP54 up to 63A with cover and connector locking	262
LiY with twin colour helix insulation	201	Socket outlet Type 2 IP54 up to 63A with RGB LED as well as cover and connector locking	262
H05V-K <VDE>	202	Socket outlet Type 2 IP54 up to 63A and connector locking	262
H05V-K <HAR>	203	Socket outlet Type 2 IP54 up to 63A with RGB LED and connector locking	262
H05V-K in big one-way cardboard box	204	Socket outlet Type 2 IP54 up to 63A with RGB LED and connector locking	New 262
X05V-K with twin colour helix insulation	205	EVCP2 Controller Mode 3/ Typ 2	263
H07V-K <VDE>	206	Vehicle connector Type 1 up to 32A	264
H07V-K <HAR>	207	Plug Type 2 up to 63A	264
H07V-K in big one-way cardboard box	209	Vehicle connector Type 2 up to 63A	265
X07V-K with twin colour helix insulation	210	Socket outlet ground receptacle 16A 230V, German System	265
<b>Harmonised and certified</b>		Socket outlet ground receptacle 16A 230V, German System	266
MULTI-STANDARD SC 1	211	Socket outlet ground receptacle 16A 230V, Belgian/French System	266
MULTI-STANDARD SC 2.1	212	Socket outlet Type 23, Swiss System	267
MULTI-STANDARD SC 2.2	214	Socket outlet ground receptacle with flat design	267
<b>Halogen-free</b>		Socket outlet ground receptacle with hinged cover locking	268
H05Z-K 90°C	216	Socket outlet ground receptacle with hinged cover locking and LED	268
H07Z-K 90°C	217	Socket outlet ground receptacle	269
<b>EMC-optimised design</b>		Socket outlet ground receptacle with LED	269
LiYCY	219	Socket outlet CEE 3-way 230V	270
Li2YCY	219	Socket outlet CEE 5-way 400V	270
<b>Building Installation</b>			
<b>Various applications</b>			
ÖLFLEX® STATIC CY black	220		

## ÖLFLEX® CONNECT

### Systems Solutions made by Lapp

Our dedicated and highly qualified team of engineers, technicians, sales and service personnel are with you throughout – from design to the creation of the prototype right through to production and quality control.


## ÖLFLEX® CONNECT SERVO



Thanks to our expertise in manufacturing servo cables and circular connectors, we can provide you with solutions for all your servo-application needs: servo cables in three performance classes, connectors with standard interlocking screws or rapid interlocking system, overmolded assemblies.

#### Our newly designed servo assemblies

- Global quality standard with automated production process
- 360 degree screen contact for optimum protection against EMI
- All required approvals
- RFID option available

 Find our servo assemblies from page 100 onwards

## ÖLFLEX® CONNECT CABLES

### Cable assemblies

Our wide array of cables, connectors and accessories that we have engineered, enables us to respond quickly to your requirements – from smaller orders to large-scale projects. Our systems solutions assembly sites around the world all operate to the same operating standards to deliver the renowned Lapp quality.



Cable harness with different connectors and end sleeves



Extruded e-mobility cabling

### Examples of products from our portfolio:



Cable with ring eyelets



Cable with heat shrink tube, crimps and circular connector



Cable with circular connector and earth cable with heat shrink tube

**i** Find out more about our cable assemblies on [www.lappgroup.com/systems](http://www.lappgroup.com/systems)

### Spiral cables

When producing spiral cables, we have a wealth of expertise at our disposal. Flexibility and durability are key factors for applications requiring long-term high performance. It is also crucial to have the appropriate insulation and the right conductor material. With Lapp, your spiral cables are definitely in safe hands.

#### Features

- PUR or rubber outer sheath to withstand high mechanical stress
- Extension lengths of up to 3.5x the unextended spiral length
- High restoring force
- Various cable cross sections from 0.7 to 2.5 mm<sup>2</sup>
- Unextended lengths of > 2.0 m are customizable

**i** Find our spiral cable options from page 241 onwards



Various applications • PVC outer sheath and coloured cores



# ÖLFLEX® CLASSIC 100 300/500V

Colour-coded PVC control cable



**Info**

- Nominal voltage  $U_0/U$ : 300/500V
- Identical to previous ÖLFLEX CLASSIC 100 up to 1,5mm<sup>2</sup> but with extended range of cross-section
- For nominal voltage  $U_0/U$ : 450/750V or higher conductor cross-sections see ÖLFLEX® CLASSIC 100 450/750V

### Benefits

- Space-saving installation due to small cable diameters
- High electrical performance due to 4 kV test voltage
- High flexibility due to short-twisted conductor layers
- Now available with conductor cross-section from 2,5mm<sup>2</sup> as 300/500V version

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems  
Power stations
- Dry or damp rooms that are subject to medium mechanical loads
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1

### Norm references / Approvals

- Based on IEC 60227-5 and EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: ÖLFLEX® colour code, refer to Appendix T7

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
 $U_0/U$ : 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 300/500 V</b>				
00100004	2 X 0.5	4.8	9.6	35
00100014	3 G 0.5	5.1	14.4	42
00101224	3 X 0.5	5.1	14.4	42
00100024	4 G 0.5	5.7	19.2	54
00101234	4 X 0.5	5.7	19.2	54
00100034	5 G 0.5	6.2	24	63
00101244	5 X 0.5	6.2	24	63
0010004	6 G 0.5	6.7	28.8	73
0010005	7 G 0.5	6.7	33.6	81
0010006	8 G 0.5	8.0	38.4	97
0010007	10 G 0.5	8.6	48	116
0010008	12 G 0.5	8.9	58	133
0010009	14 G 0.5	9.5	67	151
0010010	16 G 0.5	10.0	76	169
0010011	21 G 0.5	11.7	99	223
0010012	24 G 0.5	12.4	114	254
0010016	40 G 0.5	15.4	192	404
00100214	2 X 0.75	5.4	14.4	45
00100224	3 G 0.75	5.7	21.6	55
00101254	3 X 0.75	5.7	21.6	55
00100234	4 G 0.75	6.2	28.8	66

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00101264	4 X 0.75	6.2	28.8	66
00100244	5 G 0.75	6.7	36	79
00101274	5 X 0.75	6.7	36	79
0010025	6 G 0.75	7.3	43.3	104
0010026	7 G 0.75	7.3	50.4	109
0010027	8 G 0.75	8.8	56	123
0010028	9 G 0.75	9.4	63	144
0010029	10 G 0.75	9.6	72	153
0010030	12 G 0.75	9.9	86.4	176
0010031	15 G 0.75	10.9	108	211
0010032	18 G 0.75	11.7	129.6	268
0010033	21 G 0.75	13.0	151	293
0010034	25 G 0.75	13.8	180	374
0010036	40 G 0.75	17.3	288	571
0010037	50 G 0.75	19.2	360	698
00100414	2 X 1.0	5.7	19.2	53
00100424	3 G 1.0	6.0	28.8	65
00102034	3 X 1.0	6.0	28.8	65
00100434	4 G 1.0	6.5	38.4	79
00102044	4 X 1.0	6.5	38.4	79
00100444	5 G 1.0	7.1	48	94
00102054	5 X 1.0	7.1	48	94

**ÖLFLEX® CLASSIC 100 300/500V**

Colour-coded PVC control cable

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0010045	6 G 1.0	8.0	58	124
0010046	7 G 1.0	8.0	67	131
0010047	8 G 1.0	9.5	77	146
0010049	10 G 1.0	10.2	96	183
0010050	12 G 1.0	10.5	115	215
0010052	16 G 1.0	11.8	154	282
0010053	18 G 1.0	12.7	173	315
0010054	20 G 1.0	13.4	192	350
0010056	25 G 1.0	14.7	240	449
00100634	2 X 1.5	6.3	28.8	68
00100644	3 G 1.5	6.7	43.2	84
00101284	3 X 1.5	6.7	43.2	84
00100654	4 G 1.5	7.2	57.6	104
00101294	4 X 1.5	7.2	57.6	104
00100664	5 G 1.5	8.1	72	128
00101304	5 X 1.5	8.1	72	128
0010068	7 G 1.5	8.9	101	166
0010069	8 G 1.5	10.6	115	205
0010071	12 G 1.5	12.0	173	307
0010072	14 G 1.5	12.7	202	349
0010074	18 G 1.5	14.4	259	465
0010076	25 G 1.5	16.9	360	655
1120800	2 X 2.5	7.5	48	100
1120801	3 G 2.5	8.1	72	132
1120802	4 G 2.5	8.9	96	163
1120803	5 G 2.5	10.0	120	200

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1120804	7 G 2.5	11.1	168	267
1120805	2 X 4	9.2	77	160
1120806	3 G 4	9.9	115.2	201
1120807	4 G 4	10.8	153.6	263
1120808	5 G 4	12.1	192	315
1120809	7 G 4	13.4	269	407
1120810	3 G 6	11.7	174	289
1120811	4 G 6	13.0	230	352
1120812	5 G 6	14.5	288	470
1120813	7 G 6	16.0	403	600
1120814	3 G 10	14.6	288	466
1120815	4 G 10	16.2	384	590
1120816	5 G 10	18.1	480	722
1120817	3 G 16	17.0	460.8	720
1120818	4 G 16	18.8	614.4	1067
1120819	5 G 16	21.2	768	1370
1120820	3 G 25	21.0	720	1250
1120821	4 G 25	23.5	960	1582
1120822	5 G 25	26.4	1200	1998
1120823	3 G 35	23.7	1008	1700
1120824	4 G 35	26.4	1344	2106
1120825	5 G 35	29.6	1680	2635
1120826	3 G 50	29.1	1440	2200
1120827	4 G 50	32.4	1920	2800
1120828	5 G 50	36.5	2400	3600

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Single lengths for sizes: ≥ 5G50 max. 500 m; ≥ 5G95 max. 400; ≥ 3G120 max. 500 m; ≥ 4G185 max. 250 m  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® 100 refer to page 276
- ÖLFLEX® CLASSIC 100 H refer to page 63
- ÖLFLEX® CLASSIC 100 BK 0,6/1 kV refer to page 32
- ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to page 69

**Accessories**

- SKINTOP® CLICK refer to page 715
- Detectable Cable ties refer to page 1059
- TY - FAST® cable ties refer to page 1058
- STAR STRIP stripping tool refer to page 1000

Various applications • PVC outer sheath and coloured cores



## ÖLFLEX® CLASSIC 100 450/750V

Colour-coded PVC power and control cable



**i Info**

- Nominal voltage  $U_0/U$ : 450/750V
- Identical to previous ÖLFLEX CLASSIC 100 starting at 2,5mm<sup>2</sup>
- For nominal voltage  $U_0/U$ : 300/500V and conductor cross-sections below 2,5mm<sup>2</sup> see ÖLFLEX® CLASSIC 100 300/500V

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC001578  
 ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
 Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9 / From 6 cores: ÖLFLEX® colour code, refer to Appendix T7

**Conductor stranding**  
 Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Torsion movement in WTG**  
 TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 $U_0/U$ : 450/750 VAC  
 In protected and fixed installations:  $U_0/U$ : 600/1000 V

**Test voltage**  
 4000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Occasional flexing: -5°C to +70°C  
 Fixed installation: -40°C to +80°C

### Benefits

- High electrical performance due to 4 kV test voltage
- High flexibility due to short-twisted conductor layers

### Application range

- Plant engineering  
 Industrial machinery  
 Heating and air-conditioning systems  
 Power stations
- Dry or damp rooms that are subject to medium mechanical loads
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1

### Norm references / Approvals

- Based on IEC 60227-5 and EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, grey (RAL 7001)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 450/750 V</b>				
0010086	2 X 2.5	8.9	48	128
0010087	3 G 2.5	9.6	72	162
00100933	3 X 2.5	9.6	72	162
00100883	4 G 2.5	10.7	96	203
00100893	5 G 2.5	11.8	120	242
0010091	7 G 2.5	13.1	168	321
0010092	8 G 2.5	15.8	192	385
0010100	2 X 4	10.4	76.8	187
0010210	3 G 4	11.2	115.2	244
00101013	4 G 4	12.5	154	297
00101023	5 G 4	13.7	192	355
0010103	7 G 4	15.2	269	471
0010105	3 G 6	12.6	173	318
00101063	4 G 6	13.8	230	394
00101073	5 G 6	15.6	288	489
0010108	7 G 6	17.3	403	651
0010301	3 G 10	15.9	288	516
00101093	4 G 10	17.6	384	650
00101103	5 G 10	19.7	480	792
0010111	7 G 10	21.7	672	1058
0010302	3 G 16	18.3	461	728

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00101123	4 G 16	20.4	614	1087
00101133	5 G 16	22.8	768	1118
0010303	3 G 25	23.0	720	1388
00101153	4 G 25	25.4	960	1582
00101163	5 G 25	28.5	1200	1771
0010304	3 G 35	25.6	1008	1766
00101173	4 G 35	28.5	1344	2106
00101183	5 G 35	31.9	1680	2635
0010305	3 G 50	31.0	1440	2556
00101193	4 G 50	34.5	1920	2943
00103133	5 G 50	38.6	2400	3936
0010306	3 G 70	35.3	2016	3182
00101203	4 G 70	39.4	2688	4092
00103143	5 G 70	44.1	3360	4800
0010307	3 G 95	41.3	2736	4675
00101213	4 G 95	45.8	3648	5290
00103153	5 G 95	51.6	4560	5600
0010308	3 G 120	47.6	3456	5626
00103093	4 G 120	53.1	4608	6994
00103113	4 G 150	57.4	5760	7500
00103123	4 G 185	62.8	7104	8300

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Single lengths for sizes: ≥ 5G50 max. 500 m; ≥ 5G95 max. 400; ≥ 3G120 max. 500 m; ≥ 4G120 max. 300; ≥ 4G185 max. 250 m  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 100 300/500V refer to page 26
- ÖLFLEX® CLASSIC 100 H refer to page 63
- ÖLFLEX® CLASSIC 100 BK 0,6/1 kV refer to page 32

**Accessories**

- SKINTOP® CLICK refer to page 715
- Detectable Cable ties refer to page 1059
- STAR STRIP stripping tool refer to page 1000

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX





# ÖLFLEX® CLASSIC 100 YELLOW

Yellow outer sheath for special warning purposes

**Info**

- For warning purposes



**Benefits**

- High electrical performance due to 4 kV test voltage

**Application range**

- For electrical circuits that remain 'live' after the main switch has been disconnected
- Service sockets and illumination circuits in electrical switchboards and cabinets
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

**Product features**

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1

**Norm references / Approvals**

- Based on IEC 60227-5 and EN 50525-2-51

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8 / 1
- PVC outer sheath, yellow (RAL 1016)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
VDE 0293-308, refer to Appendix T9
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 450/750 VAC  
In protected and fixed installations:  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 YELLOW; U<sub>0</sub>/U: 450/750 V</b>				
0010400	3 G 1.5	8.1	43	95
00104023	4 G 1.5	8.9	58	117
00104033	5 G 1.5	10.0	72	144
0010401	3 G 2.5	9.6	72	152
00104043	4 G 2.5	10.7	96	205
00104053	5 G 2.5	11.8	120	225

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® 450 P refer to page 84
- ÖLFLEX® 540 P refer to page 86

**Accessories**

- SKINTOP® CLICK refer to page 715
- STAR STRIP stripping tool refer to page 1000



# ÖLFLEX® CLASSIC 100 CY

Colour-coded and screened PVC control cable



**Info**

- EMC-compliant

### Benefits

- Space-saving installation due to small cable diameters
- High electrical performance due to 4 kV test voltage

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Conveyor and transport systems
- Servo drives
- In EMC-sensitive environments (electromagnetic compatibility)

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

### Norm references / Approvals

- Based on IEC 60227-5 and EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, transparent

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: ÖLFLEX® colour code, refer to Appendix T7

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
Up to 1.0 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 V  
From 1.5 mm<sup>2</sup>: U<sub>0</sub>/U: 450/750 V  
Fixed, protected installation:  
U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 CY; U<sub>0</sub>/U: 300/500 V</b>				
0035001	2 X 0.5	7.0	41	75
0035002	3 G 0.5	7.3	46	83
00350033	4 G 0.5	7.9	55	99
00352013	5 G 0.5	8.4	66	112
0035202	7 G 0.5	8.9	80	132
0035004	2 X 0.75	7.4	46	86
0035005	3 G 0.75	7.9	57	100
00350063	4 G 0.75	8.4	64	115
00350163	5 G 0.75	8.9	77	130
0035203	7 G 0.75	9.7	102	161
0035220	2 X 1.0	7.9	56	98
0035221	3 G 1.0	8.2	65	111
00352223	4 G 1.0	8.7	78	130
00352233	5 G 1.0	9.5	89	153
0035204	7 G 1.0	10.2	113	185
<b>ÖLFLEX® CLASSIC 100 CY; U<sub>0</sub>/U: 450/750 V</b>				
0035000	2 X 1.5	9.9	65	132
0035458	3 G 1.5	10.3	79	170
00354593	4 G 1.5	11.3	97	204
00354603	5 G 1.5	12.6	116	246
0035461	7 G 1.5	13.9	149	320
0035011	3 G 2.5	11.8	146	211
00350173	4 G 2.5	13.5	167	310
00350123	5 G 2.5	14.6	200	326

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0035289	7 G 2.5	15.9	288	444
00350183	4 G 4	15.1	237	403
00350133	5 G 4	16.5	328	478
00350193	4 G 6	16.6	318	521
00350143	5 G 6	18.2	441	624
0034953	3 G 10	18.9	414	690
00350213	4 G 10	21.1	558	843
00352903	5 G 10	23.1	714	1004
0034954	3 G 16	21.7	607	910
00350223	4 G 16	23.9	804	1164
00350153	5 G 16	26.8	1050	1812
0034955	3 G 25	26.6	936	1330
00350233	4 G 25	29.4	1289	1903
00350243	5 G 25	32.6	1446	2374
0034956	3 G 35	29.4	1258	1370
00350253	4 G 35	32.4	1693	2489
00350263	5 G 35	36.0	1975	2771
0034952	3 G 50	35.1	1748	2590
00350273	4 G 50	38.8	2342	3362
00350283	4 G 70	43.7	3035	3719
00350293	4 G 95	50.4	4055	5849
00354303	4 G 120	56.8	5225	7509
00354313	4 G 150	62.2	6300	7800
00354323	4 G 185	67.8	7753	9866

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Single lengths for sizes: ≥ 4G50 max. 500 m; ≥ 4G95 max. 400 m; ≥ 4G120 max. 300 m; ≥ 4G150 max. 250 m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO 9YSLCY-JB refer to page 104
- ÖLFLEX® SERVO 2YSLCY-JB refer to page 102

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- 3M Scotch™ 1183 screening tape refer to page 1044
- SKINTOP® MS-M BRUSH refer to page 733

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



**i Info**

- Steel wire braiding for extra mechanical protection



**ÖLFLEX® CLASSIC 100 SY**

Colour-coded PVC control cable with steel wire braiding

**Benefits**

- Extra mechanical protection due to braided steel wire

**Application range**

- Plant engineering
- Industrial machinery
- Heating and air-conditioning systems
- Areas with high mechanical stress

**Product features**

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1

**Norm references / Approvals**

- Based on IEC 60227-5 and EN 50525-2-51

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC inner sheath, grey
- Braid of galvanized steel wires
- PVC outer sheath, transparent

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: ÖLFLEX® colour code, refer to Appendix T7
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
Up to 1.5 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 V  
From 2.5 mm<sup>2</sup>: U<sub>0</sub>/U: 450/750 V  
From 2.5 mm<sup>2</sup>, in the case of fixed and protected installations: U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 SY; U<sub>0</sub>/U: 300/500 V</b>				
0016022	2 X 0.75	8.2	14.4	97
0016023	3 G 0.75	8.5	21.6	108
00160243	4 G 0.75	9.2	28.8	126
00160253	5 G 0.75	9.7	36	146
0016027	7 G 0.75	10.3	50	172
0016031	12 G 0.75	12.9	86	260
0016042	2 X 1.0	8.5	19.2	137
0016043	3 G 1.0	8.8	29	154
00160443	4 G 1.0	9.5	38.4	180
00160453	5 G 1.0	10.1	48	202
0016047	7 G 1.0	11.0	67	242
0016064	2 X 1.5	9.3	29	172
0016065	3 G 1.5	9.7	43	191
00160663	4 G 1.5	10.2	58	217
00160673	5 G 1.5	11.1	72	268
0016069	7 G 1.5	11.9	101	311
0016072	12 G 1.5	15.4	173	499
0016075	18 G 1.5	17.6	259	652
0016077	25 G 1.5	20.3	360	913

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 SY; U<sub>0</sub>/U: 450/750 V</b>				
0016087	2 X 2.5	12.1	48	245
0016088	3 G 2.5	12.6	72	278
00160893	4 G 2.5	13.9	96	339
00160903	5 G 2.5	15.2	120	397
0016092	7 G 2.5	16.3	168	470
0016101	2 X 4	13.6	76.8	329
00161023	4 G 4	15.7	154	457
00161033	5 G 4	17.1	192	545
0016106	3 G 6	15.8	173	544
00161073	4 G 6	17.2	230	687
00161083	5 G 6	18.8	288	798
00161103	4 G 10	21.3	384	1009
00161113	5 G 10	23.3	480	1197
00161133	4 G 16	24.1	614	1384
00161143	5 G 16	26.8	768	1740
00161163	4 G 25	29.4	960	2021
00161173	5 G 25	32.6	1200	2464
00161183	4 G 35	32.4	1344	2570
00161193	5 G 35	36.0	1680	3185
00161203	4 G 50	38.8	1920	3514

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Single lengths for sizes: ≥ 4G35 max. 500 m; ≥ 4G95 max. 400 m  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 110 SY refer to page 41

**Accessories**

- KT cable shears refer to page 999

Various applications • PVC outer sheath and coloured cores



## ÖLFLEX® CLASSIC 100 BK 0,6/1 kV



### Info

- Good outdoor performance

### Benefits

- High electrical performance due to 4 kV test voltage

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems  
Power stations  
Stage applications
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Suitable for outdoor applications
- Suitable for direct burial

### Product features

- Flame-retardant according IEC 60332-1-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396
- Flexible down to -30°C

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: PVC, cold-resistant
- PVC outer sheath, cold-resistant, black (RAL 9005)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable



#### Core identification code

Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: ÖLFLEX® colour code, refer to Appendix T7



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Torsion movement in WTG

TW-0 & TW-1, refer to Appendix T0



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 600/1000 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -30°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 BK 0,6/1 kV</b>				
1120457	3 G 1.0	9.0	29	112
1120459	5 G 1.0	10.4	48	152
1120462	2 X 1.5	9.6	29	123
1120463	3 G 1.5	10.1	43	144
1120464	4 G 1.5	10.8	58	170
1120465	5 G 1.5	11.7	72	199
1120469	3 G 2.5	11.3	72	182
1120470	4 G 2.5	12.2	96	225
1120474	4 G 4	13.8	154	324
1120475	4 G 6	15.1	230	442

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Other sizes and screened types are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to page 69
- ÖLFLEX® CLASSIC 110 BLACK 0,6/1 kV refer to page 42

### Accessories

- FLEXIMARK® Stainless steel kit refer to page 956
- SKINTOP® MS-M refer to page 724
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



# ÖLFLEX® SMART 108

Cost-effective VDE-registered PVC control cable

**Info**

- VDE certificate of conformity with factory surveillance
- Only available in standard lengths and standard packagings



**Benefits**

- SMART: good price/performance ratio the ÖLFLEX® SMART 108 has everything a flexible control cable needs
- SMART: environmentally friendly internal sheath layer made from recycled PVC with the same high quality of the TM2 model

**Application range**

- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Dry or damp rooms that are subject to medium mechanical loads
- Main dimensions available, further dimensions see ÖLFLEX® CLASSIC 110
- For extended applications and individual lengths, see ÖLFLEX® CLASSIC 110

**Product features**

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- Oil resistance: see data sheet

**Norm references / Approvals**

- VDE reg. no. 8639

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation, T12
- Two-layer PVC outer sheath, TM2; outside silvergrey

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to DIN EN 60228 (VDE 0295), class 5 / IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Standard length (m) and standard packaging						Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
		50 m /RG	100 m /RG	200 m /RG	200 m /DR	500 m /DR	1000 m /DR			
<b>ÖLFLEX® SMART 108</b>										
17520099	2 X0.5		100	200		500	1000	4.8	9.6	35
10030099	3 G0.5		100	200		500	1000	5.1	14.4	42
17530099	3 X0.5		100	200		500	1000	5.1	14.4	42
10040099	4 G0.5		100	200		500	1000	5.7	19.2	54
17540099	4 X0.5		100	200		500	1000	5.7	19.2	54
10050099	5 G0.5		100	200		500	1000	6.2	24	63
10070099	7 G0.5	50	100	200		500	1000	6.7	33.6	81
18020099	2 X0.75		100	200		500	1000	5.4	14.4	45
11030099	3 G0.75		100	200		500	1000	5.7	21.6	55
18030099	3 X0.75		100	200		500	1000	5.7	21.6	55
11040099	4 G0.75		100	200		500	1000	6.2	28.8	66
18040099	4 X0.75		100	200		500	1000	6.2	28.8	66
11050099	5 G0.75	50	100	200		500	1000	6.7	36	79
11070099	7 G0.75	50	100	200		500	1000	7.3	50	101
18520099	2 X1.0		100	200		500	1000	5.7	19.2	53
12030099	3 G1.0		100	200		500	1000	6.0	28.8	65
12040099	4 G1.0	50	100	200		500	1000	6.5	38.4	79
12050099	5 G1.0	50	100	200		500	1000	7.1	48	94
12070099	7 G1.0	50	100	200		500	1000	8.0	67	126
19020099	2 X1.5		100	200		500	1000	6.3	29	68
13030099	3 G1.5	50	100	200		500	1000	6.7	43	84
13040099	4 G1.5	50	100	200		500	1000	7.2	58	104
13050099	5 G1.5	50	100	200		500	1000	8.1	72	128
13070099	7 G1.5	50			200	500	1000	8.9	101	166
19520099	2 X2.5	50	100	200		500	1000	7.5	48	101
14030099	3 G2.5	50	100	200		500	1000	8.1	72	132
14040099	4 G2.5	50	100		200	500	1000	8.9	96	163
14050099	5 G2.5	50	100		200	500	1000	10.0	120	200
14070099	7 G2.5	50	100		200	500	1000	11.1	168	267

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Standard packaging: ring = RG, drum = DR. Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 110 refer to page 34
- ÖLFLEX® CLASSIC 110 refer to page 37

**Accessories**

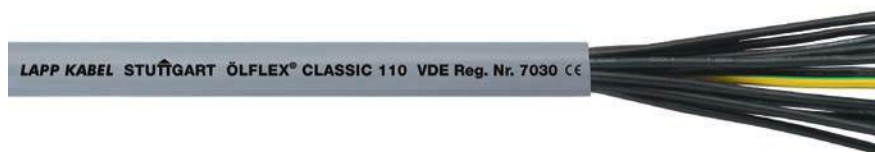
- EPIC® Industrial connectors
- SKINTOP® ST-M refer to page 712

Various applications • PVC outer sheath and numbered cores



## ÖLFLEX® CLASSIC 110

VDE-registered oil-resistant PVC control cable for a wide range of applications



**Info**

- VDE certificate of conformity with factory surveillance
- More than 140 items with up to 100 conductors



### Benefits

- Wide choice of standardized lengths and individual cuts
- Very broad range, items with up to 100 conductors

### Application range

- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Dry or damp rooms that are subject to medium mechanical loads
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- In power chains for a travelling distance up to 5 m and 0,2 ... 1 million bending cycles, for following dimensions: 0,5 to 2.5mm<sup>2</sup> and 2 to 7 conductors

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- Oil-resistant according to DIN EN 50290-2-22 (TM54)

### Norm references / Approvals

- VDE reg. no. 7030 for the following sizes: up to 2.5 mm<sup>2</sup>: 2 - 65 cores  
from 4 mm<sup>2</sup>: 2 - 7 cores  
from 25 mm<sup>2</sup>: 2 - 5 cores

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to DIN EN 60228 (VDE 0295), class 5 / IEC 60228 class 5

**Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
In power chains: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -15°C to +70°C  
In power chains: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Standard length (m) and standard packaging							Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
		25	50	100	200	300	500	1000			
<b>ÖLFLEX® CLASSIC 110</b>											
1119752	2 X0.5			100	200	300	500	1000	4.8	9.6	35
1119003	3 G0.5			100	200	300	500	1000	5.1	14.4	42
1119753	3 X0.5			100	200	300	500	1000	5.1	14.4	42
1119004	4 G0.5			100	200	300	500	1000	5.7	19.2	54
1119754	4 X0.5			100	200	300	500	1000	5.7	19.2	54
1119005	5 G0.5			100	200	300	500	1000	6.2	24	63
1119755	5 X0.5			100	200	300	500	1000	6.2	24	63
1119007	7 G0.5		50	100	200	300	500	1000	6.7	33.6	81
1119757	7 X0.5		50	100	200	300	500	1000	6.7	33.6	81
1119010	10 G0.5		50	100	200	300	500	1000	8.6	48	116
1119012	12 G0.5		50	100	200	300	500	1000	8.9	58	131
1119014	14 G0.5		50	100			500	1000	9.5	67	153
1119018	18 G0.5		50	100			500	1000	10.5	86.4	188
1119021	21 G0.5		50	100			500	1000	11.7	101	221
1119025	25 G0.5		50	100			500	1000	12.4	120	261
1119030	30 G0.5		50	100			500	1000	13.3	144	304
1119035	35 G0.5		50	100			500	1000	14.5	168	356
1119040	40 G0.5		50	100			500	1000	15.4	192	400
1119052	52 G0.5		50	100			500		17.3	250	517
1119061	61 G0.5		50	100			500		18.5	293	603
1119065	65 G0.5		50	100			500		19.6	312	644

**ÖLFLEX® CLASSIC 110**

VDE-registered oil-resistant PVC control cable for a wide range of applications

Article number	Number of cores and mm <sup>2</sup> per conductor	Standard length (m) and standard packaging							Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
		25	50	100	200	300	500	1000			
1119080	80 G0.5		50	100			500		21.1	384	780
1119100	100 G0.5		50	100			500		23.6	480	975
1119802	2 X0.75			100	200	300	500	1000	5.4	14.4	45
1119103	3 G0.75			100	200	300	500	1000	5.7	21.6	55
1119803	3 X0.75			100	200	300	500	1000	5.7	21.6	55
1119104	4 G0.75			100	200	300	500	1000	6.2	28.8	66
1119804	4 X0.75			100	200	300	500	1000	6.2	28.8	66
1119105	5 G0.75		50	100	200	300	500	1000	6.7	36	79
1119805	5 X0.75		50	100	200	300	500	1000	6.7	36	79
1119107	7 G0.75		50	100	200	300	500	1000	7.3	50	101
1119807	7 X0.75		50	100	200	300	500	1000	7.3	50	101
1119109	9 G0.75		50	100	200	300	500	1000	9.4	65	137
1119110	10 G0.75		50	100	200	300	500	1000	9.6	72	150
1119112	12 G0.75		50	100	200	300	500	1000	9.9	86	171
1119812	12 X0.75		50	100	200	300	500	1000	9.9	86	171
1119115	15 G0.75		50	100			500	1000	10.9	108	209
1119117	15 X0.75		50	100			500	1000	10.9	108	209
1119116	16 G0.75		50	100			500	1000	11.1	115.2	220
1119118	18 G0.75		50	100			500	1000	11.7	130	244
1119121	21 G0.75		50	100			500	1000	13.0	151	286
1119125	25 G0.75		50	100			500	1000	13.8	180	337
1119126	26 G0.75		50	100			500	1000	14.2	187.2	350
1119134	34 G0.75		50	100			500	1000	15.9	245	448
1119141	41 G0.75		50	100			500	1000	17.4	296	538
1119150	50 G0.75		50	100			500		19.2	360	648
1119151	51 G0.75		50	100			500		19.2	367	646
1119161	61 G0.75		50	100			500		20.5	439	779
1119165	65 G0.75		50	100			500		21.8	468	832
1119180	80 G0.75		50	100			500		23.6	576	1019
1119200	100 G0.75		50	100			500		26.4	718	1271
1119852	2 X1.0			100	200	300	500	1000	5.7	19.2	53
1119203	3 G1.0			100	200	300	500	1000	6.0	28.8	65
1119853	3 X1.0			100	200	300	500	1000	6.0	28.8	65
1119204	4 G1.0		50	100	200	300	500	1000	6.5	38.4	79
1119854	4 X1.0		50	100	200	300	500	1000	6.5	38.4	79
1119205	5 G1.0		50	100	200	300	500	1000	7.1	48	94
1119855	5 X1.0		50	100	200	300	500	1000	7.1	48	94
1119206	6 G1.0		50	100	200	300	500	1000	8.0	58	113
1119207	7 G1.0		50	100	200	300	500	1000	8.0	67	126
1119857	7 X1.0		50	100	200	300	500	1000	8.0	67	126
1119208	8 G1.0		50	100	200	300	500	1000	9.5	77	149
1119209	9 G1.0		50	100	200	300	500	1000	10.0	86	164
1119210	10 G1.0		50	100	200	300	500	1000	10.2	96	180
1119212	12 G1.0		50	100	200	300	500	1000	10.5	115	205
1119862	12 X1.0		50	100	200	300	500	1000	10.5	115	205
1119214	14 G1.0		50	100			500	1000	11.2	134	238
1119216	16 G1.0		50	100			500	1000	11.8	153.6	266
1119218	18 G1.0		50	100			500	1000	12.7	173	320
1119868	18 X1.0		50	100			500	1000	12.7	173	320
1119220	20 G1.0		50	100			500	1000	13.4	192	330
1119870	20 X1.0		50	100			500	1000	13.4	192	330
1119225	25 G1.0		50	100			500	1000	14.7	240	408
1119226	26 G1.0		50	100			500	1000	15.1	249	424
1119234	34 G1.0		50	100			500	1000	17.1	326	551
1119236	36 G1.0		50	100			500	1000	17.4	346	578
1119241	41 G1.0		50	100			500	1000	18.8	394	661
1119250	50 G1.0		50	100			500		20.6	480	797
1119256	56 G1.0		50	100			500		21.4	538	888
1119261	61 G1.0		50	100			500		22.1	586	958
1119265	65 G1.0		50	100			500		23.6	624	1033
1119280	80 G1.0		50	100			500		25.3	768	1251
1119300	100 G1.0		50	100			500		28.3	960	1560
1119902	2 X1.5			100	200	300	500	1000	6.3	29	68
1119303	3 G1.5	25	50	100	200	300	500	1000	6.7	43	84
1119903	3 X1.5		50	100	200	300	500	1000	6.7	43	84
1119304	4 G1.5	25	50	100	200	300	500	1000	7.2	58	104
1119904	4 X1.5		50	100	200	300	500	1000	7.2	58	104
1119305	5 G1.5	25	50	100	200	300	500	1000	8.1	72	128
1119905	5 X1.5		50	100	200	300	500	1000	8.1	72	128
1119306	6 G1.5		50	100	200	300	500	1000	8.4	86.4	157
1119307	7 G1.5	25	50	100	200	300	500	1000	8.9	101	166
1119907	7 X1.5		50	100	200	300	500	1000	8.9	101	166
1119308	8 G1.5		50	100			500	1000	10.6	115	210
1119313	8 X1.5		50	100			500	1000	10.6	116	210
1119309	9 G1.5		50	100			500	1000	11.4	130	221
1119310	10 G1.5		50	100			500	1000	11.6	143	243

## ÖLFLEX® CLASSIC 110

VDE-registered oil-resistant PVC control cable for a wide range of applications

Article number	Number of cores and mm <sup>2</sup> per conductor	Standard length (m) and standard packaging							Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	
		25	50	100	200	300	500	1000				
1119311	11 G 1.5		50	100				500	1000	11.6	158	258
1119312	12 G 1.5	25	50	100				500	1000	12.0	173	279
1119912	12 X 1.5		50	100				500	1000	12.0	173	279
1119314	14 G 1.5		50	100				500	1000	12.7	202	323
1119316	16 G 1.5		50	100				500	1000	13.4	230.4	361
1119318	18 G 1.5	25	50	100				500	1000	14.4	259	407
1119321	21 G 1.5		50	100				500	1000	15.7	302	469
1119325	25 G 1.5	25	50	100				500	1000	16.9	360	560
1119326	26 G 1.5		50	100				500	1000	17.3	374.4	582
1119332	32 G 1.5		50	100				500	1000	18.7	461	704
1119334	34 G 1.5		50	100				500	1000	19.4	490	746
1119341	41 G 1.5		50	100				500	1000	21.3	591	895
1119350	50 G 1.5		50	100				500		23.5	720	1089
1119361	61 G 1.5		50	100				500		25.2	878	1309
1119365	65 G 1.5		50	100				500		26.7	936	1398
1119952	2 X 2.5	25	50	100	200	300	500	1000		7.5	48	101
1119403	3 G 2.5	25	50	100	200	300	500	1000		8.1	72	132
1119404	4 G 2.5	25	50	100	200	300	500	1000		8.9	96	163
1119405	5 G 2.5	25	50	100	200	300	500	1000		10.0	120	200
1119407	7 G 2.5	25	50	100			500	1000		11.1	168	267
1119412	12 G 2.5	25	50	100			500	1000		14.8	288	445
1119414	14 G 2.5		50	100			500	1000		15.8	336	515
1119418	18 G 2.5	25	50	100			500	1000		17.8	432	648
1119425	25 G 2.5	25	50	100			500	1000		20.8	600	890
1119434	34 G 2.5		50	100			500	1000		24.4	816	1208
1119450	50 G 2.5		50	100			500			29.4	1200	1754
1119503	3 G 4	25	50	100			500	1000		9.9	115	201
1119504	4 G 4	25	50	100			500	1000		10.8	154	249
1119505	5 G 4	25	50	100			500	1000		12.1	192	294
1119507	7 G 4	25	50	100			500	1000		13.4	269	407
1119511	11 G 4		50	100			500	1000		17.6	422	634
1119512	12 G 4		50	100			500	1000		18.1	461	660
1119603	3 G 6	25	50	100			500	1000		11.7	172.8	289
1119604	4 G 6	25	50	100			500	1000		13.0	230	365
1119605	5 G 6	25	50	100			500	1000		14.5	288	447
1119607	7 G 6	25	50	100			500	1000		16.0	403	600
1119613	3 G 10	25	50	100			500	1000		14.6	288	466
1119614	4 G 10	25	50	100			500	1000		16.2	384	590
1119615	5 G 10	25	50	100			500	1000		18.1	480	722
1119617	7 G 10	25	50	100			500	1000		20.0	672	968
1119624	4 G 16		50	100			500			18.8	614	1087
1119625	5 G 16		50	100			500			21.2	768	1370
1119627	7 G 16		50	100			500			23.4	1075	1779
1119634	4 G 25		50	100			500			23.5	960	1582
1119635	5 G 25		50	100			500			26.4	1200	1998
1119636	7 G 25		50	100			500			29.1	1680	2825
1119644	4 G 35		50	100			500			26.4	1344	2106
1119645	5 G 35		50	100			500			29.6	1680	2635

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 191 refer to page 52

### Accessories

- SKINTOP® CLICK refer to page 715





## ÖLFLEX® CLASSIC 110

VDE-registered oil-resistant PVC control cable with black outer sheath for a wide range of applications

**Info**

- With black outer sheath, UV-resistant
- VDE certificate of conformity with factory surveillance



### Benefits

- Suitable for outdoor applications
- Wide choice of standardized lengths and individual cuts

### Application range

- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Dry or damp rooms that are subject to medium mechanical loads
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- In power chains for a travelling distance up to 5 m and 0,2 ... 1 million bending cycles, for following dimensions: 0,5 to 2.5mm<sup>2</sup> and 2 to 7 conductors
- Suitable for outdoor applications

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- UV and weather-resistant according to ISO 4892-2

### Norm references / Approvals

- VDE reg. no. 7030 for the following sizes: up to 2.5 mm<sup>2</sup>: 2 - 65 cores from 4 mm<sup>2</sup>: 2 - 7 cores from 25 mm<sup>2</sup>: 2 - 5 cores

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to DIN EN 60228 (VDE 0295), class 5 / IEC 60228 class 5

**Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
In power chains: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -15 °C to +70 °C  
In power chains: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

### Similar products

- ÖLFLEX® CLASSIC 110 LT refer to page 38
- ÖLFLEX® CLASSIC 110 BLACK 0,6/1 kV refer to page 42

### Accessories

- SKINTOP® CLICK refer to page 715

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110</b>				
1119809	2 X0.75	5.4	14.4	45
1119871	3 G0.75	5.7	21.6	55
1119892	3 X0.75	5.7	21.6	55
1119872	4 G0.75	6.2	28.8	66
1119893	4 X0.75	6.2	28.8	66
1119873	5 G0.75	6.7	36	79
1119874	7 G0.75	7.3	50.4	101
1119875	12 G0.75	9.9	86.4	171
1119876	18 G0.75	11.7	130	244
1119877	25 G0.75	13.8	180	337
1119878	34 G0.75	15.9	245	448
1119894	2 X1.0	5.7	19.2	53
1119244	3 G1.0	6.0	28.8	65
1119895	3 X1.0	6.0	28.8	65
1119245	4 G1.0	6.5	38.4	79
1119896	4 X1.0	6.5	38.4	79
1119246	5 G1.0	7.1	48	94
1119897	5 X1.0	7.1	48	94
1119247	7 G1.0	8.0	67.2	126
1119248	12 G1.0	10.5	115	205
1119249	18 G1.0	12.7	173	290
1119251	25 G1.0	14.7	240	390
1119252	34 G1.0	17.1	326	551
1119898	2 X1.5	6.3	28.8	68
1119020	3 G1.5	6.7	43.2	84
1119899	3 X1.5	6.7	43.2	84

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1119879	4 G1.5	7.2	57.6	104
1119900	4 X1.5	7.2	57.6	104
1119880	5 G1.5	8.1	72	128
1119911	5 X1.5	8.1	72	128
1119881	7 G1.5	8.9	101	166
1119913	7 X1.5	8.9	101	166
1119882	12 G1.5	12.0	173	279
1119883	18 G1.5	14.4	259	407
1119884	25 G1.5	16.9	360	560
1119914	2 X2.5	7.5	48	100
1119885	3 G2.5	8.1	72	132
1119886	4 G2.5	8.9	96	163
1119887	5 G2.5	10.0	120	200
1119888	7 G2.5	11.1	168	267
1119889	12 G2.5	14.8	288	444
1119890	18 G2.5	17.8	432	648
1119891	25 G2.5	20.8	600	890
1119915	3 G4	9.9	115.2	201
1119916	4 G4	10.8	154	249
1119917	5 G4	12.1	192	315
1119918	4 G6	13.0	230	365
1119919	5 G6	14.5	288	447
1119920	4 G10	16.2	384	590
1119921	5 G10	18.1	480	722
1119922	4 G16	18.8	614	1087
1119923	5 G16	21.2	768	1370

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

Various applications • PVC outer sheath and numbered cores



## ÖLFLEX® CLASSIC 110 LT

Cold flexible PVC control cable, suitable for low temperatures as well as outdoor use



**Info**

- Successor of ÖLFLEX CLASSIC 110 COLD, flexible down to -30°C
- UV and weather-resistant according to ISO 4892-2
- Torsion resistant for drip loops

### Benefits

- Inexpensive control cable for flexing outdoor use
- Space-saving installation due to small cable diameters
- High electrical performance due to 4 kV test voltage

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Freezing plants, cold storage
- Suitable for outdoor applications
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Flame-retardant according IEC 60332-1-2
- Flexible down to -30°C
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- Based on EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: PVC, cold-resistant
- Cores twisted in layers
- Outer sheath: PVC, cold-resistant, black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -30°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 LT</b>				
1120730	2 X0.75	5.4	14.4	45
1120731	3 X0.75	5.7	21.6	55
1120732	3 G0.75	5.7	21.6	55
1120733	4 X0.75	6.2	28.8	66
1120734	4 G0.75	6.2	28.8	66
1120735	5 G0.75	6.7	36	79
1120736	7 G0.75	7.3	50.4	101
1120737	12 G0.75	9.9	86.4	171
1120738	18 G0.75	11.7	130	244
1120739	25 G0.75	13.8	180	337
1120740	2 X1.0	5.7	19.2	53
1120741	3 X1.0	6.0	28.8	65
1120742	3 G1.0	6.0	28.8	65
1120743	4 X1.0	6.5	38.4	79
1120744	4 G1.0	6.5	38.4	79
1120745	5 G1.0	7.1	48	94
1120746	7 G1.0	8.0	67.2	126
1120747	12 G1.0	10.5	115	205
1120748	18 G1.0	12.7	173	300
1120749	25 G1.0	14.7	240	408
1120750	2 X1.5	6.3	29	68
1120751	3 X1.5	6.7	43	84

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1120752	3 G1.5	6.7	43	84
1120753	4 X1.5	7.2	58	104
1120754	4 G1.5	7.2	58	104
1120755	5 X1.5	8.1	72	128
1120756	5 G1.5	8.1	72	128
1120757	7 X1.5	8.9	101	166
1120758	7 G1.5	8.9	101	166
1120759	12 G1.5	12.0	173	279
1120760	18 G1.5	14.4	259	407
1120761	25 G1.5	16.9	360	560
1120762	2 X2.5	7.5	48	101
1120763	3 G2.5	8.1	72	132
1120764	4 G2.5	8.9	96	163
1120765	5 G2.5	10.0	120	200
1120766	7 G2.5	11.1	168	267
1120767	12 G2.5	14.8	288	445
1120768	18 G2.5	17.8	432	648
1120769	25 G2.5	20.8	600	890
1120770	4 G4	10.8	154	249
1120771	5 G4	12.1	192	305
1120772	4 G6	13.0	230	365
1120773	5 G6	14.5	288	447

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC 110 H refer to page 64
- ÖLFLEX® ROBUST 210 refer to page 73

### Accessories

- FLEXIMARK® Stainless steel kit refer to page 956
- SKINTOP® MS-M refer to page 724
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



# ÖLFLEX® CLASSIC 110 ORANGE

**Info**

- For warning purposes and for exempted circuits according to EN 60204-1, e.g. circuits for maintenance or interlocking circuits



**Benefits**

- Space-saving installation due to small cable diameters
- High electrical performance due to 4 kV test voltage

**Application range**

- According to EN 60204-1 (VDE 0113-1), conductors of control circuits that are supplied by an external power source and/or remain live when the main switch is deactivated must be orange
- Electrical lighting and socket circuits for maintenance or repair purposes
- Undervoltage protection circuits
- Interlocking control circuits
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

**Product features**

- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Based on IEC 60227-5 and EN 50525-2-51

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Orange cores with black numbers
- PVC outer sheath, orange (RAL 2003)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Orange cores with black numbers
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 ORANGE</b>				
0019700	2 X1.0	5.7	19.2	53
0019701	3 G1.0	6.0	28.8	65
0019702	3 X1.0	6.0	28.8	65
0019706	4 G1.0	6.5	38.4	80
0019708	4 X1.0	6.5	38.4	80
0019709	5 G1.0	7.1	50	95
0019710	2 X1.5	6.3	29	68
0019711	3 G1.5	6.7	43	85
0019718	4 G1.5	7.2	58	105
0019720	5 G1.5	8.1	72	128

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- H07V-K <HAR> refer to page 207
- Orange-coloured single cores

**Accessories**

- SKINTOP® CLICK refer to page 715

Various applications • PVC outer sheath and numbered cores



## ÖLFLEX® CLASSIC 110 CY

Screened PVC control cable with transparent outer sheath



### Info

- EMC-compliant
- VDE reg. no. 7030

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-1



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

### Benefits

- Space-saving installation due to small cable diameters
- High electrical performance due to 4 kV test voltage

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Conveyor and transport systems
- In EMC-sensitive environments (electromagnetic compatibility)

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

### Norm references / Approvals

- VDE reg. no. 7030

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, transparent

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 CY</b>				
1135752	2 X0.5	7.0	41	75
1135003	3 G0.5	7.3	45.5	83
1135753	3 X0.5	7.3	45.5	83
1135004	4 G0.5	7.9	55	99
1135754	4 X0.5	7.9	55	99
1135005	5 G0.5	8.4	66	112
1135755	5 X0.5	8.4	66	112
1135007	7 G0.5	8.9	80.5	132
1135757	7 X0.5	8.9	80.5	132
1135012	12 G0.5	11.3	138.5	202
1135762	12 X0.5	11.3	138.5	202
1135018	18 G0.5	13.3	156.4	289
1135025	25 G0.5	15.2	250	378
1135030	30 G0.5	16.1	297	429
1135040	40 G0.5	18.2	343	542
1135802	2 X0.75	7.4	46	86
1135103	3 G0.75	7.9	57.9	100
1135803	3 X0.75	7.9	57.9	100
1135104	4 G0.75	8.4	64	115
1135804	4 X0.75	8.4	64	115
1135105	5 G0.75	8.9	77.4	130
1135805	5 X0.75	8.9	77.4	130
1135107	7 G0.75	9.7	102	161
1135807	7 X0.75	9.7	102	161
1135112	12 G0.75	12.3	177	247
1135812	12 X0.75	12.3	177	247
1135118	18 G0.75	14.5	243	356
1135818	18 X0.75	14.5	243	356
1135125	25 G0.75	16.6	307.3	465
1135134	34 G0.75	18.9	323.2	601
1135840	40 X0.75	20.5	369.4	734
1135141	41 G0.75	20.6	488	728
1135852	2 X1.0	7.9	56	98
1135203	3 G1.0	8.2	65.3	111
1135853	3 X1.0	8.2	65.3	111
1135204	4 G1.0	8.7	78.1	130
1135854	4 X1.0	8.7	78.1	130
1135205	5 G1.0	9.5	89.4	153
1135207	7 G1.0	10.2	113.3	185
1135212	12 G1.0	13.3	188.1	307
1135216	16 G1.0	14.6	216	390
1135218	18 G1.0	15.5	286	418
1135225	25 G1.0	17.5	388.5	544

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1135234	34 G1.0	20.3	505	738
1135241	41 G1.0	22.0	578	864
1135250	50 G1.0	23.8	688	1011
1135902	2 X1.5	8.5	65	117
1135303	3 G1.5	8.9	83	136
1135903	3 X1.5	8.9	83	136
1135304	4 G1.5	9.6	100	163
1135904	4 X1.5	9.6	100	163
1135305	5 G1.5	10.3	125	188
1135905	5 X1.5	10.3	125	188
1135307	7 G1.5	11.3	149	237
1135907	7 X1.5	11.3	149	237
1135312	12 G1.5	14.8	280	393
1135318	18 G1.5	17.2	389	538
1135325	25 G1.5	20.1	535	745
1135334	34 G1.5	22.8	702	964
1135341	41 G1.5	24.7	844.6	1123
1135350	50 G1.5	27.1	1006	1372
1135402	2 X2.5	9.9	112	165
1135403	3 G2.5	10.3	146	192
1135404	4 G2.5	11.3	167	233
1135405	5 G2.5	12.6	200	283
1135407	7 G2.5	13.9	288	371
1135412	12 G2.5	17.6	477.3	585
1135502	2 X4	11.4	120	247
1135504	4 G4	13.4	237	347
1135505	5 G4	14.7	280	413
1135602	2 X6	13.6	180	353
1135604	4 G6	15.8	318	485
1135605	5 G6	17.3	441	702
1135607	7 G6	18.8	530	950
1135702	2 X10	16.4	256	492
1135615	3 G10	17.4	362.4	507
1135614	4 G10	19.0	518	735
1135616	5 G10	21.3	595	847
1135617	7 G10	23.2	796	1039
1135622	2 X16	18.6	390	698
1135624	4 G16	22.2	804	1395
1135623	5 G16	24.4	935	1440
1135626	4 G25	26.9	1161	1730
1135627	5 G25	30.0	1400	2090
1135625	4 G35	30.2	1543	2210
1135628	5 G35	33.2	1901	2710

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

\*OD = Outer diameter



**i Info**

- Steel wire braiding for extra mechanical protection
- VDE reg. no. 7030



## ÖLFLEX® CLASSIC 110 SY

Steel-wire braided PVC control cable with transparent outer sheath

### Benefits

- Extra mechanical protection due to braided steel wire
- High electrical performance due to 4 kV test voltage

### Application range

- Plant engineering
- Industrial machinery
- Heating and air-conditioning systems
- Areas with high mechanical stress
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1

### Norm references / Approvals

- VDE reg. no. 7030

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8 / 1
- Cores twisted in layers
- PVC inner sheath, grey
- Braid of galvanized steel wires
- PVC outer sheath, transparent

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 SY</b>				
1125752	2 X0.5	7.8	10	87
1125003	3 G0.5	8.1	15	95
1125004	4 G0.5	8.5	19.2	107
1125005	5 G0.5	9.2	24	123
1125007	7 G0.5	9.7	33.6	147
1125010	10 G0.5	11.6	48	196
1125012	12 G0.5	11.9	58	213
1125014	14 G0.5	12.5	67	237
1125018	18 G0.5	13.9	86.4	291
1125021	21 G0.5	14.9	101	332
1125025	25 G0.5	15.6	120	375
1125030	30 G0.5	16.5	144	422
1125040	40 G0.5	18.8	192	545
1125061	61 G0.5	21.9	293	773
1125802	2 X0.75	8.2	14.4	97
1125103	3 G0.75	8.5	21.6	108
1125104	4 G0.75	9.2	28.8	126
1125105	5 G0.75	9.7	36	146
1125107	7 G0.75	10.3	50	172
1125109	9 G0.75	12.4	65	224
1125112	12 G0.75	12.9	86	260
1125115	15 G0.75	14.1	108	315
1125118	18 G0.75	14.9	130	355
1125125	25 G0.75	17.0	180	465
1125134	34 G0.75	19.3	245	596
1125150	50 G0.75	22.8	360	832
1125852	2 X1.0	8.5	19.2	106
1125203	3 G1.0	8.8	28.8	119
1125204	4 G1.0	9.5	38.4	141
1125205	5 G1.0	10.1	48	164
1125207	7 G1.0	11.0	67	200
1125208	8 G1.0	12.5	77	234
1125209	9 G1.0	13.2	86	260
1125212	12 G1.0	13.9	115	309
1125214	14 G1.0	14.4	134	345
1125218	18 G1.0	15.9	173	415
1125220	20 G1.0	16.8	192	455

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1125225	25 G1.0	18.1	240	548
1125234	34 G1.0	20.5	326	714
1125241	41 G1.0	22.2	394	832
1125250	50 G1.0	24.2	480	987
1125902	2 X1.5	9.3	29	128
1125303	3 G1.5	9.7	43	151
1125304	4 G1.5	10.2	58	173
1125305	5 G1.5	11.1	72	202
1125307	7 G1.5	11.9	101	248
1125308	8 G1.5	14.0	115	301
1125312	12 G1.5	15.4	173	396
1125314	14 G1.5	15.9	202	438
1125318	18 G1.5	17.6	259	538
1125325	25 G1.5	20.3	360	713
1125332	32 G1.5	22.1	461	876
1125350	50 G1.5	27.1	720	1305
1125403	3 G2.5	11.1	72	206
1125404	4 G2.5	12.1	96	249
1125405	5 G2.5	13.2	120	295
1125407	7 G2.5	14.3	168	373
1125412	12 G2.5	18.2	288	586
1125418	18 G2.5	21.4	432	823
1125425	25 G2.5	24.4	600	1093
1125503	3 G4	12.7	115	285
1125504	4 G4	14.0	154	348
1125505	5 G4	15.1	192	410
1125507	7 G4	16.4	269	519
1125604	4 G6	16.2	230	482
1125605	5 G6	17.7	288	579
1125607	7 G6	19.2	403	740
1125614	4 G10	19.4	384	731
1125615	5 G10	21.5	480	889
1125617	7 G10	23.4	672	1146
1125624	4 G16	22.4	614	1384
1125625	5 G16	24.6	768	1740
1125626	4 G25	26.9	960	1680
1125630	5 G25	30.0	1200	2050
1125629	4 G35	30.2	1344	2170

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 100 SY refer to page 31

**Accessories**

- SKINTOP® MS-M refer to page 724
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726

Various applications • PVC outer sheath and numbered cores



## ÖLFLEX® CLASSIC 110 BLACK 0,6/1 kV



### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems  
Power stations  
Stage applications
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Enhanced suitability for direct burial in ground
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Flame-retardant according IEC 60332-1-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- Based on VDE 0250-1 and HD 627-1 S1

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- PVC outer sheath, black (RAL 9005)



### Info

- Good outdoor performance

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-1



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Torsion movement in WTG

TW-0 & TW-1, refer to Appendix T0



#### Minimum bending radius

Static/Occ. moved: 4/15xOD\*



#### Nominal voltage

U<sub>0</sub>/U: 600/1000 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 BLACK</b>				
1120232	2 X0.75	8.3	14.4	81
1120233	3 G0.75	8.7	21.6	93
1120234	3 X0.75	8.7	21.6	93
1120235	4 G0.75	9.2	29	108
1120237	5 G0.75	9.9	36	126
1120241	7 G0.75	10.7	51	162
1120248	12 G0.75	13.4	86	236
1120251	18 G0.75	15.4	130	334
1120259	41 G0.75	21.6	296	713
1120266	2 X1.0	8.6	19.2	98
1120267	3 G1.0	9.0	29	112
1120268	3 X1.0	9.0	29	112
1120269	4 G1.0	9.6	38.4	131
1120270	4 X1.0	9.6	38.4	131
1120271	5 G1.0	10.4	48	152
1120274	7 G1.0	11.1	67	196
1120280	12 G1.0	14.0	116	286
1120284	18 G1.0	16.1	173	419
1120290	25 G1.0	18.6	240	572
1120294	34 G1.0	21.3	326	764
1120298	41 G1.0	23.2	394	891
1120306	2 X1.5	9.6	29	123
1120307	3 G1.5	10.1	43	144
1120308	3 X1.5	10.1	43	144
1120309	4 G1.5	10.8	58	170
1120311	5 G1.5	11.7	72	199
1120314	7 G1.5	12.6	101	261
1120320	12 G1.5	16.1	173	399
1120322	14 G1.5	17.0	202	448
1120324	18 G1.5	18.8	259	547
1120328	25 G1.5	21.7	360	770

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1120330	34 G1.5	24.9	490	996
1120333	50 G1.5	29.8	720	1427
1120339	2 X2.5	10.8	48	147
1120340	3 G2.5	11.3	72	182
1120342	4 G2.5	12.2	96	225
1120343	4 X2.5	12.2	96	225
1120344	5 G2.5	13.3	120	266
1120346	7 G2.5	14.4	168	354
1120349	12 G2.5	18.7	288	540
1120350	14 G2.5	19.8	336	542
1120351	18 G2.5	22.0	432	788
1120353	25 G2.5	25.8	600	1094
1120360	4 G4	13.8	154	324
1120361	5 G4	15.1	192	385
1120362	7 G4	16.4	269	513
1120366	4 G6	15.1	230	442
1120367	5 G6	16.8	288	526
1120368	7 G6	18.2	403	705
1120370	4 G10	18.7	384	707
1120371	5 G10	20.7	480	881
1120374	4 G16	21.3	614	1100
1120375	5 G16	23.6	768	1600
1120376	7 G16	26.2	1075	1890
1120378	4 G25	26.2	960	1600
1120379	5 G25	29.0	1200	2050
1120382	4 G35	29.1	1344	2400
1120383	5 G35	32.5	1680	2900
1120385	4 G50	35.6	1920	3400
1120387	4 G70	40.7	2688	5050
1120389	4 G95	46.8	3648	6010
1120390	4 G120	53.5	4608	7500

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

\*OD = Outer diameter

### Similar products

- ÖLFLEX® CLASSIC 100 BK 0,6/1 kV refer to page 32
- ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to page 69

### Accessories

- SKINTOP® MS-M refer to page 724
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726
- KT cable shears refer to page 999



# ÖLFLEX® CLASSIC 110 CY BLACK 0,6/1 kV



**Info**

- Good outdoor performance
- EMC/Screened

**Application range**

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems  
Power stations
- For frequency converter-powered 3-phase AC motors
- In EMC-sensitive environments (electromagnetic compatibility)
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Enhanced suitability for direct burial in ground

**Product features**

- Flame-retardant according IEC 60332-1-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- Based on VDE 0250-1 and HD 627-1 S1

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8 / 1
- PVC inner sheath, black
- Tinned-copper braiding
- PVC outer sheath, black (RAL 9005)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Static/Occ. moved: 6/20xOD\*

**Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 CY BLACK</b>				
1121232	2 X0.75	10.5	46	183
1121233	3 G0.75	10.9	56	210
1121235	4 G0.75	11.4	67	238
1121236	4 X0.75	11.4	67	238
1121237	5 G0.75	12.1	78	272
1121241	7 G0.75	12.9	97	315
1121247	12 G0.75	15.8	168	464
1121251	18 G0.75	18.0	229	616
1121254	25 G0.75	20.7	296	762
1121266	2 X1.0	10.8	52	198
1121267	3 G1.0	11.2	66	228
1121268	3 X1.0	11.2	66	228
1121269	4 G1.0	11.8	79	261
1121270	4 X1.0	11.8	79	261
1121271	5 G1.0	12.6	93	300
1121274	7 G1.0	13.3	117	335
1121280	12 G1.0	16.4	204	522
1121284	18 G1.0	18.7	280	687
1121290	25 G1.0	21.6	369	884
1121306	2 X1.5	11.8	69	243
1121307	3 G1.5	12.3	87	273
1121308	3 X1.5	12.3	87	273
1121309	4 G1.5	13.0	102	290
1121310	4 X1.5	13.0	102	290

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1121311	5 G1.5	13.9	125	352
1121314	7 G1.5	15.0	180	448
1121320	12 G1.5	18.7	281	690
1121324	18 G1.5	21.8	391	938
1121328	25 G1.5	25.1	518	1180
1121340	3 G2.5	13.5	123	354
1121342	4 G2.5	14.6	168	413
1121344	5 G2.5	15.7	204	515
1121346	7 G2.5	17.0	265	619
1121349	12 G2.5	21.7	421	936
1121360	4 G4	16.2	238	587
1121361	5 G4	17.7	302	689
1121362	7 G4	19.0	396	828
1121367	4 G6	17.7	318	715
1121368	5 G6	19.2	419	862
1121372	4 G10	21.7	574	875
1121373	5 G10	23.0	612	1037
1121377	4 G16	24.3	809	1198
1121378	5 G16	26.7	935	1500
1121381	4 G25	29.8	1165	1814
1121385	4 G35	32.7	1683	2893
1121388	4 G50	39.6	2368	4094
1121391	4 G70	44.5	3261	5467
1121394	4 G95	51.0	4055	5849
1121397	4 G120	58.1	5225	7509

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.  
\*OD = Outer diameter

**Similar products**

- ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV refer to page 70

**Accessories**

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-M BRUSH refer to page 733



## ÖLFLEX® CLASSIC 115 CY

Screened PVC control cable with small outer diameter



**Info**

- EMC-compliant
- Thin and light, without inner sheath

### Benefits

- Space-saving installation due to small cable diameters

### Application range

- Measurement and control technology
- Office machines and systems for data processing

### Product features

- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

### Similar products

- ÖLFLEX® ROBUST 215 C refer to page 74
- ÖLFLEX® CLASSIC 110 CY refer to page 40

### Norm references / Approvals

- Based on EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- Plastic foil wrapping
- Tinned-copper braiding
- PVC outer sheath, grey (RAL 7001)

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- 3M Scotch™ 1183 screening tape refer to page 1044
- SKINTOP® MS-M BRUSH refer to page 733

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 115 CY</b>				
1136752	2 X0.5	5.8	36	45
1136003	3 G0.5	6.1	43	59
1136753	3 X0.5	6.1	43	59
1136004	4 G0.5	6.5	49	71
1136754	4 X0.5	6.5	49	71
1136005	5 G0.5	7.0	57	86
1136755	5 X0.5	7.0	57	86
1136007	7 G0.5	7.5	69	105
1136757	7 X0.5	7.5	69	105
1136012	12 G0.5	9.9	104	200
1136762	12 X0.5	9.9	104	200
1136018	18 G0.5	11.5	141	275
1136768	18 X0.5	11.5	141	275
1136025	25 G0.5	13.4	211	350
1136775	25 X0.5	13.4	211	350
1136802	2 X0.75	6.2	43	56
1136103	3 G0.75	6.5	52	70
1136803	3 X0.75	6.5	52	70
1136104	4 G0.75	7.0	61	95
1136804	4 X0.75	7.0	61	95
1136105	5 G0.75	7.7	72	108
1136805	5 X0.75	7.7	72	108
1136107	7 G0.75	8.3	89	127
1136807	7 X0.75	8.3	89	127
1136112	12 G0.75	10.9	138	232
1136118	18 G0.75	12.7	211	315
1136125	25 G0.75	14.8	280	435
1136825	25 X0.75	14.8	280	435
1136852	2 X1.0	6.5	51	71
1136203	3 G1.0	6.8	62	86
1136853	3 X1.0	6.8	62	86
1136204	4 G1.0	7.3	74	98
1136854	4 X1.0	7.3	74	98
1136205	5 G1.0	8.1	88	121
1136855	5 X1.0	8.1	88	121

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1136207	7 G1.0	8.8	112	147
1136857	7 X1.0	8.8	112	147
1136212	12 G1.0	11.5	185	285
1136218	18 G1.0	13.9	268	395
1136225	25 G1.0	15.9	354	486
1136902	2 X1.5	7.1	65	86
1136303	3 G1.5	7.5	82	112
1136903	3 X1.5	7.5	82	112
1136304	4 G1.5	8.2	100	135
1136904	4 X1.5	8.2	100	135
1136305	5 G1.5	8.9	119	148
1136905	5 X1.5	8.9	119	148
1136307	7 G1.5	9.9	154	192
1136907	7 X1.5	9.9	154	192
1136312	12 G1.5	13.0	268	365
1136318	18 G1.5	15.6	373	520
1136325	25 G1.5	17.9	530	734
1136334	34 G1.5	20.8	683	944
1136403	3 G2.5	8.9	118	151
1136404	4 G2.5	9.9	147	188
1136405	5 G2.5	11.0	176	270
1136407	7 G2.5	11.9	253	340
1136412	12 G2.5	16.0	355	540
1136418	18 G2.5	19.0	569	782
1136425	25 G2.5	22.2	827	1358
1136504	4 G4	11.6	248	305
1136507	7 G4	14.4	355	500
1136604	4 G6	14.2	343	440
1136607	7 G6	17.0	505	672
1136614	4 G10	17.2	495	680
1136615	5 G10	19.5	592	824
1136624	4 G16	20.2	800	1050
1136625	5 G16	22.6	895	1285
1136634	4 G25	25.1	1075	1413
1136635	5 G25	28.0	1400	1976
1136638	4 G35	28.0	1576	2070

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.





ROHS  
VDE-Reg. -Nr. 6584

2629 - S/25

- LAPP KABEL STUTTGART

ÖLFLEX

ÖLFLEX°

SERVO FD 796 CP

ÖLFLEX CLASSIC 110

12 G 1,5

VDE-Reg. -Nr. 7030

LAPP KABEL STUTTGART



## ÖLFLEX® EB

Control cable for intrinsically safe circuits according to IEC 60079-14 / EN 60079-14 / VDE 0165-1



### Info

- For use within intrinsically safe circuits - type of protection 'i'

### Benefits

- Space-saving installation due to small cable diameters

### Application range

- For intrinsically safe circuits (type of protection i - intrinsic safety) according to IEC 60079-14:2013 / EN 60079-14:2014 / VDE 0165-1:2014, section 16.2.2

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, sky blue RAL 5015

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-1



#### Mutual capacitance

Core/core approx. 140 nF/km



#### Inductivity

approx. 0.52 mH/km



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V



#### Test voltage

Core/core: 3000 V



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® EB without protective conductor GN/YE</b>				
0012420	2 X 0.75	5.4	14.7	50
0012421	3 X 0.75	5.7	22.1	60
0012430	4 X 0.75	6.2	29.4	81
0012422	5 X 0.75	6.7	36.8	88
0012423	7 X 0.75	7.3	51.5	115
0012425	12 X 0.75	9.9	88.2	185
0012427	18 X 0.75	11.7	132.3	282
0012429	25 X 0.75	13.8	183.8	393
0012440	2 X 1.0	5.7	19.7	57
0012441	3 X 1.0	6.0	29.6	73
0012443	5 X 1.0	7.1	49.4	105
0012444	7 X 1.0	8.0	69.1	138
0012446	12 X 1.0	10.5	118.4	231
0012448	18 X 1.0	12.7	177.7	331
0012401	2 X 1.5	6.3	29	80
0012402	3 X 1.5	6.7	43	105
0012403	4 X 1.5	7.2	58	125
0012404	5 X 1.5	8.1	72	139
<b>ÖLFLEX® EB with protective conductor GN/YE</b>				
0012501	3 G 1.5	6.7	43	105
0012502	4 G 1.5	7.2	58	125
0012503	5 G 1.5	8.1	72	139
0012504	7 G 1.5	8.9	101	180
0012505	12 G 1.5	12.0	173	339
0012506	18 G 1.5	14.4	259	513
0012507	25 G 1.5	16.9	360	698

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® EB CY (TP) refer to page 283

### Accessories

- FLEXIMARK® Stainless steel kit refer to page 956
- SKINTOP® K-M ATEX plus blue refer to page 723



**ÖLFLEX® EB CY**

Control cable for intrinsically safe circuits according to IEC 60079-14 / EN 60079-14 / VDE 0165-1

**i Info**

- For use within intrinsically safe circuits - type of protection 'i'
- EMC-compliant



**Benefits**

- Space-saving installation due to small cable diameters
- Copper wire braid screening of the ÖLFLEX® EB CY protects signal transmission within intrinsically safe circuits against electromagnetic interference

**Application range**

- For intrinsically safe circuits (type of protection i - intrinsic safety) according to IEC 60079-14:2013 / EN 60079-14:2014 / VDE 0165-1:2014, section 16.2.2
- In EMC-sensitive environments (electromagnetic compatibility)

**Product features**

- Flame-retardant according IEC 60332-1-2
- High degree of screening low transfer impedance (max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- Based on EN 50525-2-51

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- Plastic foil wrapping
- Tinned-copper braiding
- PVC outer sheath, sky blue RAL 5015

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Mutual capacitance**  
Core/core approx. 160 nF/km  
Core/screen approx. 250 nF/km

**Inductivity**  
approx. 0.52 mH/km

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
Core/core: 3000 V  
Core/screen: 2000 V

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® EB CY screened; without inner sheath</b>				
0012640	2 X 0.75	6.2	43	56
0012641	3 X 0.75	6.5	52	70
0012642	4 X 0.75	7.0	61	95
0012643	5 X 0.75	7.7	72	108
0012644	7 X 0.75	8.3	89	168
0012645	12 X 0.75	10.9	138	216
0012646	18 X 0.75	12.7	211	315
0012647	25 X 0.75	14.8	280	435
0012650	2 X 1.0	6.5	51	84
0012651	3 X 1.0	6.8	62	110
0012652	5 X 1.0	8.1	88	156
0012653	7 X 1.0	8.8	112	192
0012654	12 X 1.0	11.5	185	285
0012655	18 X 1.0	13.9	268	395
0012656	25 X 1.0	15.9	354	656
0012660	2 X 1.5	7.1	65	87
0012661	3 X 1.5	7.5	82	112
0012662	5 X 1.5	8.9	119	148
0012663	7 X 1.5	9.9	154	193
0012664	12 X 1.5	13.0	268	365
0012666	25 X 1.5	17.9	530	734

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® EB CY (TP) refer to page 283

**Accessories**

- 3M Scotch™ 1183 screening tape refer to page 1044
- SKINTOP® K-M ATEX plus blue refer to page 723

Various applications • PVC sheath, certified



## ÖLFLEX® 140\*

H05VV5-F (EN 50525-2-51)



### Info

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VV5-F

### Benefits

- High acceptance in Europe due to Harmonisation

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 50363-4-1: TM5

### Norm references / Approvals

- EN 50525-2-51

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing:  
12.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 140 H05VV5-F</b>				
0011000	3 G 0.5	5.5 - 7.0	14.4	62.4
0011104	4 G 0.5	6.2 - 7.9	19.2	68.2
0011001	5 G 0.5	6.8 - 8.6	24	87.1
0011002	7 G 0.5	8.3 - 10.4	33.6	118.7
0011003	12 G 0.5	10.4 - 12.9	58	198
0011004	18 G 0.5	12.3 - 15.3	86.4	266.9
0011005	25 G 0.5	14.8 - 18.3	120	380.4
0011006	34 G 0.5	17.2 - 21.2	163.2	509
0011009	3 G 0.75	6.0 - 7.6	21.6	75.6
0011204	4 G 0.75	6.6 - 8.3	28.8	83.9
0011010	5 G 0.75	7.4 - 9.3	36	113.3
0011011	7 G 0.75	9.0 - 11.3	50	145
0011012	12 G 0.75	11.0 - 13.7	86	244.9
0011013	18 G 0.75	13.2 - 16.4	130	327.7
0011014	25 G 0.75	15.8 - 19.5	180	466.4
0011015	34 G 0.75	18.4 - 22.6	245	626.5
0011241	41 G 0.75	20.1 - 24.7	296	748
0011018	3 G 1.0	6.3 - 8.0	28.8	89.3
0011304	4 G 1.0	6.9 - 8.7	38.4	98.6
0011019	5 G 1.0	7.8 - 9.8	48	132.1
0011020	7 G 1.0	9.5 - 11.8	67	169.3

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0011021	12 G 1.0	11.8 - 14.6	115	285.9
0011022	18 G 1.0	14.0 - 17.2	173	405.2
0011023	25 G 1.0	16.8 - 20.7	240	569.5
0011024	34 G 1.0	19.6 - 24.0	326	741.7
0011341	41 G 1.0	21.4 - 26.2	394	886
0011027	3 G 1.5	7.4 - 9.4	43	109.8
0011404	4 G 1.5	8.2 - 10.2	58	140.7
0011028	5 G 1.5	9.1 - 11.4	72	175
0011029	7 G 1.5	11.3 - 14.1	101	224.2
0011030	12 G 1.5	13.8 - 17.0	173	361.7
0011031	18 G 1.5	16.5 - 20.3	259	518.3
0011032	25 G 1.5	19.8 - 24.3	360	729.9
0011033	34 G 1.5	23.1 - 28.2	490	946.6
0011036	3 G 2.5	9.0 - 11.2	72	162.4
0011504	4 G 2.5	10.1 - 12.5	96	203.3
0011037	5 G 2.5	11.0 - 13.7	120	251.1
0011038	7 G 2.5	13.6 - 16.8	168	326
0011039	12 G 2.5	16.8 - 20.6	288	553.3
0011045	14 G 2.5	18.3 - 22.7	336	611
0011040	18 G 2.5	20.2 - 24.8	432	795.2
0011041	25 G 2.5	24.2 - 29.6	600	1109.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 150 refer to page 50

### Accessories

- SKINTOP® CLICK refer to page 715



**ÖLFLEX® 140 CY\***  
H05VVC4V5-K (EN 50525-2-51)

**Info**

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VVC4V5-K and EMC compliant



**Benefits**

- High acceptance in Europe due to Harmonisation

**Application range**

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- In EMC-sensitive environments (electromagnetic compatibility)

**Product features**

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 50363-4-1: TM5
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- EN 50525-2-51

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 140 CY H05VVC4V5-K</b>				
0035700	3 G 0.5	8.0 - 10.0	47	111.3
0035701	4 G 0.5	8.5 - 10.7	58	132.7
0035702	5 G 0.5	9.3 - 11.6	69	162.7
0035703	7 G 0.5	10.8 - 13.5	86	207.7
0035704	12 G 0.5	13.1 - 16.2	142	295
0035710	3 G 0.75	8.3 - 10.4	55	129.4
0035711	4 G 0.75	9.1 - 11.3	67	163.6
0035712	5 G 0.75	9.7 - 12.1	77.4	188.6
0035713	7 G 0.75	11.5 - 14.3	109	246.9
0035714	12 G 0.75	13.8 - 17.1	166	354.3
0035715	18 G 0.75	16.1 - 19.8	257.3	517
0035716	25 G 0.75	18.7 - 23.0	318.6	677.8
0035717	34 G 0.75	21.4 - 26.2	409.4	860.6
0035720	3 G 1.0	8.8 - 11.0	62	144.8
0035721	4 G 1.0	9.4 - 11.7	78.3	180.8
0035722	5 G 1.0	10.3 - 12.8	91	209

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0035723	7 G 1.0	12.2 - 15.1	118	273
0035724	12 G 1.0	14.5 - 17.9	198	427.6
0035725	18 G 1.0	16.9 - 20.8	303.6	598.6
0035726	25 G 1.0	19.8 - 24.2	411.9	791.8
0035727	34 G 1.0	22.6 - 27.7	516.3	1003.9
0035730	3 G 1.5	9.7 - 12.1	83	189.7
0035731	4 G 1.5	10.7 - 13.2	97.8	221.6
0035732	5 G 1.5	11.8 - 14.7	118	261.8
0035733	7 G 1.5	14.1 - 17.4	218	356.7
0035734	12 G 1.5	16.7 - 20.6	309.7	559.4
0035735	18 G 1.5	19.5 - 24.0	411.4	767.6
0035736	25 G 1.5	22.9 - 28.0	546.5	1049
0035740	3 G 2.5	11.3 - 14.0	115	241.5
0035741	4 G 2.5	12.6 - 15.5	163	298.3
0035742	5 G 2.5	13.9 - 17.2	191	363.7
0035743	7 G 2.5	16.5 - 20.3	288.9	487.2
0035744	12 G 2.5	19.8 - 24.3	516.6	743.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
\* Trade product, no Lapp product  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® 150 CY refer to page 51

**Accessories**

- KMK Label holders refer to page 989
- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX

Various applications • PVC sheath, certified



## ÖLFLEX® 150

Oil resistant multi-standard cable with H05VV5-F and AWM approval



**Info**

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VV5-F and UL recognized

### Benefits

- Wide application range due to multiple certifications

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5

### Norm references / Approvals

- H05VV5-F (EN 50525-2-51)
- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing:  
12.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
HAR U<sub>0</sub>/U: 300/500 V  
UL/CSA: 600 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing:  
HAR: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation:  
HAR: -40°C to +70°C  
UL/CSA: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 150</b>				
0015002	2 X 0.5	5.9	9.6	47
0015003	3 G 0.5	6.2	14.4	62.4
0015004	4 G 0.5	6.8	19.2	68.2
0015005	5 G 0.5	7.4	24	87.1
0015007	7 G 0.5	9.0	33.6	118.7
0015012	12 G 0.5	11.1	58	198
0015018	18 G 0.5	13.2	86.4	328
0015025	25 G 0.5	16.0	120	380.4
0015034	34 G 0.5	18.1	164	509
0015041	41 G 0.5	19.7	197	595
0015102	2 X 0.75	6.3	14.4	61
0015103	3 G 0.75	6.7	21.6	75.6
0015104	4 G 0.75	7.2	28.8	83.9
0015105	5 G 0.75	8.1	36	113.3
0015107	7 G 0.75	9.9	50	145
0015112	12 G 0.75	12.0	86	244.9
0015118	18 G 0.75	14.4	130	327.7
0015125	25 G 0.75	17.1	180	466.4
0015134	34 G 0.75	19.7	245	626.5
0015141	41 G 0.75	21.6	296	748
0015202	2 X 1.0	6.6	19.2	80
0015203	3 G 1.0	7.0	28.8	79
0015204	4 G 1.0	7.8	38.4	98.6
0015205	5 G 1.0	8.6	48	132.1
0015206	6 G 1.0	9.5	57.6	150

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0015207	7 G 1.0	10.4	67	169.3
0015212	12 G 1.0	12.8	115	285.9
0015218	18 G 1.0	15.1	173	405.2
0015225	25 G 1.0	18.0	240	569.5
0015234	34 G 1.0	20.9	326	741.7
0015241	41 G 1.0	22.8	394	886
0015250	50 G 1.0	25.0	480	1072.2
0015302	2 X 1.5	7.6	28.8	95
0015303	3 G 1.5	8.3	43	109.8
0015304	4 G 1.5	9.0	58	145
0015305	5 G 1.5	10.1	72	168
0015307	7 G 1.5	12.5	101	224.2
0015312	12 G 1.5	15.1	173	361.7
0015318	18 G 1.5	18.0	259	518.3
0015325	25 G 1.5	21.4	360	729.9
0015334	34 G 1.5	25.0	490	946.6
0015341	41 G 1.5	27.2	591	1136
0015402	2 X 2.5	9.2	48	159
0015403	3 G 2.5	9.9	72	170
0015404	4 G 2.5	10.8	96	210
0015405	5 G 2.5	12.1	120	257
0015407	7 G 2.5	14.7	168	340
0015412	12 G 2.5	17.9	288	580
0015418	18 G 2.5	21.6	432	850
0015425	25 G 2.5	25.6	600	1166

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 140\* refer to page 48
- ÖLFLEX® 191 refer to page 52

### Accessories

- SKINTOP® CLICK refer to page 712
- SKINTOP® ST-M refer to page 712

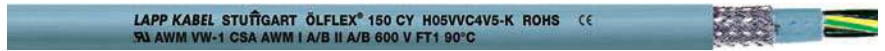


**ÖLFLEX® 150 CY**

Screened and oil-resistant multi-standard cable with H05VVC4V5-K and AWM approval

**Info**

- Oil-resistant according to EN 50363-4-1: TM5
- Harmonised (HAR): H05VVC4V5-K and UL recognized
- EMC-compliant



**Benefits**

- Wide application range due to multiple certifications

**Application range**

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- In EMC-sensitive environments (electromagnetic compatibility)
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5
- High degree of screening  
low transfer impedance  
(max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- H05VVC4V5-K (EN 50525-2-51)
- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
HAR U<sub>0</sub>/U: 300/500 V  
UL/CSA: 600 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing:  
HAR: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation:  
HAR: -40°C to +70°C  
UL/CSA: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 150 CY</b>				
0015602	2 X 0.75	8.5	40	109
0015603	3 G 0.75	8.9	51	125
0015604	4 G 0.75	9.6	70	157
0015605	5 G 0.75	10.3	77	180
0015607	7 G 0.75	12.3	93	226
0015612	12 G 0.75	14.8	155	325
0015702	2 X 1.0	8.8	46.4	121
0015703	3 G 1.0	9.4	76	145
0015704	4 G 1.0	10.0	80	180
0015705	5 G 1.0	11.0	95	203
0015707	7 G 1.0	13.0	118	273

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0015712	12 G 1.0	15.6	195	425
0015802	2 X 1.5	10.0	59.2	151
0015803	3 G 1.5	10.5	84	159
0015804	4 G 1.5	11.4	94.8	211
0015805	5 G 1.5	12.7	122	241
0015807	7 G 1.5	15.1	143	306
0015812	12 G 1.5	17.8	254	480
0015903	3 G 2.5	11.9	120	245
0015904	4 G 2.5	13.2	170	295
0015905	5 G 2.5	14.7	205	365
0015907	7 G 2.5	17.5	241	480

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® 140 CY\* refer to page 49
- ÖLFLEX® 191 CY refer to page 53

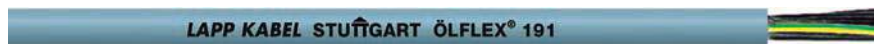
**Accessories**

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733



## ÖLFLEX® 191

Oil-resistant multi-standard cable with AWM approval



**Info**

- Conductor cross-section up to 120 mm<sup>2</sup>
- Further items with 0,5 and 0,75 mm<sup>2</sup>: see ÖLFLEX® 150
- Oil-resistant according to EN 50363-4-1: TM5

### Benefits

- High electrical performance due to 4 kV test voltage
- For various applications

### Application range

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Machine tools
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test
- Oil-resistant according to EN 50363-4-1: TM5

### Norm references / Approvals

- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### Product Make-up

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
HAR U<sub>0</sub>/U: 300/500 V  
UL/CSA: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation: -40°C to +70°C  
UL/CSA: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 191</b>				
0011222	7 G 0.75	8.3	50.4	116
0011223	9 G 0.75	10.5	64.8	152
0011224	12 G 0.75	11.2	86.4	194
0011113	3 G 1.0	6.7	28.8	66
0011114	4 G 1.0	7.2	38.4	81
0011115	5 G 1.0	8.1	48	95
0011116	7 G 1.0	8.9	67.2	125
0011117	12 G 1.0	12.0	115.2	211
0011118	18 G 1.0	14.4	172.8	309
0011119	25 G 1.0	17.3	240	413
0011136	2 X 1.5	6.9	28.8	74
0011137	3 G 1.5	7.3	44	91
0011138	4 G 1.5	8.2	58	112
0011139	5 G 1.5	9.0	72	136
0011140	7 G 1.5	10.0	101	179
0011125	9 G 1.5	12.6	129.6	230
0011142	12 G 1.5	13.4	173	313
0011143	18 G 1.5	16.1	260	444
0011144	25 G 1.5	19.5	360	620
0011150	3 G 2.5	8.4	72	138

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0011151	4 G 2.5	9.1	96	182
0011152	5 G 2.5	10.2	120	216
0011153	7 G 2.5	11.3	168	286
0011160	3 G 4	9.9	115.2	202
0011161	4 G 4	10.8	154	245
0011162	5 G 4	12.1	192	310
0011167	7 G 4	13.4	268.8	470
0011165	4 G 6	13.0	231	398
0011166	5 G 6	14.5	288	479
0011169	4 G 10	16.5	384	559
0011170	5 G 10	18.4	480	782
0011172	4 G 16	22.1	615	904
0011173	5 G 16	24.3	768	1171
0011175	4 G 25	25.2	960	1299
0011176	5 G 25	28.0	1200	1640
0011178	4 G 35	28.1	1344	2119
0011179	5 G 35	31.5	1680	2606
0011205	4 G 50	35.7	1920	2898
0011206	4 G 70	43.0	2688	4052
0011207	4 G 95	47.2	3648	5430
0011208	4 G 120	51.0	4608	6290

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 150 refer to page 50
- ÖLFLEX® CONTROL TM refer to page 54
- ÖLFLEX® TRAY II refer to page 58

### Accessories

- SKINTOP® CLICK refer to page 715
- SKINTOP® ST-M refer to page 712
- KT cable shears refer to page 999





# ÖLFLEX® 191 CY

Screened and oil-resistant multi-standard cable with AWM approval



**Info**

- Conductor cross-section up to 120 mm<sup>2</sup>
- Further items with 0,75 mm<sup>2</sup>: see ÖLFLEX® 150 CY
- Oil-resistant according to EN 50363-4-1: TM5

**Benefits**

- High electrical performance due to 4 kV test voltage
- Multifunctional application possibilities

**Application range**

- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- In EMC-sensitive environments (electromagnetic compatibility)
- Mainly used in dry, damp and wet interiors (including water-oil mixtures), but not for outdoor use
- For fixed installation under medium mechanical load conditions, and applications with occasional flexing at free, non-continuously recurring movement without tensile load or compulsory guidance
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 and UL 1581 §1061 Cable Flame Test

- Oil-resistant according to EN 50363-4-1: TM5
- High degree of screening low transfer impedance (max. 250 Ω/km at 30 MHz)

**Norm references / Approvals**

- UL AWM Style 21098  
CSA AWM I A/B II A/B
- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

**Product Make-up**

- Fine-wire strand made of bare copper wires
- PVC core insulation
- Cores twisted in layers
- PVC inner sheath, grey
- Tinned-copper braiding
- PVC outer sheath, high oil-resistance, grey (RAL 7001)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
HAR U<sub>0</sub>/U: 300/500 V  
UL/CSA: 600 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
UL/CSA: -5°C to +90°C  
Fixed installation: -40°C to +70°C  
UL/CSA: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 191 CY</b>				
0011234	7 G 0.75	10.5	85.9	187
0011202	2 X 1.0	8.4	48	126
0011180	3 G 1.0	8.8	55.8	122
0011181	4 G 1.0	9.6	80.8	157
0011182	5 G 1.0	10.3	89.4	183
0011183	7 G 1.0	11.2	99.9	207
0011184	12 G 1.0	14.6	175.7	342
0011185	18 G 1.0	17.0	241.7	472
0011186	25 G 1.0	20.1	341.7	648
0011302	2 X 1.5	9.0	64.7	156
0011187	3 G 1.5	9.6	89.1	166
0011188	4 G 1.5	10.3	96.6	191
0011189	5 G 1.5	11.3	111.2	222
0011190	7 G 1.5	12.1	145.2	270
0011191	12 G 1.5	16.1	257	464
0011192	18 G 1.5	18.7	382.8	679
0011193	25 G 1.5	23.0	546.2	952
0011194	3 G 2.5	10.8	111.1	221

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0011195	4 G 2.5	11.4	140.6	269
0011196	5 G 2.5	12.9	167.3	325
0011197	7 G 2.5	14.1	240	421
30010542	12 G 2.5	17.9	414.9	769
30010543	18 G 2.5	22.0	626.1	1102
30010544	4 G 4	13.6	236.7	462
30010545	5 G 4	14.9	277.8	535
30010546	7 G 4	16.2	393.4	735
30010548	4 G 6	15.8	317.1	574
3023130	5 G 6	17.3	413.7	737
30010547	7 G 6	18.8	563.8	950
3023131	4 G 10	19.5	550.4	946
30010639	4 G 16	24.7	819.1	1189
3023132	4 G 25	28.7	1165	1692
30010928	4 G 35	32.0	1683	2700
3026535	4 G 50	39.7	2342	3362
3025946	4 G 70	44.8	3229	4490
3025947	4 G 95	50.0	4010	5540
3026536	4 G 120	55.4	5012	6960

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 600 m drum or 8 x 75 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® 150 CY refer to page 51
- ÖLFLEX® CONTROL TM CY refer to page 56
- ÖLFLEX® TRAY II CY refer to page 60

**Accessories**

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733
- KT cable shears refer to page 999



## ÖLFLEX® CONTROL TM

ÖLFLEX® Control Cable PVC, 0.6/1kV, UL TC-ER/WTTC/AWM20886/WET/OIL RES, CSA AWM



**Info**

- Torsion resistant for drip loops
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- (UL) SUN. RES. approval in preparation

### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Industrial machinery; plant engineering
- Machine tools compliant with UL MTW (Machine Tool Wiring)
- TC-ER (Tray Cable Exposed Run) approval for open wiring between cable tray and industrial machines/plants acc. to NEC 336.10(7)
- Wind turbines: USA Wind Turbine Tray Cable (WTTC)
- According to NEC/ NFPA 70 (2014), ARTICLE 501, for hazardous Class I, Division 2 locations determined in NEC ARTICLE 500

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Water-resistant, UL 75°C wet rating
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Suitable for outdoor use thanks to technical UV and ozone resistance

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

- UL cable type certifications for US use:
  - (UL) TC-ER per UL 1277 [UL file no.: E171371];
  - (UL) MTW per UL 1063 [UL file no.: E155920];
  - (UL) WTTC per UL 2277 [UL file no.: E323700];
  - UL AWM styles 2587 & 21098 (Oil) per UL 758 [UL file no.: E100338].

#### Attributes:

- UL OIL RES I/ II;
- 75°C Wet, 90°C Dry;
- Technically sunlight resistant (not SUN. RES. certified);
- Direct burial;
- Bus Drop Cable (2.5 mm<sup>2</sup>/ 14 AWG and larger, 3-core and 4-core versions only);
- NFPA 79 2015 Edition;
- FT4 flame retardance.

#### NEC (NFPA 70):

- Class 1, Division 2 per NEC Article 501.

#### UL and CSA cable type certifications for use in Canada:

- c(UL) CIC/ TC FT4 [UL file no.: E171371];
- CSA AWM I/II A/B FT1;
- CSA C22.2 210.2.

#### Additionally:

- Impact and Crush test per UL 1277 (excluding 0.75 mm<sup>2</sup>)

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC with nylon sheath (PA skin)
- Outer jacket: Specially Formulated Thermoplastic Polymer
- Color of the outer jacket: Gray

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers

**Conductor stranding**  
Fine-wire, bare copper strand

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Static/Occ. moved: 5/15xOD\*

**Nominal voltage**  
UL/CSA: 600 V (TC, MTW, CIC), WTTC 1000 V  
UL/CSA: 1000 V (AWM)  
VDE U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-40°C (static)/ -25°C (occ. moved) to +90°C (AWM: +105°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CONTROL TM</b>				
281803	3 G 1.0	7.4	28.8	82
281804	4 G 1.0	8.0	38.4	95
281805	5 G 1.0	8.6	48	112
281807	7 G 1.0	9.3	67	144
281812	12 G 1.0	12.0	115	247
281818	18 G 1.0	14.7	173	365
281825	25 G 1.0	16.7	240	464
281602	2 X 1.5	7.3	28.8	74
281603	3 G 1.5	8.1	43	100
281604	4 G 1.5	8.8	58	119
281605	5 G 1.5	9.5	72	141

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
281607	7 G 1.5	10.3	101	183
281609	9 G 1.5	11.9	129.6	247
281612	12 G 1.5	14.1	172.8	328
281618	18 G 1.5	16.4	259	403
281625	25 G 1.5	18.6	360	596
281403	3 G 2.5	8.9	72	125
281404	4 G 2.5	9.8	96	155
281405	5 G 2.5	10.7	120	185
281407	7 G 2.5	11.6	168	244
281203	3 G 4	10.6	115	165
281204	4 G 4	11.5	154	220
281205	5 G 4	12.6	192	269
281207	7 G 4	14.6	269	482
281004	4 G 6	14.5	231	382
281005	5 G 6	15.8	288	457
280804	4 G 10	17.7	384	615
280805	5 G 10	19.4	480	771
280604	4 G 16	22.5	615	864

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 \*OD = Outer diameter

**Similar products**

- ÖLFLEX® TRAY II refer to page 58

**Accessories**

- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-M refer to page 712
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726

Various applications • PVC sheath, certified



## ÖLFLEX® CONTROL TM CY

ÖLFLEX® Control Cable PVC 0.6/1kV, UL TC-ER/WTTC/AWM/OIL RES, CSA AWM, Screened



**Info**

- Torsion resistant for drip loops
- Wide application range (NFPA 70/NEC)/ compliance with NFPA 79 for industrial machinery
- EMC/Screened

### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Industrial machinery; plant engineering
- Machine tools compliant with UL MTW (Machine Tool Wiring)
- TC-ER (Tray Cable Exposed Run) approval for open wiring between cable tray and industrial machines/plants acc. to NEC 336.10(7)
- Wind turbines: USA Wind Turbine Tray Cable (WTTC)
- According to NEC/ NFPA 70 (2014), ARTICLE 501, for hazardous Class I, Division 2 locations determined in NEC ARTICLE 500

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Water-resistant, UL 75°C wet rating
- High degree of screening low transfer impedance (max. 250 Ω/km at 30 MHz)
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

- UL cable type certifications for US use:
  - (UL) TC-ER per UL 1277 [UL file no.: E171371];
  - (UL) MTW per UL 1063 [UL file no.: E155920];
  - (UL) WTTC per UL 2277 [UL file no.: E323700];
  - UL AWM styles 2587 & 21098 (Oil) per UL 758 [UL file no.: E100338].

#### Attributes:

- UL OIL RES I/ II;
- 75°C Wet, 90°C Dry;
- Technically sunlight resistant (not SUN. RES. certified);
- Direct burial;
- Bus Drop Cable (2.5 mm<sup>2</sup>/ 14 AWG and larger, 3-core and 4-core versions only);
- NFPA 79 2015 Edition;
- FT4 flame retardance.

#### NEC (NFPA 70):

- Class 1, Division 2 per NEC Article 501.

UL and CSA cable type certifications for use in Canada:

- c(UL) CIC/ TC FT4 [UL file no.: E171371];
- CSA AWM I/II A/B FT1;
- CSA C22.2 210.2.

#### Additionally:

- Impact and Crush test per UL 1277 (excluding 0.75 mm<sup>2</sup>)

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC with nylon sheath (PA skin)
- Aluminum-coated foil
- Tinned-copper braiding
- Outer jacket: Specially Formulated Thermoplastic Polymer
- Color of the outer jacket: Gray

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers

**Conductor stranding**  
Fine-wire, bare copper strand

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Static/ Occ. moved: 5/20 x OD\*

**Nominal voltage**  
UL/CSA: 600 V (TC, MTW, CIC), WTTC 1000 V  
UL/CSA: 1000 V (AWM)  
VDE U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-40°C (static) / -25°C (occ. moved) to +90°C (AWM: +105°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CONTROL TM CY</b>				
281803CY	3 G 1.0	8.1	49.5	119
281804CY	4 G 1.0	8.6	60.2	137
281805CY	5 G 1.0	9.3	81.4	149
281807CY	7 G 1.0	10.0	101.1	193
281812CY	12 G 1.0	12.8	161.4	330
281818CY	18 G 1.0	15.5	228.2	438
281825CY	25 G 1.0	17.5	326.4	574
281603CY	3 G 1.5	8.8	65	144
281604CY	4 G 1.5	9.4	81.9	173
281605CY	5 G 1.5	10.2	99.1	189
281607CY	7 G 1.5	11.1	140.4	246
281612CY	12 G 1.5	15.0	225.2	426
281618CY	18 G 1.5	17.2	321.7	552

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
281403CY	3 G 2.5	9.7	105.7	180
281404CY	4 G 2.5	10.4	135.6	223
281405CY	5 G 2.5	11.5	160.3	268
281407CY	7 G 2.5	12.4	213	327
281204CY	4 G 4	12.3	198.5	315
281205CY	5 G 4	14.2	242.7	388
281004CY	4 G 6	15.3	284.236	552
280804CY	4 G 10	18.5	458.4	857

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

\*OD = Outer diameter

**Similar products**

- ÖLFLEX® TRAY II CY refer to page 60

**Accessories**

- SKINTOP® MS-SC-M refer to page 732

Various applications • PVC sheath, certified



## ÖLFLEX® TRAY II

ÖLFLEX® Control Cable 0.6/1kV, UL TC-ER/WTTC/AWM/WET/OIL RES/SUN RES, CSA AWM



**Info**

- Torsion resistant for drip loops
- Broad application range (NFPA 70/NEC), NFPA 79 compliance, Outdoor use

### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Industrial machinery; plant engineering
- TC-ER (Tray Cable Exposed Run) approval for open wiring between cable tray and industrial machines/plants acc. to NEC 336.10(7)
- Wind turbines: USA Wind Turbine Tray Cable (WTTC)
- According to NEC/ NFPA 70 (2014), ARTICLE 501, for hazardous Class I, Division 2 locations determined in NEC ARTICLE 500
- Suitable for outdoor use and direct burial

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Water-resistant, UL 75°C wet rating
- UV-resistant UL SUN RES
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

### UL certifications for US use:

- (UL) TC-ER per UL 1277 [UL file no.: E171371];
- (UL) MTW per UL 1063 [UL file no.: E155920];
- (UL) WTTC per UL 2277 [UL file no.: E323700];
- Submersible Pump (2.5 mm<sup>2</sup>/ 14 AWG & larger, only up to 7 cores);
- (UL) PLTC-ER per UL 13 (4 mm<sup>2</sup>/ 12 AWG to and incl. 10 mm<sup>2</sup>/ 8 AWG) [E216027];
- (UL) ITC-ER per UL 2250 (1 mm<sup>2</sup>/ 18 AWG to and incl. 4 mm<sup>2</sup>/ 12 AWG) [UL file no.: E196134];
- DP-1 per UL 1690 [UL file no.: E233406];
- UL AWM style 20886 per UL 758 [UL file no.: E100338].

### Attributes:

- UL OIL RES I/ II;
- 75°C Wet, 90°C Dry;
- Sunlight resistant;
- Direct burial;
- NFPA 79 2012+ 2015 Edition;
- FT4 flame retardance.

### NEC (NFPA 70):

- Class 1 Division 2 per NEC Article 501.

### UL/ CSA certifications for use in Canada:

- cUL C1C/ TC FT4 [UL file no.: E171371];
- CSA AWM I/II A/B FT4.

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC+nylon sheath (PA skin)
- Outer jacket: Specially Formulated Thermoplastic Polymer
- Color of the outer jacket: Black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers

**Conductor stranding**  
Fine copper wire strands

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Static/Occ. moved: 5/15 x OD\*

**Nominal voltage**  
UL/CSA: 600 V (TC, MTW, C1C), WTTC 1000 V  
UL/CSA: 1000 V (AWM)  
VDE U<sub>0</sub>/U: 600/1000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-40°C (static) / -25°C (occ. moved) to +90°C (AWM: +105°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® Tray II</b>					
221803	3 G 1.0		7.5	28.8	85
221804	4 G 1.0		8.1	38.4	98
221805	5 G 1.0		8.8	48	115
221807	7 G 1.0		9.5	67	149
221812	12 G 1.0		12.1	115	255
221818	18 G 1.0		14.9	173	365
221825	25 G 1.0		16.9	240	479
221603	3 G 1.5		8.3	43	103
221604	4 G 1.5		8.9	58	124
221605	5 G 1.5		9.7	72	146
221607	7 G 1.5		10.5	101	189
221609	9 G 1.5		12.1	130	255
221612	12 G 1.5		14.4	173	328

Article number	Number of cores and mm <sup>2</sup> per conductor	AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
221618	18 G 1.5		16.6	259	431
221625	25 G 1.5		18.8	360	592
221641	41 G 1.5		25.0	591	931
221403	3 G 2.5		9.2	72	130
221404	4 G 2.5		10.0	96	159
221405	5 G 2.5		10.8	120	191
221407	7 G 2.5		11.8	168	252
221412	12 G 2.5		16.2	288	459
221418	18 G 2.5		18.7	432	654
221425	25 G 2.5		22.5	600	874
221204	4 G 4		11.7	153	226
221205	5 G 4		12.8	192	279
221004	4 G 6		14.7	231	394
221005	5 G 6		16.0	288	472
221007	7 G 6		17.4	405	661
220804	4 G 10		17.9	384	615
220805	5 G 10		19.6	480	771
220604	4 G 16		22.8	615	864
220605	5 G 16		24.9	768	1080
220404	4 G	4	27.8	960	1418
220204	4 G	2	32.3	1344	2077

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 \*OD = Outer diameter

**Similar products**

- ÖLFLEX® CONTROL TM refer to page 54

**Accessories**

- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-M refer to page 712
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726

Various applications • PVC sheath, certified



## ÖLFLEX® TRAY II CY

ÖLFLEX® Control Cable 0.6/1kV, UL TC-ER/WTTC/AWM/WET/OIL RES/SUN RES, Screened



**Info**

- Torsion resistant for drip loops
- Broad application range (NFPA 70/NEC), NFPA 79 compliance, Outdoor use
- EMC/Screened

### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Industrial machinery; plant engineering
- TC-ER (Tray Cable Exposed Run) approval for open wiring between cable tray and industrial machines/plants acc. to NEC 336.10(7)
- Wind turbines: USA Wind Turbine Tray Cable (WTTC)
- According to NEC/ NFPA 70 (2014), ARTICLE 501, for hazardous Class I, Division 2 locations determined in NEC ARTICLE 500
- Suitable for outdoor use and direct burial

### Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I & II
- Water-resistant, UL 75°C wet rating
- UV-resistant UL SUN RES
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

- UL certifications for US use:
  - (UL) TC-ER per UL 1277 [UL file no.: E171371];
  - (UL) MTW per UL 1063 [UL file no.: E155920];
  - (UL) WTTC per UL 2277 [UL file no.: E323700];
  - Submersible Pump (2.5 mm<sup>2</sup>/ 14 AWG & larger, only up to 7 cores);
  - (UL) PLTC-ER per UL 13 (4 mm<sup>2</sup>/ 12 AWG to and incl. 10 mm<sup>2</sup>/ 8 AWG) [E216027];
  - (UL) ITC-ER per UL 2250 (1 mm<sup>2</sup>/ 18 AWG to and incl. 4 mm<sup>2</sup>/ 12 AWG) [UL file no.: E196134];
  - DP-1 per UL 1690 [UL file no.: E233406];
  - UL AWM style 20886 per UL 758 [UL file no.: E100338].

#### Attributes:

- UL OIL RES I/ II;
- 75°C Wet, 90°C Dry;
- Sunlight resistant;
- Direct burial;
- NFPA 79 2012+ 2015 Edition;
- FT4 flame retardance.

#### NEC (NFPA 70):

- Class 1 Division 2 per NEC Article 501.

#### UL/ CSA certifications for use in Canada:

- cUL CIC/ TC FT4 [UL file no.: E171371];
- CSA AWM I/II A/B FT4.

### Product Make-up

- Fine-wire strand made of bare copper wires
- Insulation: PVC+nylon sheath (PA skin)
- Aluminum-coated foil
- Tinned-copper braiding
- Outer jacket: Specially Formulated Thermoplastic Polymer
- Color of the outer jacket: Black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers

**Conductor stranding**  
Fine copper wire strands

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Static/Occ. moved: 5/20 x OD\*

**Nominal voltage**  
UL/CSA: 600 V (TC, MTW, CIC), WTTC 1000 V  
UL/CSA: 1000 V (AWM)  
VDE U<sub>0</sub>/U: 600/1000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-40°C (static) / -25°C (occ. moved) to +90°C (AWM: +105°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® Tray II CY</b>					
2218030	3 G 1.0		8.2	35.1	119
2218040	4 G 1.0		8.8	55.2	137
2218050	5 G 1.0		9.4	65.8	149
2218070	7 G 1.0		10.1	86.9	193
2218120	12 G 1.0		12.9	149.3	330
2218180	18 G 1.0		15.7	214.2	438
2218250	25 G 1.0		17.7	354.2	574
2216030	3 G 1.5		8.9	59.8	144
2216040	4 G 1.5		9.6	74.5	173
2216050	5 G 1.5		10.3	93.5	189
2216070	7 G 1.5		11.3	130.5	246
2216120	12 G 1.5		15.1	213.8	426



Article number	Number of cores and mm <sup>2</sup> per conductor	AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2216180	18 G 1.5		17.3	312.4	515
2216250	25 G 1.5		19.6	415.6	708
2214030	3 G 2.5		9.8	91.2	180
2214040	4 G 2.5		10.7	125.7	223
2214050	5 G 2.5		11.6	150.1	268
2214070	7 G 2.5		12.5	201.2	327
2214120	12 G 2.5		16.9	333.6	595
2214180	18 G 2.5		19.5	487.6	784
2214250	25 G 2.5		23.3	685.1	1048
2212040	4 G 4		12.5	186.4	315
2212070	7 G 4		15.5	310.2	499
2210040	4 G 6		15.5	271.7	552
2208040	4 G 10		18.7	438.6	857
2206040	4 G 16		23.3	699	1208
2204040	4 G	4	28.6	1296.8	1982
2202040	4 G	2	33.2	1899.5	2903

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 \*OD = Outer diameter

**Similar products**

- ÖLFLEX® CONTROL TM CY refer to page 56

**Accessories**

- SKINTOP® MS-SC-M refer to page 732



## ÖLFLEX® SF

Super-flexible H05VV-F power cable



### Info

- Super-flexible cable for handheld equipment
- Ozone-resistant according to EN 50396

### Benefits

- High acceptance in Europe due to Harmonisation

### Application range

- Very suitable for domestic appliances, electrical power tools, and various handyman tools
- H05VV-F cable types may not be used in commercial premises, with the exception of offices.
- Not for permanent outdoor use.

### Product features

- Flame-retardant according IEC 60332-1-2
- Highly flexible at cold temperatures
- Design and geometry in compliance with harmonisation document
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- H05VV-F acc. to EN 50525-2-11, from 6 cores: based on EN 50525-2-11

### Product Make-up

- Super-fine strands of bare copper wire with an individual wire diameter of 0.07 mm
- PVC core insulation, cold-resistant
- PVC outer sheath, cold-resistant, orange (RAL 2003)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001578 ETIM 5.0 Class-Description: Flexible cable
	<b>Core identification code</b> Colours according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
	<b>Conductor stranding</b> Super-fine wire (diameter of each wire is 0.07 mm)
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 4 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 300/500 V
	<b>Test voltage</b> 3000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> Flexing: -15°C to +60°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SF</b>				
0027590	2 X 0.75	6.4	14.9	50
0027591	3 G 0.75	7.0	22.3	60
00275923	4 G 0.75	7.7	29.7	73
00275933	5 G 0.75	8.7	37.1	88
0027594	7 G 0.75	10.4	51.5	109
0027600	2 X 1.0	6.8	20.1	74
0027601	3 G 1.0	7.4	30.2	87
00276033	5 G 1.0	9.2	50.8	130
0027701	3 G 1.5	8.7	44.8	116
00277023	4 G 1.5	9.9	61	166
00277033	5 G 1.5	11.1	72	184

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 500 P refer to page 85
- ÖLFLEX® 550 P\* refer to page 88

### Accessories

- SKINTOP® ST-M refer to page 712
- STAR STRIP stripping tool refer to page 1000



**i Info**

- High flexibility and oil-resistance
- Nominal voltage 450/750V
- Torsion resistant for drip loops

## ÖLFLEX® CLASSIC 100 H

Halogen-free power and control cable, oil resistant and very flexible



### Benefits

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features

### Application range

- Public buildings like airports or railway stations
- Plant engineering, Industrial machinery Heating and air-conditioning systems Stage applications
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5) and UL OIL RES I and UL OIL RES II
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- Based on IEC 60227-5 and EN 50525-2-51
- Based on EN 50525-3-11

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Outer sheath made of special halogen-free compound, grey (RAL 7001)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U0/U: 450/750 VAC  
In protected and fixed installations: U0/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -30°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 100 H</b>				
0014150	2 X 1.5	7.6	28.8	91
0014151	3 G 1.5	8.3	43.2	114
0014152	4 G 1.5	9.0	57.6	140
0014153	5 G 1.5	10.1	72	176
0014156	2 X 2.5	9.0	48	133
0014157	3 G 2.5	9.7	72	167
0014158	4 G 2.5	10.8	96	207
0014159	5 G 2.5	11.9	120	260
0014162	3 G 4	11.4	115.2	240
0014163	4 G 4	12.7	153.6	303
0014164	5 G 4	13.9	192	372
0014166	3 G 6	12.7	172.8	320
0014167	4 G 6	13.9	230.4	400
0014168	5 G 6	15.8	288	510
0014170	4 G 10	17.9	384	662
0014171	5 G 10	19.9	480	826
0014173	4 G 16	20.7	614.4	957
0014174	5 G 16	23.0	768	1193
0014176	4 G 25	25.4	960	1480
0014177	5 G 25	28.5	1200	1860
0014179	4 G 35	28.8	1344	1985
0014180	5 G 35	32.3	1680	2490
0014182	4 G 50	35.0	1920	2830
0014184	4 G 70	40.0	2688	3890
0014186	4 G 95	46.0	3648	5110
0014188	4 G 120	51.0	4608	6315

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Single lengths for sizes: ≥ 4G50 max. 500 m; ≥ 4G120 max. 400 m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to page 69

### Accessories

- SKINTOP® ST-HF-M refer to page 718

Various applications • Halogen-free



## ÖLFLEX® CLASSIC 110 H

Halogen-free control cable, oil resistant and very flexible



### Benefits

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features
- Certified for maritime applications

### Application range

- Public buildings like airports or railway stations
- Plant engineering, Industrial machinery Heating and air-conditioning systems Stage applications
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Intended for use under the European Construction Product Regulation (CPR), refer to catalogue appendix T14
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5) and UL OIL RES I and UL OIL RES II
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 119-14 HH

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Outer sheath made of special halogen-free compound, grey (RAL 7001)

### Info

- New: Extended application range due to GL certification
- High flexibility and oil-resistance
- VDE-certified

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000104 ETIM 5.0 Class-Description: Control cable
	<b>Core identification code</b> Black with white numbers acc. to VDE 0293-1
	<b>Conductor stranding</b> Fine wire according to VDE 0295, class 5/IEC 60228 class 5
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 4 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 300/500 V UL: 600 V
	<b>Test voltage</b> 4000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> Occasional flexing: -30°C to +70°C (UL: +75°C) Fixed installation: -40°C to +80°C (UL: +75°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 H U<sub>0</sub>/U: 300/500 V</b>				
10019900	2 X 0.5	5.1	9.6	41
10019901	3 G 0.5	5.4	14.4	49
10019902	3 X 0.5	5.4	14.4	49
10019903	4 G 0.5	5.8	19.2	58
10019904	4 X 0.5	5.8	19.2	58
10019905	5 G 0.5	6.3	24	69
10019906	7 G 0.5	6.9	33.6	87
10019907	12 G 0.5	9.1	57.6	141
10019910	2 X 0.75	5.5	14.4	51
10019911	3 G 0.75	5.8	21.6	61
10019912	3 X 0.75	5.8	21.6	61
10019913	4 G 0.75	6.3	28.8	73
10019914	4 X 0.75	6.3	28.8	73
10019915	5 G 0.75	6.9	36	87
10019916	5 X 0.75	6.9	36	87
10019917	7 G 0.75	7.5	50.4	111
10019918	7 X 0.75	7.5	50.4	111
10019919	9 G 0.75	9.6	64.8	150
10019920	12 G 0.75	10.1	86.4	186
10019921	18 G 0.75	12.0	129.6	265
10019922	25 G 0.75	14.1	180	365
10019960	2 X 1.0	5.8	19.2	59
10019961	3 G 1.0	6.1	28.8	72
10019962	3 X 1.0	6.1	28.8	72
10019963	4 G 1.0	6.6	38.4	87
10019964	4 X 1.0	6.6	38.4	87
10019965	5 G 1.0	7.3	48	104
10019967	7 G 1.0	8.1	67.2	138
10019968	8 G 1.0	9.7	76.8	164
10019969	12 G 1.0	10.7	115.2	225
10019970	14 G 1.0	11.4	134.4	261
10019971	18 G 1.0	12.9	172.8	328
10019972	25 G 1.0	15.0	240	445

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
10019973	41 G 1.0	19.2	393.6	719
10019930	2 X 1.5	6.4	28.8	76
10019931	3 G 1.5	6.8	43.2	94
10019980	3 X 1.5	6.8	43.2	94
10019932	4 G 1.5	7.4	57.6	115
10019933	5 G 1.5	8.3	72	142
10019934	7 G 1.5	9.0	100.8	184
10019981	8 G 1.5	10.8	115.2	218
10019982	9 G 1.5	11.6	129.6	245
10019935	12 G 1.5	12.2	172.8	308
10019936	14 G 1.5	13.0	201.6	357
10019937	18 G 1.5	14.6	259.2	449
10019938	25 G 1.5	17.2	360	617
10019927	34 G 1.5	19.8	489.6	821
10019944	2 X 2.5	7.6	48	113
10019945	3 G 2.5	8.3	72	146
10019946	4 G 2.5	9.0	96	180
10019947	5 G 2.5	10.1	120	221
10019948	7 G 2.5	11.2	168	295
10019949	12 G 2.5	15.1	288	491
10019950	4 G 4	10.8	153.6	268
10019951	5 G 4	12.1	192	328
10019952	7 G 4	13.4	268.8	438
10019953	4 G 6	13.0	230.4	391
10019954	5 G 6	14.5	288	478
10019975	7 G 6	16.0	403.2	638
10019851	4 G 10	16.2	384	635
10019852	5 G 10	18.1	480	775
10019849	4 G 16	18.8	614.4	930
10019853	5 G 16	21.2	768	1147
10019854	4 G 25	23.5	960	1442
10019855	5 G 25	26.4	1200	1773
10019856	4 G 35	26.6	1344	1917

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



**i Info**

- New: Extended application range due to GL certification
- High flexibility and oil-resistance
- Items with higher cross-sections on request

**Benefits**

- Easy handling and installation due to very flexible cable type
- Wide application range due to excellent product features
- Certified for maritime applications

**Application range**

- Public buildings like airports or railway stations
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Intended for use under the European Construction Product Regulation (CPR), refer to catalogue appendix T14
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- Oil-resistant according to EN 50363-4-1 (TM5) and UL OIL RES I and UL OIL RES II
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

**Norm references / Approvals**

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 119-14 HH

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Halogen-free inner sheath, grey
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound, grey (RAL 7001)



**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V  
UL: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -30°C to +70°C (UL: +75°C)  
Fixed installation: -40°C to +80°C (UL: +75°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 110 CH U<sub>0</sub>/U: 300/500 V</b>				
10035030	2 X 0.5	7.1	29.1	85
10035031	3 G 0.5	7.4	35.1	95
10035032	3 X 0.5	7.4	35.1	95
10035033	4 G 0.5	8.0	41.4	111
10035034	4 X 0.5	8.0	41.4	111
10035035	5 G 0.5	8.6	48	126
10035036	7 G 0.5	9.1	59.9	148
10035037	12 G 0.5	11.5	91.4	226
10035040	2 X 0.75	7.7	35.4	101
10035041	3 G 0.75	8.0	43.8	114
10035042	3 X 0.75	8.0	43.8	114
10035043	4 G 0.75	8.5	52.8	130
10035044	4 X 0.75	8.5	52.8	130
10035045	5 G 0.75	9.3	62.3	153
10035046	5 X 0.75	9.3	62.3	153
10035047	7 G 0.75	9.9	79.5	183
10035048	7 X 0.75	9.9	79.5	183
10035050	12 G 0.75	12.5	123.2	280
10035051	18 G 0.75	14.8	188.6	399
10035052	25 G 0.75	16.9	247.5	522
10035055	2 X 1.0	8.0	41.4	112
10035056	3 G 1.0	8.4	52.1	127
10035057	3 X 1.0	8.4	52.1	127
10035058	4 G 1.0	8.9	73.5	157
10035059	4 X 1.0	8.9	73.5	157
10035060	5 G 1.0	9.7	83.2	171
10035061	7 G 1.0	10.3	97.2	210
10035062	12 G 1.0	13.6	168.7	347

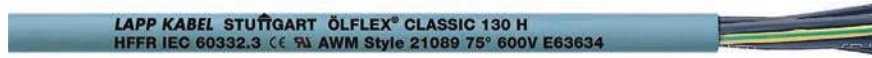
Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
10035063	18 G 1.0	15.7	235.4	474
10035064	25 G 1.0	17.8	312	611
10035065	41 G 1.0	22.4	508	969
10035067	2 X 1.5	8.6	53.2	134
10035068	3 G 1.5	9.0	69.1	155
10035069	3 X 1.5	9.0	69.1	155
10035070	4 G 1.5	9.8	85.8	186
10035071	5 G 1.5	10.5	102.8	215
10035072	7 G 1.5	11.4	134.2	269
10035073	12 G 1.5	15.0	232.8	445
10035074	18 G 1.5	17.4	327.8	610
10035075	25 G 1.5	20.4	463.2	843
10035089	3 G 2.5	10.5	102.8	220
10035090	4 G 2.5	11.4	129.4	265
10035091	5 G 2.5	12.7	157.5	322
10035092	7 G 2.5	14.0	223	422
10035093	12 G 2.5	17.9	360.5	659
10035094	4 G 4	13.6	207.6	390
10035095	5 G 4	14.9	251.5	463
10035096	7 G 4	16.2	333.9	588
10035097	4 G 6	15.8	294.8	516
10035098	5 G 6	17.3	356.1	616
10035099	7 G 6	18.8	479.3	792
10035380	4 G 10	19.1	461.1	789
10035381	5 G 10	21.4	586.6	998
10035382	4 G 16	22.3	727.6	1154
10035383	5 G 16	24.5	888.7	1389
10035384	4 G 25	27.0	1123.9	1807
10035386	4 G 35	30.4	1529.2	2321

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Single lengths for sizes: ≥ 4G50 max. 500 m  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CLASSIC 130 H

Halogen-free control cable with improved fire characteristics



**Info**

- VDE-certified
- For use within public buildings and industrial plants
- **New:** Extended application range  
GL certified and cold flexible down to -25°C

### Benefits

- Easy installation due to flexible design
- Certified for maritime applications
- Substitutes ÖLFLEX® 120 H

### Application range

- Public buildings like airports or railway stations
- Plant engineering, Industrial machinery Heating and air-conditioning systems Stage applications
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 120-14 HH

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Outer sheath made of special halogen-free compound, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V  
UL: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -25°C to +70°C (UL: +75°C)  
Fixed installation: -40°C to +80°C (UL: +75°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 130 H</b>				
1123000	2 X 0.5	5.1	9.6	36
1123001	3 G 0.5	5.4	14.4	42
1123002	3 X 0.5	5.4	14.4	42
1123003	4 G 0.5	5.8	19.2	55
1123004	4 X 0.5	5.8	19.2	55
1123005	5 G 0.5	6.3	24	65
1123006	5 X 0.5	6.3	24	65
1123008	7 G 0.5	6.9	33.6	80
1123009	7 X 0.5	6.9	33.6	80
1123010	8 G 0.5	8.2	38.4	103
1123012	10 G 0.5	8.8	48	112
1123013	12 G 0.5	9.1	57.6	128
1123017	18 G 0.5	10.8	86.4	189
1123020	25 G 0.5	12.7	120	260
1123021	30 G 0.5	13.6	144	294
1123032	2 X 0.75	5.5	14.4	47
1123033	3 G 0.75	5.8	21.6	56
1123034	3 X 0.75	5.8	21.6	56
1123035	4 G 0.75	6.3	28.8	69
1123036	4 X 0.75	6.3	28.8	69
1123037	5 G 0.75	6.9	36	83
1123038	5 X 0.75	6.9	36	83
1123041	7 G 0.75	7.5	50.4	104
1123042	7 X 0.75	7.5	50.4	104
1123046	10 G 0.75	9.8	72	149
1123047	12 G 0.75	10.1	86.4	172
1123048	12 X 0.75	10.1	86.4	172
1123051	18 G 0.75	12.0	129.6	252
1123054	25 G 0.75	14.1	180	352

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123056	34 G 0.75	16.3	244.8	466
1123066	2 X 1.0	5.8	19.2	55
1123067	3 G 1.0	6.1	28.8	67
1123068	3 X 1.0	6.1	28.8	67
1123069	4 G 1.0	6.6	38.4	83
1123070	4 X 1.0	6.6	38.4	83
1123071	5 G 1.0	7.3	48	100
1123072	5 X 1.0	7.3	48	100
1123074	7 G 1.0	8.1	67.2	130
1123075	7 X 1.0	8.1	67.2	130
1123076	8 G 1.0	9.7	76.8	164
1123078	10 G 1.0	10.4	96	183
1123080	12 G 1.0	10.7	115.2	212
1123081	12 X 1.0	10.7	115.2	212
1123083	16 G 1.0	12.1	153.6	275
1123084	18 G 1.0	12.9	172.8	314
1123090	25 G 1.0	15.0	240	429
1123094	34 G 1.0	17.5	326.4	570
1123106	2 X 1.5	6.4	28.8	72
1123107	3 G 1.5	6.8	43.2	88
1123108	3 X 1.5	6.8	43.2	88
1123109	4 G 1.5	7.4	57.6	110
1123110	4 X 1.5	7.4	57.6	110
1123111	5 G 1.5	8.3	72	135
1123112	5 X 1.5	8.3	72	135
1123114	7 G 1.5	9.0	100.8	174
1123115	7 X 1.5	9.0	100.8	174
1123116	8 G 1.5	10.8	115.2	223
1123118	10 G 1.5	11.8	144	250
1123120	12 G 1.5	12.2	172.8	289

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123124	18 G 1.5	14.6	259.2	433
1123128	25 G 1.5	17.2	360	596
1123130	34 G 1.5	19.8	489.6	786
1123139	2 X 2.5	7.6	48	110
1123140	3 G 2.5	8.3	72	137
1123142	4 G 2.5	9.0	96	174
1123144	5 G 2.5	10.1	120	217
1123146	7 G 2.5	11.2	168	283
1123149	12 G 2.5	15.1	288	467
1123151	18 G 2.5	18.0	432	696
1123153	25 G 2.5	21.1	600	969
1123159	3 G 4	9.8	115.2	213
1123160	4 G 4	10.8	153.6	267

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123161	5 G 4	12.1	192	331
1123162	7 G 4	13.4	268.8	432
1123166	3 G 6	11.7	172.8	303
1123167	4 G 6	13.0	230.4	388
1123168	5 G 6	14.5	288	480
1123169	7 G 6	16.0	403.2	626
1123172	4 G 10	16.2	384	601
1123173	5 G 10	18.1	480	735
1123177	4 G 16	18.8	614.4	917
1123178	5 G 16	21.2	768	1148
1123181	4 G 25	23.5	960	1418
1123182	5 G 25	26.4	1200	1769
1123185	4 G 35	26.6	1344	1905

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to page 69

**Accessories**

- SKINTOP® ST-HF-M refer to page 718



**ÖLFLEX® CLASSIC 135 CH**

Screened halogen-free control cable with improved fire characteristics



**Info**

- VDE-certified
- For use within public buildings and industrial plants
- **New:** Extended application range  
GL certified and cold flexible down to -25 °C

**Benefits**

- Easy installation due to flexible design
- Space-saving installation due to small cable diameters
- Certified for maritime applications
- Substitutes ÖLFLEX® 120 CH

**Application range**

- Public buildings like airports or railway stations
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- In EMC-sensitive environments (electromagnetic compatibility)
- Note: for the use of AWM (Appliance Wiring Material) cables in industrial machinery (USA) according to NFPA 79 Ed. 2015: please see the catalogue appendix table T29

**Product features**

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-22 and IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

**Norm references / Approvals**

- UL AWM style 21089
- Based on EN 50525-3-11
- Based on EN 50525-2-51
- Germanischer Lloyd (GL) certificate no. 11 120-14 HH

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Cores twisted in layers
- Halogen-free plastic foil wrapping
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound, grey (RAL 7001)

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000104 ETIM 5.0 Class-Description: Control cable
	<b>Core identification code</b> Black with white numbers acc. to VDE 0293-1
	<b>Conductor stranding</b> Fine wire according to VDE 0295, class 5/IEC 60228 class 5
	<b>Minimum bending radius</b> Occasional flexing: 20 x outer diameter Fixed installation: 6 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 300/500 V UL: 600 V
	<b>Test voltage</b> Core/core: 4000 V Core/screen: 2000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> Occasional flexing: -25 °C to +70 °C (UL: +75 °C) Fixed installation: -40 °C to +80 °C (UL: +75 °C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 135 CH</b>				
1123200	2 X 0.5	5.9	36	51
1123201	3 G 0.5	6.2	43	61
1123202	3 X 0.5	6.2	43	61
1123203	4 G 0.5	6.6	49	72
1123204	4 X 0.5	6.6	49	72
1123205	5 G 0.5	7.1	57	85
1123206	5 X 0.5	7.1	57	85
1123208	7 G 0.5	7.7	69	103
1123209	7 X 0.5	7.7	69	103
1123213	12 G 0.5	10.1	104	165
1123217	18 G 0.5	11.8	141	236
1123220	25 G 0.5	13.7	224	324
1123232	2 X 0.75	6.3	43	60
1123233	3 G 0.75	6.6	52	77
1123234	3 X 0.75	6.6	52	77
1123235	4 G 0.75	7.1	61	87
1123236	4 X 0.75	7.1	61	87
1123237	5 G 0.75	7.9	72	106
1123238	5 X 0.75	7.9	72	106
1123241	7 G 0.75	8.5	89	129
1123242	7 X 0.75	8.5	89	129
1123247	12 G 0.75	11.1	138	211
1123248	12 X 0.75	11.1	138	211
1123251	18 G 0.75	13.0	211	307
1123254	25 G 0.75	15.1	280	413
1123266	2 X 1.0	6.6	51	79
1123267	3 G 1.0	6.9	62	88
1123268	3 X 1.0	6.9	62	88
1123269	4 G 1.0	7.4	74	106
1123270	4 X 1.0	7.4	74	106
1123271	5 G 1.0	8.3	88	124
1123272	5 X 1.0	8.3	88	124
1123274	7 G 1.0	8.9	112	155
1123275	7 X 1.0	8.9	112	155
1123280	12 G 1.0	11.7	185	250
1123281	12 X 1.0	11.7	185	250

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123284	18 G 1.0	14.1	268	368
1123290	25 G 1.0	16.2	354	493
1123291	25 X 1.0	16.2	354	493
1123306	2 X 1.5	7.2	65	91
1123307	3 G 1.5	7.6	82	112
1123308	3 X 1.5	7.6	82	112
1123309	4 G 1.5	8.4	100	141
1123310	4 X 1.5	8.4	100	141
1123311	5 G 1.5	9.1	119	161
1123312	5 X 1.5	9.1	119	161
1123314	7 G 1.5	10.0	154	206
1123315	7 X 1.5	10.0	154	206
1123320	12 G 1.5	13.4	268	355
1123324	18 G 1.5	15.8	373	517
1123328	25 G 1.5	18.2	530	705
1123339	2 X 2.5	8.6	96	128
1123340	3 G 2.5	9.1	118	157
1123342	4 G 2.5	10.0	147	201
1123344	5 G 2.5	11.1	176	248
1123346	7 G 2.5	12.0	253	313
1123349	12 G 2.5	16.3	385	524
1123359	3 G 4	10.6	178	231
1123360	4 G 4	11.8	248	291
1123361	5 G 4	13.3	269	361
1123362	7 G 4	14.6	371	468
1123366	3 G 6	12.7	240	318
1123367	4 G 6	14.2	343	437
1123368	5 G 6	15.5	441	510
1123369	7 G 6	17.0	510	662
1123372	4 G 10	17.2	495	685
1123373	5 G 10	19.5	592	824
1123374	7 G 10	21.4	820	1067
1123377	4 G 16	20.2	736	1036
1123378	5 G 16	22.6	895	1285
1123381	4 G 25	25.1	1129	1663
1123382	5 G 25	28.0	1400	1976
1123385	4 G 35	28.2	1546	2052

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 110 CH refer to page 65
- ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV refer to page 70

**Accessories**

- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® ST-HF-M refer to page 718

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX





# ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV

0.6/1kVAC, Halogen-free, Flexible, IEC 60332-3, IEC 61034-2, UV/ ozone resistance, UL AWM 1000V

**Info**

- Outdoors
- Public buildings
- UL AWM recognized



**Benefits**

- Easy installation due to flexible design

**Application range**

- Public buildings
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- For outdoor applications
- According to NFPA 79, 2015 Edition, subchapter 12.9.2: Use for industrial machinery operated in the USA on the basis of UL AWM (recognized) certification

**Product features**

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396
- UL Cable Flame Test

**Norm references / Approvals**

- Based on EN 50525-3-11
- UL AWM (recognized) Style 21156 (outer jacket) with max. conductor temperature of +75 °C acc. to UL

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Outer sheath made of special halogen-free compound, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V  
UL: 1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -25°C to +70°C  
Fixed installation: -40°C to +80°C  
UL: +75°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV</b>				
1123410	2 X 1.0	8.6	19.2	107
1123411	3 G 1.0	9.0	28.8	123
1123412	4 G 1.0	9.6	38.4	144
1123413	5 G 1.0	10.4	48	167
1123414	7 G 1.0	11.1	67.2	206
1123415	12 G 1.0	14.0	115.2	314
1123418	2 X 1.5	9.6	28.8	137
1123419	3 G 1.5	10.1	43.2	161
1123420	4 G 1.5	10.8	57.6	190
1123421	5 G 1.5	11.7	72	221
1123422	7 G 1.5	12.6	100.8	276
1123423	12 G 1.5	16.1	172.8	427
1123424	18 G 1.5	18.8	259.2	596
1123425	25 G 1.5	21.7	360	799
1123427	3 G 2.5	11.3	72	219

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123428	4 G 2.5	12.2	96	262
1123429	5 G 2.5	13.3	120	307
1123430	7 G 2.5	14.4	168	390
1123431	12 G 2.5	18.7	288	624
1123432	18 G 2.5	22.0	432	879
1123433	25 G 2.5	25.8	600	1212
1123434	3 G 4	12.6	115.2	290
1123435	4 G 4	13.7	153.6	351
1123436	5 G 4	14.9	192	416
1123438	4 G 6	15.1	230.4	463
1123439	5 G 6	16.8	288	559
1123440	4 G 10	18.7	384	757
1123441	5 G 10	20.7	480	915
1123443	5 G 16	23.6	768	1296
1123444	4 G 25	26.2	960	1631

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC 110 H refer to page 64
- ÖLFLEX® CLASSIC 130 H refer to page 66

**Accessories**

- SKINTOP® ST-HF-M refer to page 718



## ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV

0.6/1kVAC, Halogen-free, Flexible, IEC 60332-3, IEC 61034-2, UV/ ozone resistance, UL AWM 1000V



**Info**

- Outdoors
- Public buildings
- EMC/Screened

### Benefits

- Easy installation due to flexible design
- Space-saving installation due to small cable diameters

### Application range

- Public buildings
- Plant engineering  
Industrial machinery  
Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- For outdoor applications
- According to NFPA 79, 2015 Edition, subchapter 12.9.2: Use for industrial machinery operated in the USA on the basis of UL AWM (recognized) certification

### Product features

- Flame-retardant according to IEC 60332-1-2 (flame spread on a single cable)
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

- Low smoke density according to IEC 61034-2
- UV and weather-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396
- UL Cable Flame Test

### Norm references / Approvals

- Based on EN 50525-3-11
- UL AWM (recognized) Style 21156 (outer jacket) with max. conductor temperature of +75 °C acc. to UL

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Halogen-free plastic foil wrapping
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V  
UL: 1000 V

**Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -25°C to +70°C  
Fixed installation: -40°C to +80°C  
UL: +75°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV</b>				
1123460	2 X 1.0	9.4	39.5	120
1123461	3 G 1.0	9.8	51	140
1123462	4 G 1.0	10.4	62.8	165
1123463	5 G 1.0	11.2	76	191
1123464	7 G 1.0	11.9	97.2	231
1123465	12 G 1.0	15.0	169.1	360
1123466	18 G 1.0	17.3	238.2	494
1123467	25 G 1.0	19.8	315.5	643
1123468	2 X 1.5	10.4	53.2	149
1123469	3 G 1.5	10.9	69.5	177
1123470	4 G 1.5	11.6	86.5	209
1123471	5 G 1.5	12.5	104.3	243
1123472	7 G 1.5	13.4	136.5	300
1123473	12 G 1.5	17.3	238.3	486
1123474	18 G 1.5	20.2	355.4	691
1123475	25 G 1.5	23.1	475.1	914

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1123476	2 X 2.5	11.6	79.4	197
1123477	3 G 2.5	12.1	106.1	243
1123478	4 G 2.5	13.0	134.3	293
1123479	5 G 2.5	14.1	158.3	342
1123480	7 G 2.5	15.4	225	462
1123481	12 G 2.5	20.1	383.6	718
1123482	18 G 2.5	23.4	548.9	1011
1123483	25 G 2.5	27.4	761.7	1370
1123485	4 G 4	14.7	211.9	399
1123486	5 G 4	15.9	250.3	471
1123487	3 G 6	14.9	232.1	414
1123488	4 G 6	16.1	298.5	519
1123489	5 G 6	17.8	356.1	607
1123490	4 G 10	20.1	490.6	837
1123492	4 G 16	22.5	735.1	1157
1123493	5 G 16	25.0	888.7	1407
1123494	4 G 25	27.8	1126.6	1683

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC 110 CH refer to page 35
- ÖLFLEX® CLASSIC 135 CH refer to page 37

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-M BRUSH refer to page 733



**ÖLFLEX® PETRO C HFFR**

Chemically and mechanically robust cable for harsh environmental conditions - certified

**Info**

- Resistant to oil and drilling fluids acc. to NEK TS 606:2009 (Oil & Mud)
- Highly flame retardant
- UL/cUL certified for North America



**Benefits**

- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Reduced flame spreading increase the protection against damage to persons and property in the event of a fire
- Copper braiding screens the cable against electromagnetic interference
- Can be used in many applications from different industries due to its mechanical, thermal and chemical properties

**Application range**

- Onshore and offshore applications
- For electrical connection of drilling units, pumping stations, compressors or generators in harsh environmental conditions
- Particularly in wet areas of machine tools and transfer lines

**Product features**

- Resistant against oil and drilling fluids according to NEK TS 606:2009 and IEC 61892-4

- Fire behaviour:
  - Halogen-free (VDE 0472-815)
  - Flame-retardant (IEC 60332-1-2)
  - No flame propagation (IEC 60332-3-22 Cat. A)
- UV-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396
- Salt water-resistant according to UL 1309

**Norm references / Approvals**

- Single-core versions:
  - USA: UL AWM Style 11624
  - Canada: cUL AWM II A/B
- Multi-core versions:
  - USA: UL AWM Style 20234
  - Canada: cUL AWM II A/B

**Product Make-up**

- Fine-wire, tinned-copper conductor
- Core insulation: polyolefin compound
- Cores twisted in layers
- Inner sheath: halogen-free compound
- Tinned copper screen braiding
- Outer sheath made of robust special polymer, colour black

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Fire test**  
Flame-retardant acc. to IEC 60332-1-2, UL VW-1, Cable Flame Test, CSA FT 1  
No flame-propagation according to IEC 60332-3-22 category A

**Conductor stranding**  
Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
IEC U<sub>0</sub>/U: 600/1000 V  
Up to 1.0mm<sup>2</sup> 300/500 V

**Test voltage**  
4000 V

**Temperature range**  
Occasional flexing: -40°C to +90°C  
According to UL/AWM: -40°C to +80°C  
Fixed installation: -50°C to +90°C  
according to UL/AWM: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® PETRO C HFFR black - single core</b>				
0023249	1 X 70	19.3	737	948
0023250	1 X 95	21.6	1002	1155
0023251	1 X 120	24.5	1254	1463
0023248	1 X 150	26.1	1553	1767
0023233	1 X 185	28.4	1912	2349
0023234	1 X 240	32.6	2475	2869
0023279	1 X 300	34.7	3075	3817
<b>ÖLFLEX® PETRO C HFFR black - multi-core</b>				
0023275	3 G 0.5	10.1	36	140
0023274	2 X 1.0	10.5	41	149
0023252	2 X 1.5	11.5	57	183
0023253	3 G 1.5	12.0	72	212
0023254	4 G 1.5	12.8	90	249
0023255	5 G 1.5	14.0	115	307
0023256	7 G 1.5	15.9	151	401
0023239	12 G 1.5	18.8	238	573
0023257	18 G 1.5	22.3	350	846
0023240	25 G 1.5	26.6	490	1183
0023278	3 G 2.5	13.5	105	276
0023242	4 G 2.5	14.6	147	347
0023244	5 G 2.5	15.7	171	401
0023245	7 G 2.5	18.3	233	547
0023258	12 G 2.5	22.3	378	840

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0023260	4 G 4	16.2	212	457
0023266	5 G 4	17.6	250	540
0023261	4 G 6	17.7	288	558
0023268	5 G 6	19.9	367	710
0023280	4 G 10	22.3	474	882
0023272	5 G 10	24.3	582	1069
0023281	4 G 16	24.9	716	1208
0023269	5 G 16	27.6	881	1483
0023267	4 G 25	30.2	1096	1785
0023270	5 G 25	33.4	1371	2206
0023262	4 G 35	33.6	1515	2314
0023282	5 G 35	37.1	1875	2847
0023246	4 G 50	39.3	2140	3264
0023271	5 G 50	43.4	2620	4002
<b>ÖLFLEX® PETRO C HFFR blue - multi-core</b>				
0023276	3 G 0.5	10.1	36	140
0023273	2 X 1.0	10.5	41	147
0023263	2 X 1.5	11.5	57	183
0023283	3 G 1.5	12.0	72	212
0023237	4 G 1.5	12.8	90	249
0023284	5 G 1.5	14.0	115	307
0023238	7 G 1.5	15.9	151	401
0023264	12 G 1.5	18.8	238	573
0023265	25 G 1.5	26.6	490	1183

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® ROBUST 200

Proven all-weather connection cable - resistant against a variety of chemical media

LAPP KABEL STUTTGART ÖLFLEX® ROBUST 200 CE



### Info

- Excellent weather resistance
- Good chemical resistance
- Voltage class 450/750 V

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Agricultural equipment
- For indoor and outdoor use

### Product features

- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Flexible down to -40°C
- Low-capacitance design
- Colour-coded up to 5 cores

### Norm references / Approvals

- Based on EN 50525-2-51
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation made of modified PP
- Cores twisted in layers
- Outer sheath made of special TPE
- Sheath colour: black

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable



#### Core identification code

Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 450/750 V



#### Test voltage

4000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBUST 200</b>				
0021800	2 X 1.0	8.0	19.2	65
0021801	3 G 1.0	8.4	29	79
0021802	4 G 1.0	9.2	38.4	96
0021803	5 G 1.0	10.0	48	113
0021805	2 X 1.5	8.6	29	78
0021806	3 G 1.5	9.1	43	97
0021807	4 G 1.5	9.9	58	122
0021808	5 G 1.5	10.8	72	146
0021809	7 G 1.5	13.5	101	208
0021810	2 X 2.5	9.8	48	114
0021811	3 G 2.5	10.4	72	144
0021812	4 G 2.5	11.5	96	181
0021813	5 G 2.5	13.1	120	222

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0021814	7 G 2.5	15.9	168	312
0021816	3 G 4	12.4	115.2	215
0021817	4 G 4	14.0	154	273
0021818	5 G 4	15.8	192	333
0021822	4 G 6	15.7	230	378
0021823	5 G 6	17.2	288	463
0021825	4 G 10	19.4	384	570
0021826	5 G 10	21.4	480	770
0021828	4 G 16	22.4	614	885
0021829	5 G 16	24.6	768	1100
0021831	4 G 25	27.0	960	1365
0021833	4 G 35	29.7	1344	1773
0021836	4 G 50	36.2	1920	3454

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Single lengths for sizes: ≥ 4G16 max. 600 m; ≥ 4G25 max. 300 m; ≥ 4G50 max. 250 m

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- H07RN-F, enhanced version refer to page 92
- ÖLFLEX® ROBUST 210 refer to page 73
- ÖLFLEX® ROBUST 215 C refer to page 74

### Accessories

- FLEXIMARK® Stainless steel kit refer to page 956
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-HF-M refer to page 718
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



**i Info**

- Excellent weather resistance
- Good chemical resistance
- Reduced outer diameter

**ÖLFLEX® ROBUST 210**

Proven all-weather control cable resistant to a wide range of chemical media



**Benefits**

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

**Application range**

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Agricultural equipment
- For indoor and outdoor use

**Product features**

- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Flexible down to -40°C
- Low-capacitance design
- Number-coded cores

**Norm references / Approvals**

- Based on VDE 0250 / 0285
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation made of modified PP
- Cores twisted in layers
- Outer sheath made of special TPE
- Sheath colour: black

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBUST 210</b>				
0021880	2 X 0.5	4.9	10	27
0021881	3 G 0.5	5.2	15	33
0021882	3 X 0.5	5.2	15	33
0021883	4 G 0.5	5.8	19.2	41
0021884	4 X 0.5	5.8	19.2	41
0021885	5 G 0.5	6.3	24	49
0021886	5 X 0.5	6.3	24	49
0021888	7 G 0.5	6.9	33.6	64
0021889	7 X 0.5	6.9	33.6	64
0021890	10 G 0.5	8.8	48	92
0021891	12 G 0.5	9.1	58	106
0021892	18 G 0.5	10.8	86.4	151
0021893	25 G 0.5	12.7	120	210
0021897	2 X 0.75	5.5	14.4	35
0021898	3 G 0.75	5.8	21.6	43
0021899	3 X 0.75	5.8	21.6	43
0021900	4 G 0.75	6.3	28.8	49
0021901	4 X 0.75	6.3	28.8	49
0021902	5 G 0.75	6.9	36	66
0021903	5 X 0.75	6.9	36	66
0021904	7 G 0.75	7.5	50	85
0021905	7 X 0.75	7.5	50	85
0021907	12 G 0.75	10.1	86	144
0021908	18 G 0.75	12.0	130	208
0021909	25 G 0.75	14.1	180	288
0021910	34 G 0.75	16.3	245	386
0021911	41 G 0.75	17.8	296	464
0021912	50 G 0.75	19.6	360	560
0021913	2 X 1.0	5.8	19.2	42
0021914	3 G 1.0	6.1	28.8	49
0021915	3 X 1.0	6.1	28.8	49
0021916	4 G 1.0	6.6	38.4	63
0021917	4 X 1.0	6.6	38.4	63
0021918	5 G 1.0	7.3	48	78
0021919	5 X 1.0	7.3	48	78
0021920	7 G 1.0	8.1	67	107
0021921	10 G 1.0	10.4	96	154

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0021922	12 G 1.0	10.7	115	178
0021923	18 G 1.0	12.9	173	262
0021924	25 G 1.0	15.0	240	357
0021925	34 G 1.0	17.5	326	484
0021926	41 G 1.0	19.2	394	582
0021927	50 G 1.0	21.0	480	703
0021928	2 X 1.5	6.4	29	56
0021929	3 G 1.5	6.8	43	72
0021930	3 X 1.5	6.8	43	72
0021931	4 G 1.5	7.4	58	91
0021932	4 X 1.5	7.4	58	91
0021933	5 G 1.5	8.3	72	108
0021934	5 X 1.5	8.3	72	108
0021936	7 G 1.5	9.0	101	149
0021937	7 X 1.5	9.0	101	149
0021938	10 G 1.5	11.8	143	215
0021940	12 G 1.5	12.2	173	234
0021941	18 G 1.5	14.6	259	369
0021942	25 G 1.5	17.2	360	510
0021943	34 G 1.5	19.8	490	683
0021945	50 G 1.5	24.0	720	999
0021946	2 X 2.5	7.6	48	86
0021947	3 G 2.5	8.3	72	115
0021949	4 G 2.5	9.0	96	131
0021951	5 G 2.5	10.1	120	178
0021953	7 G 2.5	11.2	168	241
0021954	12 G 2.5	15.1	288	405
0021963	3 G 4	10.1	115	180
0021964	4 G 4	11.1	157	228
0021965	5 G 4	12.4	192	280
0021966	7 G 4	13.6	269	377
0021967	4 G 6	13.3	230	332
0021968	5 G 6	14.8	288	407
0021969	4 G 10	16.5	384	541
0021970	5 G 10	18.4	480	620
0021971	4 G 16	18.8	614.4	806
0021972	4 G 25	23.5	960	1218
0021973	4 G 35	26.4	1344	1658

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Single lengths for sizes: ≥ 4G16 max. 600 m; ≥ 4G25 max. 300 m; ≥ 4G50 max. 250 m  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® ROBUST 215 C

Proven all-weather control cable - screened and resistant to a wide range of chemical media



**Info**

- Excellent weather resistance
- Good chemical resistance
- EMC compliant copper screening

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Agricultural equipment
- For indoor and outdoor use
- In EMC-sensitive environments (electromagnetic compatibility)

### Product features

- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Flexible down to -40°C
- Low-capacitance design
- Number-coded cores

### Norm references / Approvals

- Based on VDE 0250 / 0285
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation made of modified PP
- Cores twisted in layers
- Halogen-free plastic foil wrapping
- Tinned copper screen braiding
- Outer sheath made of special TPE
- Sheath colour: black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBUST 215 C</b>				
0022700	2 X 0.5	5.9	36	42
0022701	3 G 0.5	6.2	43	52
0022702	3 X 0.5	6.2	43	52
0022703	4 G 0.5	6.6	49	59
0022704	4 X 0.5	6.6	49	59
0022705	5 G 0.5	7.1	57	68
0022706	5 X 0.5	7.1	57	68
0022708	7 G 0.5	7.7	69	85
0022709	7 X 0.5	7.7	69	85
0022711	12 G 0.5	10.1	104	136
0022712	18 G 0.5	11.8	141	189
0022713	25 G 0.5	13.7	211	265
0022717	2 X 0.75	6.3	43	50
0022718	3 G 0.75	6.6	52	60
0022719	3 X 0.75	6.6	52	60
0022720	4 G 0.75	7.1	61	72
0022721	4 X 0.75	7.1	61	72
0022722	5 G 0.75	7.9	72	88
0022723	5 X 0.75	7.9	72	88
0022724	7 G 0.75	8.5	89	110
0022725	7 X 0.75	8.5	89	110
0022727	12 G 0.75	11.1	138	177
0022728	18 G 0.75	13.0	211	247
0022729	25 G 0.75	15.1	280	347
0022730	34 G 0.75	17.5	380	460
0022733	2 X 1.0	6.6	51	60
0022734	3 G 1.0	6.9	62	70
0022735	3 X 1.0	6.9	62	70
0022736	4 G 1.0	7.4	74	85

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0022737	4 X 1.0	7.4	74	85
0022738	5 G 1.0	8.3	88	103
0022739	5 X 1.0	8.3	88	103
0022740	7 G 1.0	8.9	112	131
0022742	12 G 1.0	11.7	185	213
0022743	18 G 1.0	14.1	268	321
0022744	25 G 1.0	16.2	354	425
0022748	2 X 1.5	7.2	65	71
0022749	3 G 1.5	7.6	82	90
0022750	3 X 1.5	7.6	82	90
0022751	4 G 1.5	8.4	100	114
0022752	4 X 1.5	8.4	100	114
0022753	5 G 1.5	9.1	119	136
0022754	5 X 1.5	9.1	119	136
0022756	7 G 1.5	10.0	154	177
0022757	7 X 1.5	10.0	154	177
0022760	12 G 1.5	13.4	268	290
0022761	18 G 1.5	15.8	373	435
0022762	25 G 1.5	18.2	530	579
0022763	34 G 1.5	21.2	683	797
0022767	3 G 2.5	9.1	118	134
0022768	4 G 2.5	10.0	147	169
0022769	5 G 2.5	11.1	176	207
0022770	7 G 2.5	12.0	253	270
0022774	4 G 4	11.9	190	258
0022776	4 G 6	14.5	290	392
0022777	4 G 10	17.5	458	602
0022778	4 G 16	20.2	736.6	928
0022771	4 G 25	25.1	1126.7	1411
0022780	4 G 35	28.0	1540	1883

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Single lengths for sizes: ≥ 4G16 max. 600 m; ≥ 4G25 max. 300 m; ≥ 4G50 max. 250 m  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® CLASSIC 400 P

Abrasion- and oil-resistant control cable with PUR sheath for increased application requirements

**Info**

- High mechanical strength
- Good oil resistance
- The classic for multi-functional use



- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Compatible with a multitude of acidic cleaning and disinfection solutions
  - Also available as DESINA® compliant power cable with black outer sheath colour

- Application range**
- Industrial machinery and machine tools
  - Measurement, control and electrical applications
  - Food production and packaging machinery
  - Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
  - Outdoor use is possible within the indicated operating temperature range

- Product features**
- High oil-resistance
  - Abrasion and notch-resistant
  - Low-adhesive surface
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- Based on VDE 0285
  - Certified resistance to disinfection and cleaning solutions used in food and beverage industry

- Product Make-up**
- Fine-wire, bare copper conductor
  - Core insulation: special PVC
  - Cores twisted in layers
  - Special polyurethane outer sheath (PUR)
  - Sheath colour: silver grey (RAL 7001)
  - DESINA®-compliant: black (RAL 9005)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Flexible use: 12.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 400 P - sheath colour: grey</b>				
1312802	2 X 0.5	4.8	10	32
1312003	3 G 0.5	5.1	15	43
1312803	3 X 0.5	5.1	15	43
1312004	4 G 0.5	5.7	19.2	50
1312804	4 X 0.5	5.7	19.2	50
1312005	5 G 0.5	6.2	24	59
1312805	5 X 0.5	6.2	24	59
1312007	7 G 0.5	6.7	34	73
1312807	7 X 0.5	6.7	34	73
1312010	10 G 0.5	8.6	48	109
1312012	12 G 0.5	8.9	57.6	125
1312018	18 G 0.5	10.5	87	180
1312025	25 G 0.5	12.4	120	250
1312034	34 G 0.5	14.3	164	333
1312041	41 G 0.5	15.7	197	400
1312852	2 X 0.75	5.4	14.4	41
1312103	3 G 0.75	5.7	21.6	51
1312853	3 X 0.75	5.7	21.6	51
1312104	4 G 0.75	6.2	28.8	62
1312854	4 X 0.75	6.2	28.8	62
1312105	5 G 0.75	6.7	36	74
1312855	5 X 0.75	6.7	36	74
1312107	7 G 0.75	7.3	50	97
1312857	7 X 0.75	7.3	50	97
1312110	10 G 0.75	9.6	72	142
1312112	12 G 0.75	9.9	86.4	163
1312118	18 G 0.75	11.7	129.6	234
1312125	25 G 0.75	13.8	180	324
1312134	34 G 0.75	15.9	244.8	431
1312141	41 G 0.75	17.4	295.2	529
1312902	2 X 1.0	5.7	19.2	48

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1312203	3 G 1.0	6.0	28.8	61
1312903	3 X 1.0	6.0	28.8	61
1312204	4 G 1.0	6.5	38.4	74
1312904	4 X 1.0	6.5	38.4	74
1312205	5 G 1.0	7.1	48	89
1312905	5 X 1.0	7.1	48	89
1312207	7 G 1.0	8.0	67	116
1312210	10 G 1.0	10.2	96	171
1312212	12 G 1.0	10.5	115	197
1312218	18 G 1.0	12.7	173	289
1312225	25 G 1.0	14.7	240	412
1312234	34 G 1.0	17.1	326.4	532
1312241	41 G 1.0	18.8	393.6	638
1312952	2 X 1.5	6.3	29	63
1312303	3 G 1.5	6.7	43	79
1312953	3 X 1.5	6.7	43	79
1312304	4 G 1.5	7.2	58	98
1312954	4 X 1.5	7.2	58	98
1312305	5 G 1.5	8.1	72	121
1312955	5 X 1.5	8.1	72	121
1312307	7 G 1.5	8.9	101	159
1312957	7 X 1.5	8.9	101	159
1312312	12 G 1.5	12.0	173	268
1312318	18 G 1.5	13.4	259.5	392
1312325	25 G 1.5	16.9	360	531
1312334	34 G 1.5	19.4	489.6	722
1312341	41 G 1.5	21.3	590.4	867
1312403	3 G 2.5	8.1	72	132
1312404	4 G 2.5	8.9	96	163
1312405	5 G 2.5	10.0	120	186
1312407	7 G 2.5	11.1	168	267
1312412	12 G 2.5	14.8	288	445

Harsh conditions • High mechanical and chemical resistance

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1312504	4 G 4	10.8	154	237
1312505	5 G 4	12.1	192	291
1312507	7 G 4	13.4	269	391
1312604	4 G 6	13.0	230.4	327
1312605	5 G 6	14.5	288	424
1312607	7 G 6	16.0	403	580
1312614	4 G 10	16.2	384	567
1312615	5 G 10	18.1	480	695
1312617	7 G 10	20.0	672	937
1312624	4 G 16	18.8	614.4	1064

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 400 P DESINA - sheath colour: black</b>				
1312970	4 G 1.5	7.2	58	98
1312981	7 G 1.5	8.8	101	159
1312983	11 G 1.5	11.6	158	228
1312973	4 G 2.5	8.9	96	163
1312974	4 G 4	10.8	154	237
1312975	4 G 6	13.0	230.4	350
1312976	4 G 10	16.2	384	567
1312978	4 G 25	23.5	960	1582

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

DESINA® is a registered trademark of the German Machine Tool Builders' Association

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 408 P refer to page 79
- ÖLFLEX® 409 P refer to page 80
- ÖLFLEX® 440 P refer to page 81

### Accessories

- SKINTOP® metric plastic cable glands





# ÖLFLEX® CLASSIC 400 CP

Screened, abrasion- and oil-resistant control cable with PUR sheath for increased application requirements

**Info**

- High mechanical strength
- Good oil resistance
- EMC compliant copper screening



- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Compatible with a multitude of acidic cleaning and disinfection solutions
  - Additional robustness thanks to inner sheath
  - Copper braiding screens the cable against electromagnetic interference

- Application range**
- Industrial machinery and machine tools
  - Measurement, control and electrical applications
  - Food production and packaging machinery
  - Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
  - Outdoor use is possible within the indicated operating temperature range

- Product features**
- High oil-resistance
  - Abrasion and notch-resistant
  - EMC-compliant
  - Low-adhesive surface
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- Based on VDE 0285
  - Certified resistance to disinfection and cleaning solutions used in food and beverage industry

- Product Make-up**
- Fine-wire, bare copper conductor
  - Core insulation: special PVC
  - Cores twisted in layers
  - PVC inner sheath, grey
  - Tinned-copper braiding
  - Special polyurethane outer sheath (PUR)
  - Sheath colour: silver grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 400 CP</b>				
1313852	2 X 0.75	7.4	45	85
1313103	3 G 0.75	7.9	52	99
1313853	3 X 0.75	7.9	52	99
1313104	4 G 0.75	8.4	77	114
1313854	4 X 0.75	8.4	77	114
1313105	5 G 0.75	8.9	84	130
1313855	5 X 0.75	8.9	84	130
1313107	7 G 0.75	9.7	92	161
1313857	7 X 0.75	9.7	92	161
1313112	12 G 0.75	12.3	138	245
1313118	18 G 0.75	14.5	219	354
1313125	25 G 0.75	16.6	277	463
1313134	34 G 0.75	18.9	420	598
1313141	41 G 0.75	20.6	500	725
1313902	2 X 1.0	7.9	50	97
1313203	3 G 1.0	8.2	77	111
1313903	3 X 1.0	8.2	77	111
1313204	4 G 1.0	8.7	87	129
1313904	4 X 1.0	8.7	87	129
1313205	5 G 1.0	9.5	90	152
1313207	7 G 1.0	10.2	110	184
1313212	12 G 1.0	13.3	194	306
1313218	18 G 1.0	15.5	267	417
1313225	25 G 1.0	17.5	379	541
1313234	34 G 1.0	20.3	516	735

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1313241	41 G 1.0	22.0	610	860
1313952	2 X 1.5	8.5	77	116
1313303	3 G 1.5	8.9	85	135
1313953	3 X 1.5	8.9	85	135
1313304	4 G 1.5	9.6	100	162
1313954	4 X 1.5	9.6	100	162
1313305	5 G 1.5	10.3	120	187
1313955	5 X 1.5	10.3	120	187
1313307	7 G 1.5	11.3	152	236
1313957	7 X 1.5	11.3	152	236
1313312	12 G 1.5	14.8	267	392
1313318	18 G 1.5	17.2	400	536
1313325	25 G 1.5	20.1	572	742
1313334	34 G 1.5	21.9	754	960
1313341	41 G 1.5	24.7	874	1118
1313403	3 G 2.5	10.3	121	191
1313404	4 G 2.5	11.3	163	232
1313405	5 G 2.5	12.6	199	282
1313407	7 G 2.5	13.9	261	370
1313412	12 G 2.5	17.2	470	580
1313504	4 G 4	13.4	238	345
1313505	5 G 4	14.7	279	412
1313604	4 G 6	15.8	318	483
1313605	5 G 6	17.3	370	576
1313614	4 G 10	19.0	558	733
1313624	4 G 16	22.2	804	1340

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® CLASSIC 415 CP refer to page 78
  - ÖLFLEX® 440 CP refer to page 82
  - ÖLFLEX® CLASSIC 415 CP
  - ÖLFLEX® 440 CP

- Accessories**
- Conductor end sleeves
  - SKINTOP® MS-SC-M refer to page 732



## ÖLFLEX® CLASSIC 415 CP

Screened, abrasion- and oil-resistant PUR control cable with reduced outer diameter



**Info**

- Thin and light, without inner sheath
- EMC compliant copper screening

### Benefits

- Space and weight-saving installations due to small cable diameters
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Industrial machinery and machine tools
- Measurement, control and electrical applications
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
- Outdoor use is possible within the indicated operating temperature range

### Product features

- High oil-resistance
- Abrasion and notch-resistant
- EMC-compliant
- Low-adhesive surface
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- Core based on VDE 0812/0285
- Outer sheath based on VDE 0250/0285

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: special PVC
- Cores twisted in layers
- Plastic foil wrapping
- Tinned-copper braiding
- Special polyurethane outer sheath (PUR)
- Sheath colour: silver grey (RAL 7001)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC 415 CP</b>				
1314000	2 X 0.5	5.8	36	45
1314001	3 G 0.5	6.1	43	59
1314002	3 X 0.5	6.1	43	59
1314003	4 G 0.5	6.5	49	83
1314004	4 X 0.5	6.5	49	83
1314005	5 G 0.5	7.0	57	96
1314006	5 X 0.5	7.0	57	96
1314007	7 G 0.5	7.5	69	136
1314008	7 X 0.5	7.5	69	136
1314010	12 G 0.5	9.9	104	200
1314011	12 X 0.5	9.9	104	200
1314012	18 G 0.5	11.5	141	275
1314013	18 X 0.5	11.5	141	275
1314014	25 G 0.5	13.4	211	350
1314015	25 X 0.5	13.4	211	350
1314017	2 X 0.75	6.2	43	56
1314018	3 G 0.75	6.5	52	70
1314019	3 X 0.75	6.5	52	70
1314020	4 G 0.75	7.0	61	95
1314021	4 X 0.75	7.0	61	95
1314022	5 G 0.75	7.7	72	130
1314023	5 X 0.75	7.7	72	130
1314024	7 G 0.75	8.3	89	168
1314025	7 X 0.75	8.3	89	168
1314026	12 G 0.75	10.9	138	232
1314027	18 G 0.75	12.7	211	315
1314028	25 G 0.75	14.8	280	435
1314029	25 X 0.75	14.8	280	435
1314032	2 X 1.0	6.5	51	84
1314033	3 G 1.0	6.8	62	110
1314034	3 X 1.0	6.8	62	110
1314035	4 G 1.0	7.3	74	130
1314036	4 X 1.0	7.3	74	130
1314037	5 G 1.0	8.1	88	156

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1314038	5 X 1.0	8.1	88	156
1314039	7 G 1.0	8.8	112	192
1314040	7 X 1.0	8.8	112	192
1314041	12 G 1.0	11.5	185	285
1314042	18 G 1.0	13.9	268	395
1314043	25 G 1.0	15.9	354	656
1314046	2 X 1.5	7.1	65	97
1314047	3 G 1.5	7.5	82	125
1314048	3 X 1.5	7.5	82	125
1314049	4 G 1.5	8.2	100	165
1314050	4 X 1.5	8.2	100	165
1314051	5 G 1.5	8.9	119	193
1314052	5 X 1.5	8.9	119	193
1314053	7 G 1.5	9.9	154	245
1314054	7 X 1.5	9.9	154	245
1314055	12 G 1.5	13.0	268	365
1314056	18 G 1.5	15.6	373	553
1314057	25 G 1.5	17.9	530	734
1314058	34 G 1.5	20.8	683	944
1314061	3 G 2.5	8.9	118	188
1314062	4 G 2.5	9.9	147	236
1314063	5 G 2.5	11.0	176	270
1314064	7 G 2.5	11.9	253	340
1314065	12 G 2.5	16.0	355	589
1314066	18 G 2.5	19.0	569	978
1314067	25 G 2.5	22.2	827	1358
1314068	4 G 4	11.6	248	305
1314070	7 G 4	14.4	355	500
1314071	4 G 6	14.2	343	440
1314073	7 G 6	17.0	505	672
1314074	4 G 10	17.2	535	710
1314075	4 G 16	20.2	800	1050
1314076	4 G 25	25.1	1075	1570
1314077	4 G 35	28.0	1576	2070

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® ROBUST 215 C refer to page 74
- ÖLFLEX® CLASSIC 400 CP refer to page 77

### Accessories

- Conductor end sleeves
- SKINTOP® MS-SC-M refer to page 732



**ÖLFLEX® 408 P**

Abrasion- and oil-resistant control cable with PUR sheath for increased application requirements - VDE certified



**Info**

- High mechanical strength
- Good oil resistance
- Interstice-filling functional layer

- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Interstice-filling functional layer ensures more safety and efficiency during industrial jacket stripping
  - VDE-tested characteristics

- Application range**
- Appliance and apparatus construction
  - Industrial machinery and machine tools
  - Measurement, control and electrical applications
  - Outdoor use is possible within the indicated operating temperature range
  - Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress

- Product features**
- High oil-resistance
  - Abrasion and notch-resistant
  - Low-adhesive surface
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- VDE Reg.No. 8744

- Product Make-up**
- Fine-wire, bare copper conductor
  - Core insulation: special PVC
  - Cores twisted in layers
  - Special outer sheath of polyurethane with interstice-filling functional layer
  - Sheath colour: silver grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Flexible use: 12.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -15°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 408 P</b>				
1308802	2 X 0,5	4,8	9.6	32
1308003	3 G 0,5	5,1	14.4	39
1308803	3 X 0,5	5,1	14.4	39
1308004	4 G 0,5	5,7	19.2	49
1308804	4 X 0,5	5,7	19.2	49
1308005	5 G 0,5	6,2	24	59
1308805	5 X 0,5	6,2	24	59
1308007	7 G 0,5	6,7	33.6	73
1308807	7 X 0,5	6,7	33.6	73
1308010	10 G 0,5	8,6	48	116
1308012	12 G 0,5	8,9	57.6	129
1308018	18 G 0,5	10,5	86.4	184
1308025	25 G 0,5	12,4	120	256
1308852	2 X 0,75	5,4	14.4	42
1308103	3 G 0,75	5,7	21.6	51
1308853	3 X 0,75	5,7	21.6	51
1308104	4 G 0,75	6,2	28.8	62
1308854	4 X 0,75	6,2	28.8	62
1308105	5 G 0,75	6,7	36	75
1308855	5 X 0,75	6,7	36	75
1308107	7 G 0,75	7,3	50.4	95
1308857	7 X 0,75	7,3	50.4	95
1308110	10 G 0,75	9,6	72	153
1308112	12 G 0,75	9,9	86.4	170
1308118	18 G 0,75	11,7	129.6	245
1308125	25 G 0,75	13,8	180	340
1308902	2 X 1.0	5,7	19.2	49
1308203	3 G 1.0	6.0	28.8	60
1308903	3 X 1.0	6.0	28.8	60
1308204	4 G 1.0	6,5	38.4	74
1308904	4 X 1.0	6,5	38.4	74
1308205	5 G 1.0	7,1	48	90
1308905	5 X 1.0	7,1	48	90

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1308207	7 G 1.0	8.0	67.2	118
1308907	7 X 1.0	8.0	67.2	118
1308210	10 G 1.0	10,2	86	184
1308212	12 G 1.0	10,5	115.2	204
1308218	18 G 1.0	12,7	172.8	303
1308225	25 G 1.0	14,7	240	412
1308952	2 X 1,5	6,3	28.8	64
1308303	3 G 1,5	6,7	43.2	81
1308953	3 X 1,5	6,7	43.2	81
1308304	4 G 1,5	7,2	57.6	99
1308954	4 X 1,5	7,2	57.6	99
1308305	5 G 1,5	8,1	72	125
1308955	5 X 1,5	8,1	72	125
1308307	7 G 1,5	8,9	100.8	161
1308957	7 X 1,5	8,9	100.8	161
1308312	12 G 1,5	12.0	172.8	286
1308318	18 G 1,5	14,4	259.2	419
1308325	25 G 1,5	16,9	360	580
1308403	3 G 2,5	8,1	72	125
1308404	4 G 2,5	8,9	96	158
1308405	5 G 2,5	10.0	120	198
1308407	7 G 2,5	11,1	168	259
1308412	12 G 2,5	14,8	288	454
1308504	4 G 4	10,8	153.6	241
1308505	5 G 4	12,1	192	302
1308507	7 G 4	13,4	268.8	394
1308604	4 G 6	13.0	230.4	356
1308605	5 G 6	14,5	288	443
1308607	7 G 6	16.0	403.2	579
1308514	4 G 10	16,2	384	571
1308615	5 G 10	18,1	480	714
1308617	7 G 10	20.0	672	935
1308624	4 G 16	18,8	614.4	843

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

Harsh conditions • High mechanical and chemical resistance



## ÖLFLEX® 409 P

Abrasion- and oil-resistant PUR control cable for increased application requirements - certified for North America



**Info**

- Substitutes previous ÖLFLEX® 491 P
- UL/cUL certified for North America
- Interstice-filling functional layer

### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Interstice-filling functional layer ensures more safety and efficiency during industrial jacket stripping
- Certified for the USA and Canada for export-oriented appliance and apparatus manufacturers

### Application range

- Appliance and apparatus construction
- Industrial machinery and machine tools
- Measurement, control and electrical applications
- Under consideration of the temperature range also suitable for outdoor use
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress

### Product features

- High oil-resistance
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Abrasion and notch-resistant
- Low-adhesive surface
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- UL AWM Style 20234
- CUL AWM II A/B FT1

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: special PVC
- Cores twisted in layers
- Special outer sheath of polyurethane with interstice-filling functional layer
- Sheath colour: black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Flexible use: 12.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V  
UL/CSA: 1000 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 409 P</b>				
1311852	2 X 0,75	6,9	14.4	61
1311103	3 G 0,75	7,2	21.6	71
1311104	4 G 0,75	7,7	28.8	84
1311105	5 G 0,75	8,3	36	100
1311107	7 G 0,75	8,9	50.4	122
1311110	10 G 0,75	10,8	72	180
1311112	12 G 0,75	11,1	86.4	198
1311118	18 G 0,75	12,8	129.6	275
1311125	25 G 0,75	14,5	180	364
1311902	2 X 1.0	7,2	19.2	69
1311203	3 G 1.0	7,5	28.8	81
1311204	4 G 1.0	8.0	38.4	97
1311205	5 G 1.0	8,7	48	117
1311207	7 G 1.0	9,3	67.2	142
1311210	10 G 1.0	11,4	96	212
1311212	12 G 1.0	11,7	115.2	234
1311218	18 G 1.0	13,5	172.8	327
1311225	25 G 1.0	15,4	240	437
1311952	2 X 1,5	7,8	28.8	87

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1311303	3 G 1,5	8,2	43.2	104
1311304	4 G 1,5	8,8	57.6	126
1311305	5 G 1,5	9,5	72	151
1311307	7 G 1,5	10,2	100.8	188
1311312	12 G 1,5	13.0	172.8	314
1311318	18 G 1,5	15.0	259.2	441
1311325	25 G 1,5	17,2	360	596
1311403	3 G 2,5	9,5	72	151
1311404	4 G 2,5	10,2	96	184
1311405	5 G 2,5	11,1	120	224
1311407	7 G 2,5	12.0	168	282
1311412	12 G 2,5	15,5	288	480
1311504	4 G 4	11,8	153.6	266
1311505	5 G 4	12,9	192	325
1311604	4 G 6	13,1	230.4	359
1311605	5 G 6	14,3	288	438
1311704	4 G 10	16,5	384	585
1311705	5 G 10	18,2	480	722
1311804	4 G 16	19,1	614.4	861
1311805	5 G 16	22,1	768	1107

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



**ÖLFLEX® 440 P**

Abrasion- and oil-resistant all-weather control cable with TPE core insulation and PUR sheath - VDE certified

**Info**

- Flexible down to -40°C
- Halogen-free and flame-retardant
- VDE-tested and registered



- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Wide temperature range for applications in harsh climatic environments
  - VDE-tested characteristics

- Application range**
- Industrial machinery and machine tools
  - Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
  - Construction machinery
  - Agricultural equipment
  - For indoor and outdoor use

- Product features**
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
  - Abrasion and notch-resistant
  - Halogen-free and flame-retardant (IEC 60332-1-2)
  - Resistant to hydrolysis and microbes
  - Flexible down to -40°C

- Norm references / Approvals**
- VDE reg. no. 6582

- Product Make-up**
- Fine-wire, tinned-copper conductor
  - Core insulation: TPE
  - Cores twisted in layers
  - Special polyurethane outer sheath (PUR)
  - Sheath colour: silver grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 12.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 440 P</b>				
0012800	2 X 0.5	5.8	10	39
0012801	3 G 0.5	6.1	14	46
0012802	4 G 0.5	6.6	19	53
0012803	5 G 0.5	7.3	24	65
0012804	7 G 0.5	8.8	34	92
0012805	12 G 0.5	10.9	58	149
0012806	18 G 0.5	12.9	86	207
0012807	25 G 0.5	15.7	120	274
0012813	2 X 0.75	6.2	14	48
0012814	3 G 0.75	6.5	22	53
0012815	4 G 0.75	7.1	29	67
0012816	5 G 0.75	8.0	36	81
0012817	7 G 0.75	9.7	50	119
0012818	12 G 0.75	11.7	86	193
0012819	18 G 0.75	14.1	130	269
0012820	25 G 0.75	17.1	180	378
0012825	2 X 1.0	6.5	19	57
0012826	3 G 1.0	6.9	29	61
0012827	4 G 1.0	7.7	38	82
0012828	5 G 1.0	8.4	48	107

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0012829	7 G 1.0	10.2	67	138
0012830	12 G 1.0	12.6	115	215
0012831	18 G 1.0	14.9	173	328
0012832	25 G 1.0	18.1	240	479
0012833	34 G 1.0	20.6	326	616
0012834	41 G 1.0	22.4	394	727
0012837	2 X 1.5	7.1	29	73
0012838	3 G 1.5	7.5	43	96
0012839	4 G 1.5	8.4	58	105
0012840	5 G 1.5	9.4	72	133
0012841	7 G 1.5	11.4	101	175
0012842	12 G 1.5	14.0	173	309
0012843	18 G 1.5	16.6	259	458
0012844	25 G 1.5	20.1	360	635
0012846	41 G 1.5	25.1	590	1003
0012850	3 G 2.5	9.2	72	142
0012851	4 G 2.5	10.0	96	184
0012852	5 G 2.5	11.2	120	220
0012853	7 G 2.5	13.8	168	294
0012854	12 G 2.5	16.9	288	489

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths) Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils). Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® ROBUST 210 refer to page 73
  - ÖLFLEX® CLASSIC 400 P refer to page 75

- Accessories**
- Conductor end sleeves
  - SKINTOP® ST-M refer to page 712



## ÖLFLEX® 440 CP

Screened, abrasion- and oil-resistant all-weather control cable with TPE insulation and PUR sheath - VDE certified



**Info**

- Halogen-free and flame-retardant
- VDE-tested and registered
- EMC compliant copper screening

### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Additional robustness thanks to inner sheath
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Industrial machinery and machine tools
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
- Construction machinery
- Agricultural equipment
- For indoor and outdoor use

### Product features

- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Abrasion and notch-resistant
- Halogen-free and flame-retardant (IEC 60332-1-2)
- Resistant to hydrolysis and microbes
- Flexible at low temperatures

### Norm references / Approvals

- VDE reg. no. 6582

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: TPE
- Cores twisted in layers
- Inner sheath made of TPE
- Tinned-copper braiding
- Special polyurethane outer sheath (PUR)
- Sheath colour: silver grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x cable diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 440 CP</b>				
0012901	3 G 0.5	8.3	44	100
0012902	4 G 0.5	8.8	52	120
0012903	5 G 0.5	9.7	61	139
0012904	7 G 0.5	11.2	75	175
0012906	12 G 0.5	13.7	131	276
0012907	18 G 0.5	15.7	168	376
0012908	25 G 0.5	18.5	212	485
0012911	2 X 0.75	8.4	45	104
0012912	3 G 0.75	8.7	52	119
0012913	4 G 0.75	9.5	67	126
0012914	5 G 0.75	10.2	75	165
0012915	7 G 0.75	11.9	96	210
0012917	12 G 0.75	14.5	160	331
0012919	25 G 0.75	20.3	283	596
0012925	2 X 1.0	8.7	49	117
0012926	3 G 1.0	9.3	60	132
0012927	4 G 1.0	9.9	78	163
0012928	5 G 1.0	10.8	88	187

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0012929	7 G 1.0	12.8	115	255
0012931	12 G 1.0	15.4	201	419
0012932	18 G 1.0	17.7	267	546
0012933	25 G 1.0	21.5	351	738
0012934	34 G 1.0	23.8	498	972
0012940	2 X 1.5	9.5	68	122
0012941	3 G 1.5	9.9	83	140
0012942	4 G 1.5	10.8	102	170
0012943	5 G 1.5	11.6	119	200
0012944	7 G 1.5	14.2	186	290
0012945	12 G 1.5	16.8	264	423
0012946	18 G 1.5	20.0	379	616
0012947	25 G 1.5	23.5	534	804
0012949	41 G 1.5	28.9	803	1360
0012950	3 G 2.5	11.4	121	194
0012951	4 G 2.5	12.6	145	307
0012952	5 G 2.5	14.0	205	413
0012953	7 G 2.5	16.4	259	533
0012954	12 G 2.5	20.1	407	795

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC 400 CP refer to page 77

### Accessories

- Conductor end sleeves
- SKINTOP® MS-SC-M refer to page 732



# ÖLFLEX® 491 P

Abrasion- and oil-resistant PUR control cable for increased application requirements - certified for North America

**Info**

- For the North American market
- High oil-resistance
- Discontinued product - Will be substituted of ÖLFLEX® 409 P



- Benefits**
- Certified for the USA and Canada for export-oriented appliance and apparatus manufacturers
  - Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Metric flexible conductor design
  - Also available as DESINA® compliant power cable with black outer sheath colour

- Application range**
- Appliance and apparatus construction
  - Plant engineering
  - Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
  - Outdoor use is possible within the indicated operating temperature range

- Product features**
- High oil-resistance
  - Abrasion and notch-resistant
  - Low-adhesive surface
  - Flame-retardant according to IEC 60332-1-2 & CSA FT1
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- In accordance with UL AWM Style 20234
  - CUL AWM II A/B FT1
  - Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.

- Product Make-up**
- Fine-wire, bare copper conductor
  - Core insulation: special PVC
  - Cores twisted in layers
  - Special polyurethane outer sheath (PUR)
  - Sheath colour: silver grey (RAL 7001)
  - DESINA®-compliant: black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
HAR U<sub>0</sub>/U: 300/500 V  
UL/CSA: 600 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexible use: -5°C to 80°C  
Fixed installation: -40°C to 80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 491 P - sheath colour: black</b>				
0013009	3 G 1.0	7.7	27	73
0013017	3 G 1.5	8.3	44	100
0013018	4 G 1.5	9.0	58	123
0013019	5 G 1.5	9.8	72	150
0013020	7 G 1.5	10.7	101	197
0013021	12 G 1.5	13.8	173.4	344
0013023	25 G 1.5	20.0	360	682
0013024	3 G 2.5	9.2	72	152
0013025	4 G 2.5	9.9	96	200
<b>ÖLFLEX® 491 P - sheath colour: grey</b>				
0013208	2 X 1.0	7.3	19.2	62
0013210	4 G 1.0	8.2	35	89
0013212	7 G 1.0	9.7	61	138
0013213	12 G 1.0	12.5	105	232
0013214	18 G 1.0	14.8	157	340
0013215	25 G 1.0	17.8	218	454
0013223	3 G 1.5	8.3	44	100
0013220	4 G 1.5	9.0	57.6	123
0013222	7 G 1.5	10.7	101	197
0013225	12 G 1.5	13.8	173	344
0013226	18 G 1.5	16.6	260	488
0013227	25 G 1.5	20.0	360	682

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 DESINA® is a registered trademark of the German Machine Tool Builders' Association  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® 409 P refer to page 80

- Accessories**
- Marking systems
  - SKINTOP® Standard



## ÖLFLEX® 450 P

Abrasion- and oil-resistant cable for handheld equipment with integrated wear indicator



### Info

- Cost-effective PVC/PUR dual sheath
- Integrated wear indicator

### Benefits

- Good cost-benefit ratio
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- The signal colour of the outer sheath increases safety and visual perception
- Serious mechanical damages of the yellow outer jacket become visible due to the red inner sheath

### Application range

- Portable handheld electrical devices such as drills, sanders, jig saws or grinders
- Power or extension cord
- Portable devices for the home and garden
- Outdoor use is possible within the indicated operating temperature range

### Product features

- Good oil resistance
- Abrasion and notch-resistant
- Flame-retardant according IEC 60332-1-2
- Low-adhesive surface
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- Based on VDE 0250 / 0285

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: Based on PVC
- Cores twisted together
- Inner sheath: PVC - colour red
- Outer sheath: PUR colour yellow

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable



#### Core identification code

Colours according to VDE 0293-308, refer to Appendix T9



#### Conductor stranding

Fine wire according to VDE 0295, class 5/IEC 60228 class 5



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V



#### Test voltage

3000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 450 P</b>				
0012101	2 X 1.0	8.0	19.2	82
0012102	3 G 1.0	8.4	29	89
0012202	3 G 1.5	9.3	43	120
00122033	4 G 1.5	10.1	58	160
00122043	5 G 1.5	10.9	72	179
0012302	3 G 2.5	10.8	72	186
00123043	5 G 2.5	13.6	120	283

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® 540 P refer to page 86
- ÖLFLEX® 550 P\* refer to page 88

### Accessories

- SKINTOP® BS-M refer to page 719
- SKINTOP® ST-M refer to page 712





## ÖLFLEX® 500 P

Flexible, abrasion-, oil- and cold-resistant workshop cable with PUR outer sheath



**Info**

- High mechanical strength
- Good oil resistance
- Extra flexible conductor design

- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath material
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Wide temperature range for applications in harsh climatic environments
  - High flexibility simplifies installation when space is at a premium and use with electrical handheld devices
  - The signal colour of the outer sheath increases safety and visual perception

- Application range**
- Portable handheld electrical devices such as drills, sanders, jig saws or grinders
  - Portable devices for the home and garden
  - Connection and extension cables

- Product features**
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
  - Abrasion and notch-resistant
  - Flexible down to -40°C
  - Halogen-free and flame-retardant (IEC 60332-1-2)
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- Based on VDE 0285

- Product Make-up**
- Extra-fine wire strand made of bare copper
  - Core insulation: TPE compound
  - Cores twisted together
  - PUR outer sheath
  - Sheath colour: orange

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 500 P</b>				
0012345	2 X 1.0	7.2	19.5	64
0012346	3 G 1.0	7.6	29	77
00123473	4 G 1.0	8.5	38.4	96
00123483	5 G 1.0	9.2	48	120
0012351	2 X 1.5	8.0	29	81
0012352	3 G 1.5	8.7	43	105.3
00123543	4 G 1.5	9.6	58	135
00123533	5 G 1.5	10.8	72	158.9
0012365	3 G 2.5	10.9	72	173.2
00123553	4 G 2.5	11.9	96	204
00123663	5 G 2.5	13.2	120	254

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

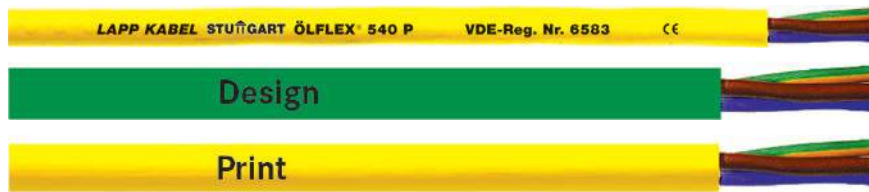
- Similar products**
- ÖLFLEX® 540 P refer to page 86
  - ÖLFLEX® 550 P\* refer to page 88

- Accessories**
- Marking systems
  - Conductor end sleeves
  - SKINTOP® CLICK refer to page 715
  - SKINTOP® ST-M refer to page 712



## ÖLFLEX® 540 P

Cold-flexible, abrasion- and oil-resistant TPE/PUR connection cable for harsh conditions - VDE-registered



**Info**

- The proven building site cable
- Voltage class from 1.5 mm<sup>2</sup> 450/750 V
- VDE-tested and registered

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9 (7-cored version number-coded)

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
Up to 1.0 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 V  
From 1.5 mm<sup>2</sup>: U<sub>0</sub>/U: 450/750 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- The signal colour of the outer sheath increases safety and visual perception
- VDE-tested characteristics

### Application range

- Connection and extension cables
- Construction machinery
- Building sites, camp sites, stage applications
- Agricultural equipment
- For indoor and outdoor use

### Product features

- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Abrasion and notch-resistant
- Halogen-free and flame-retardant (IEC 60332-1-2)
- Flexible down to -40°C
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- VDE reg. no. 6583 up to 1.0 mm<sup>2</sup>
- VDE reg. no. 6584 from 1.5 mm<sup>2</sup>

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: TPE
- Cores twisted together
- Outer sheath: PUR colour yellow
- DESIGN: Other sheath colours on request
- PRINT: Other sheath marking on request

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 540 P U<sub>0</sub>/U: 300/500 V</b>				
0012452	2 X 0.75	6.2	14.4	52
0012453	3 G 0.75	6.7	21.6	63
00124543	4 G 0.75	7.3	28.8	80
00124553	5 G 0.75	8.2	36	98
0012456	7 G 0.75	9.9	51	126
0012457	2 X 1.0	6.7	19.2	53
0012458	3 G 1.0	7.1	29	72
00124593	4 G 1.0	7.7	38.4	96
00124603	5 G 1.0	8.6	48	117
0012461	7 G 1.0	10.4	68	147
<b>ÖLFLEX® 540 P U<sub>0</sub>/U: 450/750 V</b>				
0012462	2 X 1.5	8.3	29	82
0012463	3 G 1.5	8.8	43	108
00124643	4 G 1.5	9.8	58	147
00124653	5 G 1.5	10.7	72	164
0012466	7 G 1.5	13.4	101	267
0012467	2 X 2.5	9.7	48	142
0012468	3 G 2.5	10.3	72	161
00124693	4 G 2.5	11.4	96	220
00124703	5 G 2.5	12.7	120	245
0012471	7 G 2.5	15.8	168	321
0012474	3 G 4	12.3	115.2	262
00124753	4 G 4	13.6	154	284
00124763	5 G 4	15.2	192	355
00124783	4 G 6	15.4	230	440
00124793	5 G 6	17.1	288	530
00124813	4 G 10	20.1	384	615
00124823	5 G 10	22.3	480	735

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® ROBUST 200 refer to page 72
- H07RN-F, enhanced version refer to page 92
- ÖLFLEX® 550 P\* refer to page 88

### Accessories

- SKINTOP® BS-M refer to page 719
- SKINTOP® MS-M refer to page 724
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



**ÖLFLEX® 540 CP**

Screened, cold-flexible, abrasion- and oil-resistant PUR connection cable for harsh conditions - VDE-registered

**Info**

- The proven building site cable
- Voltage class from 1.5 mm<sup>2</sup> 450/750 V
- VDE-tested and registered



- Benefits**
- Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Wide temperature range for applications in harsh climatic environments
  - Additional robustness thanks to inner sheath
  - The signal colour of the outer sheath increases safety and visual perception

- Application range**
- Connection and extension cables
  - Construction machinery
  - Building sites, camp sites, stage applications
  - Agricultural equipment
  - For indoor and outdoor use

- Product features**
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
  - Abrasion and notch-resistant
  - Halogen-free and flame-retardant (IEC 60332-1-2)
  - Flexible down to -40°C
  - Resistant to hydrolysis and microbes

- Norm references / Approvals**
- VDE reg. no. 6583 up to 1.0 mm<sup>2</sup>
  - VDE reg. no. 6584 from 1.5 mm<sup>2</sup>

- Product Make-up**
- Fine-wire, tinned-copper conductor
  - Core insulation: TPE
  - Cores twisted together
  - Inner sheath made of TPE
  - Tinned copper screen braiding
  - Outer sheath: PUR colour yellow

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9 (7-cored version number-coded)
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 12.5 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
Up to 1.0 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 V  
From 1.5 mm<sup>2</sup>: U<sub>0</sub>/U: 450/750 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 540 CP U<sub>0</sub>/U: 300/500 V</b>				
0012752	2 X 0.75	8.2	43.9	103
0012753	3 G 0.75	8.5	67.6	140
00127553	5 G 0.75	10.2	75	164
0012757	2 X 1.0	8.5	65.2	138
0012758	3 G 1.0	9.3	74.9	153
00127603	5 G 1.0	10.8	87.2	184
0012761	7 G 1.0	12.6	138.5	281
<b>ÖLFLEX® 540 CP U<sub>0</sub>/U: 450/750 V</b>				
0012762	2 X 1.5	10.5	67.7	159
0012763	3 G 1.5	11.0	82.3	181
00127643	4 G 1.5	12.0	101.8	218
00127653	5 G 1.5	13.7	143.3	287
0012766	7 G 1.5	16.6	195.7	394
0012767	2 X 2.5	11.9	92.4	213
0012768	3 G 2.5	12.5	119	263
00127693	4 G 2.5	14.2	168.2	334
00127703	5 G 2.5	15.7	204.7	416
00127753	4 G 4	17.0	240.1	476
00127783	4 G 6	18.4	355.5	634
00127793	5 G 6	20.5	452.9	770
00127813	4 G 10	22.3	577.8	993
00127823	5 G 10	25.3	681.2	1151

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® 440 CP refer to page 82

- Accessories**
- SKINTOP® MS-SC-M refer to page 732
  - SKINDICHT® SM-PE-M refer to page 763

Harsh conditions • High mechanical and chemical resistance



## ÖLFLEX® 550 P\*

Power cord with PUR outer sheath and European harmonisation (HAR)



**Info**

- High mechanical strength
- Good oil resistance
- H05BQ-F/H07BQ-F design standard

### Benefits

- Harmonised use in Europe
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- The signal colour of the outer sheath increases safety and visual perception

### Application range

- Portable handheld electrical devices such as drills, sanders, jig saws or grinders
- Building sites, camp sites, stage applications
- Construction machinery
- Agricultural equipment
- For indoor and outdoor use

### Product features

- Oil-resistant
- Abrasion and notch-resistant
- Flexible down to -40°C
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- EN 50525-2-21
- H05BQ-F/H07BQ-F design standard

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: rubber compound
- Cores twisted together
- PUR outer sheath
- Sheath colour: orange

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
For flexible use:  
12.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
Up to 1.0 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 V  
From 1.5 mm<sup>2</sup>: U<sub>0</sub>/U: 450/750 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® 550 P U<sub>0</sub>/U: 300/500 V</b>				
0013600	2 X 0.75	5.7 - 7.4	14.4	50
0013601	3 G 0.75	6.2 - 8.1	21.6	64
00136023	4 G 0.75	6.8 - 8.8	28.8	78
00136033	5 G 0.75	7.6 - 9.9	36	98
0013610	2 X 1.0	6.1 - 8.0	19.2	60
0013611	3 G 1.0	6.5 - 8.5	29	74
00136123	4 G 1.0	7.1 - 9.3	38.4	92
00136133	5 G 1.0	8.0 - 10.3	48	114
<b>ÖLFLEX® 550 P U<sub>0</sub>/U: 450/750 V</b>				
0013620	2 X 1.5	7.6 - 9.8	29	87
0013621	3 G 1.5	8.0 - 10.4	43	108
00136223	4 G 1.5	9.0 - 11.6	58	137
00136233	5 G 1.5	9.8 - 12.7	72	165
0013630	2 X 2.5	9.0 - 11.6	48	90
0013631	3 G 2.5	9.6 - 12.4	72	161
00136323	4 G 2.5	10.7 - 13.8	96	206
00136333	5 G 2.5	11.9 - 16.3	120	254

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® ROBUST 200 refer to page 72
- H05RN-F refer to page 90
- H07RN-F refer to page 91
- H07RN-F, enhanced version refer to page 92
- ÖLFLEX® 500 P refer to page 85
- ÖLFLEX® 540 P refer to page 86

### Accessories

- Cutting tools for various applications
- Stripping tools
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-M refer to page 712
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



# H05RR-F

Rubber cable for light mechanical stress and handheld devices used in households, kitchens, offices

**Info**

- Light mechanical stress



### Benefits

- Type-compliant versions <HAR>-certified with “<HAR>” testing and certification mark for accelerated granting of approvals if final application of cable is within the European CENELEC area

### Application range

- Handheld and power supply devices according to EN 50565-2
- For lightweight workshop tools that are subject to light loads
- According to EN 50565-2: dry and damp rooms; only temporary use outdoors; not for industrial/commercial or agricultural facilities, except tailors/cutting workshops; not suitable for supplying industrial power tools
- Light & sound technology

### Product features

- Ozone-resistant

### Norm references / Approvals

- <HAR> cable type approval according to EN 50525-2-21

### Product Make-up

- Bare copper wire according to HAR
- Core insulation: rubber compound, type EI 4
- Outer sheath: rubber compound, type EM3

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Coloured according to HD 308
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
4 to 8 x outer diameter (EN 50565-1)
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Current rating**  
According to IEC 60364-5-52/  
VDE 0298-4  
EN 50565-1/ VDE 0298-565-1
- Temperature range**  
Flexible use: -25°C to +60°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H05RR-F</b>				
1600203	2 X 0.75	5.7 - 7.4	14.4	61
1600207	3 G 0.75	6.2 - 8.1	21.6	75
1600204	2 X 1.0	6.1 - 8.0	19.2	73
1600208	3 G 1.0	6.5 - 8.5	28.8	86
16002113	4 G 1.0	7.1 - 9.3	38.4	105
1600205	2 X 1.5	7.6 - 9.8	28.8	115
1600200	3 G 1.5	8.0 - 10.4	43.2	135
16002013	4 G 1.5	9.0 - 11.6	57.6	165
16002023	5 G 1.5	9.8 - 12.7	72	190
1600206	2 X 2.5	9.0 - 11.6	48	160
1600209	3 G 2.5	9.6 - 12.4	72	190
16002123	4 G 2.5	10.7 - 13.8	96	235
16002133	5 G 2.5	11.9 - 15.3	120	285

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- H05RN-F refer to page 90



## H05RN-F

Rubber cable for handheld devices and chains of decorative lights



**Info**

- Oil-resistant

### Benefits

- Type-compliant versions <HAR>-certified with “<HAR>” testing and certification mark for accelerated granting of approvals if final application of cable is within the European CENELEC area

### Application range

- According to EN 50565-2: for supplying devices in households, kitchens or offices under light mechanical stress; handheld inspection lamps
- According to EN 50565-2: provided the maximum conductor temperature of +60 °C, the maximum outer sheath surface temperature of +50 °C and the lack of ozone resistance are taken into account, suitable for permanent use outdoors with conventional mechanical stress

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404

### Norm references / Approvals

- <HAR> cable type approval according to EN 50525-2-21

### Product Make-up

- Bare copper wire according to HAR
- Core insulation: rubber compound, type EI 4
- Outer sheath: rubber compound, type EM2

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC001578  
 ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
 Coloured according to HD 308

**Conductor stranding**  
 Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
 4 to 8 x outer diameter (EN 50565-1)

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Current rating**  
 According to IEC 60364-5-52 / VDE 0298-4  
 EN 50565-1 / VDE 0298-565-1

**Temperature range**  
 Flexible use: -25 °C to +60 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H05RN-F</b>				
1600250	2 X 0.75	5.7 - 7.4	14.4	80
1600252	3 G 0.75	6.2 - 8.1	21.6	95
16002583	4 G 0.75	6.8 - 8.8	28.8	105
1600251	2 X 1.0	6.1 - 8.0	19.2	95
1600253	3 G 1.0	6.5 - 8.5	28.8	115

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- H07RN-F refer to page 91



# H07RN-F

Heavy standard construction

**Info**

- Medium mechanical stress
- Oil-resistant



**Benefits**

- For mechanically more demanding applications
- 1000 V AC at protected + static laying
- Arrangements made of single-core, rubber-sheathed cables H07RN-F can be used for short circuit-proof and short-to-ground-proof installations in accordance with IEC 60364-5-52/ HD 60364-5-52/ VDE 0100 Part 520

**Application range**

- Handheld and power supply devices according to EN 50565-2
- Medium, mechanical stress
- Industrial, agricultural use
- According to EN 50565-2: In dry, damp and wet rooms as well as for fixed installation e.g. on the plaster

**Product features**

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404

**Norm references / Approvals**

- <HAR> H07RN-F cable type approval according to EN 50525-2-21

**Product Make-up**

- Bare copper wire according to HAR
- Core insulation: rubber compound, type EI 4
- Outer sheath: rubber compound, type EM2

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
4 to 8 x outer diameter (EN 50565-1)

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Current rating**  
According to IEC 60364-5-52/ VDE 0298-4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
-25°C to +60°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H07RN-F</b>				
1600096	1 X 1.5	5.7 - 7.1	14.4	59
1600099	1 X 2.5	6.3 - 7.9	24	72
1600097	1 X 4	7.2 - 9.0	38.4	99
1600098	1 X 6	7.9 - 9.8	57.6	130
1600194	1 X 10	9.5 - 11.9	96	230
1600195	1 X 16	10.8 - 13.4	153.6	320
1600196	1 X 25	12.7 - 15.8	240	450
1600193	1 X 35	14.3 - 17.9	336	605
1600197	1 X 50	16.5 - 20.6	480	825
1600189	1 X 70	18.6 - 23.3	672	1090
1600190	1 X 95	20.8 - 26.0	912	1405
1600198	1 X 120	22.8 - 28.6	1152	1745
1600191	1 X 150	25.2 - 31.4	1440	1887
1600175	1 X 185	27.6 - 34.4	1776	2274
1600177	1 X 240	30.6 - 38.3	2304	2955
30015435	1 X 300	33.5 - 41.9	2880	3479
1600117	3 G 1.0	8.3 - 10.7	28.8	130
1600199	2 X 1.5	8.5 - 11.0	28.8	135
1600103	3 G 1.5	9.2 - 11.9	43.2	165
16001233	4 G 1.5	10.2 - 13.1	57.6	200
16001043	5 G 1.5	11.2 - 14.4	72	240
1600151	7 G 1.5	14.7 - 18.7	100.8	385
1600148	12 G 1.5	17.6 - 22.4	172.8	516
1600259	19 G 1.5	20.7 - 26.3	273.6	800
1600166	24 G 1.5	24.3 - 30.7	345.6	882
1600263	25 G 1.5	25.1 - 25.9	360	920
1600187	2 X 2.5	10.2 - 13.1	48	195
1600118	3 G 2.5	10.9 - 14.0	72	235
16001053	4 G 2.5	12.1 - 15.5	96	290
16001293	5 G 2.5	13.3 - 17.0	120	294

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1600152	7 G 2.5	17.1 - 21.8	168	520
1600154	12 G 2.5	20.6 - 26.2	288	810
1600156	19 G 2.5	25.5 - 31.0	456	1200
1600157	24 G 2.5	28.8 - 36.4	576	1650
1600186	2 X 4	11.8 - 15.1	76.8	270
1600119	3 G 4	12.7 - 16.2	115.2	320
16001063	4 G 4	14.0 - 17.9	153.6	395
16001303	5 G 4	15.6 - 19.9	192	485
1600161	7 G 4	20.1 - 25.5	268.8	681
1600120	3 G 6	14.1 - 18.0	172.8	360
16001073	4 G 6	15.7 - 20.0	230.4	475
16001313	5 G 6	17.5 - 22.2	288	760
1600121	3 G 10	19.1 - 24.2	288	880
16001083	4 G 10	20.9 - 26.5	384	1060
16001093	5 G 10	22.9 - 29.1	480	1300
1600122	3 G 16	21.8 - 27.6	460.8	1090
16001103	4 G 16	23.8 - 30.1	614.4	1345
16001113	5 G 16	26.4 - 33.3	768	1680
16001123	4 G 25	28.9 - 36.6	960	1995
16001133	5 G 25	32.0 - 40.4	1200	2470
1600124	3 G 35	29.3 - 37.1	1008	1910
16001143	4 G 35	32.5 - 41.4	1344	2645
16001363	5 G 35	35.7 - 45.1	1680	2810
16001153	4 G 50	37.7 - 47.5	1920	3635
1600126	5 G 50	41.8 - 53.0	2400	4050
16001163	4 G 70	42.7 - 54.0	2688	4830
16001283	4 G 95	48.4 - 61.0	3648	6320
16001323	4 G 120	53.0 - 66.0	4608	6830
16000883	4 G 150	58.0 - 73.0	5760	8320
1600141	4 G 185	64.0 - 80.0	7104	9800
1600183	4 G 240	72.0 - 91.0	9216	12800

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- H07RN-F, enhanced version refer to page 92

**Accessories**

- SKINTOP® CLICK System
- EASY STRIP stripping and cutting tool refer to page 1004

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## H07RN-F, enhanced version

Halogen-free; Long-run submersion; Bending/Loop Torsion (WTG): -40°C to +90°C; UV/Ozone resistant



**Info**

- Halogen-free & Low Smoke density
- Loop Torsion/Flexible: -40°C to +90°C
- 100m long-run submersion, UV/ Ozone resistant

### Benefits

- Arrangements made of single-core, rubber-sheathed cables H07RN-F can be used for short circuit-proof and short-to-ground-proof installations in accordance with IEC 60364-5-52/ HD 60364-5-52/ VDE 0100 Part 520
- More water-resistant than H07RN-F and H07RN8-F
- Conductor temperature range more suitable for outdoor installation and wider than H07RN-F, H07ZZ-F, H07BN4-F und NSSHÖU

### Application range

- Medium, mechanical stress and industrial and agricultural use as well as for handheld and power supply devices (H07RN-F according to EN 50565-2)
- Drip loop torsion between the nacelle and the tower of wind turbine generators/ windmills
- Outdoors acc. EN 50565-2
- For buildings or industrial plants with a high density of people or valuable assets

### Product features

- Oil resistant according to EN 60811-404; Good resistance to abrasion, atmospheric agents, grease and mineral oils

- UV-, Ozone- (acc. EN 60811), Cold- (-40 °C flexible at the conductor) and Heat-resistant (+90 °C at the conductor)
- Drip loop torsion resistant (wind turbine) ==>TW-0, TW-1 and TW-2: -40 °C to +90 °C / 2,000 cycles (5,000 cycles from +5 °C)/ torsion angle of +/-150 ° per metre at one revolution per minute
- Long-time water submersion (AD8) down to 100 m without interruption (no drinking water, minimum water temperature of +5 °C, standing water only, no areas with boat/ ship/ submarine traffic)
- Halogen-free acc. EN 50267-2 (sub-parts -1 and -2), flame-retardant according to IEC 60332-1-2 and low smoke density (LS) acc. EN 61034-2

### Norm references / Approvals

- <HAR> H07RN-F cable type approval according to EN 50525-2-21

### Product Make-up

- Strands of bare copper wires
- Core insulation: special rubber
- Outer sheath: special rubber compound

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5

**Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
Moved: 6 x Outer diameter  
Fixed installation: 4 x Outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V AC

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Current rating**  
According to IEC 60364-5-52/  
VDE 0298-4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Moved: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H07RN-F, enhanced version</b>				
4533027	3 G 1.0	8.3 - 10.7	28.8	140
4533061	4 G 1.0	9.2 - 11.9	38.4	160
4533062	4 X 1.0	9.2 - 11.9	38.4	160
4533091	5 G 1.0	10.2 - 13.1	48	200
4533000	1 X 1.5	5.7 - 7.1	14.4	55
4533020	2 X 1.5	8.5 - 11.0	28.8	125
4533029	3 G 1.5	9.2 - 11.9	43.2	172
4533063	4 G 1.5	10.2 - 13.1	57.6	200
4533064	4 X 1.5	10.2 - 13.1	57.6	200
4533093	5 G 1.5	11.2 - 14.4	72	250
4533111	7 G 1.5	14.7 - 18.7	100.8	430
4533113	12 G 1.5	17.6 - 22.4	172.8	620
4533001	1 X 2.5	6.3 - 7.9	24	72
4533021	2 X 2.5	10.2 - 13.1	48	173
4533031	3 G 2.5	10.9 - 14.0	72	225
4533065	4 G 2.5	12.1 - 15.5	96	285
4533066	4 X 2.5	12.1 - 15.5	96	285
4533095	5 G 2.5	13.3 - 17.0	120	345
4533115	12 G 2.5	20.6 - 26.2	288	850
4533002	1 X 4	7.2 - 9.0	38.4	98
4533022	2 X 4	11.8 - 15.1	76.8	239
4533033	3 G 4	12.7 - 16.2	115.2	325
4533067	4 G 4	14.0 - 17.9	153.6	395
4533097	5 G 4	15.6 - 19.9	192	485
4533003	1 X 6	7.9 - 9.8	57.6	127
4533023	2 X 6	13.1 - 16.8	115.2	330



Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
4533035	3 G 6	14.1 - 18.0	172.8	415
4533069	4 G 6	15.7 - 20.0	230.4	535
4533099	5 G 6	17.5 - 22.2	288	648
4533004	1 X 10	9.5 - 11.9	96	192
4533024	2 X 10	17.7 - 22.6	192	590
4533037	3 G 10	19.1 - 24.2	288	712
4533071	4 G 10	20.9 - 26.5	384	920
4533005	1 X 16	10.8 - 13.4	153.6	262
4533039	3 G 16	21.8 - 27.6	460.8	990
4533073	4 G 16	23.8 - 30.1	614.4	1290
4533006	1 X 25	12.7 - 15.8	240	375
4533041	3 G 25	26.1 - 33.0	720	1395
4533075	4 G 25	28.9 - 36.6	960	1930
4533101	5 G 25	32.0 - 40.4	1200	2500
4533007	1 X 35	14.3 - 17.9	336	493
4533043	3 G 35	29.3 - 37.1	1008	1815
4533077	4 G 35	32.5 - 41.4	1344	2470
4533103	5 G 35	35.7 - 45.1	1680	3250
4533008	1 X 50	16.5 - 20.6	480	675
4533045	3 G 50	34.1 - 42.9	1440	2470
4533079	4 G 50	37.7 - 47.5	1920	3320
4533105	5 G 50	41.8 - 53.0	2400	4408
4533009	1 X 70	18.6 - 23.3	672	914
4533081	4 G 70	42.7 - 54.0	2688	4420
4533107	5 G 70	47.5 - 60.0	3360	5863
4533010	1 X 95	20.8 - 26.0	912	1200
4533083	4 G 95	48.4 - 61.0	3648	5750
4533109	5 G 95	54.0 - 67.0	4560	7537
4533011	1 X 120	22.8 - 28.6	1152	1481
4533085	4 G 120	53.0 - 66.0	4608	6990
4533012	1 X 150	25.2 - 31.4	1440	1833
4533087	4 G 150	58.0 - 73.0	5760	8650
4533013	1 X 185	27.6 - 34.4	1776	2190
4533089	4 G 185	64.0 - 80.0	7104	9785
4533014	1 X 240	30.6 - 38.3	2304	2780
4533015	1 X 300	33.5 - 41.9	2880	3310
4533016	1 X 400	37.4 - 46.8	3840	4320
4533017	1 X 500	41.3 - 52.0	4800	5342

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- V 1311-A pressing pliers, hydraulic refer to page 1030
- STAR STRIP stripping tool refer to page 1000
- KT cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031



## H07ZZ-F

Machines, devices; halogen-free: events, locations with a high density of people and valuable assets



**Info**

- Public buildings

### Benefits

- Broad usages due to halogen-free materials
- According to VDE 0100-711, cables with low smoke emission are required in buildings for exhibitions, shows and stands without a fire alarm system
- Type-compliant versions <HAR>-certified with "<HAR>" testing and certification mark for accelerated granting of approvals if final application of cable is within the European CENELEC area

### Application range

- Stage technology
- For mobile equipment and machines
- According to EN 50565-2: In dry, damp and wet rooms as well as for fixed installation e.g. on the plaster
- For buildings or industrial plants with a high density of people or valuable assets

### Product features

- Low amount of corrosive gases in the event of fire
- Flame-retardant according to IEC 60332-1-2 and bundle flame test according to IEC 60332-3-24
- Low smokes/low smoke density in the event of fire according to IEC 61034
- Ozone-resistant acc. to EN 50363-6, EN 60811-403, EN 50396-8.1.3

### Norm references / Approvals

- <HAR> H07ZZ-F cable type approval according to EN 50525-3-21

### Product Make-up

- Strands of bare copper wires
- Core insulation: rubber compound, halogen-free
- Outer sheath: rubber compound, halogen-free

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC001578  
 ETIM 5.0 Class-Description:  
 Flexible cable

**Core identification code**  
 Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
 From 6 cores: black with white numbers

**Conductor stranding**  
 Fine wire according to VDE 0295  
 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
 4 to 8 x outer diameter (EN 50565-1)

**Nominal voltage**  
 U0/U: 450/750 VAC  
 In protected and fixed installations:  
 U0/U: 600/1000 V

**Test voltage**  
 2500 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Current rating**  
 VDE 0298 Part 4  
 EN 50565-1 / VDE 0298-565-1

**Temperature range**  
 Static/Moved: -40°C/-5°C ...to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H07ZZ-F</b>				
1600810	3 G 1.5	9.2 - 11.9	43.2	125
1600811	4 G 1.5	10.2 - 13.1	57.6	155
1600812	5 G 1.5	11.2 - 14.4	72	190
1600815	14 G 1.5	18.8 - 21.3	201.6	570
1600816	18 G 1.5	20.7 - 26.3	259.2	750
1600820	3 G 2.5	10.9 - 14.0	72	185
1600821	4 G 2.5	12.1 - 15.5	96	235
1600822	5 G 2.5	13.3 - 17.0	120	290
1600823	7 G 2.5	17.1 - 21.8	168	520
1600825	14 G 2.5	22.2 - 25.0	336	860
1600836	4 G 4	14.0 - 17.9	153.6	325
1600837	5 G 4	15.6 - 19.9	192	410
1600841	4 G 6	15.7 - 20.0	230.4	440
1600842	5 G 6	17.5 - 22.2	288	550
1600844	4 G 10	20.9 - 26.5	384	770
1600845	5 G 10	22.9 - 29.1	480	950
1600847	4 G 16	23.8 - 30.1	614.4	1070
1600849	4 G 25	28.9 - 36.6	960	1570
1600851	4 G 35	32.5 - 41.1	1344	2040
1600852	4 G 50	37.7 - 47.5	1920	2810

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- H07RN-F refer to page 91
- H07RN-F, enhanced version refer to page 92

### Accessories

- SKINTOP® CLICK System
- EASY STRIP stripping and cutting tool refer to page 1004
- PEW 8.87 crimping pliers refer to page 1016
- KS 20 cable shears refer to page 999



## H01N2-D

Normative arc-welding cable

**Info**

- Arc welding cable according to EN 50525-2-81
- Formerly, VDE type NSLFFÖU



- Benefits**
- Type-compliant versions <HAR>-certified with “<HAR>” testing and certification mark for accelerated granting of approvals if final application of cable is within the European CENELEC area

- Application range**
- Use the welding cable only under consideration of EN 50565-2
  - For use on handheld electrode holder up to 100 V
  - Can be used in dry or damp rooms
  - For transmitting high currents from the electric welding device to the welding tool

- Product features**
- Flame-retardant according IEC 60332-1-2

- Norm references / Approvals**
- <HAR> H01N2-D cable type approval according to EN 50525-2-81

- Product Make-up**
- Bare copper wire according to HAR
  - Stranding approximately corresponds to class 6 up to 95 mm<sup>2</sup>, and from 120 mm<sup>2</sup> approximately to class 5 acc. to VDE 0295
  - Separator made of synthetic film or paper
  - Outer sheath: rubber compound, type EM5

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000824  
ETIM 5.0 Class-Description: Welding cable
- Conductor stranding**  
H01N2-D according to EN 50525-2-81
- Minimum bending radius**  
Flexible use: 12 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 100/100 V
- Test voltage**  
1000 V
- Current rating**  
According to VDE 0298 Part 4, table 16  
EN 50565-1/ VDE 0298-565-1
- Temperature range**  
Flexible use: -25°C to +85°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H01N2-D</b>				
2310026	10	7.7 - 9.7	96	171
2210700	16	8.8 - 11.0	153.6	198
2210701	25	10.1 - 12.7	240	305
2210702	35	11.4 - 14.2	336	415
2210703	50	13.2 - 16.5	480	555
2210704	70	15.3 - 19.2	672	765
2210705	95	17.1 - 21.4	912	1010
2210706	120	19.2 - 24.0	1152	1262
2210707	150	21,1 - 26,4	1440	1610
2210708	240	25,8 - 32,1	2304	2520

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Accessories**
- KS 20 cable shears refer to page 999

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## NSSHÖU

Mechanically robust rubber cable for mining and surface mining



### Benefits

- For use at very high mechanical stress
- Single-core design suitable for robust connection cables for welding equipment
- Not antistatic

### Application range

- For mining as well as surface mining
- Connection for moving equipment and machinery
- Under extreme environmental conditions
- Suitable for outdoor use, as well as in dry and damp interiors

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404
- High notch resistance
- Abrasion-resistant
- The outer diameters stated in the part number table are maximum values

### Norm references / Approvals

- <VDE> NSSHÖU cable type approval according to VDE 0250-812

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation: rubber compound, type 3GI3
- Inner sheath: rubber-compound, type GM1b or 5GM5
- Outer sheath: rubber compound, type 5GM5

### Info

- Mining
- Outdoors
- Oil-resistant

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Flexible use: 10 x outer diameter  
Fixed installation: 5 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Current rating**  
According to VDE 0298 Part 4, Table 15
- Temperature range**  
Flexible use: -25°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NSSHÖU-O</b>				
1600500	1 X 16	10.9	153.6	260
1600501	1 X 25	13.3	240	390
1600502	1 X 35	14.4	336	500
1600503	1 X 50	16.7	480	680
1600504	1 X 70	18.9	672	900
1600505	1 X 95	21.0	912	1150
1600506	1 X 120	23.3	1152	1440
1600507	1 X 150	25.2	1440	1750
1600508	1 X 185	28.4	1776	2180
1600509	1 X 240	31.4	2304	2790
<b>NSSHÖU-J</b>				
1600516	3 G 1.5	11.8	43.2	200
16005243	4 G 1.5	12.7	57.6	230
16005333	5 G 1.5	13.6	72	280
1600517	3 G 2.5	13.2	72	260
16005253	4 G 2.5	15.4	96	360
16005343	5 G 2.5	16.5	120	420
1600541	7 G 2.5	20.0	168	600
1600544	12 G 2.5	26.0	288	860
16005263	4 G 4	16.9	153.6	470
16005353	5 G 4	18.2	192	550
16005273	4 G 6	18.3	230.4	580
16005363	5 G 6	20.6	288	740
16005283	4 G 10	22.3	384	950
16005373	5 G 10	24.1	480	1100
16005293	4 G 16	26.1	614	1400
16005383	5 G 16	28.3	768	1720
16005303	4 G 25	31.2	960	2000
16005313	4 G 35	34.1	1344	2700
16005323	4 G 50	41.0	1920	3700

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- H07RN-F, enhanced version refer to page 92
- ÖLFLEX® CRANE VS (N)SHTÖU refer to page 163
- ÖLFLEX® CRANE PUR refer to page 164

### Accessories

- STAR STRIP stripping tool refer to page 1000
- KT cable shears refer to page 999



# NSGAFÖU 1,8/3 kV

Flexible single-conductor rubber cable with 1.8/3 kV rated voltage



**Info**

- Public transport
- Control panel internal wiring

### Benefits

- Arrangements made of single-conductor cables NSGAFÖU in accordance with VDE 0250 Part 602 with nominal voltage of at least U<sub>0</sub>/U: 1.8/3 kV can be used for short circuit-proof and short-to-ground-proof installation up to 1000 V in acc. with VDE 0100 Part 520 and VDE 0298 Part 3

### Application range

- Wiring of machines, tools, devices, appliances and control cabinets
- Railway vehicles, buses; short-circuit-proof up to 1000 V in switching stations and power distributors
- No direct burial, except of lead-through through fire separations such as sand cups
- In ducts, tubes, pipes, conduits and closed installation channels
- Bundled or for connection of movable parts

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404
- Normative rated voltage classes U<sub>0</sub>/U 0.6/1 kVac and 3.6/6 kVac available on request
- The outer diameters stated in the part number table are maximum values

### Norm references / Approvals

- <VDE> NSGAFÖU 1,8/3 kV cable type approval according to VDE 0250-602

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation: rubber compound, type 3GI3
- Outer coating: rubber compound, type 5GM3
- No outer sheath

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
Flexible use: 10 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 1.8/3 kV
- Test voltage**  
6000 V
- Current rating**  
According to VDE 0298 Part 4, Table 15
- Temperature range**  
Flexible use: -25°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NSGAFÖU 1,8/3 kV</b>				
1600300	1.5	7.0	14.4	60
1600301	2.5	7.5	24	70
1600302	4	9.0	38.4	90
1600303	6	9.5	57.6	120
1600304	10	11.0	96	180
1600305	16	13.0	153.6	250
1600306	25	15.0	240	390
1600307	35	16.5	336	470
1600308	50	18.0	480	625
1600309	70	20.5	672	880
1600310	95	24.0	912	1190
1600311	120	26.0	1152	1430
1600312	150	28.0	1440	1750
1600313	185	31.0	1776	2160
1600314	240	34.5	2304	2640
3026826	300	38.0	2880	3545

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- V 1311-A pressing pliers, hydraulic refer to page 1030
- KS 20 cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031



## NSHXAFÖ 1,8/3 kV

Halogen-free, flexible single-core rubber cable for public transport and wiring



### Info

- Public transport
- Control panel internal wiring
- Halogen-free

### Benefits

- Arrangements made of single-conductor cables NSHXAFö in accordance with VDE 0250 Part 606 with nominal voltage of at least  $U_0/U$ : 1.8/3 kV can be used for short circuit-proof and short-to-ground-proof installation up to 1000 V in acc. with VDE 0100 Part 520 and VDE 0298 Part 3

### Application range

- Wiring of machines, tools, devices, appliances and control cabinets
- Railway vehicles, buses; short-circuit-proof up to 1000 V in switching stations and power distributors
- No direct burial, except of lead-through through fire separations such as sand cups
- In ducts, tubes, pipes, conduits and closed installation channels
- Bundled or for connection of movable parts

### Product features

- The outer diameters stated in the part number table are maximum values
- Halogen-free: to protect human life and valuable assets in the event of a fire, through low smoke density and low amount of corrosive gases
- Flame-retardant according IEC 60332-1-2
- Normative rated voltage classes  $U_0/U$  0.6/1 kVac and 3.6/6 kVac available on request

### Norm references / Approvals

- <VDE> NSHXAFÖ 1,8/3 kV cable type approval according to VDE 0250-606

### Product Make-up

- Fine copper wire strands
- Core insulation: halogen-free rubber compound, type 3GI3
- Outer coating: halogen-free polymer compound, type HM3
- No outer sheath

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable



#### Conductor stranding

Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5



#### Minimum bending radius

Flexible use: 10 x outer diameter  
Fixed installation: 6 x outer diameter



#### Nominal voltage

$U_0/U$ : 1.8/3 kV



#### Test voltage

6000 V



#### Temperature range

Flexing: -5 °C to +90 °C  
Fixed installation: -25 °C to +90 °C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NSHXAFÖ 1,8/3 kV</b>				
3022673	1.5	7.0	14.4	60
3022674	2.5	7.5	24	70
3022675	4	9.0	38.4	90
3022676	6	9.5	57.6	120
3022677	10	11.0	96	180
3022678	16	13.0	153.6	250
3022679	25	15.0	240	390
3022680	35	16.5	336	470
3022681	50	18.0	480	625
3022682	70	20.5	672	880
3022683	95	24.0	912	1190
3022684	120	26.0	1152	1430
3022685	150	28.0	1440	1750
3022686	185	31.0	1776	2160
3022687	240	34.5	2304	2718
3022688	300	38.0	2880	3470

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- V 1311-A pressing pliers, hydraulic refer to page 1030
- KS 20 cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031



**H07RN8-F**

Submersible pump cable; Formerly: “ÖLFLEX® AQUA RN8”

**Info**

- Use down to 10 m depth
- Submersible pump cable
- Oil-resistant



- Benefits**
- Submersion, considering application standards, e.g. EN 50565-2
  - According to EN 50565, underwater use prohibited in areas with shipping traffic, moving water or where there is a risk of dangerous, mechanical damage
  - High stresses
  - Type-compliant versions <HAR>-certified with “<HAR>” testing and certification mark for accelerated granting of approvals if final application of cable is within the European CENELEC area

- Application range**
- According to EN 50565-2: Dry or damp rooms, as well as outdoors and in industrial water
  - For connecting mobile, electrical equipment in industrial water
  - For use with submersible pumps
  - Submersion acc. AD8 standard down to 10 m depth

- Product features**
- Flame-retardant according IEC 60332-1-2
  - Oil-resistant according to EN 60811-404
  - Flexible

- Norm references / Approvals**
- <HAR> cable type approval according to EN 50525-2-21

- Product Make-up**
- Strands of bare copper wires
  - Core insulation: rubber compound, type EI 4
  - Outer sheath: rubber compound, type EM2

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
4 to 8 x outer diameter (EN 50565-1)

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Current rating**  
VDE 0298 Part 4  
EN 50565-1 / VDE 0298-565-1

**Temperature range**  
Conductor:Fix/Moved:  
-40/-25 °C to +60 °C  
Max. water temperature: +40 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>H07RN8-F</b>				
1600600	1 X 4	7.2 - 9.0	38.4	100
1600601	1 X 6	7.9 - 9.8	57.6	120
1600602	1 X 10	9.5 - 11.9	96	200
1600604	1 X 25	12.7 - 15.8	240	400
1600606	3 G 1.5	9.2 - 11.9	43.2	170
1600609	4 G 1.5	10.2 - 13.1	57.6	205
1600620	7 G 1.5	14.0 - 17.5	100.8	385
1600607	3 G 2.5	10.9 - 14.0	72	210
1600610	4 G 2.5	12.1 - 15.5	96	260
1600621	7 G 2.5	16.5 - 20.0	168	520
1600611	4 G 4	14.0 - 17.9	153.6	356
1600612	4 G 6	15.7 - 20.0	230.4	475
1600613	4 G 10	20.9 - 26.5	384	837
1600614	4 G 16	23.8 - 30.1	614.4	1220
1600615	4 G 25	28.9 - 36.6	960	1770
1600616	4 G 35	32.5 - 41.1	1344	2304

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Packaging size: Coil ≤ 30 kg, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- H07RN-F refer to page 91
  - H07RN-F, enhanced version refer to page 92

- Accessories**
- SKINTOP® CLICK System
  - EASY STRIP stripping and cutting tool refer to page 1004
  - PEW 8.87 crimping pliers refer to page 1016
  - KS 20 cable shears refer to page 999



# ÖLFLEX® SERVO 700

Servo cable with shielded control pairs and PVC outer sheath for static use



**Info**

- Power, brake, temperature
- Fits to servo drive systems from various manufacturers
- Without overall screening

### Benefits

- One common cable for multiple circuits

### Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Industrial machinery and plant engineering
- Only for outdoor use within the indicated operating temperature range, with UV-protection
- In dry, damp or wet interiors with normal mechanical stress conditions

### Product features

- Flame retardant acc. to IEC 60332-1-2

### Norm references / Approvals

- Core based on VDE 0812/0250/0285
- Outer sheath based on VDE 0245/0285

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Control pairs 0.34 mm<sup>2</sup>, colour-coded, from 0.5 mm<sup>2</sup> black with consecutive imprinted numbering
- Control pair with laminated aluminium film and tinned-copper wire screening
- The model with one control pair does not have laminated aluminium foil (FDF).
- Core and pairs are twisted together
- PVC outer sheath, grey (RAL 7001)

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 Versions with 2 pairs or 1 star quad:  
 Power cores: black with white numbers 1-3 and GN/YE protective conductor;  
 Control cores: black with white numbers 5-8 (numbering increases in line with cross-section); 0.34 mm<sup>2</sup> pairs: WH/BR/GN/YE  
 Versions with 1 control pair:  
 Power cores: (4+7 cored): black with white numbers 3-5 or 3-8 and GN/YE protective conductor;  
 Power cores (5 cored): coloured according to VDE 0293-1  
 Control cores: black with white numbers 1-2

**Conductor stranding**  
 Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
 Occasional flexing: 20 x outer diameter  
 Fixed installation: 6 x outer diameter

**Nominal voltage**  
 Power cores: U<sub>0</sub>/U 600/1000 V  
 Control core pairs: 250 V/AC

**Test voltage**  
 Power cores:  
 C/C: 4000 V; C/S: 2000V  
 Control cores:  
 C/C: 1500 V; C/S: 750 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Occasional flexing: -5 °C to +80 °C  
 Fixed installation: -40 °C to +80 °C

### Accessories

- EPIC® POWER LS1
- SKINTOP® ST-M refer to page 712

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 700</b>				
0036140	4 G 0,75 + 2 x (2 x 0,34)	9.5	91.9	120
0036145	4 G 1,5 + 2 x (2 x 0,75)	12.1	100.6	185
0036150	4 G 2,5 + (2 x 2 x 0,75)	13.9	142.1	327
0036151	4 G 4 + (2 x 0,75 + 2 x 1,0)	15.8	217.8	423
0036152	4 G 6 + (2 x 0,75 + 2 x 1,0)	16.7	294.6	544
0036154	4 G 16 + (2 x 2 x 1,0)	23.5	668.8	1168
0036025	4 G 1,5 + (2 x 0,75)	11.7	98	149
0036001	5 G 1,5 + (2 x 0,75)	12.7	110	160
0036015	7 G 1,5 + (2 x 0,75)	12.4	144.8	210
0036026	4 G 2,5 + (2 x 0,75)	13.1	138.6	227
0036020	7 G 2,5 + (2 x 0,75)	15.2	215.7	334

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.





# ÖLFLEX® SERVO 720 CY

Screened encoder cable with PVC outer sheath for static use



**Info**

- Feedback signalling
- Fits to various encoder systems
- In EMC-sensitive environments

**Benefits**

- Thin, lightweight, reliable functionality
- Easy to install
- Total screening reduces interferences from nearby cables

**Application range**

- Analogue and incremental encoders in servo drives
- For static and occasionally flexible use
- Measurement, control and electrical applications
- Industrial machinery and plant engineering
- Only for outdoor use within the indicated operating temperature range, with UV-protection

**Product features**

- Flame-retardant according to IEC 60332.1.2

**Norm references / Approvals**

- Core based on VDE 0812/0285
- Outer sheath based on VDE 0250/0285
- This product is designed for appropriate use in a voltage range < 50 V AC or 75 V DC. Therefore, the EEC (Low Voltage Directive) does not apply

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation: Based on PVC
- Refer to "Technical Data" for the colour-codes
- Core and pairs are twisted together
- Tinned copper screen braiding (\*with drain wire)
- PVC outer sheath, grey (RAL 7001)

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 0036170 pairs: rd/bk, bn/gn, gy/pk, bl/vt; single cores: wt, bn  
 0036175 cores 0.14: wt, bn, gn, ye, gy, pk, bl, rd, bk, vt; cores 0.5: wt, bn  
 0036177 cores 0.14: wt, bn, gn, ye, gy, pk, bl, rd, bk, vt; cores 0.5: wt, bn, bl, bk  
 0036178 cores 0.5: wh, bn, gn, ye; cores 0.14 DIN 47100 from grey  
 0036181 pairs 0.14: rd/bk, bn/gn, ye/vt, gy/pk; single core 0.5: wh, bl, wtgn, bngn  
 0036168 pairs: 0.14 gn/ye, rd/bl, gy/pk; single core 0.5: wt, bn

**Peak operating voltage**  
 350 V Uss (not for power applications)  
 Nominal voltage: 48 V AC

**Conductor stranding**  
 Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>

**Minimum bending radius**  
 Occasional flexing: 20 x outer diameter  
 Fixed installation: 6 x outer diameter

**Test voltage**  
 C/C: 2000 V  
 C/S: 1000 V

**Temperature range**  
 Occasional flexing: -5°C to +70°C  
 Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 720 CY</b>				
0036170	4 x 2 x 0,25 + 2 x 1,0 *	8.9	70.8	128
0036175	10 x 0,14 + 2 x 0,5	7.9	39.3	88
0036177	10 x 0,14 + 4 x 0,5	8.0	51.1	94
0036178	15 x 0,14 + 4 x 0,5	8.7	59.7	125
0036181	4 x 2 x 0,14 + 4 x 0,5	8.1	48.8	95
0036168	3 x (2 x 0,14) + 2 x (0,5)	8.5	67	129

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® SERVO FD 798 CP refer to page 112
- Special Encoder and resolver cables refer to page 118

**Accessories**

- EPIC® SIGNAL M23 Housings
- EPIC® SIGNAL M23 Inserts
- EPIC® SIGNAL M23 Contacts, tools, accessories



# ÖLFLEX® SERVO 2YSLCY-JB

EMC-optimised motor cable, low-capacitance, double screened



**Info**

- EMC-optimised design
- 4-core design in transparent or black
- 3+3 symmetry reduces common-mode interference effects

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000057  
 ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
 Colours according to HD 308 S2  
 VDE 0293-308

**Conductor stranding**  
 Fine wire according to VDE 0295  
 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
 Core/Core: 4 kV  
 Core/Screen: 4 kV

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor  
 Protective conductor of 3+3 version is gusset-filling divided between power cores

**Temperature range**  
 Flexing: -5°C to +70°C  
 3+3 core version: -15°C to +70°C  
 Fixed installation: -40°C to +70°C

**Benefits**

- EMC-compliant installation of power drive systems conforming to EN 61800-3
- High power transmission for large drives
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Symmetrical 3+3 Version supports the reduction of bearing currents
- Versions with black outer sheath are suitable for outdoor use and direct burial

**Product features**

- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Based on VDE 0207 / 0250 / 0295

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation: PE
- Cores twisted concentrically (symmetrically splitted protective conductor of 3+3 version is gusset-filling divided between the power cores)
- Screening: wrapping of laminated aluminium foil in combination with tinned copper braiding
- 4-core version: optional transparent or black PVC outer sheath
- 3+3 core version: PVC outer sheath, black - cold flexible

**Application range**

- Connecting cable between frequency converter and motor
- In dry, damp or wet interiors
- Paper industry
- Chemical industry
- Heavy industry

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 2YSLCY-JB / 4-core version - transparent outer sheath</b>				
0036425	4 G 1.5	11.4	95	230
0036426	4 G 2.5	12.4	150	300
0036427	4 G 4	15.6	235	485
0036428	4 G 6	17.0	320	630
0036429	4 G 10	19.6	533	860
0036430	4 G 16	22.1	789	1290
0036431	4 G 25	26.3	1236	1860
0036432	4 G 35	29.5	1662	2610
0036433	4 G 50	35.8	2345	2950
0036434	4 G 70	40.3	3196	3950
0036435	4 G 95	46.5	4316	5300
0036436	4 G 120	53.2	5435	6600
0036437	4 G 150	57.3	6394	7043
0036438	4 G 185	62.3	7639	8384
<b>ÖLFLEX® SERVO 2YSLCY-JB BK / 4-core version - black outer sheath</b>				
1136450	4 G 1.5	11.4	95	230
1136451	4 G 2.5	12.4	150	300
1136452	4 G 4	15.6	235	485
1136453	4 G 6	17.0	320	630
1136454	4 G 10	19.6	533	860
1136455	4 G 16	22.1	789	1290
1136456	4 G 25	26.3	1236	1860

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1136457	4 G 35	29.5	1662	2610
1136458	4 G 50	35.8	2345	2950
1136459	4 G 70	40.3	3196	3950
1136460	4 G 95	46.5	4316	5300
1136461	4 G 120	53.2	5435	6600
1136462	4 G 150	57.3	6394	7043
1136463	4 G 185	62.3	7639	8384
<b>ÖLFLEX® SERVO 2YSLCYK-JB / 3+3 core version - black outer sheath, cold flexible</b>				
0036439	3 X 1,5 + 3 G 0,25	11.4	88	140
0036440	3 X 2,5 + 3 G 0,5	12.2	144	220
0036441	3 X 4 + 3 G 0,75	14.4	224	323
0036442	3 X 6 + 3 G 1,0	15.7	276	420
0036443	3 X 10 + 3 G 1,5	18.0	491	615
0036444	3 X 16 + 3 G 2,5	20.2	723	819
0036445	3 X 25 + 3 G 4	23.8	1136	1325
0036446	3 X 35 + 3 G 6	26.9	1535	1718
0036447	3 X 50 + 3 G 10	32.6	2156	2399
0036448	3 X 70 + 3 G 10	36.4	2871	3056
0036449	3 X 95 + 3 G 16	42.0	3953	4162
0036450	3 X 120 + 3 G 16	47.8	4836	5074
0036451	3 X 150 + 3 G 25	51.6	5412	6128
0036479	3 X 185 + 3 G 35	56.5	7041	7500
0036453	3 X 240 + 3 G 50	65.1	8986	9770

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® SERVO 9YSLCY-JB refer to page 104

**Accessories**

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733



# ÖLFLEX® SERVO 719 CY

Screened, low capacitive servo cable with PVC outer sheath for static use - certified for North America

**Info**

- Successor of ÖLFLEX® SERVO 700 CY and ÖLFLEX® SERVO 709 CY
- Low-capacitance design
- EMC-compliant



- Benefits**
- Suitable for use with servomotor product lines from leading drive manufacturers
  - Longer cable installation lengths thanks to low mutual capacitance cable design
  - Multi-standard certification reduces part varieties and saves costs
  - Space and weight-saving installations due to small cable diameters
  - Copper braiding screens the cable against electromagnetic interference

- Application range**
- Connecting cable between servo controller and motor
  - For static and occasionally flexible use
  - Plant engineering
  - Industrial machinery and machine tools
  - Printing machines

- Product features**
- Low capacitance
  - Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
  - Oil-resistant
  - EMC-compliant

- Norm references / Approvals**
- USA: UL AWM Style 2570 Canada: cUL AWM Style I/II A/B FT1
  - UL File No. E63634

- Product Make-up**
- Fine-wire, bare copper conductor
  - Core insulation: polypropylene (PP)
  - Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
  - Tinned copper screen braiding
  - PVC outer sheath, orange (RAL 2003)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Single-paired versions: black; white  
Double-paired versions: black with white numbers 5; 6; 7; 8  
0,34mm<sup>2</sup> pairs: WH/BN/GN/YE

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
Power cores and control cores: IEC U<sub>0</sub>/U: 600/1000 V  
UL & CSA: 1000 V

**Test voltage**  
Core/Core: 4 kV  
Core/Screen: 4 kV

**Protective conductor**  
G = with GN-YE protective conductor

**Temperature range**  
Occasional flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 719 CY</b>				
1020010	4 G 1,5	8.4	83	130
1020011	4 G 2,5	9.9	125	190
1020012	4 G 4	11.7	191	273
1020013	4 G 6	13.7	290	394
1020014	4 G 10	16.7	452	581
1020015	4 G 16	20.1	721	884
1020016	4 G 25	24.3	1100	1348
1020017	4 G 35	27.7	1548	1840
1020018	4 G 50	33.7	2151	2645
1020019	4 G 1,5 + (2 x 1,5)	11.5	146	242
1020020	4 G 2,5 + (2 x 1,5)	12.9	189	306
1020021	4 G 4 + (2 x 1,5)	15.0	271	420
1020022	4 G 6 + (2 x 1,5)	17.0	351	529
1020023	4 G 10 + (2 x 1,5)	19.5	540	752
1020024	4 G 0,75 + 2 x (2 x 0,34)	9.7	99	163
1020025	4 G 1,5 + 2 x (2 x 0,75)	12.3	150	245
1020026	4 G 2,5 + 2 x (2 x 1,0)	14.7	223	357
1020027	4 G 4 + 2 x (2 x 1,0)	16.4	288	452
1020028	4 G 4 + (2 x 1,0) + (2 x 1,5)	16.6	307	469
1020029	4 G 6 + (2 x 1,0) + (2 x 1,5)	18.5	421	617
1020030	4 G 10 + (2 x 1,0) + (2 x 1,5)	22.1	588	852
1020031	4 G 16 + 2 x (2 x 1,5)	25.0	876	1162
1020032	4 G 25 + 2 x (2 x 1,5)	28.7	1227	1590
1020033	4 G 35 + 2 x (2 x 1,5)	30.6	1652	2023
1020034	4 G 50 + 2 x (2 x 2,5)	37.0	2264	2876

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

- Accessories**
- EPIC® POWER LS1
  - SKINTOP® MS-M BRUSH refer to page 733

Servo applications • PVC sheath, certified



## ÖLFLEX® SERVO 9YSLCY-JB

EMC-optimised motor cable, low-capacitance, double-screened, certified



**Info**

- EMC-optimised design
- 3+3 symmetry reduces common-mode interference effects
- AWM certification for USA and Canada

### Benefits

- EMC-compliant installation of power drive systems conforming to EN 61800-3
- High power transmission for large drives
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Symmetrical 3+3 Version supports the reduction of bearing currents
- 9YSLCY black design: also for outdoor applications, as well as buried underground, but not for USA or Canada

### Application range

- Connecting cable between frequency converter and motor
- In dry, damp or wet interiors
- Paper industry
- Chemical industry
- Heavy industry

### Product features

- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- EN/VDE +90° C PP insulation

### Norm references / Approvals

- USA: AWM Style 2570 or 20886, 1kV 80°C VW-1  
Canada: AWM I/II A/B 1kV 80°C FT1
- UL File No. E63634
- Based on VDE 0276, 0250, 0207

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: polypropylene (PP)
- Cores twisted concentrically (symmetrically splitted protective conductor of 3+3 version is gusset-filling divided between the power cores)
- Screening: wrapping of laminated aluminium foil in combination with tinned copper braiding
- 4-core design: transparent PVC outer sheath
- 3+3 core version: PVC outer sheath, black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable

**Core identification code**  
Colours according to HD 308 S2  
VDE 0293-308

**Conductor stranding**  
Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC U<sub>0</sub>/U: 600/1000 V  
UL & CSA: 1000 V

**Test voltage**  
4000 V

**Protective conductor**  
Protective conductor of 3+3 version is gusset-filling divided between power cores

**Temperature range**  
Flexing:  
IEC: transparent -5°C to +70°C  
IEC: black -5°C to +90°C  
UL/CSA: -5°C to +80°C  
Fixed installation:  
IEC: transparent -40°C to +80°C  
IEC: black -40°C to +90°C  
UL/CSA: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 9YSLCY-JB / 4-core version - transparent outer sheath</b>				
0037000	4 G 1,5	10.5	87	230
0037001	4 G 2,5	11.8	133	300
0037002	4 G 4	13.3	213	485
0037003	4 G 6	14.9	298	630
0037004	4 G 10	17.7	460	860
0037005	4 G 16	21.5	707	1290
0037006	4 G 25	26.3	1100	1860
0037007	4 G 35	29.7	1542	2610
0037008	4 G 50	34.1	2206	2950
0037009	4 G 70	40.9	3002	3950
0037010	4 G 95	45.4	4004	5300
0037011	4 G 120	49.8	5108	6600
0037012	4 G 150	56.1	6225	7043
0037013	4 G 185	61.4	7568	8384
0037014	4 G 240	67.9	9940	12150

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO 9YSLCY-JB / 3+3 core version - black outer sheath</b>				
0037015	3 X 1,5 + 3 G 0,25	11.4	88	140
0037016	3 X 2,5 + 3 G 0,5	12.9	130	220
0037017	3 X 4 + 3 G 0,75	13.6	224	323
0037018	3 X 6 + 3 G 1,0	15.2	276	420
0037019	3 X 10 + 3 G 1,5	17.4	511	615
0037020	3 X 16 + 3 G 2,5	20.0	751	819
0037021	3 X 25 + 3 G 4	24.3	1204	1325
0037022	3 X 35 + 3 G 6	27.5	1535	1718
0037023	3 X 50 + 3 G 10	31.1	2156	2399
0037024	3 X 70 + 3 G 10	37.1	2980	3056
0037025	3 X 95 + 3 G 16	40.0	3953	4162
0037026	3 X 120 + 3 G 16	42.6	4836	5074
0037027	3 X 150 + 3 G 25	50.0	5412	6128
0037028	3 X 185 + 3 G 35	55.6	7077	7820

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO 2YSLCY-JB refer to page 102

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733



# ÖLFLEX® SERVO 7DSL

Low capacitive hybrid servo cable with PVC outer sheath for static use - certified for North America

**Info**

- OCS - One Cable Solution
- Suitable for Hiperface DSL® motor-feedback systems
- EMC-compliant



### Benefits

- Only one connection line between drive and motor-feedback system. Instead of the encoder cable an integrated DSL pair takes over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Multi-standard certification reduces part varieties and saves costs
- Easy to install

### Application range

- For fixed installation or applications with occasional movements
- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

### Product features

- Maximum DSL transmission length: 100m
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant
- Low-capacitance design
- EMC-optimised design

### Norm references / Approvals

- USA: UL AWM Style 2570
- Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor (power cores and control pair) and 7-wire, tinned copper conductor (signal pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL signal pair twisted together
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Signal pair: white, blue  
Control pair (optional): black with white numbers 5 + 6

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5  
DSL pair: 7-wired

**Minimum bending radius**  
For flexible use: 15 x outer diameter  
Fixed installation: 5 x outer diameter

**Nominal voltage**  
Power and control: IEC: U<sub>0</sub>/U: 600/1000 V  
UL: 1000 V  
Signal pair: 300 V

**Test voltage**  
Power and control: 4 kV  
Signal pair: 1kV

**Protective conductor**  
G = with GN-YE protective conductor

**Temperature range**  
Flexing: -5°C to +70°C (UL: +80°C)  
Fixed installation: -40°C to +70°C (UL: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Hybrid cables for fixed installation</b>				
1023290	4 G 1,5 + (2 x 22AWG)	11.2	110	194
1023291	4 G 2,5 + (2 x 22AWG)	12.6	148	253
1023292	4 G 4 + (2 x 22AWG)	14.0	208	332
1023293	4 G 1,5 + (2 x 1,0) + (2 x 22AWG)	13.2	140	250
1023294	4 G 2,5 + (2 x 1,0) + (2 x 22AWG)	14.0	185	285
1023295	4 G 4 + (2 x 1,0) + (2 x 22AWG)	15.8	248	390

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
HIPERFACE DSL® is a registered trademark of SICK AG  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO 719 CY refer to page 103

### Accessories

- Protective cable conduit systems and cable carrier systems
- Circular connectors



## SERVO cables in acc. to SIEMENS® Standard 6FX 5008-

Motor and resolver/encoder cables - certified



**Info**

- Servo drives
- EMC-compliant

### Benefits

- Motor & servo motor cables up to 6 mm<sup>2</sup>: low capacitance characteristics due to PP insulation
- Multi-standard certification reduces part varieties and saves costs

### Application range

- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Plant engineering
- Industrial machinery and machine tools
- Printing machines

### Product features

- Oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- EMC-compliant

### Norm references / Approvals

- Power cable: VDE-registered UL/CSA AWM Style 2570
- Signal cables: UL/CSA AWM style 2502
- UL File No. E63634

### Product Make-up

- Design according to SIEMENS® standard 6FX 5008
- Core insulation: up to 6 mm<sup>2</sup> = PP; 10 mm<sup>2</sup> and larger = PVC
- Core and pairs are twisted together
- Tinned-copper braiding
- Outer sheath made of special PVC compound
- Signal cables: green (RAL 6018)
- Motor and servomotor cables: orange (RAL 2003)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
For fixed installation: 5 x outer diameter  
For flexible use: 15 x outer diameter

**Nominal voltage**  
Signal cables: 30 V AC (IEC)  
30 V AC/DC (UL/CSA)  
Power cable: - Power cores: U<sub>0</sub>/U 600/1000 V (IEC)  
1000 V (UL/CSA)  
- Control cores: 30 V AC (IEC)  
1000 V (UL/CSA)

**Test voltage**  
Power cable: Power cores: 4000 V  
Control cores: 2000 V  
Signal cables: 500 V

**Temperature range**  
Fixed installation: -20°C to +80°C  
Flexing: from -0°C to +60°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Signal cables</b>					
0025724	4 x 2 x 0,38 + 4 x 0,5	6FX5008-1BD21	9.0	76.4	120
0025725	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5	6FX5008-1BD41	8.9	63	100
0025726	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,23	6FX5008-1BD51	9.5	69	139
<b>Motor cables</b>					
00257001	4 G1.5	6FX5008-1BB11 LC	8.0	88	131
00257011	4 G2.5	6FX5008-1BB21 LC	9.6	132	219
00257021	4 G4	6FX5008-1BB31 LC	11.0	195	312
00257031	4 G6	6FX5008-1BB41 LC	13.1	280	380
0025704	4 G10	6FX5008-1BB51	19.3	445	620
0025705	4 G16	6FX5008-1BB61	23.3	715	1060
0025706	4 G25	6FX5008-1BB25	26.9	1110	1640
0025707	4 G35	6FX5008-1BB35	30.3	1540	2310
0025708	4 G50	6FX5008-1BB50	36.5	2160	3240
<b>Servo cables</b>					
00257151	4 G 1,5 + (2 x 1,5)	6FX5008-1BA11 LC	10.4	150	248
00257161	4 G 2,5 + (2 x 1,5)	6FX5008-1BA21 LC	12.0	194	310
00257171	4 G 4 + (2 x 1,5)	6FX5008-1BA31 LC	13.6	272	445
00257181	4 G 6 + (2 x 1,5)	6FX5008-1BA41 LC	15.6	351	554
0025719	4 G 10 + (2 x 1,5)	6FX5008-1BA51	21.0	536	806

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 110
- SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS refer to page 114

### Accessories

- Circular connectors
- SKINTOP® EMC/Earthing



## SERVO Cables in acc. to SEW® Standard

Screened, low capacitive servo cable with PVC outer sheath for static use - certified for North America

**Info**

- Servo drives
- EMC-compliant



### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Specially designed to connect SEW servomotors
- Connecting cable between servo controller and motor
- For static and occasionally flexible use
- Industrial machinery and machine tools
- Plant engineering

### Product features

- Oil-resistant
- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 2570
- UL File No. E63634

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: TPE
- Control core triplet with laminated aluminium film and a layer of tinned-copper wires
- Cores twisted in short lay lengths
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Power: black cores with U, VV, WWW printing and 1 core gnye  
Control cores: black cores with numbers 1, 2 and 3
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
Power cores: IEC 750 V, UL 600 V  
Control cores: IEC 350 V, UL 600 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor
- Temperature range**  
Flexing: -10°C to +80°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Servo cables</b>				
0038060	4 G 1,5 + (3 x 1,0)	11.8	151	300
0038061	4 G 2,5 + (3 x 1,0)	13.4	212.9	370
0038062	4 G 4 + (3 x 1,0)	15.0	281.8	476
0038063	4 G 6 + (3 x 1,5)	17.0	392.8	625
0038064	4 G 10 + (3 x 1,5)	20.0	625.1	1024

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SEW® is a registered trademark of SEW Eurodrive GmbH & Co KG, Ernst-Blickle Str. 42, D-76646 Bruchsal  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733



## ÖLFLEX® SERVO FD 781 CY

Screened, low capacitive servo cable with PVC outer sheath for flexible power chain application



**Info**

- Core Line for ordinary duty in power chain applications
- EMC-compliant

### Benefits

- Well-proven and reliable
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- Connecting cable between Frequency converter and motor
- In power chains or moving machine parts
- For power circuits in machine cabling
- In dry, damp or wet interiors with normal mechanical stress conditions
- Only for outdoor use within the indicated operating temperature range, with UV-protection

### Product features

- Oil-resistant
- Flame retardant acc. to IEC 60332-1-2
- Low-adhesive surface
- Designed for 5 million alternating bending cycles and travel distances up to 10 meter

### Norm references / Approvals

- Based on VDE 0250 / 0285
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Cores twisted in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
Flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
Core/Core: 4 kV  
Core/Screen: 4 kV
- Protective conductor**  
G = with gn-ye protective conductor
- Alternating bending cycles**  
5 mio. cycles
- Temperature range**  
Flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO FD 781 CY</b>				
0036320	4 G 1.5	9.8	89	157
0036321	4 G 2.5	11.9	133.8	233
0036322	4 G 4	13.5	210.9	335
0036324	4 G 10	19.7	488.2	747
0036325	4 G 16	23.9	744.8	1109
0036327	4 G 35	33.3	1565.4	2264
0036328	4 G 50	38.3	2174.9	3090

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 110
- SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS refer to page 114

### Accessories

- Rectangular connectors
- EPIC® POWER LS1
- SKINTOP® EMC/Earthing





## ÖLFLEX® SERVO FD 796 P

Servo cable with PUR outer sheath for highly dynamic power chain application - certified for North America

**Info**

- Extended Line for heavy duty in power chain applications
- AWM certification for USA and Canada
- VDE-tested characteristics



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Multi-standard certification reduces part varieties and saves costs

### Application range

- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- VDE - reg - no. 8591 (from 4G1,5) UL AWM Style 20234 cULus AWM I/II A/B, 1000V 80° FT1 CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- According to P/N individual design: Power cores with one or with two control pair(s), twisted together in short lay length
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Power cores: black with marking U/ L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Single-paired versions: black; white  
Double-paired versions: black with white numbers 5; 6; 7; 8  
0,34mm<sup>2</sup> pairs: WH/BN/GN/YE

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
For flexible use:  
7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC U<sub>0</sub>/U: 600/1000 V  
UL & CSA: 1000 V

**Test voltage**  
Core/Core: 4 kV  
Core/Screen: 2 kV

**Protective conductor**  
G = with GN-YE protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing:  
-40°C to +90°C (UL/CSA: +80°C)  
Fixed installation:  
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO FD 796 P</b>				
0025319	4 G 1,5 + (2 x 1,5)	11,7	99	217
0025320	4 G 2,5 + (2 x 1,5)	13,1	134	270
0025321	4 G 4 + (2 x 1,5)	14,2	195	333
0025322	4 G 6 + (2 x 1,5)	16	272	403
0025323	4 G 10 + (2 x 1,5)	18,4	425	581
0025324	4 G 16 + (2 x 1,5)	22,1	656	887
0025326	4 G 0,75 + 2 x (2 x 0,34)	10,9	54	143
0025327	4 G 1,5 + 2 x (2 x 0,75)	12,3	103	209
0025328	4 G 2,5 + 2 x (2 x 1,0)	14,3	152	306
0025312	4 G 4 + 2 x (2 x 1,0)	15,4	218	381
0025329	4 G 4 + (2 x 1,0) + (2 x 1,5)	15,6	231	388
0025330	4 G 6 + (2 x 1,0) + (2 x 1,5)	17,1	308	460

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 110

### Accessories

- Protective cable conduit systems and cable carrier systems
- Circular connectors



## ÖLFLEX® SERVO FD 796 CP

Screened servo cable with PUR outer sheath for highly dynamic power chain application - certified



**Info**

- Extended Line for heavy duty in power chain applications
- AWM certification for USA and Canada
- VDE-tested characteristics

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with servomotor product lines from leading drive manufacturers
- Longer cable connection possible between frequency converter and drive due to low capacitance design
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- VDE - Reg. - No. 8591
- UL AWM Style 20234
- cULus AWM I/II A/B, 1000V 80° FT1
- CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Optional designs with one pair of control cores: black; white  
Two pairs of control cores: black with white numbers: 5, 6, 7, 8

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
For flexible use:  
7.5 x outer diameter (1.5-16 mm<sup>2</sup>)  
10 x outer diameter (25-50 mm<sup>2</sup>)  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
Power cores and control cores:  
IEC U<sub>0</sub>/U: 600/1000 V  
UL & CSA: 1000 V

**Test voltage**  
Core/Core: 4 kV  
Core/Screen: 2 kV

**Protective conductor**  
G = with GN-YE protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing:  
-40°C to +90°C (UL/CSA: +80°C)  
Fixed installation:  
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO FD 796 CP</b>				
0027950	4 G 1,5	9,1	79	140
0027951	4 G 2,5	10,6	129	197
0027952	4 G 4	11,9	186	268
0027953	4 G 6	14,5	296	397
0027954	4 G 10	17,5	449	591
0027955	4 G 16	21,6	716	955
0027956	4 G 25	25,2	1073	1337
0027957	4 G 35	28,6	1480	1769
0027958	4 G 50	33,4	2115	2468
0027959	4 G 1,5 + (2 x 1,5)	11,6	135	261
0027960	4 G 2,5 + (2 x 1,5)	13,4	188	318
0027961	4 G 4 + (2 x 1,5)	14,8	235	385
0027962	4 G 6 + (2 x 1,5)	16,8	329	486
0027963	4 G 10 + (2 x 1,5)	19,4	515	701
0027964	4 G 16 + (2 x 1,5)	23,1	757	1048
0027965	4 G 25 + (2 x 1,5)	26,6	1147	1532
0027966	4 G 35 + (2 x 1,5)	30,9	1538	2097
0027967	4 G 50 + (2 x 1,5)	34	2181	2721
0027969	4 G 1,5 + 2 x (2 x 0,75)	12,2	155	313

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0027970	4 G 2,5 + 2 x (2 x 1,0)	14,6	212	395
0027980	4 G 4 + 2 x (2 x 1,0)	16,1	274	466
0027971	4 G 4 + (2 x 1,0) + (2 x 1,5)	16,3	339	485
0027972	4 G 6 + (2 x 1,0) + (2 x 1,5)	18,1	441	588
0027973	4 G 10 + (2 x 1,0) + (2 x 1,5)	21,8	606	819
0027974	4 G 16 + 2 x (2 x 1,5)	25,5	797	1135
0027975	4 G 25 + 2 x (2 x 1,5)	28,8	1182	1559
0027976	4 G 35 + 2 x (2 x 1,5)	30,9	1583	2093
0027977	4 G 50 + 2 x (2 x 2,5)	36,3	2252	2920

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- Circular connectors
- SKINTOP® EMC/Earthing



## ÖLFLEX® SERVO FD 798 CP

Screened encoder cable with PUR outer sheath for highly dynamic power chain application - certified



**Info**

- Extended Line for heavy duty in power chain applications
- Fits to various encoder systems
- AWM certification for USA and Canada

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Suitable for use with encoders & resolvers from leading manufacturers
- Thin, optimised for weight and volume
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and speed generators
- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Abrasion and notch-resistant
- Oil-resistant

### Norm references / Approvals

- UL AWM Style 20236
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire or extra-fine wire, tinned-copper conductor
- Core insulation: polypropylene (PP)
- Cores (or core pairs) twisted in layers or bundles
- Refer to data sheet for more details
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Details see datasheet ÖLFLEX® SERVO FD 798 CP
- Conductor stranding**  
Fine wire or extra-fine wire
- Minimum bending radius**  
Flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: 30 V  
UL & CSA: 30 V
- Test voltage**  
Core/core: 1500 V rms  
Core/screen: 750 V rms
- Alternating bending cycles**  
10 mio. cycles
- Temperature range**  
Flexing:  
-40°C to +90°C (UL/CSA: +80°C)  
Fixed installation:  
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO FD 798 CP</b>				
0036910	4x2x0,34+4x0,5	8,9	79	125
0036911	3x(2x0,14)+2x(0,5)	8,9	70	120
0036912	3x(2x0,14)+4x0,14+2x0,5	8,8	68	110
0036913	3x(2x0,14)+4x0,14+2x0,5+4x0,22	9,4	80	130
0036914	9x0,5	8,8	71	110
0036915	4x2x0,25+2x1,0	8,8	63	109
0036916	6x2x0,25+2x0,5	10,3	67	121
0036917	10x0,14+2x0,5	7,7	41	82
0036918	10x0,14+4x0,5	8,1	54	98
0036920	4x2x0,14+4x0,5	8,2	51	95
0036921	4x2x0,25	7,6	38	75
0036923	8x2x0,18	7,8	51	85
0036924	4x2x0,18	6,4	30	52
0036926	12x0,22	6,9	44	73
0036927	4x2x0,25+2x0,5	8,5	62	98
0036928	2x2x0,14+2x(2x0,14)+4x0,5+(4x0,14)	9,1	79	135
0036929	2x(2x0,25)+2x0,5	8,7	46	98
0036930	2x2x0,25+2x0,5	7,3	38	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
DESINA® is a registered trademark of the German Machine Tool Builders' Association  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Circular connectors
- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® SERVO FD 7DSL

Low capacitive hybrid servo cable with PUR outer sheath for highly dynamic power chain application - certified

**Info**

- OCS - One Cable Solution
- Suitable for Hiperface DSL® motor-feedback systems
- Extended Line for heavy duty in power chain applications



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable an integrated DSL pair takes over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 20m.
- Maximum DSL transmission length: 100m
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Low-capacitance design
- Oil-resistant

### Norm references / Approvals

- UL AWM Style 21223 cRU AWM I/II A/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine-wire, bare copper conductor (power cores and control pair) and 19-wire, tinned copper conductor (signal pair)
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores without or with one screened control pair and one DSL signal pair twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor  
Signal pair: white, blue  
Control pair (optional): black with white numbers 5 + 6

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6  
DSL pair: 19-wired

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 5 x outer diameter

**Nominal voltage**  
Power and control: IEC: U<sub>0</sub>/U: 600/1000 V  
UL: 1000 V  
Signal pair: 300 V

**Test voltage**  
Power and control: 4 kV  
Signal pair: 1kV

**Protective conductor**  
G = with GN-YE protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing: -40°C to +90°C (UL: +80°C)  
Fixed installation: -50°C to +90°C (UL: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SERVO FD 7DSL</b>				
<b>Hybrid cables for power chain applications</b>				
1023275	4 G 1,5 + (2 x 22AWG)	11,2	115	198
1023276	4 G 2,5 + (2 x 22AWG)	12,6	160	269
1023277	4 G 4 + (2 x 22AWG)	14	218	343
1023274	4 G 1 + (2 x 0,75) + (2 x 22AWG)	11,8	133	202
1023278	4 G 1,5 + (2 x 1,0) + (2 x 22AWG)	13,2	152	256
1023279	4 G 2,5 + (2 x 1,0) + (2 x 22AWG)	14	195	313
1023280	4 G 4 + (2 x 1,0) + (2 x 22AWG)	15,8	268	407

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
HIPERFACE DSL® is a registered trademark of SICK AG  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO 7DSL refer to page 105
- ÖLFLEX® SERVO FD 796 CP refer to page 110

### Accessories

- Protective cable conduit systems and cable carrier systems
- Circular connectors



## SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS

Motor and resolver/encoder cables - certified



**Info**

- Servo drives
- PUR outer sheath
- EMC-compliant

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT1

### Norm references / Approvals

- Power cable: VDE-registered UL AWM Style 21223 CSA AWM I/II, A/B 1000 V 80° FT 1
- Signal cables: UL/CSA AWM Style 20236
- UL File No. E63634
- For horizontal travel distances up to 100m
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine strand made of copper wires:
  - > Signal cables: tinned
  - > Power cables: bare
- Core insulation: polypropylene (PP)
- Tinned-copper braiding
- PUR outer sheath
- Signal cables: green (RAL 6018)
- Servo cable: orange (RAL 2003)
- Refer to data sheet for more details

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Details see datasheet

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
Power cable:  
Fixed: 4 x Diameter  
Dynamic: 1.5 mm<sup>2</sup> - 16 mm<sup>2</sup>: 7.5 x Diameter  
25 mm<sup>2</sup> - 50 mm<sup>2</sup>: 10 x Diameter  
Signal cable:  
Fixed: 4 x Diameter  
Dynamic: 8 x Diameter

**Nominal voltage**  
Signal cables: 30 V AC/DC  
Power cable:  
- Power cores: U<sub>0</sub>/U 600/1000 V (IEC) 1000 V (UL/CSA)  
- Control cores: 24 V AC/DC (IEC) 1000 V (UL/CSA)

**Test voltage**  
Power cable: 4 KV  
Signal cables: 500 V

**Protective conductor**  
G = with GN-YE protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing: -20°C to +60°C  
Fixed installation: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Feedback / signal cables</b>					
00277101	8 x 2 x 0,18	6FX8008-1BD11	7,8	54	85
00277111	4 x 2 x 0,38 + 4 x 0,5	6FX8008-1BD21	8,9	77	120
00277121	3 x (2 x 0,14) + 2 x (0,5)	6FX8008-1BD31	8,9	69	113
00277131	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5	6FX8008-1BD41	8,8	66	101
00277141	3 x (2 x 0,14) + 4 x 0,14 + 2 x 0,5 + 4 x 0,22	6FX8008-1BD51	9,4	86	139
00277151	4 x 2 x 0,18	6FX8008-1BD61	6,4	34.25	53
00277161	2 x 2 x 0,18	6FX8008-1BD71	5	23.1	36
00277171	12 x 0,22	6FX8008-1BD81	6,9	48	76
00277992	2 x 2 x 0,15 + 1 x 2 x 0,38	6FX8008-2DC00	7,2	39	67
<b>Motor cables</b>					
0027784	4 G1.5	6FX8008-1BB11-Plus	9,1	90	150
0027785	4 G2.5	6FX8008-1BB21-Plus	10,6	132	220
0027786	4 G4	6FX8008-1BB31-Plus	11,9	204	300
0027787	4 G6	6FX8008-1BB41-Plus	14,5	315	450
0027788	4 G10	6FX8008-1BB51-Plus	17,5	488	660
0027789	4 G16	6FX8008-1BB61-Plus	21,6	769	1010
<b>Servo cables</b>					
0027790	4 G 1,5 + (2 x 1,5)	6FX8008-1BA11-Plus	11,6	146	230
0027791	4 G 2,5 + (2 x 1,5)	6FX8008-1BA21-Plus	13,4	187	300

Article number	Number of cores and mm <sup>2</sup> per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0027792	4 G 4 + (2 x 1,5)	6FX8008-1BA31-Plus	14,8	258	380
0027793	4 G 6 + (2 x 1,5)	6FX8008-1BA41-Plus	16,8	365	530
0027794	4 G 10 + (2 x 1,5)	6FX8008-1BA51-Plus	19,4	560	765
0027795	4 G 16 + (2 x 1,5)	6FX8008-1BA61-Plus	23,1	816	1090
0027796	4 G 25 + (2 x 1,5)	6FX8008-1BA25-Plus	26,6	1166	1530
0027797	4 G 35 + (2 x 1,5)	6FX8008-1BA35-Plus	30,9	1554	2040
0027798	4 G 50 + (2 x 1,5)	6FX8008-1BA50-Plus	34	2188	2760

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only

Cables for power chain use should only be handled on drums prior to installation.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® SERVO FD 796 CP refer to page 110

**Accessories**

- Circular connectors
- SKINTOP® EMC/Earthing

Power chain applications • Servo applications - power drive systems, certified



## SERVO cables in acc. to INDRAMAT® Standard INK

Motor and resolver/encoder cables - certified



**Info**

- Servo drives
- PUR outer sheath
- EMC-compliant

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

### Product features

- Designed for 5 million alternating bending cycles
- For horizontal travel distances up to 100m
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT1

### Norm references / Approvals

- Power cable:  
UL Style 20234, CSA AWM I/II A/B
- Signal cables:  
UL Style 20236, CSA AWM I/II A/B
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- In accordance with INDRAMAT® standard INK (also suitable for pre-assembled versions, IKS and IKG)
- Core insulation: TPE
- Refer to data sheet for more details
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Details see datasheet

**Conductor stranding**  
Extra-fine wire according to IEC 60228 class 6

**Minimum bending radius**  
Power cable:  
Fixed installation: 4 x outer diameter  
For flexible use: 7.5 x outer diameter  
Signal cables:  
Fixed installation: 5 x outer diameter  
For flexible use: 10 x outer diameter

**Nominal voltage**  
Power cable:  
- Power cores:  
U<sub>0</sub>/U 600/1000 V (IEC)  
1000 V (UL/CSA)  
- Control cores:  
250 V AC (IEC)  
1000 V (UL/CSA)  
Signal cables:  
300 V (IEC), 300 V (UL/CSA)

**Test voltage**  
Power cable:  
Power cores: 4000 V  
Control cores: 2000 V  
Signal cables: 500 V

**Protective conductor**  
G = with GN-YE protective conductor

**Alternating bending cycles**  
5 mio. cycles

**Temperature range**  
Fixed installation: -50°C to +80°C  
Flexing: -30°C to +80°C

### Similar products

- ÖLFLEX® SERVO FD 796 CP refer to page 110

Article number	Number of cores and mm <sup>2</sup> per conductor	Reference article no.	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Feedback / encoder / resolver cables</b>					
7072400	4 x 2 x 0,25 + 2 x 1,0	INK-0209	8,8	74	120
7072401	4 x 2 x 0,25 + 2 x 0,5	INK-0448	8,5	70	100
7072402	9 x 0,5	INK-0208	8,8	75	126
7072414	4 x 1,0 + 4 x 2 x 0,14 + 4 x 0,14	INK-0532	9,7	81	140
7072415	2 x (2 x 0,25) + 2 x 0,5	INK-0234	8,7	46	90
7072416	2 x 2 x 0,25 + 2 x 0,5	INK-0750	7,6	35	92
<b>Servo cables</b>					
7072417	4 G 0,75 + 2 x 0,5	INK-0670	10	73	132
7072403	4 G 1,0 + 2 x (2 x 0,75)	INK-0653	11,5	170	226
7072404	4 G 1,5 + 2 x (2 x 0,75)	INK-0650	12,2	189	268
7072405	4 G 2,5 + 2 x (2 x 1,0)	INK-0602	15,1	212	320
7072406	4 G 4 + (2 x 1,0) + (2 x 1,5)	INK-0603	16	306	470
7072407	4 G 6 + (2 x 1,0) + (2 x 1,5)	INK-0604	18,8	366	600
7072408	4 G 10 + (2 x 1,0) + (2 x 1,5)	INK-0605	22	565	850
7072409	4 G 16 + 2 x (2 x 1,5)	INK-0606	25,2	838	1020
7072410	4 G 25 + 2 x (2 x 1,5)	INK-0607	28	1231	1420

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Indramat part designations (IKG, IKS, INK, INS, RKL and RKG) are registered trademarks of Bosch Rexroth AG, and are listed for comparison purposes only.

Cables for power chain use should only be handled on drums prior to installation.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.





## SERVO cables in acc. to LENZE® Standard

Motor and resolver/encoder cables - certified

**Info**

- Servo drives
- For static or highly flexible use
- EMC-compliant



### Benefits

- Motor cables with low-capacitance
- Multi-standard certification reduces part varieties and saves costs

### Application range

- Connecting cable between servo controller and encoder/resolver
- Connecting cable between servo controller and motor
- Plant engineering
- Assembly lines, production lines, in all kinds of machines

### Norm references / Approvals

- Resolver and encoder cable:
  - UL AWM Style 2464 for fixed installation versions,
  - UL AWM Style 21165 for highly flexible applications,
  - CSA AWM I/II A/B
- Motor cable:
  - UL AWM Style 2570 for fixed installation version,
  - UL AWM Style 20940 for high flexibility use,
  - CSA AWM I/II A/B
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Design according to LENZE® standard:
- Designs for fixed installation:
  - PVC outer sheath, PP core insulation.
- Designs for highly flexible use:
  - PUR outer sheath, TPE core insulation
- Refer to data sheet for more details
- Signal cables: green (RAL 6018)
- Servo cable: orange (RAL 2003)

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 Encoder cables  
 - 7072508 (fixed installation) bk/ye+bk/gn+bk/rd+bk/bu+bk/wh  
 - 7072517 (flexible use) gn/ye+bu/rd+gy/pk+bk/vt+bn/wh  
 Resolver cables:  
 - 7072507 (fixed installation) bk/ye+bk/gn+bk/rd+bk/wh  
 - 7072516 (flexible use) gn/ye+bu/rd+gy/pk+bn/wh

**Minimum bending radius**  
 Flexible use: 10 x outer diameter  
 Fixed installation: 7.5 x outer diameter

**Nominal voltage**  
 Signal cables:  
 30 V (VDE), 300 V (UL/CSA)  
 Power cables:  
 - Power cores: U<sub>0</sub>/U 0.6/1 kV (VDE), 600 V (UL/CSA)  
 - Control cores: 24 V (VDE) 600 V (UL/CSA)

**Test voltage**  
 Signal cable: 1.5 kV  
 Motor cable:  
 - Power cores: 4 kV  
 - Control cores: 2 kV

**Protective conductor**  
 G = with GN-YE protective conductor

**Temperature range**  
 Flexing: -5°C to +70°C  
 Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Motor cables for fixed installation</b>				
7072500	4 G 1,0 + (2 x 0,5)	10	81	128
7072501	4 G 1,5 + (2 x 0,5)	11,2	106	173
7072502	4 G 2,5 + (2 x 0,5)	12,3	153	244
<b>Screened encoder cable with PVC outer sheath for static use</b>				
7072507	3 x (2 x 0,14) + 1 x (2 x 0,5)	9,3	43	91
7072508	4 x (2 x 0,14) + 1 x (2 x 1,0)	11	65	136
<b>Motor cables for power chain application</b>				
7072509	4 G 1,0 + (2 x 0,5)	10	81	151
7072510	4 G 1,5 + (2 x 0,5)	11,5	106	192

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
7072511	4 G 2,5 + (2 x 0,5)	13,2	153	271
7072512	4 G 4 + (2 x 1,0)	14,6	235	373
7072513	4 G 6 + (2 x 1,0)	16,8	316	477
7072514	4 G 10 + (2 x 1,0)	20,1	513	710
7072515	4 G 16 + (2 x 1,0)	23,8	710	1015
<b>Resolver &amp; encoder cable for power chain applications</b>				
7072516	3 x (2 x 0,14) + 1 x (2 x 0,5)	10	44	107
7072517	4 x (2 x 0,14) + 1 x (2 x 1,0)	11,5	65	145

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Lenze® part designations (EWLM\_, EWL\_R\_, EWLE\_, EWLL\_, EYL und EYP) are registered trademarks of Lenze® AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.  
 Cables for power chain use should only be handled on drums prior to installation.  
 Article numbers refer to genuine Lapp products.  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Circular connectors
- SKINTOP® EMC/Earthing



## Special Encoder and resolver cables

Compatible with various drive systems



**Info**

- Fits to various encoder systems
- PUR outer sheath
- AWM certification for USA and Canada

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Product features

- Abrasion and notch-resistant
- Oil-resistant
- Flame-retardant according to IEC 60332-1-2 & CSA FT1

### Application range

- Servo drives and servo assemblies
- In power chains or moving machine parts
- Plant engineering
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines

### Norm references / Approvals

- UL/CSA AWM Styles please refer to data sheet
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Design according to specific OEM standard
- Refer to data sheet for more details
- PUR outer sheath
- Outer sheath colour: see part table

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description:  
 Control cable

**General**  
 More technical information of the abovementioned servo cables are available upon request.

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Colour	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for Heidenhain</b>					
70388718	4 x 2 x 0,14 + 4 x 0,5	8,5	black	48	92
70388719	3 x (2 x 0,14) + 2 x (0,5)	8,3	black	64	100
70388720	3 x (2 x 0,14) + 2 x (1,0)	9,1	black	64	115
70388721	4 x 2 x 0,14 + 4 x 0,5 + (4 x 0,14)	8,3	black	56	102
<b>Suitable for ELAU</b>					
70388722	3 x 2 x 0,25 + 2 x 0,5	8,4	green	44	95
<b>Suitable for KEB</b>					
70388724	3 x (2 x 0,14) + 2 x (0,5)	8,1	green	64	100
<b>Suitable for Berger Lahr</b>					
70388726	5 x 2 x 0,25 + 2 x 0,5	9,5	green	56	120
<b>Suitable for B &amp; R</b>					
70388727	3 x 2 x 24AWG	6,5	green	28	60
70388728	5 x 2 x 0,14 + 2 x 0,5	7,8	green	40	80
<b>Suitable for FANUC</b>					
70388730	5 x 0,5 + 2 x 2 x 0,18	7,6	green	94	169
70388731	2 x 0,5 + 4 x 2 x 0,22	7,6	green	72	120
70388732	3 x 2 x 0,18 + 6 x 0,5	8,7	green	105	189
70388733	3 x 2 x 0,18 + 6 x 1,0	8,7	green	140	252
70388734	5 x 2 x 0,18 + 6 x 0,5	8,7	green	114	205
70388735	10 x 2 x 24 AWG	9	green	60	121

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

The drive systems (Heidenhain, Elau, KEB, Controles Techniques, Berger Lahr, B & R, Fanuc) are registered trademarks that are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.

Cables for power chain use should only be handled on drums prior to installation.

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO FD 798 CP refer to page 112
- SERVO cables in acc. to SIEMENS® Standard 6FX 8PLUS refer to page 114
- SERVO cables in acc. to INDRAMAT® Standard INK refer to page 116

### Accessories

- Circular connectors
- SKINTOP® EMC/Earthing
- SILVYN® CHAIN cable protection and guiding systems



# ÖLFLEX® CLASSIC FD 810

Highly flexible control cable with PVC core insulation and PVC sheath



**Info**

- Core Line for ordinary duty in power chain applications
- The classic for multi-functional use

**Benefits**

- Well-proven and reliable
- Cost-effective solution
- Low particle emission at moved chain application

**Application range**

- In power chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- In damp or wet interiors
- Only for outdoor use within the indicated operating temperature range, with UV-protection

**Product features**

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according IEC 60332-1-2
- Low-adhesive surface

**Norm references / Approvals**

- Core based on VDE 0245/0285
- Outer sheath based on VDE 0245/0285
- Clean room classification for individual items on request
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- PVC outer sheath, grey (RAL 7001)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
For flexible use:  
7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
5 mio. cycles
- Temperature range**  
Flexing: 0°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC FD 810</b>				
0026100	2 X 0.5	5.3	10	40
0026101	3 G 0.5	5.7	15	48
0026102	4 G 0.5	6.3	19.2	58
0026103	5 G 0.5	6.8	24	67
0026104	7 G 0.5	8	34	88
0026105	12 G 0.5	9.5	58	136
0026106	18 G 0.5	11.4	86.4	195
0026107	25 G 0.5	13.7	120	274
0026108	30 G 0.5	14.3	144	312
0026109	34 G 0.5	15.6	164	359
0026110	50 G 0.5	18.5	240	515
0026119	2 X 0.75	5.7	15	49
0026120	3 G 0.75	6.2	22	60
0026121	4 G 0.75	6.8	29	73
0026122	5 G 0.75	7.4	37	86
0026123	7 G 0.75	8.9	51	117
0026124	12 G 0.75	10.6	87	181
0026125	16 G 0.75	12	116	234
0026126	18 G 0.75	12.7	130	259
0026127	25 G 0.75	15.2	181	363
0026130	2 X 1.0	6.1	19	58
0026131	3 G 1.0	6.6	29	72
0026132	4 G 1.0	7.3	39	88
0026133	5 G 1.0	8	48	104
0026134	7 G 1.0	9.6	67	142
0026135	12 G 1.0	11.4	115	221
0026136	14 G 1.0	12.3	134.4	258
0026137	16 G 1.0	13	153	287
0026138	18 G 1.0	13.9	173	324
0026139	25 G 1.0	16.4	240	445
0026140	26 G 1.0	16.4	249.6	459

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026141	34 G 1.0	18.9	326.4	595
0026142	41 G 1.0	20.6	394	712
0026143	50 G 1.0	22.3	480	854
0026144	65 G 1.0	25.4	624	1097
0026149	2 X 1.5	6.8	29	74
0026150	3 G 1.5	7.4	43.2	93
0026151	4 G 1.5	8.1	58	114
0026152	5 G 1.5	9.1	72	139
0026153	7 G 1.5	10.9	101	189
0026154	12 G 1.5	12.9	173	295
0026156	18 G 1.5	15.6	259	429
0026157	25 G 1.5	18.6	360	597
0026158	26 G 1.5	18.6	374.4	615
0026159	34 G 1.5	21.1	489.6	783
0026160	41 G 1.5	23	613	936
0026161	42 G 1.5	23	629	954
0026162	50 G 1.5	25	720	1134
0026170	3 G 2.5	9	72	145
0026171	4 G 2.5	10	96	179
0026172	5 G 2.5	11.2	120	218
0026173	7 G 2.5	13.6	168	303
0026174	12 G 2.5	16	288	473
0026175	14 G 2.5	17.2	336	548
0026180	3 G 4	10.6	120	214
0026181	4 G 4	11.7	160	266
0026182	5 G 4	13.1	200	325
0026183	4 G 6	13.9	230.4	396
0026184	5 G 6	15.5	288	484
0026185	4 G 10	17.6	384	644
0026186	5 G 10	19.6	480	785
0026187	4 G 16	21	615	922
0026188	5 G 16	23.6	768	1133

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® FD 891 refer to page 127

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



# ÖLFLEX® CLASSIC FD 810 CY

Highly flexible, screened control cable with PVC core insulation and PVC inner and outer sheath



**Info**

- Core Line for ordinary duty in power chain applications
- The classic for multi-functional use
- EMC-compliant

- Benefits**
- Well-proven and reliable
  - Cost-effective solution
  - Additional robustness thanks to inner sheath
  - Copper screening complies with EMC requirements and protects against electromagnetic interference

- Product features**
- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
  - Flame-retardant according IEC 60332-1-2
  - Low-adhesive surface
  - EMC-compliant

- Application range**
- In power chains or moving machine parts
  - Suitable for use in measuring, control and regulating circuits
  - Power circuits for electrical equipments used in automation engineering
  - Assembly lines, production lines, in all kinds of machines
  - Only for outdoor use within the indicated operating temperature range, with UV-protection

- Norm references / Approvals**
- Core based on VDE 0245/0285
  - Outer sheath based on VDE 0245/0285
  - For use in power chains: Please comply with assembly guideline Appendix T3

- Product Make-up**
- Extra-fine wire strand made of bare copper wires (class 6)
  - Core insulation: PVC
  - Cores twisted in layers in short lay lengths
  - PVC inner sheath, grey
  - Tinned-copper braiding
  - Non-woven wrapping
  - PVC outer sheath, grey (RAL 7001)

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
 Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6

**Minimum bending radius**  
 For flexible use: 7.5 x outer diameter  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 4000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Alternating bending cycles**  
 5 mio. cycles

**Temperature range**  
 Flexing: 0°C to +70°C  
 Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC FD 810 CY</b>				
0026200	2 X 0.5	6.9	33	74
0026201	3 G 0.5	7.3	39	84
0026202	4 G 0.5	7.9	46	98
0026203	5 G 0.5	8.4	54	110
0026204	7 G 0.5	9.8	70	143
0026205	12 G 0.5	11.3	100	201
0026206	18 G 0.5	13.4	153	287
0026207	25 G 0.5	15.9	202	394
0026208	30 G 0.5	16.5	228	432
0026219	2 X 0.75	7.3	39	85
0026220	3 G 0.75	7.8	48	99
0026221	4 G 0.75	8.4	59	116
0026222	5 G 0.75	9	69	133
0026223	7 G 0.75	10.7	90	178
0026224	12 G 0.75	12.4	129	253
0026226	18 G 0.75	14.9	205	368
0026227	25 G 0.75	17.4	271	496
0026229	30 G 0.75	18	320	549
0026230	2 X 1.0	7.7	46	97
0026231	3 G 1.0	8.2	57	114
0026232	4 G 1.0	8.9	70	134
0026233	5 G 1.0	9.8	81	159
0026234	7 G 1.0	11.4	110	207
0026235	12 G 1.0	13.4	182	314

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026238	18 G 1.0	16.1	254	443
0026239	25 G 1.0	18.8	365	612
0026240	26 G 1.0	18.8	374	625
0026241	34 G 1.0	21.5	463	787
0026242	41 G 1.0	23.2	542	918
0026243	50 G 1.0	25.3	640	1120
0026249	2 X 1.5	8.4	58	117
0026250	3 G 1.5	9	75	139
0026251	4 G 1.5	9.9	91	169
0026252	5 G 1.5	10.9	112	201
0026253	7 G 1.5	12.7	145	262
0026254	12 G 1.5	15.1	247	404
0026255	16 G 1.5	16.8	314	503
0026256	18 G 1.5	17.8	348	560
0026257	25 G 1.5	21.2	498	793
0026259	34 G 1.5	23.9	700	1005
0026270	3 G 2.5	10.8	119	207
0026271	4 G 2.5	11.8	161	247
0026272	5 G 2.5	13.2	194	307
0026273	7 G 2.5	15.8	262	418
0026281	4 G 4	13.7	238	360
0026282	5 G 4	15.3	280	436
0026283	4 G 6	16.1	318	514
0026285	4 G 10	20.2	521	824
0026287	4 G 16	23.6	780	1207

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® FD 891 CY refer to page 128

- Accessories**
- SKINTOP® MS-M BRUSH refer to page 733
  - SILVYN® CHAIN cable protection and guiding systems

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



## ÖLFLEX® CHAIN 809 SC

Highly flexible, single core cable with PVC insulation and PVC sheath - certified for North America

**Info**

- Basic Line for light & ordinary duty in power chain applications
- AWM certification for USA and Canada



**Benefits**

- Multi-standard certification reduces part varieties and saves costs
- Easy to install
- Multifunctional application possibilities
- Under consideration of the temperature range also suitable for flexible outdoor use

**Application range**

- In power chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- This cable can substitute multi-core power cables where space requirements or minimum bending radii cause problems
- Specially designed for power circuits of servomotors driven by frequency converters
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

**Product features**

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- Flammability:  
UL/GSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Low-adhesive surface

**Norm references / Approvals**

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107  
cRU AWM II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation: PVC
- PVC outer sheath, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable
- Core identification code**  
Black or green-yellow, other colours available on request
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
Flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: U<sub>0</sub>/U 600/1000 V  
UL & CSA: 600 V
- Test voltage**  
4000 V
- Alternating bending cycles**  
2 mio. cycles
- Temperature range**  
Flexing: 0°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Core colour	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 809 SC</b>					
1062900	6	7.4	green-yellow	57.6	101
1062901	6	7.4	black	57.6	101
1062902	10	9	green-yellow	96	158
1062903	10	9	black	96	158
1062904	16	9.9	green-yellow	153.6	217
1062905	16	9.9	black	153.6	217
1062906	25	11.3	green-yellow	240	307
1062907	25	11.3	black	240	307
1062908	35	13.1	green-yellow	336	427
1062909	35	13.1	black	336	427
1062910	50	15.9	green-yellow	480	611
1062911	50	15.9	black	480	611
1062912	70	17.6	green-yellow	672	778
1062913	70	17.6	black	672	778
1062914	95	19.8	green-yellow	912	1015
1062915	95	19.8	black	912	1015
1062916	120	23	green-yellow	1152	1296
1062917	120	23	black	1152	1296
1062918	150	24.8	green-yellow	1440	1597
1062919	150	24.8	black	1440	1597
1062920	185	27.1	green-yellow	1776	1971
1062921	185	27.1	black	1776	1971
1062922	240	30.6	green-yellow	2304	2419
1062923	240	30.6	black	2304	2419

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CHAIN 90 P
- ÖLFLEX® FD 90 refer to page 123

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems

Power chain applications • Various applications, certified



## ÖLFLEX® CHAIN 809 SC CY

Highly flexible, screened single core cable with PVC insulation and PVC sheath - certified for North America



**Info**

- Basic Line for light & ordinary duty in power chain applications
- AWM certification for USA and Canada
- EMC compliant copper screening

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Easy to install
- Multifunctional application possibilities
- Under consideration of the temperature range also suitable for flexible outdoor use
- Copper braiding screens the cable against electromagnetic interference

### Application range

- In power chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- This cable can substitute screened multi-core motor cables where space requirements or minimum bending radii cause problems
- Specially designed for power circuits of servomotors driven by frequency converters
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

### Product features

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- Flammability:  
UL/CSA: VW-1, FT1  
IEC/EN: 60332-1-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107  
cRU AWM II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Non-woven wrapping
- Tinned-copper braiding
- Non-woven wrapping
- PVC outer sheath, black (RAL 9005)

### Technical data

- Core identification code**  
Black, other colours are available upon request
- Specific insulation resistance**  
> 20 GOhm x cm
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: U<sub>0</sub>/U 600/1000 V  
UL & CSA: 600 V
- Test voltage**  
4000 V
- Alternating bending cycles**  
2 mio. cycles
- Temperature range**  
Flexing: 0°C to +70°C (UL: +90°C)  
Fixed installation: -40°C to +70°C (UL: +90°C)

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 809 SC CY</b>				
1062940	6	8.1	76	126
1062941	10	9.7	122	190
1062942	16	10.6	180	250
1062943	25	12	268	351
1062944	35	14.8	392	519
1062945	50	16.8	544	686
1062946	70	18.5	766	885
1062947	95	20.9	1020	1135
1062948	120	24.1	1272	1443
1062949	150	26.1	1593	1788
1062950	185	28.4	1941	2177
1062951	240	31.9	2518	2671
1062952	300	33.5	3116	3299

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CHAIN 90 CP
- ÖLFLEX® FD 90 CY refer to page 124

### Accessories

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® FD 90

Highly flexible, single core cable with PVC insulation and PVC sheath - certified for North America

**Info**

- Core Line for ordinary duty in power chain applications
- Well-proven and reliable
- AWM certification for USA and Canada



- Benefits**
- Multi-standard certification reduces part varieties and saves costs
  - Multifunctional application possibilities
  - Under consideration of the temperature range also suitable for flexible outdoor use
  - Also suitable for fixed installation where space is limited

- Application range**
- In power chains or moving machine parts
  - For internal wiring of electric and electronic equipment in switch cabinets
  - This cable can substitute multi-core power cables where space requirements or minimum bending radii cause problems
  - Specially designed for power circuits of servomotors driven by frequency converters
  - Test systems in the automotive industry, vehicles and stationary fuel cell systems

- Product features**
- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
  - Flame-retardant according to IEC 60332-1-2 & CSA FT1
  - High oil-resistance
  - Low-adhesive surface

- Norm references / Approvals**
- Based on VDE 0250 / 0285
  - UL-AWM-Style 10107, cRU AWM II A/B FT1 ≥150mm<sup>2</sup>
  - CSA AWM IA/B IIA/B FT 1 ≤ 120mm<sup>2</sup>
  - UL File No. E63634
  - For use in power chains: Please comply with assembly guideline Appendix T3

- Product Make-up**
- Extra-fine wire strand made of bare copper wires (class 6)
  - Non-woven wrapping
  - Core insulation: PVC
  - PVC outer sheath, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable
- Core identification code**  
Black or green-yellow, other colours available on request
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
Flexing: 7.5 x outer diameter  
Fixed installation: 3 x outer diameter
- Nominal voltage**  
IEC: U<sub>0</sub>/U 600/1000 V  
UL & CSA: 600 V
- Test voltage**  
4000 V
- Alternating bending cycles**  
5 mio. cycles
- Temperature range**  
Flexing: -5°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Core colour	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 90</b>					
0026600	10	9	green-yellow	96	176
0026601	10	9	black	96	176
0026603	16	10.5	green-yellow	153.6	240
0026604	16	10.5	black	153.6	240
0026607	25	11.8	green-yellow	240	361
0026608	25	11.8	black	240	361
0026610	35	14.2	green-yellow	336	482
0026611	35	14.2	black	336	482
0026613	50	16.2	green-yellow	480	660
0026614	50	16.2	black	480	660
0026616	70	18.3	green-yellow	672	898
0026617	70	18.3	black	672	898
0026619	95	19.8	green-yellow	912	1179
0026620	95	19.8	black	912	1179
0026622	120	23.4	green-yellow	1152	1521
0026623	120	23.4	black	1152	1521
0026625	150	25.1	green-yellow	1440	1739
0026626	150	25.1	black	1440	1739
0026628	185	28.1	green-yellow	1776	2305
0026629	185	28.1	black	1776	2305
0026634	240	31.6	green-yellow	2304	2944
0026635	240	31.6	black	2304	2944
0026640	300	33.5	green-yellow	2880	3545
0026641	300	33.5	black	2880	3545

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Accessories**
- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® FD 90 CY

Highly flexible, screened single core cable with PVC insulation and PVC sheath - certified for North America



**Info**

- Core Line for ordinary duty in power chain applications
- AWM certification for USA and Canada
- EMC compliant copper screening

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- For various applications
- Also suitable for fixed installation where space is limited
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In power chains or moving machine parts
- For internal wiring of electric and electronic equipment in switch cabinets
- Specially designed for power circuits of servomotors driven by frequency converters
- This cable can substitute screened multi-core motor cables where space requirements or minimum bending radii cause problems
- Test systems in the automotive industry, vehicles and stationary fuel cell systems

### Product features

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332-1-2 & CSA FT 1
- High oil-resistance
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- Based on VDE 0250 / 0285
- UL-AWM-Style 10107, cRU AWM II A/B FT 1  $\geq 150\text{mm}^2$
- CSA AWM IA/B IIA/B FT 1  $\leq 120\text{mm}^2$
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Non-woven wrapping
- Core insulation: PVC
- Tinned-copper braiding
- PVC outer sheath, orange (RAL 2003)

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000057  
 ETIM 5.0 Class-Description:  
 Low voltage power cable

**Core identification code**  
 Black, other colours are available upon request

**Conductor stranding**  
 Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
 For flexible use:  
 7,5 x outer diameter  
 Fixed installation: 3 x outer diameter

**Nominal voltage**  
 IEC:  $U_0/U$  600/1000 V  
 UL & CSA: 600 V

**Test voltage**  
 4000 V

**Alternating bending cycles**  
 5 mio. cycles

**Temperature range**  
 Flexing:  $-5^\circ\text{C}$  to  $+90^\circ\text{C}$   
 Fixed installation:  $-40^\circ\text{C}$  to  $+90^\circ\text{C}$

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 90 CY</b>				
0026651	10	9.7	127.6	227
0026653	16	11.2	186.2	297
0026655	25	12.5	257.8	410
0026657	35	15.1	400.7	607
0026659	50	17.1	554.8	808
0026661	70	19.4	775.6	1081
0026663	95	20.9	1028.1	1382
0026665	120	24.5	1282.4	1752
0026667	150	26.2	1410.4	1924
0026669	185	29.2	1935	2611
0026671	240	32.9	2526	3372
0026673	300	34.8	3128.8	4105

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil  $\leq 30$  kg or  $\leq 250$  m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 DESINA® is a registered trademark of the German Machine Tool Builders' Association  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® CHAIN cable protection and guiding systems





## ÖLFLEX® CHAIN 809

Highly flexible control cable with PVC core insulation and PVC sheath - certified for North America

**Info**

- Basic Line for light & ordinary duty in power chain applications
- AWM certification for USA and Canada



**Benefits**

- Good combination of quality and price
- Compact design
- Multi-standard certification reduces part varieties and saves costs
- Ideal for export-oriented machinery and equipment manufacturers

**Application range**

- In power chains or moving machine parts
- In dry, damp or wet interiors
- Suitable for use in measuring, control and regulating circuits
- Wiring of machines, tools, devices, appliances and control cabinets
- Only for outdoor use within the indicated operating temperature range, with UV-protection

**Product features**

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Low-adhesive surface

**Norm references / Approvals**

- UL AWM Style 20886
- CUL AWM II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Fine-wire, bare copper strand
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- PVC outer sheath, grey (RAL 7001)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0
- Minimum bending radius**  
For flexible applications:  
Chains in self supporting non-gliding arrangements: 10 x outside diameter  
Chains in gliding arrangements: 12 x outside diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
VDE: U<sub>0</sub>/U: 300/500 V  
UL & CSA: 1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
2 mio. cycles
- Temperature range**  
Flexing: VDE 0 °C to +70 °C  
UL 0 °C to +80 °C  
Fixed installation: VDE -40°C to +70°C;  
UL/CSA -40°C to +80°C;

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 809</b>				
1026700	2 X 0.5	5.2	10	40
1026701	3 G 0.5	5.5	15	48
1026702	4 G 0.5	6	20	58
1026703	5 G 0.5	6.5	24	67
1026704	7 G 0.5	7.7	34	88
1026705	12 G 0.5	9.2	58	136
1026706	18 G 0.5	11	87	195
1026707	25 G 0.5	13.3	120	274
1026708	2 X 0.75	5.6	15	49
1026709	3 G 0.75	6	22	60
1026710	4 G 0.75	6.5	29	73
1026711	5 G 0.75	7.1	37	86
1026712	7 G 0.75	8.5	51	117
1026713	12 G 0.75	10.3	87	181
1026714	18 G 0.75	12.2	130	259
1026715	25 G 0.75	14.8	181	363
1026716	2 X 1.0	5.9	19	58
1026717	3 G 1.0	6.3	29	72

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1026718	4 G 1.0	6.9	39	88
1026719	5 G 1.0	7.5	48	104
1026720	7 G 1.0	9	67	142
1026721	12 G 1.0	10.9	115	221
1026722	18 G 1.0	13.2	173	324
1026723	25 G 1.0	15.7	240	445
1026724	2 X 1.5	6.5	29	74
1026725	3 G 1.5	6.9	43.2	93
1026726	4 G 1.5	7.6	58	114
1026727	5 G 1.5	8.5	72	139
1026728	7 G 1.5	10.3	101	189
1026729	12 G 1.5	12.3	173	295
1026730	18 G 1.5	14.9	259	429
1026731	25 G 1.5	17.9	360	597
1026732	3 G 2.5	8.4	72	145
1026733	4 G 2.5	9.3	96	179
1026734	7 G 2.5	12.7	168	218
1026737	4 G 4	11.1	160	266

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC FD 810 refer to page 119

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® CHAIN 809 CY

Highly flexible, screened control cable with PVC core insulation and PVC sheath - certified for North America



**Info**

- Basic Line for light & ordinary duty in power chain applications
- AWM certification for USA and Canada
- EMC compliant copper screening

### Benefits

- Good combination of quality and price
- Thin and light, without inner sheath
- Multi-standard certification reduces part varieties and saves costs
- Ideal for export-oriented machinery and equipment manufacturers
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In power chains or moving machine parts
- In EMC-sensitive environments
- Suitable for use in measuring, control and regulating circuits
- Wiring of machines, tools, devices, appliances and control cabinets
- Only for outdoor use within the indicated operating temperature range, with UV-protection

### Product features

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20886
- CUL AWM II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper strand
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Torsion movement in WTG**  
TW-0 & TW-1, refer to Appendix T0

**Minimum bending radius**  
For flexible applications:  
Chains in self supporting non-gliding arrangements: 10 x outside diameter  
Chains in gliding arrangements: 12 x outside diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
VDE: U<sub>0</sub>/U: 300/500 V  
UL & CSA: 1000 V

**Test voltage**  
Core/core: 4000 V  
Core/screen: 2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
2 mio. cycles

**Temperature range**  
Flexing: VDE 0 °C to +70 °C  
UL 0 °C to +80 °C  
Fixed installation: VDE -40°C to +70°C;  
UL/CSA -40°C to +80°C;

### Similar products

- ÖLFLEX® CLASSIC FD 810 CY refer to page 120

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 809 CY</b>				
1026751	2 X 0.5	5.8	36	45
1026752	3 G 0.5	6.1	43	59
1026753	4 G 0.5	6.6	49	83
1026754	5 G 0.5	7.1	57	96
1026755	7 G 0.5	8.5	69	136
1026756	12 G 0.5	10	104	200
1026757	18 G 0.5	11.8	141	275
1026758	25 G 0.5	14.1	211	350
1026759	2 X 0.75	6.2	43	56
1026760	3 G 0.75	6.6	52	70
1026761	4 G 0.75	7.1	61	95
1026762	5 G 0.75	7.7	72	130
1026763	7 G 0.75	9.1	89	168
1026764	12 G 0.75	10.9	138	232
1026765	18 G 0.75	13	211	315
1026766	25 G 0.75	15.6	280	435
1026767	2 X 1.0	6.5	51	84
1026768	3 G 1.0	6.9	62	110

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1026769	4 G 1.0	7.5	74	130
1026770	5 G 1.0	8.3	88	156
1026771	7 G 1.0	9.8	112	192
1026772	12 G 1.0	11.7	185	285
1026773	18 G 1.0	14	268	395
1026774	25 G 1.0	16.7	354	486
1026775	2 X 1.5	7.1	65	97
1026776	3 G 1.5	7.5	82	125
1026777	4 G 1.5	8.4	76.6	165
1026778	5 G 1.5	9.1	119	193
1026779	7 G 1.5	10.9	154	245
1026780	12 G 1.5	13.3	268	365
1026781	18 G 1.5	15.7	373	553
1026782	25 G 1.5	18.7	530	734
1026783	3 G 2.5	9	118	188
1026784	4 G 2.5	10.1	147	236
1026785	7 G 2.5	13.5	253	340
1026788	4 G 4	11.9	248	305

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



## ÖLFLEX® FD 891

Highly flexible control cable with PVC core insulation and PVC sheath - certified for North America

**Info**

- Core Line for ordinary duty in power chain applications
- AWM certification for USA and Canada



### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Ideal for export-oriented machinery and equipment manufacturers
- Under consideration of the temperature range also suitable for flexible outdoor use

### Application range

- In power chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- Machine tools
- Plant engineering

### Product features

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332-1-2 & CSA FT 1
- Oil-resistant
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 21098
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- PVC outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC: U<sub>0</sub>/U 300/500 V  
UL/CSA: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
5 mio. cycles

**Temperature range**  
Flexing: -5°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 891</b>				
1026012	12 G 0.5	10.8	57.6	162
1026103	3 G 0.75	6.6	21.6	63
1026104	4 G 0.75	7.3	28.8	75
1026105	5 G 0.75	8	36	90
1026107	7 G 0.75	9.6	50.4	132
1026112	12 G 0.75	11.6	86.5	201
1026118	18 G 0.75	13.9	129.6	300
1026125	25 G 0.75	16.6	180	415
1026127	3 G 1.0	7.1	28.8	65
1026129	4 G 1.0	7.8	39	82
1026130	5 G 1.0	8.8	48	105
1026128	7 G 1.0	10.5	67.2	149
1026131	12 G 1.0	12.5	116	225
1026132	18 G 1.0	15	173	331
1026133	25 G 1.0	17.9	240	484
1026303	3 G 1.5	7.7	43.2	93
1026304	4 G 1.5	8.8	57.6	122
1026305	5 G 1.5	9.6	72	147

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1026307	7 G 1.5	11.6	100.8	219
1026312	12 G 1.5	13.9	172.8	322
1026318	18 G 1.5	16.9	259.2	478
1026325	25 G 1.5	20.1	360	670
1026334	34 G 1.5	23.6	489.6	897
1026403	3 G 2.5	8.8	72	129
1026404	4 G 2.5	9.8	96	167
1026405	5 G 2.5	11	120	212
1026407	7 G 2.5	13.4	168	304
1026412	12 G 2.5	15.8	288	452
1026504	4 G 4	11.8	153.6	263
1026505	5 G 4	13.2	192	325
1026507	7 G 4	16.1	268.8	469
1026604	4 G 6	13.7	230.4	368
1026614	4 G 10	17.9	384	588
1026624	4 G 16	24.1	614.4	1031
1026634	4 G 25	27.9	960	1530
1026644	4 G 35	31.1	1344	1959

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
DESINA® is a registered trademark of the German Machine Tool Builders' Association  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® FD 891 CY

Highly flexible, screened control cable with PVC insulation and PVC inner and outer sheath - certified



**Info**

- Core Line for ordinary duty in power chain applications
- AWM certification for USA and Canada
- EMC compliant copper screening

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Ideal for export-oriented machinery and equipment manufacturers
- Under consideration of the temperature range also suitable for flexible outdoor use
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Application range

- In power chains or moving machine parts
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- Machine tools
- Plant engineering

### Product features

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- Oil-resistant
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- UL AWM Style 21098
- CSA AWM IA/B; IIA/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- Tinned-copper braiding
- PVC outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC: U<sub>c</sub>/U 300/500 V  
UL/CSA: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
5 mio. cycles

**Temperature range**  
Flexing: -5°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 891 CY</b>				
1027003	3 G 0.5	7.9	38.9	89
1027004	4 G 0.5	8.5	47.3	102
1027005	5 G 0.5	9.2	55.3	127
1027007	7 G 0.5	10.9	81.1	177
1027012	12 G 0.5	12.6	99.9	234
1027018	18 G 0.5	15.5	160.1	381
1027025	25 G 0.5	17.7	203.9	472
1027103	3 G 0.75	8.2	49.2	105
1027104	4 G 0.75	8.9	59.9	123
1027105	5 G 0.75	10	68.6	155
1027107	7 G 0.75	11.6	91.7	206
1027112	12 G 0.75	13.8	152.1	304
1027118	18 G 0.75	16.3	204.4	425
1027292	3 G 1.0	8.7	56	124
1027301	4 G 1.0	9.8	70.2	155
1027293	5 G 1.0	10.6	84	182
1027294	7 G 1.0	12.3	108	237
1027295	12 G 1.0	14.7	178	352
1027302	18 G 1.0	17.3	255	497

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1027296	25 G 1.0	20.5	352	702
1027303	3 G 1.5	9.7	74.8	152
1027304	4 G 1.5	10.6	94.2	187
1027305	5 G 1.5	11.4	101.1	187
1027307	7 G 1.5	13.8	165.6	320
1027312	12 G 1.5	16.3	246.5	460
1027318	18 G 1.5	19.5	374.7	677
1027325	25 G 1.5	23.6	489.4	926
1027403	3 G 2.5	10.6	103.9	194
1027404	4 G 2.5	11.8	161.8	235
1027405	5 G 2.5	13	184.6	306
1027407	7 G 2.5	15.8	242.1	428
1027412	12 G 2.5	18.2	403.5	590
1027503	3 G 4	12.4	157.5	275
1027504	4 G 4	14	218.1	365
1027507	7 G 4	18.3	373.2	629
1027604	4 G 6	16.1	304.7	500
1027624	4 G 16	27.1	803.6	1357
1027634	4 G 25	31.3	1180.4	1879
1027644	4 G 35	34.3	1593.7	2360

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
DESINA® is a registered trademark of the German Machine Tool Builders' Association  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® CHAIN cable protection and guiding systems



**ÖLFLEX® CHAIN 808 P**

Highly flexible control cable with PVC core insulation and abrasion and oil resistant PUR sheath

**Info**

- Basic Line for light & ordinary duty in power chain applications
- Good oil resistance



**Benefits**

- Good combination of quality and price
- Compact design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

**Application range**

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines
- In dry, damp or wet interiors

**Product features**

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- High oil-resistance
- Abrasion and notch-resistant
- Low-adhesive surface

**Norm references / Approvals**

- Based on EN 50525-2-21
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- PUR outer sheath, grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
For flexible applications:  
Chains in self supporting non-gliding arrangements: 10 x outside diameter  
Chains in gliding arrangements: 12 x outside diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
Core/core: 4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
2 mio. cycles

**Temperature range**  
Flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 808 P</b>				
1027700	2 X 0.5	5.2	10	40
1027701	3 G 0.5	5.5	15	48
1027702	4 G 0.5	6	20	58
1027703	5 G 0.5	6.5	24	67
1027704	7 G 0.5	7.7	34	88
1027705	12 G 0.5	9.2	58	136
1027706	18 G 0.5	11	87	195
1027707	25 G 0.5	13.3	120	274
1027708	2 X 0.75	5.6	15	49
1027709	3 G 0.75	6	22	60
1027710	4 G 0.75	6.5	29	73
1027711	5 G 0.75	7.1	37	86
1027712	7 G 0.75	8.5	51	117
1027713	12 G 0.75	10.3	87	181
1027714	18 G 0.75	12.2	130	259
1027715	25 G 0.75	14.8	181	363
1027716	2 X 1.0	5.9	19	58
1027717	3 G 1.0	6.3	29	72

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1027718	4 G 1.0	6.9	39	88
1027719	5 G 1.0	7.5	48	104
1027720	7 G 1.0	9	67	142
1027721	12 G 1.0	10.9	115	221
1027722	18 G 1.0	13.2	173	324
1027723	25 G 1.0	15.7	240	445
1027724	2 X 1.5	6.5	29	74
1027725	3 G 1.5	6.9	43.2	93
1027726	4 G 1.5	7.6	58	114
1027727	5 G 1.5	8.5	72	139
1027728	7 G 1.5	10.3	101	189
1027729	12 G 1.5	12.3	173	295
1027730	18 G 1.5	14.9	259	429
1027731	25 G 1.5	17.9	360	597
1027732	3 G 2.5	8.4	72	145
1027733	4 G 2.5	9.3	96	179
1027734	7 G 2.5	12.7	168	218
1027737	4 G 4	11.1	160	266

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CLASSIC FD 810 P refer to page 131

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® CHAIN 808 CP

Highly flexible, screened control cable with PVC core insulation and abrasion and oil resistant PUR sheath

LAPP KABEL STUÏGART ÖLFLEX® CHAIN 808 CP CE



### Info

- Basic Line for light & ordinary duty in power chain applications
- Good oil resistance
- EMC compliant copper screening

### Benefits

- Good combination of quality and price
- Compact design
- Thin and light, without inner sheath
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Copper braiding screens the cable against electromagnetic interference

### Application range

- In power chains or moving machine parts
- In EMC-sensitive environments
- Particularly in wet areas of machine tools and transfer lines
- Suitable for use in measuring, control and regulating circuits
- In dry, damp or wet interiors

### Product features

- Designed for 2 million alternating bending cycles and travel distances up to 10 meter
- High oil-resistance
- Abrasion and notch-resistant
- Low-adhesive surface

### Norm references / Approvals

- Based on EN 50525-2-21
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine-wire, bare copper conductor
- Core insulation: PVC
- Cores twisted in layers
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, grey (RAL 7001)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Core identification code

Black with white numbers acc. to VDE 0293-1



#### Conductor stranding

Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5



#### Minimum bending radius

For flexible applications:  
Chains in self supporting non-gliding arrangements: 10 x outside diameter  
Chains in gliding arrangements:  
12 x outside diameter  
Fixed installation: 4 x outer diameter



#### Nominal voltage

$U_0/U$ : 300/500 V



#### Test voltage

Core/core: 4000 V  
Core/screen: 2000 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Alternating bending cycles

2 mio. cycles



#### Temperature range

Flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 808 CP</b>				
1027751	2 X 0.5	5.8	36	45
1027752	3 G 0.5	6.1	43	59
1027753	4 G 0.5	6.6	49	83
1027754	5 G 0.5	7.1	57	96
1027755	7 G 0.5	8.5	69	136
1027756	12 G 0.5	10	104	200
1027757	18 G 0.5	11.8	141	275
1027758	25 G 0.5	14.1	211	350
1027759	2 X 0.75	6.2	43	56
1027760	3 G 0.75	6.6	52	70
1027761	4 G 0.75	7.1	61	95
1027762	5 G 0.75	7.7	72	130
1027763	7 G 0.75	9.1	89	168
1027764	12 G 0.75	10.9	138	232
1027765	18 G 0.75	13	211	315
1027766	25 G 0.75	15.6	280	435
1027767	2 X 1.0	6.5	51	84
1027768	3 G 1.0	6.9	62	110

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1027769	4 G 1.0	7.5	74	130
1027770	5 G 1.0	8.3	88	156
1027771	7 G 1.0	9.8	112	192
1027772	12 G 1.0	11.7	185	285
1027773	18 G 1.0	14	268	395
1027774	25 G 1.0	16.7	354	656
1027775	2 X 1.5	7.1	65	97
1027776	3 G 1.5	7.5	82	125
1027777	4 G 1.5	8.4	100	165
1027778	5 G 1.5	9.1	119	193
1027779	7 G 1.5	10.9	154	245
1027780	12 G 1.5	13.3	268	365
1027781	18 G 1.5	15.7	373	553
1027782	25 G 1.5	18.7	530	734
1027783	3 G 2.5	9	118	188
1027784	4 G 2.5	10.1	147	236
1027785	7 G 2.5	13.5	253	340
1027788	4 G 4	11.9	248	305

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC FD 810 CP refer to page 132

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® CHAIN cable protection and guiding systems



# ÖLFLEX® CLASSIC FD 810 P

Highly flexible control cable with PVC core insulation and abrasion and oil resistant PUR sheath

**Info**

- Core Line for ordinary duty in power chain applications
- Good oil resistance



**Benefits**

- Well-proven and reliable
- Various applications
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

**Product features**

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332.1.2
- High oil-resistance
- Abrasion and notch-resistant
- Low-adhesive surface

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>n</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
5 mio. cycles
- Temperature range**  
Flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

**Application range**

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Power circuits for electrical equipments used in automation engineering
- Suitable for use in measuring, control and regulating circuits
- In dry, damp or wet interiors with normal mechanical stress conditions

**Norm references / Approvals**

- Core based on VDE 0245/0285
- Outer sheath based on VDE 0245/0285
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in short lay lengths
- Non-woven wrapping
- PUR outer sheath, grey (RAL 7001)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC FD 810 P</b>				
0026300	2 X 0.5	5.3	10	36
0026301	3 G 0.5	5.7	15	44
0026302	4 G 0.5	6.3	19	53
0026303	5 G 0.5	6.8	24	62
0026304	7 G 0.5	8	34	82
0026305	12 G 0.5	9.5	58	129
0026306	18 G 0.5	11.4	86.4	185
0026319	2 X 0.75	5.7	15	44
0026320	3 G 0.75	6.2	22	55
0026321	4 G 0.75	6.8	29	67
0026322	5 G 0.75	7.4	37	80
0026323	7 G 0.75	8.9	51	109
0026324	12 G 0.75	10.6	87	172
0026326	18 G 0.75	12.7	130	247
0026327	25 G 0.75	15.2	181	346
0026330	2 X 1.0	6.1	20	52
0026331	3 G 1.0	6.6	29	66
0026332	4 G 1.0	7.3	39	82
0026333	5 G 1.0	8	48	97
0026334	7 G 1.0	9.6	67	117
0026335	12 G 1.0	11.4	115	211
0026338	18 G 1.0	13.9	173	310
0026339	25 G 1.0	16.4	240	426
0026341	34 G 1.0	18.9	326.4	571
0026342	41 G 1.0	20.6	394	684
0026343	50 G 1.0	22.3	480	822
0026344	65 G 1.0	25.4	624	1058

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026349	2 X 1.5	6.8	29	68
0026350	3 G 1.5	7.4	43.2	86
0026351	4 G 1.5	8.1	58	106
0026352	5 G 1.5	9.1	72	131
0026353	7 G 1.5	10.9	101	178
0026354	12 G 1.5	12.9	173	281
0026355	16 G 1.5	14.6	230	365
0026356	18 G 1.5	15.6	259	411
0026357	25 G 1.5	18.6	360	571
0026359	34 G 1.5	21.1	489.6	753
0026361	42 G 1.5	23	629	919
0026362	50 G 1.5	25	720	1093
0026370	3 G 2.5	9	72	135
0026371	4 G 2.5	10	96	168
0026372	5 G 2.5	11.2	120	206
0026373	7 G 2.5	13.6	168	286
0026374	12 G 2.5	16	288	453
0026375	14 G 2.5	17.2	336	525
0026381	4 G 4	11.7	160	252
0026382	5 G 4	13.1	200	309
0029200	1 G 6	6.4	60	84
0026383	4 G 6	13.9	230	377
0029210	1 G 10	7.7	100	141
0026385	4 G 10	17.6	384	614
0026386	5 G 10	19.6	480	751
0029220	1 G 16	9.2	160	198
0026387	4 G 16	21	615	851

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® FD 855 P refer to page 135

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® CLASSIC FD 810 CP

Highly flexible, screened control cable with PVC insulation, inner sheath and abrasion and oil resistant PUR jacket



**Info**

- Core Line for ordinary duty in power chain applications
- Good oil resistance
- EMC compliant copper screening

### Benefits

- Well-proven and reliable
- Various applications
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Additional robustness thanks to inner sheath
- Copper braiding screens the cable against electromagnetic interference

### Application range

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Power circuits for electrical equipments used in automation engineering
- Suitable for use in measuring, control and regulating circuits
- In dry, damp or wet interiors with normal mechanical stress conditions

### Product features

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332.1.2
- High oil-resistance
- Abrasion and notch-resistant
- EMC-compliant
- Low-adhesive surface

### Norm references / Approvals

- Core based on VDE 0245/0285
- Outer sheath based on VDE 0245/0285
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in short lay lengths
- Non-woven wrapping
- PVC inner sheath
- Tinned-copper braiding
- PUR outer sheath, grey (RAL 7001)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
5 mio. cycles

**Temperature range**  
Flexing: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CLASSIC FD 810 CP</b>				
0026400	2 X 0.5	6.9	33	70
0026401	3 G 0.5	7.3	39	80
0026402	4 G 0.5	7.9	46	94
0026403	5 G 0.5	8.4	54	106
0026404	7 G 0.5	9.8	70	138
0026405	12 G 0.5	11.3	100	194
0026419	2 X 0.75	7.3	39	81
0026420	3 G 0.75	7.8	48	95
0026421	4 G 0.75	8.4	59	111
0026422	5 G 0.75	9	69	128
0026423	7 G 0.75	10.7	90	171
0026424	12 G 0.75	12.4	129	244
0026425	16 G 0.75	14.2	186	328
0026426	18 G 0.75	14.9	205	356
0026427	25 G 0.75	17.4	271	479
0026430	2 X 1.0	7.7	46	93
0026431	3 G 1.0	8.2	57	109
0026432	4 G 1.0	8.9	70	129
0026433	5 G 1.0	9.8	81	154
0026434	7 G 1.0	11.4	110	200
0026435	12 G 1.0	13.4	182	304

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026438	18 G 1.0	16.1	254	429
0026439	25 G 1.0	18.8	365	593
0026449	2 X 1.5	8.4	58	112
0026450	3 G 1.5	9	75	133
0026451	4 G 1.5	9.9	91	163
0026452	5 G 1.5	10.9	112	193
0026453	7 G 1.5	12.7	145	252
0026454	12 G 1.5	15.1	247	391
0026456	18 G 1.5	17.8	348	542
0026457	25 G 1.5	21.2	498	767
0026470	3 G 2.5	10.8	119	199
0026471	4 G 2.5	11.8	161	238
0026472	5 G 2.5	13.2	194	297
0026473	7 G 2.5	15.8	262	403
0026474	12 G 2.5	18.2	410	589
0026475	14 G 2.5	19.8	490	702
0026481	4 G 4	13.7	238	349
0026483	4 G 6	16.1	318	499
0026484	5 G 6	17.7	410	596
0026485	4 G 10	20.2	521	842
0026487	4 G 16	23.6	780	1173

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® FD 855 CP refer to page 136

### Accessories

- SKINTOP® BRUSH ADD-ON refer to page 734
- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® CHAIN cable protection and guiding systems





# ÖLFLEX® ROBUST FD

Highly flexible, all-weather control cable with TPE sheath - resistant to a wide range of chemical media

**Info**

- Extended Line for heavy duty in power chain applications
- Good chemical resistance



- Benefits**
- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
  - Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
  - Good resistance to ammonia compounds and bio-gases
  - Good resistance to cold and hot water as well as water-soluble cleaning agents
  - Well-suited to frequent steam cleaning
  - Low particle emission at moved chain application

- Application range**
- In power chains or moving machine parts
  - Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
  - Food and beverage industry, especially for production and processing equipment of milk and meat products
  - For indoor and outdoor use

- Product features**
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
  - Highly resistant to oil and chemicals
  - Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
  - Hydrolysis-resistant to warm and hot water
  - Good chemical resistance to ester-based hydraulic fluids
  - Flexible down to -40 °C

- Norm references / Approvals**
- Based on VDE 0250 / 0285
  - Clean room classification for individual items on request
  - Certified resistance to disinfection and cleaning solutions used in food and beverage industry
  - For use in power chains: Please comply with assembly guideline Appendix T3

- Product Make-up**
- Extra-fine wire, tinned copper strands
  - Core insulation: TPE
  - Cores twisted together in extremely short lay lengths
  - Non-woven wrapping
  - Robust outer sheath made of special halogen-free TPE, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black cores with printed white numbers (VDE 0293-1)
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
For flexible use:  
7.5 x cable diameter (at temperatures < 70 °C)  
10 x cable diameter (at a max. temperature of 105 °C)  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
10 mio. cycles
- Temperature range**  
Flexing: -40 °C to +105 °C  
Fixed installation: -50 °C to +110 °C  
Short-term: up to +120 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBUST FD</b>				
0026501	3 G 0.75	6.9	21.6	51
0026502	4 G 0.75	7.7	28.8	69
0026503	5 G 0.75	8.6	36	87
0026504	7 G 0.75	10.4	50.4	127
0026505	12 G 0.75	12.2	86.4	182
0026506	18 G 0.75	14.9	129.6	277
0026507	25 G 0.75	18.5	180	421
0026509	3 G 1.0	7.4	28.8	63
0026510	4 G 1.0	8.2	38.4	82
0026511	5 G 1.0	9.2	48	105
0026516	7 G 1.0	11.1	67.2	157
0026517	12 G 1.0	13.3	115.2	226
0026518	18 G 1.0	15.9	172.8	345
0026521	3 G 1.5	8.9	43.2	90

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026522	4 G 1.5	9.9	57.6	118
0026523	5 G 1.5	11	72	149
0026524	7 G 1.5	13.4	100.8	233
0026525	12 G 1.5	15.8	172.8	322
0026526	18 G 1.5	18.9	259.2	494
0026527	25 G 1.5	23.5	360	695
0026531	4 G 2.5	11.8	96	181
0026532	5 G 2.5	12.9	120	228
0026533	7 G 2.5	15.7	168	329
0026534	12 G 2.5	18.7	288	491
0026541	4 G 4	13.8	153.6	261
0026551	4 G 6	14.8	230.4	356
0026561	4 G 10	20.1	384	596
0026571	4 G 16	23.8	614.4	910

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® FD 855 P refer to page 135

- Accessories**
- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® ROBUST FD C

Highly flexible, screened all-weather control cable with TPE sheath - resistant to a wide range of chemical media



**Info**

- Extended Line for heavy duty in power chain applications
- Good chemical resistance

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product features

- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Highly resistant to oil and chemicals
- Hydrolysis-resistant to warm and hot water
- Good chemical resistance to ester-based hydraulic fluids
- Flexible down to -40 °C

### Norm references / Approvals

- Based on VDE 0250 / 0285
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- Inner sheath made of TPE
- Tinned-copper braiding
- Robust outer sheath made of special halogen-free TPE, black (RAL 9005)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black cores with printed white numbers (VDE 0293-1)
- Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6
- Minimum bending radius**  
For flexible use:  
7.5 x cable diameter (at temperatures < 70 °C)  
10 x cable diameter (at a max. temperature of 105 °C)  
Fixed installation: 4 x Outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
10 mio. cycles
- Temperature range**  
Flexing: -40 °C to +105 °C  
Fixed installation: -50 °C to +105 °C  
Short-term: up to +120 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBUST FD C</b>				
0026701	3 G 0.75	9.1	49.6	110
0026702	4 G 0.75	10.1	60.9	137
0026703	5 G 0.75	10.8	72.8	160
0026704	7 G 0.75	12.6	107.2	238
0026705	12 G 0.75	15	151.5	312
0026706	18 G 0.75	17.7	205.5	448
0026707	25 G 0.75	21.7	299.1	657
0026709	3 G 1.0	9.8	61.1	125
0026716	7 G 1.0	13.9	132.3	278
0026717	12 G 1.0	16.1	189.1	370
0026721	3 G 1.5	10.9	79.8	163
0026722	4 G 1.5	12.1	99.2	210

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0026723	5 G 1.5	13.6	129.7	264
0026724	7 G 1.5	15.8	175.2	370
0026725	12 G 1.5	18.4	257.1	498
0026726	18 G 1.5	22.1	378.9	749
0026727	25 G 1.5	27.1	555.5	1042
0026731	4 G 2.5	14.4	161.5	307
0026732	5 G 2.5	15.5	188.3	361
0026733	7 G 2.5	18.3	252.6	512
0026734	12 G 2.5	21.9	406.5	730
0026741	4 G 4	16.2	227.3	412
0026751	4 G 6	17.2	306.7	519
0026761	4 G 10	23.3	513.6	853
0026771	4 G 16	27.2	809.6	1273

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® PETRO FD 865 CP refer to page 137

### Accessories

- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® CHAIN cable protection and guiding systems



# ÖLFLEX® FD 855 P

Halogen-free, highly flexible control cable with abrasion and oil resistant PUR sheath - certified



**Info**

- Extended Line for heavy duty in power chain applications
- Small bending radii - long travel lengths
- UL/cUL certified for North America

**Benefits**

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Low particle emission at moved chain application
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

**Application range**

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Assembly lines, production lines, in all kinds of machines
- For use in assembling & pick-and-place machinery
- For indoor and outdoor use

**Product features**

- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Halogen-free and flame-retardant (IEC 60332-1-2)
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- Flexible down to -40°C
- Abrasion and notch-resistant
- Low-adhesive surface

**Norm references / Approvals**

- Based on VDE 0250 / 0285
- USA: UL AWM Style 21576
- Canada: cUL AWM Style I/II A/B FT2
- UL File No. E63634
- Clean room classification for individual items on request
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- PUR outer sheath, grey (RAL 7001)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
For flexible use: 5 x outer diameter  
Fixed installation: 3 x outer diameter
- Nominal voltage**  
IEC U<sub>0</sub>/U: 300/500 V  
UL: 1000 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
10 mio. cycles
- Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -50°C to +90°C according to UL/AWM: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 855 P</b>				
0027530	2 X 0.5	5.1	10	34
0027531	3 G 0.5	5.5	14	40
0027532	5 G 0.5	6.6	24	55
0027533	6 G 0.5	7.1	29	63
0027534	7 G 0.5	7.7	34	76
0027535	12 G 0.5	9.1	58	114
0027536	18 G 0.5	10.9	86	165
0027537	20 G 0.5	11.5	96	180
0027538	25 G 0.5	13.4	120	219
0027540	30 G 0.5	13.6	144	251
0027541	36 G 0.5	14.7	173	290
0027545	2 X 0.75	5.6	14	42
0027546	3 G 0.75	6	22	50
0027547	4 G 0.75	6.7	29	60
0027548	5 G 0.75	7.3	36	71
0027549	7 G 0.75	8.8	50	99
0027550	12 G 0.75	10.3	86	158
0027551	18 G 0.75	12.4	130	219
0027552	20 G 0.75	13.3	144	240
0027553	25 G 0.75	15.5	180	309
0027555	36 G 0.75	16.9	259	411
0027560	2 X 1.0	6	19	50
0027561	3 G 1.0	6.5	29	61
0027562	4 G 1.0	7.2	38	70
0027563	5 G 1.0	7.8	48	93

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0027564	7 G 1.0	9.5	67	122
0027565	12 G 1.0	11.2	115	196
0027566	18 G 1.0	13.7	173	274
0027567	20 G 1.0	14.4	192	300
0027568	25 G 1.0	16.8	240	385
0027570	30 G 1.0	17	288	444
0027571	36 G 1.0	18.6	346	516
0027575	2 X 1.5	6.7	29	68
0027576	3 G 1.5	7.3	43	83
0027586	4 G 1.5	8	58	100
0027577	5 G 1.5	9	72	128
0027578	7 G 1.5	10.7	101	177
0027579	12 G 1.5	12.7	173	275
0027580	18 G 1.5	15.2	259	405
0027582	25 G 1.5	18.8	360	565
0027584	30 G 1.5	18.8	432	652
0027585	36 G 1.5	20.6	518	759
0027587	41 G 1.5	22.4	614	978
0027370	3 G 2.5	8.9	72	121
0027371	4 G 2.5	9.9	96	163
0027372	5 G 2.5	11	120	196
0027373	7 G 2.5	13.4	168	266
0027374	12 G 2.5	15.8	288	446
0027375	18 G 2.5	18.9	432	665
0027376	25 G 2.5	23.5	600	929

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® CHAIN 896 P refer to page 139

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems

Power chain applications • Harsh conditions, certified



## ÖLFLEX® FD 855 CP

Halogen-free, highly flexible and screened control cable with abrasion and oil resistant PUR sheath - certified



**Info**

- Extended Line for heavy duty in power chain applications
- Small bending radii - long travel lengths
- UL/cUL certified for North America

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments
- Multi-standard certification reduces part varieties and saves costs
- Copper screening complies with EMC requirements and protects against electromagnetic interference

### Product features

- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter
- Halogen-free and flame-retardant (IEC 60332-1-2)
- Resistant to oil and drilling fluids according to IEC 61892-4, Appendix D
- High oil-resistance
- Flexible down to -40°C
- Low-adhesive surface
- EMC-compliant

### Norm references / Approvals

- Based on VDE 0250 / 0285
- USA: UL AWM Style 21576 with add. VW-1
- Canada: cUL AWM Style I/II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Application range

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- For use in assembling & pick-and-place machinery
- Assembly lines, production lines, in all kinds of machines
- For indoor and outdoor use

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: TPE
- Cores twisted together in extremely short lay lengths
- Non-woven wrapping
- Inner sheath made of TPE
- Tinned-copper braiding
- PUR outer sheath, grey (RAL 7001)

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC U<sub>0</sub>/U: 300/500 V  
UL: 1000 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -50°C to +90°C  
according to UL/AWM: -50°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 855 CP</b>				
0027605	2 X 0.5	6.7	32	67
0027606	3 G 0.5	7.1	40	79
0027607	5 G 0.5	8.2	53	107
0027608	6 G 0.5	8.7	59	121
0027609	7 G 0.5	9.5	67	132
0027610	12 G 0.5	10.9	97	190
0027611	18 G 0.5	12.9	131	245
0027612	20 G 0.5	13.5	156	281
0027613	25 G 0.5	15.6	190	367
0027615	30 G 0.5	15.8	222	408
0027616	36 G 0.5	16.9	251	459
0027620	2 X 0.75	7.2	40	79
0027621	3 G 0.75	7.6	47	96
0027622	4 G 0.75	8.3	58	112
0027623	5 G 0.75	8.9	65	126
0027624	7 G 0.75	10.6	85	165
0027625	12 G 0.75	12.1	127	231
0027626	18 G 0.75	14.6	198	330
0027628	25 G 0.75	17.7	259	459
0027630	36 G 0.75	19.5	348	605
0027635	2 X 1.0	7.6	45	93
0027636	3 G 1.0	8.1	55	109
0027637	4 G 1.0	8.8	68	126

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0027638	5 G 1.0	9.6	81	147
0027639	7 G 1.0	11.3	106	196
0027640	12 G 1.0	13.2	175	292
0027641	18 G 1.0	15.9	242	418
0027643	25 G 1.0	19.5	329	575
0027645	30 G 1.0	19.6	377	635
0027646	36 G 1.0	21.2	467	758
0027649	2 X 1.5	8.3	58	115
0027650	3 G 1.5	8.9	76	139
0027661	4 G 1.5	9.8	91	156
0027651	5 G 1.5	10.8	111	198
0027652	7 G 1.5	12.5	145	254
0027653	12 G 1.5	14.9	242	416
0027654	18 G 1.5	17.4	346	564
0027656	25 G 1.5	21.4	486	811
0027659	36 G 1.5	23.4	655	1066
0027380	3 G 2.5	10.7	110	194
0027381	4 G 2.5	11.7	136	234
0027382	5 G 2.5	12.8	180	293
0027383	7 G 2.5	15.6	246	418
0027384	12 G 2.5	18	377	629
0027385	18 G 2.5	21.5	569	912
0027386	25 G 2.5	26.5	765	1266

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® PETRO FD 865 CP refer to page 137

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



**ÖLFLEX® PETRO FD 865 CP**

Halogen-free, highly flexible and screened control cable with abrasion and MUD-resistant PUR sheath - certified

**Info**

- Extended Line for heavy duty in power chain applications
- Resistant to oil and drilling fluids acc. to NEK TS 606:2009 (Oil & Mud)
- EMC compliant copper screening



- Benefits**
- Suitable for contact with oil- and ester-based drilling muds as well as calcium bromide solutions
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Suitable for long horizontal drag chain travel distances
  - Additional robustness thanks to inner sheath
  - Wide temperature range for applications in harsh climatic environments
  - Copper braiding screens the cable against electromagnetic interference

- Application range**
- Permanently moved power chains or machine parts in harsh environment
  - Onshore and offshore applications
  - In wet areas within machinery and production or assembly lines
  - For indoor and outdoor use

- Product features**
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter

- Halogen-free and flame-retardant (IEC 60332-1-2)
  - Good weather, ozone, UV and oil resistance
  - Good notch and abrasion resistance
  - Flexible at low temperatures
  - EMC-compliant
- Norm references / Approvals**
- DNV Det Norske Veritas certified
  - Resistant against oil and drilling fluids according to NEK TS 606:2009 and IEC 61892-4
  - Salt water-resistant according to UL 1309
  - For use in power chains: Please comply with assembly guideline Appendix T3

- Product Make-up**
- Extra-fine wire strand made of bare copper
  - Core insulation: TPE
  - Cores twisted in short lay lengths
  - Non-woven wrapping
  - Inner sheath made of TPE
  - Tinned copper screen braiding
  - Outer sheath made of robust special polymer, colour black

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire acc. to VDE 0295, class 6 / IEC 60228 class 6

**Minimum bending radius**  
For flexible use:  
7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
10 mio. cycles

**Temperature range**  
Flexing: -50°C to +80°C  
Fixed installation: -60°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® PETRO FD 865 CP</b>				
0023300	2 X 0.5	6.7	32	67
0023301	3 G 0.5	7.1	40	79
0023302	4 G 0.5	7.6	47	84
0023303	5 G 0.5	8.2	53	107
0023304	7 G 0.5	9.5	67	132
0023305	12 G 0.5	10.9	97	190
0023306	18 G 0.5	12.9	131	245
0023307	20 G 0.5	13.5	156	281
0023308	25 G 0.5	15.6	190	367
0023309	30 G 0.5	15.8	222	408
0023310	36 G 0.5	16.9	251	459
0023311	2 X 0.75	7.2	40	79
0023312	3 G 0.75	7.6	47	96
0023313	4 G 0.75	8.3	58	112
0023314	5 G 0.75	8.9	65	126
0023315	7 G 0.75	10.6	85	165
0023316	12 G 0.75	12.1	127	231
0023317	18 G 0.75	14.6	198	330
0023318	20 G 0.75	15.5	213	354
0023319	25 G 0.75	17.7	259	459
0023320	30 G 0.75	17.7	296	480
0023321	36 G 0.75	19.5	348	605
0023322	2 X 1.0	7.6	45	93
0023323	3 G 1.0	8.1	55	109
0023324	4 G 1.0	8.8	68	126
0023325	5 G 1.0	9.6	81	147
0023326	7 G 1.0	11.3	106	196
0023327	12 G 1.0	13.2	175	292
0023328	18 G 1.0	15.9	242	418

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0023329	20 G 1.0	16.6	269	427
0023330	25 G 1.0	19.2	329	575
0023331	30 G 1.0	19.6	377	635
0023332	36 G 1.0	21.2	467	758
0023333	2 X 1.5	8.3	58	115
0023334	3 G 1.5	8.9	76	139
0023335	4 G 1.5	9.8	91	156
0023336	5 G 1.5	10.8	111	198
0023337	7 G 1.5	12.5	145	254
0023338	12 G 1.5	14.9	242	416
0023339	18 G 1.5	17.4	346	564
0023340	20 G 1.5	18.3	377	562
0023341	25 G 1.5	21.4	486	811
0023342	30 G 1.5	21.4	821	821
0023343	36 G 1.5	23.4	655	1066
0023344	2 X 2.5	9.8	73	129
0023345	3 G 2.5	10.7	110	194
0023346	4 G 2.5	11.7	136	234
0023347	5 G 2.5	12.8	180	293
0023348	7 G 2.5	15.6	246	418
0023349	12 G 2.5	18	377	629
0023350	18 G 2.5	21.5	569	912
0023351	20 G 2.5	22.7	582	850
0023352	25 G 2.5	26.5	765	1266
0023353	4 G 4	13.9	205	311
0023354	5 G 4	15.4	250	381
0023355	4 G 6	16.2	289	423
0023356	5 G 6	17.8	354	512
0023357	4 G 10	20.4	475	672
0023358	5 G 10	22.3	582	814

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® FD 891 P

Highly flexible control cable with PVC core insulation and abrasion and oil resistant PUR sheath - certified



**Info**

- Core Line for ordinary duty in power chain applications
- Good oil resistance
- AWM certification for USA and Canada

### Benefits

- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Ideal for export-oriented machinery and equipment manufacturers

### Application range

- In power chains or moving machine parts
- Particularly in wet areas of machine tools and transfer lines
- Suitable for use in measuring, control and regulating circuits
- Plant engineering

### Product features

- Designed for 5 million alternating bending cycles and travel distances up to 10 meter
- Flame-retardant according to IEC 60332-1-2 & CSA FT1
- High oil-resistance
- Abrasion and notch-resistant
- Low-adhesive surface

### Norm references / Approvals

- UL rec. AWM Style 20234
- CRU AWM II A/B FT 1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: PVC
- Cores twisted in layers in short lay lengths
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
For flexible use: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC:  $U_n/U$  300/500 V  
UL/CSA: 600 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Alternating bending cycles**  
5 mio. cycles

**Temperature range**  
Flexing: -5 °C to +80 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® FD 891 P</b>				
1028752	2 X 0.5	6.5	9.6	46
1028007	7 G 0.5	9.6	33.6	118
1028103	3 G 0.75	7.3	21.6	66
1028104	4 G 0.75	8	28.8	82
1028105	5 G 0.75	8.7	36	101
1028107	7 G 0.75	10.7	50.4	142
1028112	12 G 0.75	11.7	86.4	196
1028118	18 G 0.75	13.9	129.6	282
1028125	25 G 0.75	16.6	180	404
1028134	34 G 0.75	18.9	244.8	541
1028150	50 G 0.75	22.5	360	738
1028303	3 G 1.5	8.4	43.2	98
1028304	4 G 1.5	9.3	57.6	125
1028305	5 G 1.5	10.1	72	155
1028307	7 G 1.5	11.9	100.8	221
1028312	12 G 1.5	13.9	172.8	318

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1028318	18 G 1.5	16.9	259.2	484
1028325	25 G 1.5	20.1	360	671
1028334	34 G 1.5	23.1	489.6	910
1028952	2 X 2.5	8.9	48	102
1028403	3 G 2.5	9.3	72	134
1028404	4 G 2.5	10.3	96	173
1028405	5 G 2.5	11.3	120	217
1028407	7 G 2.5	13.4	168	312
1028412	12 G 2.5	15.8	288	460
1028503	3 G 4	10.9	115.2	197
1028504	4 G 4	12.1	153.6	257
1028507	7 G 4	16.1	268.8	471
1028604	4 G 6	13.7	230.4	363
1028614	4 G 10	17.9	384	605
1028624	4 G 16	23.4	614.4	973
1028634	4 G 25	27.6	960	1437

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
DESINA® is a registered trademark of the German Machine Tool Builders' Association  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® FD 855 P refer to page 135

**Accessories**

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® CHAIN 896 P

Highly flexible, halogen-free power cable with low capacitive insulation and oil resistant PUR sheath - certified

**Info**

- Extended Line for heavy duty in power chain applications
- Good oil resistance
- Rated voltage 0,6/1 kV



### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Longer cable installation lengths thanks to low mutual capacitance cable design
- Wide temperature range for applications in harsh climatic environments

### Application range

- In power chains or moving machine parts
- Applications in automation engineering
- Power circuits in industrial machines
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

### Product features

- Dynamic power chain performance: Acceleration up to 50 m/s<sup>2</sup>. Travel speeds up to 5 m/s. Travel distances up to 100 m.
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- High oil-resistance
- Low-capacitance design
- Flexible down to -40°C

### Norm references / Approvals

- VDE - reg - no. 8661  
UL AWM Style 20234  
cULus AWM I/II A/B, 1000V 80° FT1  
CSA AWM I/II A, 1000V 80° FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires (class 6)
- Core insulation: polypropylene (PP)
- Non-woven wrapping
- PUR outer sheath, black (RAL 9005)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
For flexible use:  
7.5 x outer diameter (≤16mm<sup>2</sup>)  
10 x outer diameter (>16mm<sup>2</sup>)  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC U<sub>0</sub>/U: 600/1000 V  
UL & CSA: 1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Alternating bending cycles**  
10 mio. cycles
- Temperature range**  
Flexing:  
-40°C to +90°C (UL/CSA: +80°C)  
Fixed installation:  
-50°C to +90°C (UL/CSA: +80°C)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHAIN 896 P</b>				
1023229	4 G 1.5	9.6	58	120
1023230	5 G 1.5	10	72	143
1023238	4 G 2.5	11	96	174
1023239	5 G 2.5	12	120	210
1023245	4 G 4	12.5	154	242
1023246	5 G 4	13.7	192	316
1023248	4 G 6	14.3	231	335
1023249	5 G 6	15.7	288	439
1023250	4 G 10	17	384	503
1023251	5 G 10	18.9	480	663
1023252	4 G 16	21.2	615	810
1023253	5 G 16	23.8	768	1065
1023254	4 G 25	25.9	960	1254
1023255	5 G 25	29	1200	1582

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SERVO 7DSL refer to page 105
- ÖLFLEX® SERVO FD 796 P refer to page 109
- ÖLFLEX® SERVO FD 7DSL refer to page 113

### Accessories

- SILVYN® CHAIN cable protection and guiding systems



## ÖLFLEX® ROBOT 900 P

TPE-PUR robot cable for flexing and torsion load



**Info**

- Simultaneous bending and torsion
- Torsion angle up to +/- 360 °/m

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Space-saving installation due to small cable diameters
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Plant engineering
- Industrial machinery and machine tools
- Automated handling equipment
- Multi-axis articulated robots
- In power chains or moving machine parts

### Product features

- Abrasion and notch-resistant
- Flame-retardant
- High oil-resistance
- Flexible at low temperatures
- Low-adhesive surface

### Norm references / Approvals

- For travel distances up to 10 m.
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Fine or extra-fine strands made of bare copper wire
- Core insulation: TPE
- Cores twisted in layers
- Versions with additional center pair: 2 cores twisted to a pair, PTFE foil wrapping, layer of tinned copper wires
- PTFE tape wrapping
- PUR outer sheath, black (RAL 9005)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Up to 0.34 mm<sup>2</sup>: DIN 47100 cores  
From 0.5 mm<sup>2</sup>: black cores with white printed numbers
- Mutual capacitance**  
C/C approx. 100 nF/km  
C/S approx. 120 nF/km
- Peak operating voltage**  
0.34 mm<sup>2</sup>: 350 V  
(not for power transmission)
- Inductivity**  
approx. 0.7 mH/km
- Conductor stranding**  
Fine wire or extra-fine wire
- Torsion**  
Torsion load max. ± 360 °/m
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
Up to 0.34 mm<sup>2</sup>: 48 V AC  
From 0.5 mm<sup>2</sup> U<sub>0</sub>/U: 300/500 V
- Test voltage**  
Up to 0.34 mm<sup>2</sup>: 1500 V  
From 0.5 mm<sup>2</sup>: 3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

### Similar products

- ÖLFLEX® ROBOT F1 refer to page 142

### Accessories

- SILVYN® RILL PA 12 refer to page 863

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBOT 900 P</b>				
0028110	7 X 0.25	6.2	16.8	48
0028116	25 X 0.25	10.2	60	141
0028188	2 X 0.34	5.0	7	27
0028145	18 G 0.5	11.2	86.4	120
0028146	25 G 0.5	13.3	120	254
0028160	4 G 0.75	6.6	28.8	63
0028164	14 G 0.75	11.2	100.8	199
0028170	2 X 1.0	6.2	19.2	47
0028171	3 G 1.0	6.5	29	61
0028172	4 G 1.0	7.0	38.4	76
0028174	7 G 1.0	9.3	67.2	131
0028176	12 G 1.0	11.5	115.2	216
0028185	16 G 1,0 + (2 x 1,0)	16.0	195	376
0028178	18 G 1.0	13.2	172.8	287
0028186	23 G 1,0 + (2 x 1,0)	17.3	262	470
0028180	25 G 1.0	16.4	240	433
0028190	34 G 1.0	19.9	326.4	571
0028191	41 G 1.0	22.3	393.6	705
0028198	18 G 1.5	15.8	259.2	446
0028181	3 G 2.5	9.3	72	136
0028182	4 G 2.5	10.1	96	171
0028400	3 G 16	21.4	460.8	721
0028187	3 G 25	26.2	720	1178
0028189	3 G 35	28.8	1008	1559

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.





**ÖLFLEX® ROBOT 900 DP**

Screened TPE-PUR robot cable for bending and torsion loads

**Info**

- Simultaneous bending and torsion
- Torsion angle up to +/- 180 °/m
- Copper screening



- Benefits**
- Allows much faster speed and accelerations which increases the economic efficiency of the machines
  - Space-saving installation due to small cable diameters
  - Increased durability under harsh conditions thanks to robust PUR outer sheath
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Wide temperature range for applications in harsh climatic environments

- Application range**
- Plant engineering
  - Industrial machinery and machine tools
  - Automated handling equipment
  - Multi-axis articulated robots
  - In power chains or moving machine parts

- Product features**
- Abrasion and notch-resistant
  - Flame-retardant
  - High oil-resistance
  - Flexible at low temperatures
  - Low-adhesive surface

- Norm references / Approvals**
- For use in power chains: Please comply with assembly guideline Appendix T3
  - For travel distances up to 10 m.

- Product Make-up**
- Fine or extra-fine strands made of bare copper wire
  - Core insulation: TPE
  - Cores twisted in layers
  - PTFE tape wrapping
  - Screen wrapping of tinned copper wires
  - PUR outer sheath, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Up to 0.34 mm<sup>2</sup>: DIN 47100 cores  
From 0.5 mm<sup>2</sup>: black cores with white printed numbers
- Mutual capacitance**  
C/C approx. 100 nF/km  
C/S approx. 120 nF/km
- Peak operating voltage**  
0.34 mm<sup>2</sup>: 350 V  
(not for power transmission)
- Inductivity**  
approx. 0.7 mH/km
- Conductor stranding**  
Fine wire or extra-fine wire
- Torsion**  
Torsion load max. ± 180 °/m
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
Up to 0,34 mm<sup>2</sup>: 48 V AC  
From 0.5 mm<sup>2</sup> U<sub>0</sub>/U: 300/500 V
- Test voltage**  
Up to 0.34 mm<sup>2</sup>: 1500 V  
From 0.5 mm<sup>2</sup>: 3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: -40 °C to +80 °C  
Fixed installation: -50 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBOT 900 DP</b>				
0028100	12 x 0,14	6.7	42.5	69
0028105	3 x 2 x 0,14	6.2	17	44
0028126	25 x 0,25	11.1	103.5	183
0028135	4 x 0,34	5.7	21.3	46
0028136	5 x 2 x 0,34	9.1	64.4	114
0028195	12 G 1,5	14.0	259	395

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Similar products**
- ÖLFLEX® ROBOT F1 ( C ) refer to page 143

- Accessories**
- SILVYN® RILL PA 12 refer to page 863

Power chain applications • Torsion, articulated robot, certified



## ÖLFLEX® ROBOT F1

TPE-PUR robot cable for flexing and torsion load, certified



**Info**

- Simultaneous bending and torsion
- Torsion angle up to +/- 360 °/m
- AWM certification for USA and Canada

### Benefits

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Multi-axis articulated robots
- Automated handling equipment
- Industrial machinery and machine tools
- In power chains or moving machine parts
- Plant engineering

### Product features

- Abrasion and notch-resistant
- Flame-retardant
- High oil-resistance
- Flexible at low temperatures
- Low-adhesive surface

### Norm references / Approvals

- UL AWM Style 20940 VW1 cUL AWM I/II A/B FT 1
- UL File No. E213974
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine strands, 0.14 mm<sup>2</sup> - 0.5 mm<sup>2</sup>, made from tinned-copper wires, bare above.
- Core insulation: TPE
- Cores (or core pairs) twisted in layers or bundles
- PTFE tape wrapping
- Pair screen (D): layer of tinned-copper wires
- PUR outer sheath, black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Core identification code**  
Up to 0.34 mm<sup>2</sup>: DIN 47100 cores  
From 0.5 mm<sup>2</sup>: white cores with black printed numbers

**Conductor stranding**  
Extra-fine wire

**Torsion**  
Torsion load max. ± 360 °/m

**Minimum bending radius**  
Flexible use: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
IEC: up to 0.34 mm<sup>2</sup> 250 Vss.  
0.5 - 2.5 mm<sup>2</sup> 300/500 V  
UL/CSA up to 1.5 mm<sup>2</sup> 600 V, from 2.5 mm<sup>2</sup> 1000 V

**Test voltage**  
Cores: spark test 6 kV

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

### Accessories

- SILVYN® RILL PA 12 refer to page 863

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBOT F1</b>				
0029590	7 X 0.25	6.7	16.8	62
0029591	12 X 0.25	9.0	30	122
0029592	18 X 0.25	10.6	45	156
0029593	25 X 0.25	12.5	60	205
0029594	2 X 0.34	4.6	7	38
0029595	3 X 0.34	4.8	10	40
0029596	4 X 0.34	5.2	15	48
0029599	12 X 0.34	9.4	40	130
0029600	18 X 0.34	11.2	60	170
0029601	25 X 0.34	13.1	83	220
0029608	18 G 0.5	12.3	84	202
0029609	25 G 0.5	15.2	120	284
0029610	2 X 1.0	6.3	19	60
0029611	3 G 1.0	6.6	28	71
0029612	4 G 1.0	7.2	38	87
0029614	7 G 1.0	9.2	65	141
0029615	12 G 1.0	12.4	110	237
0029616	14 G 1.0	13.2	128	257
0029617	16 G 1,0 + (2 x 1,0)	15.4	190	346
0029618	18 G 1.0	16.1	170	349
0029619	23 G 1 + (2 x 1,0)	18.0	250	461
0029620	25 G 1.0	18.3	240	407
0029621	34 G 1.0	21.1	320	600
0029622	41 G 1.0	23.6	390	753
0029624	4 G 1.5	8.2	57	114
0029625	5 G 1.5	9.1	72	141
0029627	7 G 1.5	10.5	101	187
0029629	12 G 1.5	14.3	170	294
0029630	18 G 1.5	17.5	259	450
0029631	25 G 1.5	22.2	360	661
0029632	3 G 2.5	9.1	72	136
0029641	4 G 6	13.3	220	330

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® ROBOT F1 ( C )

Screened TPE-PUR robot cable for bending and torsion loads, certified



**Info**

- Simultaneous bending and torsion
- Torsion angle up to +/- 180 °/m
- AWM certification for USA and Canada

**Benefits**

- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Multi-standard certification reduces part varieties and saves costs
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

**Application range**

- Multi-axis articulated robots
- Automated handling equipment
- Industrial machinery and machine tools
- In power chains or moving machine parts
- Plant engineering

**Product features**

- Abrasion and notch-resistant
- Flame-retardant
- High oil-resistance
- Resistant to cold temperatures
- Low-adhesive surface

**Norm references / Approvals**

- UL AWM Style 20940 VW1  
cUL AWM I/II A/B FT 1
- UL File No. E213974
- For use in power chains: Please comply with assembly guideline Appendix T3

**Product Make-up**

- Extra-fine strands, 0.14 mm<sup>2</sup> - 0.5 mm<sup>2</sup>, made from tinned-copper wires, bare above.
- Core insulation: TPE
- Cores (or core pairs) twisted in layers or bundles
- PTFE tape wrapping
- Braiding or wrapping of tinned copper wires
- PUR outer sheath, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
Up to 0.34 mm<sup>2</sup>: DIN 47100 cores  
From 0.5 mm<sup>2</sup>: white cores with black printed numbers
- Conductor stranding**  
Extra-fine wire
- Torsion**  
Torsion load max. ± 180 °/m
- Minimum bending radius**  
Flexible use: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
IEC: up to 0.34 mm<sup>2</sup> 250 Vss.  
0.5 - 2.5 mm<sup>2</sup> 300/500 V  
UL/CSA up to 1.5 mm<sup>2</sup> 600 V,  
from 2.5 mm<sup>2</sup> 1000 V
- Test voltage**  
Cores: spark test 6 kV
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexing: -40 °C to +80 °C  
Fixed installation: -50 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® ROBOT F1 (C)</b>				
0029653	3 x 2 x 0,25	8.0	38	100
0029654	25 x 0,25	13.8	115	280
0029655	2 x 0,34	5.2	18	54
0029656	3 x 0,34	5.4	20	56
0029657	4 x 0,34	6.6	28	72
0029658	5 x 2 x 0,34	10.2	69	158
0029689	12 G 1,5	15.4	230	380
0029690	18 G 1,5	18.5	340	550
0029664	4 G 1,5	8.8	75.1	120
0029665	4 G 2,5	10.3	116	200
0029691	4 G 1,5 + (2 x 1,0)	11.0	116	213
0029692	4 G 2,5 + (2 x 1,0)	12.0	150	270

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® RILL PA 12 refer to page 863

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## LiFY

Flexible at cold temperatures, Class 6 single conductor for devices or measurements



**Info**

- Extremely flexible / Extra-finely stranded

### Benefits

- Very soft PVC insulation that is flexible at low temperatures

### Application range

- For use in and on mobile equipment
- For measuring assemblies in technical training sessions, education and electric laboratories

### Norm references / Approvals

- Based on VDE 0812 and VDE 0250-1

### Product Make-up

- Stranded copper wire
- Core insulation: Based on PVC

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000993  
 ETIM 5.0 Class-Description:  
 Single core cable

**Conductor stranding**  
 Extra-finely stranded IEC conductor class 6: 0.07 mm

**Nominal voltage**  
 Highly flexible LiFY cores:  
 up to 1.0 mm<sup>2</sup>: U0/U: 300/500 V,  
 from 1.5 mm<sup>2</sup>: U0/U: 450/750 V

**Temperature range**  
 Flexible use: -15°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	PU	black	blue	green/yellow	red
0.75	2.5	7.2	100	4560013S	4560014S	4560017S	4560016S
1	2.9	9.6	100	4560023S	4560024S	4560027S	4560026S
1.5	3.7	14.4	100	4560033S	4560034S	4560037S	4560036S
2.5	4.2	24	50	4560053S	4560054S	4560057S	4560056S
4	5.1	38.4	100	4560063	4560064	4560067	
6	6.0	57.6	50	4560073	4560074	4560077	4560076
10	7.4	96	50	4560083		4560087	4560086

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- PEW 8.87 crimping pliers refer to page 1016
- KS 15 cable shears

ÖFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## LiFY 1 kV

Flexible at cold temperatures, Class 6 single conductor for devices or measurements

**Info**

- Extremely flexible / Extra-finely stranded



### Benefits

- Very soft PVC insulation that is flexible at low temperatures

### Application range

- For use in and on mobile equipment
- The 1000 V version with thick insulation wall is ideal for many measuring instruments such as multimeters.
- For measuring assemblies in technical training sessions, education and electric laboratories

### Norm references / Approvals

- Based on VDE 0812 and VDE 0250-1

### Product Make-up

- Stranded copper wire
- Core insulation: Based on PVC

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable
- Conductor stranding**  
Extra-finely stranded IEC conductor class 6: 0.07 mm
- Nominal voltage**  
LiFY measurement cores:  
U: 1000 VAC
- Temperature range**  
Flexible use: -15°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	PU	black	blue	red
0.75	4.0	7.2	50	4560011S	4560021S	4560041S
1.5	4.0	14.4	50	4560012S	4560022S	4560042S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- PEW 8.87 crimping pliers refer to page 1016
- KS 15 cable shears



## ESUY Copper Earthing Cable

Flexible single conductor for grounding and shorting as well as for grounding installation and potential equalisation



### Info

- Grounding, Shorting prior to field maintenance
- Mechanically highly flexible

### Benefits

- Very flexible despite a large cross-section

### Application range

- Provides protection during repairs
- For earthing in high-voltage power installations of power companies and railway systems
- For earthing devices and potential equalisation on machine parts and EDP systems

### Product features

- Flame-retardant according IEC 60332-1-2

### Product Make-up

- Strands of bare copper wires
- Braiding made of bare copper wires
- Outer sheath: Based on PVC, transparent

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable



#### Conductor stranding

refer to article table



#### Minimum bending radius

Flexible use: 12 x outer diameter



#### Test voltage

2000 V



#### Temperature range

Flexible use: -5°C to +70°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Conductor stranding: number of wires x wire diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ESUY Copper Earthing Cable</b>					
4571101	16	4,200 x 0.07	8.8	177	230
4571102	25	3,192 x 0.1	10.4	275	316
4571103	35	4,480 x 0.1	12.4	387	475
4571104	50	6,383 x 0.1	14.6	560	670
4571105	70	8,918 x 0.1	17.0	791	905
4571106	95	12,100 x 0.1	19.8	1069	1220

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- X00V3-D Copper Earthing Cable refer to page 147

### Accessories

- KT cable shears refer to page 999



## X00V3-D Copper Earthing Cable

Flexible at cold temperatures, <HAR>-type single conductor for earthing and shorting

**Info**

- Grounding, Shorting prior to field maintenance
- Flexible at low temperatures



**Application range**

- Provides protection during repairs
- For earthing in high-voltage power installations of power companies and railway systems
- For earthing devices and potential equalisation on machine parts and EDP systems
- For applications in cold environments

**Norm references / Approvals**

- Based on VDE 0283 Part 3 or EN 61138

**Product Make-up**

- Strands of bare copper wires
- Outer sheath: Based on PVC, transparent

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Based on VDE 0283 Part 3 or EN 61138
- Minimum bending radius**  
Flexible use: 12 x outer diameter
- Test voltage**  
1000 V
- Temperature range**  
Flexible use: -25°C to +55°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>X00V3-D Copper Earthing Cable</b>				
4571110	16	8.1	153.6	223
4571111	25	9.5	240	330
4571112	35	11.0	336	455
4571113	50	13.2	480	648
4571114	70	15.8	672	913
4571115	95	18.3	912	1234

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Packaging size: Coil ≤ 30 kg, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ESUY Copper Earthing Cable refer to page 146

**Accessories**

- KT cable shears refer to page 999

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## ÖLFLEX® TRUCK 170 FLRY



### Info

- Commercial vehicles
- Hazardous materials transportation

### Benefits

- Special ADR approval
- ADR approval enables use in vehicles transporting hazardous goods

### Application range

- Commercial vehicles
- Wiring of electrical equipments in all trailers and semi-trailers

### Product features

- UV-resistant
- Resistant to cold temperatures
- Resistant to most oils, chemicals and weather conditions

### Norm references / Approvals

- ISO 4141 and DIN/ISO 6722

### Product Make-up

- Strands of bare copper wires
- Core insulation: Based on PVC
- Special PVC-based outer sheath

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Core identification code

ISO 4141-3

#### Capacity of data pairs

Related to length between cores, max. 50 pF/m and between each data transmission core and all other cores in the cable, max. 100 pF/m



#### Conductor stranding

Fine wire according to DIN/ISO 6722



#### Minimum bending radius

12 x outer diameter



#### Nominal voltage

60 V



#### Test voltage

5 kV rms for at least 5 min.



#### Temperature range

Area of application, Class A  
Fixed installation: -40°C to +85°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Colour	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® TRUCK 170 FLRY</b>					
7027060	2 x 1,0	6.0	white-black	19.2	55
7027061	2 x 1,0	6.0	white-brown	19.2	55
7027000	2 x 1,5	6.6	white-black	28.8	68
7027001	2 x 1,5	6.6	white-brown	28.8	68
7027062	3 x 1,0	6.3	black-brown-blue	28.8	63
7027012	3 x 1,0	6.3	white/brown/blue, newest ISO design	28.8	63
7027063	4 x 1,0	6.8	white/black/red/brown	38.4	81
7027034	4 x 1,5	7.5	white/black/red/brown	57.6	106
7027064	5 x 1,0	7.5	white/brown/green/red/grey	48	97
7027065	5 x 1,0 + 1 x 2,5	9.0	1.0 = green/brown/red/blue/violet; 2.5 = white	72	133
7027066	5 x 1,0 + 1 x 2,5	9.0	1.0 = yellow/black/red/blue/violet; 2.5 = white	72	133
7027015	5 x 1,0 + 1 x 2,5	9.0	1.0 = brown/green/red/grey/violet; 2.5 = white, newest ISO design	72	133
7027016	5 x 1,0 + 1 x 2,5	9.0	1.0 = brown/yellow/red/grey/violet; 2.5 = white, newest ISO design	72	133
7027007	7 x 0,75	7.3	white/black/yellow/red/green/brown/blue	50.4	101
7027067	7 x 1,5	8.9	white/black/yellow/red/green/brown/blue	100.8	166
7027068	6 x 1,5 + 1 x 2,5	10.3	ISO 4141 1.5 = black/yellow/red/green/brown/blue; 2.5 = white	110.4	187
7027069	8 x 1,5 + 1 x 2,5	11.7	ISO 4141 + grey/violet	139.2	239
7027070	10 x 1,5 + 3 x 2,5 + 1x(2x1,5)	14.4	white with black numbers; 1.5 = no. 1 - 3, 5 - 8, 10 - 12; 2.5 = no. 4, 9, 13; 1.5 = no. 14, 15	244.8	391
7027010	10 x 1,5 + 3 x 2,5 + 1x(2x1,5)	14.4	ISO 12098	244.8	391
7027071	10 x 1,5 + 3 x 2,5	14.4	white with black numbers; 1.5 = no. 1 - 3, 5 - 8, 10 - 12; 2.5 = no. 4, 9, 13	216	367
7027035	2 x 0,75 + 2 x 1,5	7.2	0.75 = white-brown; 1.5 = yellow-green	43.2	85
7027017	5 x 1,5 + 2 x 2,5	10.3	1.5 = black/yellow/green/brown/blue; 2.5 = white/red	120	217
7027004	8 x 1,5 + 5 x 2,5	14.8	1.5 = yellow/blue/green/brown/red/black/pink/white-blue; 2.5 = white/orange/grey/white-black/white-red	235.2	360
7027073	9 x 1,5 + 4 x 2,5	14.8	white with black numbers; 1.5 = no. 2, 4 - 8, 10 - 12; 2.5 = no. 1, 3, 9, 13	225.6	352
7027074	4 x 6 + 1 x 1,5	13.7	1.5 = grey; 6.0 = brown/red/black/blue	244.8	352

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.





# ÖLFLEX® TRUCK 470 P FLRY11Y



### Info

- Commercial vehicles
- Hazardous materials transportation
- Hydrolysis and microbe resistant



### Benefits

- Special ADR approval
- ADR approval enables use in vehicles transporting hazardous goods

### Application range

- Commercial vehicles
- Wiring of electrical equipments in all trailers and semi-trailers

### Product features

- UV-resistant
- Resistant to cold temperatures
- Resistant to most oils, chemicals and weather conditions
- Resistant to hydrolysis and microbes

### Norm references / Approvals

- ISO 4141 and DIN/ISO 6722

### Product Make-up

- Strands of bare copper wires
- Core insulation: Based on PVC
- Special PVC-based inner sheath
- Outer sheath made of special polyurethane

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable
- Core identification code**  
ISO 4141-3
- Capacity of data pairs**  
Related to length between cores, max. 50 pF/m and between each data transmission core and all other cores in the cable, max. 100 pF/m
- Conductor stranding**  
Fine wire according to DIN/ISO 6722
- Minimum bending radius**  
12 x outer diameter
- Nominal voltage**  
60 V
- Test voltage**  
5 kV rms for at least 5 min.
- Temperature range**  
Fixed installation: -40°C to +85°C  
Area of application, Class A

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Colour	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® TRUCK 470 P FLRY11Y</b>					
7027080	2 x 1,0	6.0	white-black	19.2	55
7027081	2 x 1,0	6.0	white-brown	19.2	55
7027020	2 x 1,5	6.6	white-black	28.8	68
7027021	2 x 1,5	6.6	white-brown	28.8	68
7027082	3 x 1,0	6.3	black-brown-blue	28.8	67
7027022	3 x 1,0	6.3	white/brown/blue, newest ISO design	28.8	67
7027083	4 x 1,0	6.8	white/black/red/brown	38.4	81
7027038	4 x 1,5	7.5	white/black/red/brown	57.6	106
7027084	5 x 1,0	7.5	white/brown/green/red/grey	48	97
7027085	5 x 1,0 + 1 x 2,5	9.0	1.0 = green/brown/red/blue/violet; 2.5 = white	72	133
7027086	5 x 1,0 + 1 x 2,5	9.0	1.0 = yellow/black/red/blue/violet; 2.5 = white	72	133
7027025	5 x 1,0 + 1 x 2,5	9.0	1.0 = brown/green/red/grey/violet; 2.5 = white, newest ISO design	72	133
7027087	6 x 1,5 + 1 x 2,5	10.3	ISO 4141 1.5 = black/yellow/red/green/brown/blue; 2.5 = white	110.4	187
7027130	7 x 0,75	7.3	white/black/yellow/red/green/brown/blue	50.4	101
7027088	7 x 1,5	8.9	white/black/yellow/red/green/brown/blue	100.8	166
7027089	8 x 1,5 + 1 x 2,5	11.7	ISO 4141 + grey/violet	139.2	239
7027090	10x1,5+3x2,5+1x(2x1,5)	14.4	white with black numbers; 1.5 = no. 1 - 3, 5 - 8, 10 - 12; 2.5 = no. 4, 9, 13; 1.5 = no. 14, 15	244.8	391
7027030	10x1,5+3x2,5+1x(2x1,5)	14.4	ISO 12098	244.8	395
7027091	10x1,5+3x2,5	14.4	white with black numbers; 1.5 = no. 1 - 3, 5 - 8, 10 - 12; 2.5 = no. 4, 9, 13	216	367
7027031	10x1,5+3x2,5	14.4	1.5 = yellow/green/blue/black/brown/red/pink/grey/white-black/white-blue; 2.5 = white/orange/white-red	216	367
7027046	2 x 0,75 + 2 x 1,5	7.2	0.75 = white-brown; 1.5 = yellow-green	43.2	85
7027092	2 x 6 + 3 x 1,5 ABS	12.1	DIN 72570 6.0 = red/brown; 1.5 = black/yellow/white	158.4	267
7027093	2x6+3x1,5+1x(2x1,5) EBS	12.1	DIN 72570 6.0 = red/brown; 1.5 = black/yellow/white; 1.5 = white-grey/white-brown	187.2	321
7027094	2x4+3x1,5+1x(2x1,5) EBS	11.9	4.0=red/brown; 1.5=black/yellow/white; 1.5=white-grey/white-brown	148.8	257
7027024	18 x 1,5	13.7	white with black numbers	259.2	407
7027032	25 x 1,5	16.1	white with black numbers	360	560

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® TRUCK 170 TWIN



### Info

- Commercial vehicles
- Hazardous materials transportation
- Battery twin cable

### Benefits

- Polarity identification is possible without stripping the sheath or external marking (the item designation is always printed on the positive pole). This rules out incorrect connections.
- No brushing of cores after stripping and therefore optimum subsequent handling, for example when crimping/contacting
- Special ADR approval

### Application range

- Battery cable between the power source and the end user
- Commercial vehicles

### Product features

- Double-sheathed version, extremely tough, for installation without corrugated tubing
- Very strong connection but offering easy separation of the cable by hand

### Norm references / Approvals

- ADR approval TÜ.EGG.091-04

### Product Make-up

- Strands of bare copper wires
- Core insulation: Based on PVC
- Special PVC-based outer sheath

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001578

ETIM 5.0 Class-Description:

Flexible cable



#### Minimum bending radius

15 x outer diameter



#### Nominal voltage

60 V DC



#### Test voltage

3000 V AC



#### Temperature range

Fixed installation: -40°C to +85°C

Area of application, Class A

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)
<b>ÖLFLEX® TRUCK 170 TWIN PVC/PVC</b>			
7027055	PVC/PVC 2 x 6,0	15.2 x 7.1	115.2
7027056	PVC/PVC 2 x 10,0	18.8 x 8.9	192
7027057	PVC/PVC 2 x 16,0	21.0 x 10.0	307.2
7027058	PVC/PVC 2 x 25,0	25.6 x 12.3	480
7027059	PVC/PVC 2 x 35,0	28.4 x 13.5	672
7027054	PVC/PVC 2 x 50,0	33.0 x 16.0	960
7027052	PVC/PVC 2 x 70,0	39.8 x 18.4	1344

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Details of the clamping force are available upon request, halogen-free.

Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SOLAR XLR-R

Electron beam cross-linked solar cables with reduced diameters - TÜV type approved

**Info**

- Optimised cable design - thin, light and robust
- TÜV Type PV1-F (2 PFG 1169/08.2007)



### Benefits

- Reduced outer diameters enable space and weight saving installation
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

### Application range

- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Flexible or building-integrated PV systems

### Product features

- Weather/UV-resistant acc. to HD 605/A1 Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR-R = X-Linked Radiated-Reduced Proven electron beam cross-linked quality
- Version without colour stripe for size up to 300mm<sup>2</sup> on request

### Norm references / Approvals

- PV1-F (TÜV type approved according to 2 PFG 1169/08.2007)

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
AC U<sub>0</sub>/U : 600/1000 V  
DC U<sub>0</sub>/U : 900/1500 V  
Max. permissible operating voltage: DC 1,8 kV (Conductor-conductor, non earthed system)

**Test voltage**  
AC 6500 V

**Current rating**  
In compliance with TÜV 2 PFG 1169/08.2007 table 1

**Temperature range**  
-40°C to +120°C max. conductor temperature based on EN 60216-1  
Ambient temperature according to TÜV 2 PFG 1169/08.07: -40°C to +90°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SOLAR XLR-R</b>				
<b>Core insulation: white / Outer sheath: black</b>				
0023175	1.5	4.4	14.4	34
0023176	2.5	4.8	24	46
0023177	4.0	5.2	38.4	63
0023178	6.0	5.8	57.6	86
0023179	10.0	7	96	132
0023180	16.0	8.3	153.6	197
<b>Core insulation: white / Outer sheath: black with red stripe</b>				
0023360	2.5	4.8	24	46
0023361	4.0	5.2	38.4	63
0023362	6.0	5.8	57.6	86
0023363	10.0	7	96	132
0023364	16.0	8.3	153.6	197
<b>Core insulation: white / Outer sheath: black with blue stripe</b>				
0023370	2.5	4.8	24	46
0023371	4.0	5.2	38.4	63
0023372	6.0	5.8	57.6	86
0023373	10.0	7	96	132
0023374	16.0	8.3	153.6	197

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SOLAR XLR WP refer to page 153

### Accessories

- EPIC® SOLAR 4 M refer to page 703
- EPIC® SOLAR 4 F refer to page 703
- UNIVERSAL STRIP stripping tool refer to page 1006
- KS 20 cable shears refer to page 999



## ÖLFLEX® SOLAR XLS-R

Electron beam cross-linked solar cables with reduced outer diameters



**Info**

- Optimised cable design - thin, light and robust

### Benefits

- Reduced outer diameters enable space and weight saving installation
- Robust against mechanical impacts
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

### Application range

- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Flexible or building-integrated PV systems

### Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLS-R = X-Linked Standard - Reduced Proven electron beam cross-linked quality

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage:  
DC 1,8 kV (Conductor-conductor, non earthed system)

**Test voltage**  
AC 6500 V

**Temperature range**  
Fixed installation: -40°C to +100°C  
max. conductor temperature

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SOLAR XLS-R</b>				
0023136	2.5	4.8	24	46
0023137	4.0	5.2	38.4	63
0023138	6.0	5.8	57.6	86
0023104	10.0	7	96	132
0023105	16.0	8.3	153.6	197
<b>Core insulation: white / Outer sheath: black with red stripe</b>				
0023390	2.5	4.8	24	46
0023391	4.0	5.2	38.4	63
0023392	6.0	5.8	57.6	86
0023393	10.0	7	96	132
0023394	16.0	8.3	153.6	197
<b>Core insulation: white / Outer sheath: black with blue stripe</b>				
0023395	2.5	4.8	24	46
0023396	4.0	5.2	38.4	63
0023397	6.0	5.8	57.6	86
0023398	10.0	7	96	132
0023399	16.0	8.3	153.6	197

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® SOLAR XLR-R refer to page 151

### Accessories

- EPIC® SOLAR 4 M refer to page 703
- EPIC® SOLAR 4 F refer to page 703
- UNIVERSAL STRIP stripping tool refer to page 1006
- KS 20 cable shears refer to page 999



## ÖLFLEX® SOLAR XLR WP

Electron beam cross-linked solar cables with optimized performance in water - TÜV type

**Info**

- Optimised cable design - constant high volume resistance even after long-term period in water
- TÜV Type PV1-F (2 PFG 1169/08.2007)



### Benefits

- The alternative for long-term storage in water, e.g. as it can occur in case after flooding or in buried conduits
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

### Application range

- For underground installation in conduits, in which water, heat and moisture can accumulate
- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Suitable for direct burial: see data sheet

### Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR WP = X-Linked Radiated Water-Proof Proven electron beam cross-linked quality

### Norm references / Approvals

- PV1-F (TÜV type approved according to 2 PFG 1169/08.2007)

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage: DC 1,8 kV (Conductor-conductor, non earthed system)

**Test voltage**  
AC 6500 V

**Current rating**  
In compliance with TÜV 2 PFG 1169/08.2007 table 1

**Temperature range**  
-40°C to +120°C max. conductor temperature based on EN 60216-1  
Ambient temperature according to TÜV 2 PFG 1169/08.07: -40°C to +90°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® SOLAR XLR WP</b>				
<b>Core insulation: white / Outer sheath: black</b>				
1023501	2.5	5.2	24	48
1023502	4.0	5.6	38.4	65
1023503	6.0	6.2	57.6	88
1023504	10.0	7.4	96	135
1023505	16.0	8.7	153.6	207
<b>Core insulation: white / Outer sheath: black with red stripe</b>				
1023521	2.5	5.2	24	48
1023522	4.0	5.6	38.4	65
1023523	6.0	6.2	57.6	88
1023524	10.0	7.4	96	135
1023525	16.0	8.7	153.6	207
<b>Core insulation: white / Outer sheath: black with blue stripe</b>				
1023526	2.5	5.2	24	48
1023527	4.0	5.6	38.4	65
1023528	6.0	6.2	57.6	88
1023529	10.0	7.4	96	135
1023530	16.0	8.7	153.6	207

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® SOLAR 4 M refer to page 703
- EPIC® SOLAR 4 F refer to page 703
- UNIVERSAL STRIP stripping tool refer to page 1006
- KS 20 cable shears refer to page 999



## ÖLFLEX® TORSION FRNC

Cold and oil-resistant cables for flexible applications under torsional load, halogen-free - 0.6/1 kV

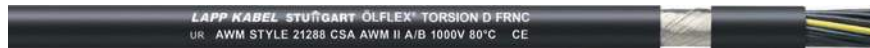


**i Info**

- Torsion resistant, Cold flexible and Oil resistant for drip loops
- Halogen-free, Highly flame retardant, Low smoke density

## ÖLFLEX® TORSION D FRNC

Screened, cold and oil-resistant cables for flexible applications under torsional load, halogen-free - 0.6/1 kV



**i Info**

- Torsion resistant, Cold flexible and Oil resistant for drip loops
- Halogen-free, Highly flame retardant, Low smoke density
- EMC/Screened

### Benefits

- The special design reliably compensates for the permanent torsional drip loop movements inside the wind turbine between the nacelle and the tower
- The high flexibility and good dismantling and stripping properties enable easy space-saving cable installation and fast processing
- Resistant to lipper and drops of sea water for onshore and offshore applications
- FRNC = Flame Retardant Non Corrosive
  - Reduction of flame-propagation and density and toxicity of smoke gases in the event of fire
  - Minimisation of damage to buildings and production facilities
  - Safety for staff and in areas with high density of people
- The copper wrapping of the screened D version protects against electromagnetic interference

### Application range

- For fixed and flexible installations, as well as for applications with torsional movements (e.g. machinery, wind turbines)
- Very suitable for installation in the drip loop, between the rotating nacelle and the stationary windmill tower, to connect the generator to the control units

### Product features

- Torsion-resistant up to  $\pm 150^\circ/\text{m}$
- Good weather, abrasion, temperature and UV-resistance
- Resistant to oils
- Halogen-free and highly flame-retardant
- Depending on the quantity, customised designs are also possible upon request

### Norm references / Approvals

- Use of leading, European metric stranded conductors according to the IEC scale for conductor nominal cross-sections in  $\text{mm}^2$  according to IEC 60228/VDE 0295, braided conductor class 6 (tinned): For converting to AWG, odd-numbered nominal AWG cross-sections must be excluded. The next lowest nominal AWG conductor cross-section in  $\text{mm}^2$  must then be allocated to the metric nominal conductor cross-section in  $\text{mm}^2$  (according to IEC 60228) (please refer to the technical catalogue appendix T16). This is to ensure that the normative current rating defined by the nominal AWG conductor cross-section does not exceed the physical/real current rating defined by the nominal IEC conductor cross-section that is actually used
- Cable type certifications: UL AWM style 21288 by UL acc. UL standard as well as cUL AWM II A/B by UL acc. CSA AWM standard
- Fire behaviour:
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Flame-retardant (IEC 60332-1-2)
  - No fire propagation (IEC 60332-3-24 and IEC 60332-3-25)
- Oil-resistant according to EN 60811-404 and UL OIL RES I and UL OIL RES II
- UV-resistant according to ISO 4892-2 and ozone-resistant according to EN 50396

### Product Make-up

- Extra-fine wire conductor made of bare copper
- Core insulation: polyolefin compound
- Core connection optimised for high torsion requirements, twisted in layers
- Optional screening (D): wrapped with braided tinned-copper wires
- Outer sheath: special compound, halogen-free, black (RAL 9005)

### Technical data

**Classification**  
**ÖLFLEX® TORSION FRNC**  
 ETIM 5.0 Class-ID: EC000057  
 ETIM 5.0 Class-Description: Low voltage power cable  
**ÖLFLEX® TORSION D FRNC**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 Power and control cables: Colour-coded in accordance with VDE 0293-308, refer to Appendix T9  
 From 6 cores: black with white numbers  
 Paired signal cables: DIN 47100

**Conductor stranding**  
**ÖLFLEX® TORSION FRNC**  
 Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6 (Refer to Appendix T16 for the matching US conductor sizes in AWG standard)  
**ÖLFLEX® TORSION D FRNC**  
 Extra-fine wire acc. to VDE 0295, class 6/ IEC 60228 class 6

**Torsion movement in WTG**  
 TW-0 & TW-2, refer to Appendix T0

**Minimum bending radius**  
 Flexible use: 10 x outer diameter  
 Fixed installation: 6 x outer diameter

**Nominal voltage**  
 According to IEC/VDE: U0/U 0.6/1 kV ac  
 Operating voltage in accordance with UL: 1000V

**Test voltage**  
**ÖLFLEX® TORSION FRNC**  
 C/C: 4000 V  
**ÖLFLEX® TORSION D FRNC**  
 C/C: 4000 V  
 C/S: 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Flexible use:  $-40^\circ\text{C}$  to  $+90^\circ\text{C}$  (UL  $+80^\circ\text{C}$ )  
 Fixed installation:  $-40^\circ\text{C}$  to  $+90^\circ\text{C}$  (UL  $+80^\circ\text{C}$ )

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® TORSION FRNC</b>				
1150373	12 G 1.0	13.2	115.2	274
1150378	16 G 1.0	14.8	153.6	392
1150271	3 G 1.5	9.0	43.2	131
1150272	4 G 1.5	9.7	57.6	156
1150273	5 G 1.5	10.6	72	183
1150275	7 G 1.5	12.6	100.8	253
1150279	12 G 1.5	15.3	172.8	386
1150311	3 G 2.5	10.4	72	181
1150312	4 G 2.5	11.3	96	242
1150313	5 G 2.5	12.4	120	258
1150350	3 G 4	11.9	115.2	254
1150351	4 G 4	13.0	153.6	313
1150357	5 G 6	16.0	288	486
1150362	5 G 10	20.5	480	799
<b>ÖLFLEX® TORSION D FRNC - screened</b>				
1150111	4 x 2 x 0.5	11.9	71	205
1150115	12 x 2 x 0.5	18.3	188	518
1150121	4 x 2 x 0.75	12.7	90	232
1150125	12 x 2 x 0.75	19.8	258	603
1150221	18 G 0.75	15.2	180	402
1150228	50 G 0.75	24.9	470	1079

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Drum  
 Details of the clamping force are available upon request, halogen-free.  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

**ÖLFLEX® TORSION FRNC**

- H07RN-F, enhanced version refer to page 92



# ÖLFLEX® CHARGE

VDE EVC cable to charge electrically powered vehicles and for spiralization

LAPP KABEL STUTTGART ÖLFLEX® CHARGE EVC 3G6+0,5 450/750 VAC VDE-Reg. 8727 RoHS CE

**Info**

- VDE EVC type certified
- Halogen-free and flame-retardant
- Spiralizable

### Benefits

- Normative compliance of the charging process with IEC 61851-1
- VDE EVC certified according to VDE-AR-E 2283-5/ EVC cable type as third-party approved component involved in charging
- Low toxicity of flue in the event of fire
- Permanent connection as flexible charging cable to charging station or for permanent on-board carriage inside vehicles
- Suitable for spiralization, except for 5G6mm<sup>2</sup>+1X0.5mm<sup>2</sup>

### Product features

- Flame-retardant acc. IEC 60332-1-2 as well as Halogen-free acc. VDE-AR-E 2283-5/ appendices B+C, EN 50267-2-1, EN 50267-2-2, EN 50525-1/ appendix C, EN 60684-2
- UV-resistant acc. EN ISO 4892-2, 2.4.20, as well as ozone-resistant acc. EN 50396, 8.1.3, for outdoor use
- Cold-flexible as well as water-resistant according to AD6 of HD 516 and VDE-AR-E 2283-5, appendix I
- Resistance to acids and solutions according to EN 60811
- High resistance to usual vehicle chemicals according to VDE-AR-E 2283-5, appendix G

### Norm references / Approvals

- <VDE> EVC cable type registration issued by the VDE according to the VDE application rule VDE-AR-E 2283-5

### Product Make-up

- Finely stranded, bare copper conductors of IEC conductor class 5 acc. IEC 60228
- Core insulations of power cores made of special, halogen-free, cross-linked elastomer EVI-2 acc. VDE-AR-E 2283-5
- Core insulation control/ pilot core(s): Halogen-free, thermoplastic, special compound EVI-1 acc. VDE-AR-E 2283-5
- Halogen-free, outer sheath made of PUR in compliance with the normative compound EVM-1 acc. VDE-AR-E 2283-5
- Colour of the outer sheath: Orange similar to RAL 2003, further sheath colours on request

### Technical data

- ETIM** 5.0 Class-ID: EC002884  
ETIM 5.0 Class-Description:
- Core identification code**  
Power cores: colour-coded according to HD 308/VDE 0293-308  
Control/ Pilot core: Red
- Conductor stranding**  
Fine-wired/ Finely stranded according to IEC 60228, conductor class 5  
Bare copper
- Minimum bending radius**  
10 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U = 450/750 V AC
- Test voltage**  
At the core: 2.5 kV AC  
At the finished cable: 3 kV AC
- Protective conductor**  
Always with protective conductor (PE), hence uppercase "G" as part of the dimension abbreviation
- Temperature range**  
-25°C to +80°C  
Maximum permissible conductor temperature: +90 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CHARGE</b>				
74880550	3G2,5+1X0,5	10.1	76.8	155
74880558	3G6+1X0,5	13.2	178	330

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
74880574	5G2,5+1X0,5	12.8	125	260
74880582	5G6+1X0,5	16	293	460

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Extension- and compensating cables, paired

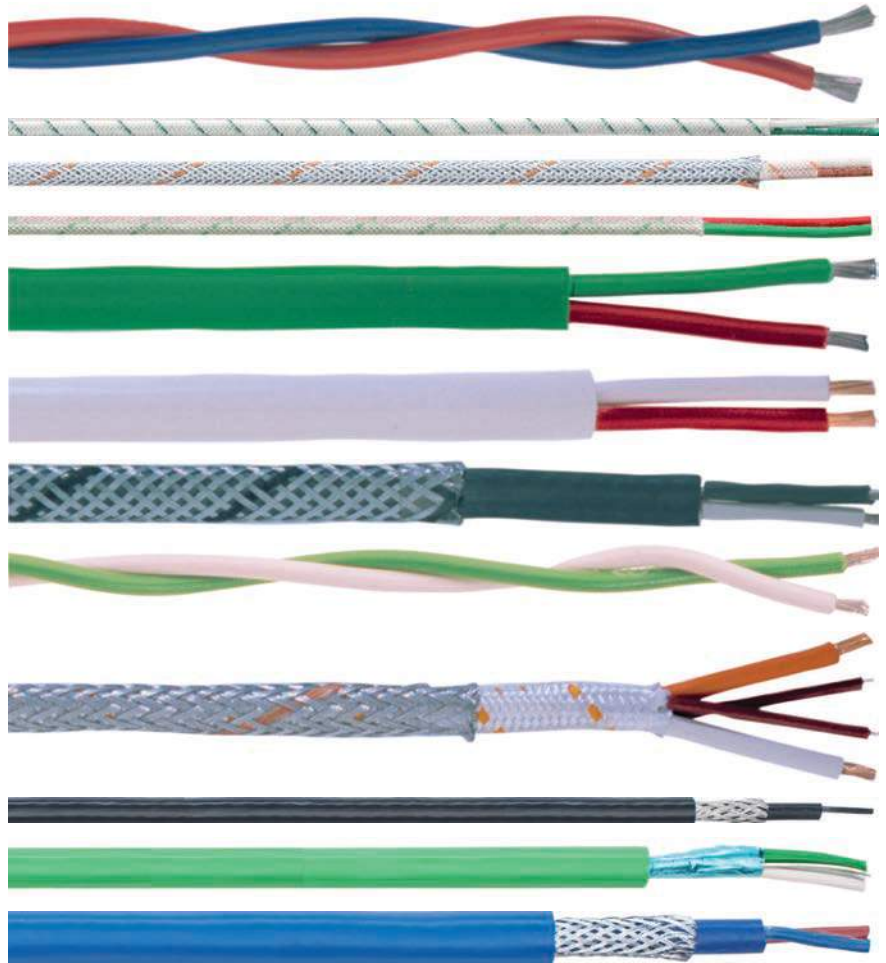
PVC, silicone, FEP or glass fibre-insulated

**i Info**

- Available in many different designs
- New: thermocouple cable type K

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000838  
ETIM 5.0 Class-Description:  
Thermocouple cable
- Based on**  
Limiting deviation in accordance with  
DIN and IEC in accordance with class 2
- Conductor stranding**  
1.5 mm<sup>2</sup>: approx. 48 x 0.20 mm  
0.75 mm<sup>2</sup>: approx. 24 x 0.20 mm  
0.5 mm<sup>2</sup>: approx. 16 x 0.20 mm  
0.22 mm<sup>2</sup>: approx. 7 x 0.20 mm
- Minimum bending radius**  
Without metal braiding:  
12 x cable diameter  
With metal braiding:  
15 x cable diameter
- Temperature range**  
(referring to insulation and sheath  
material)  
PVC: -5°C to +80°C  
Silicone: -25°C to +180°C  
Glass fibre: -25°C to +200°C  
FEP: -100°C to +205°C  
E-Glass: -25°C to +400°C



**Norm references / Approvals**

- Space-saving and flexible
- For more detailed information, see appendix T8 and data sheets

**Application range**

- Allows temperature measurement even in places where non-contact temperature measurement is not possible or reasonable
- The thermocouple is used to measure temperature as a part of monitoring the manufacturing process, thus the sheath material should be selected with reference to the maximum ambient temperature at its junction.
- **Conductor materials (alloys):**  
**Fe/CuNi (LX, JX)**  
Conductor alloys are identical to thermocouple alloys
- **NiCr/Ni (K, KX, KCA)**  
K and KX version - conductor alloys are identical to thermocouple alloys  
KCA version: compensating alloys (for KCA: Fe/CuNi), not identical to thermocouple alloys
- **PtRh/Pt (RCB, SCB)**  
Compensating alloys (for RCB, SCB: Cu/CuNi) are not identical to thermocouple alloys

**Norm references / Approvals**

- **Colour identity code**  
**DIN 43710**  
Negative conductor and outer sheath:  
Fe/CuNi: blue  
NiCr/Ni: green  
PtRh/Pt: white  
Positive conductor: always red  
**IEC 60 584**  
Positive conductor and outer sheath:  
Fe/CuNi: black  
NiCr/Ni: green  
PtRh/Pt: orange  
Negative conductor: always white

**Product Make-up**

- **Design abbreviations:**  
**PVC:** Polyvinylchloride  
**SIL:** Silicone rubber  
**GL:** Glass fibre  
**FEP:** Fluorinated ethylene propylene  
**EGL:** E-Glass fibre  
**C:** Copper braiding screen  
**ST:** Aluminium foil screen  
**S:** Steel wire braiding
- **Design, for example PVC-PVC-S-PVC:**  
- PVC core insulation  
- PVC inner sheath  
- Steel wire braiding  
- PVC outer sheath

• **Examples shown (top to bottom):**

- Fe/CuNi DIN 2 x 1.5 PVC
- NiCr/Ni IEC 2 x 1.5 GL-GL
- PtRh/Pt IEC 2 x 1.5 GL-GL-S
- NiCr/Ni DIN 2 x 1.5 SIL-GL
- NiCr/Ni DIN 2 x 1.5 PVC-PVC
- PtRh/Pt DIN 2 x 1.5 SIL-SIL
- Fe/CuNi IEC 2 x 1.5 SIL-SIL-S
- NiCr/Ni IEC 2 x 1.5 SIL
- PtRh/Pt IEC 2 x 1.5 SIL-GL-S
- Fe/CuNi IEC 2 x 0.22 PVC-PVC-C-PVC
- NiCr/Ni IEC 2 x 1.5 PVC-ST-PVC
- Fe/CuNi DIN 2 x 1.5 PVC-PVC-S-PVC

Article number	Reference/article designation	Thermocouple	Product Make-up	Cable design	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Outer dimensions, width x height (mm)	Weight (kg/km)
<b>0.22 mm<sup>2</sup> extension and compensating cables</b>								
0151051	KE 9-022 L	Fe/CuNi	DIN LX	PVC-PVC	2 x 0.22	4.0		22
0161051	KE 9-022 L	Fe/CuNi	IEC JX	PVC-PVC	2 x 0.22	4.0		22
0152051	KN 9-022 L	NiCr/Ni	DIN KCA	PVC-PVC	2 x 0.22	4.0		22
0162051	KN 9-022 L	NiCr/Ni	IEC KCA	PVC-PVC	2 x 0.22	4.0		22
0153051	KP 9-022 L	PtRh/Pt	DIN RCB, SCB	PVC-PVC	2 x 0.22	4.0		22
0163051	KP 9-022 L	PtRh/Pt	IEC RCB, SCB	PVC-PVC	2 x 0.22	4.0		22
0151052	KE 5-022 L-CY	Fe/CuNi	DIN LX	PVC-PVC-C-PVC	2 x 0.22	4.9		31
0161052	KE 5-022 L-CY	Fe/CuNi	IEC JX	PVC-PVC-C-PVC	2 x 0.22	4.9		31
0152052	KN 5-022 L-CY	NiCr/Ni	DIN KCA	PVC-PVC-C-PVC	2 x 0.22	4.9		31
0162052	KN 5-022 L-CY	NiCr/Ni	IEC KCA	PVC-PVC-C-PVC	2 x 0.22	4.9		31
0153052	KP 5-022 L-CY	PtRh/Pt	DIN RCB, SCB	PVC-PVC-C-PVC	2 x 0.22	4.9		31
0163052	KP 5-022 L-CY	PtRh/Pt	IEC RCB, SCB	PVC-PVC-C-PVC	2 x 0.22	4.9		31
1161011	KN FEP-SIL	NiCr/Ni	IEC KCA	FEP-SIL	2 x 0.22	3,8		22
1161007	K FEP-C-FEP	NiCr/Ni	IEC K	FEP-C-FEP	2 x 0.22	3.0		22
<b>Thermocouple cables 0,5 mm</b>								
1161008	K FEP-FEP	NiCr/Ni	IEC K	FEP-FEP ovale	2 x 0.5		2.4 x 1.5	45
1161009	K GL-GL	NiCr/Ni	IEC K	EGL-EGL ovale	2 x 0.5		2.3 x 1.3	45
<b>0.5 mm<sup>2</sup> extension and compensating cables</b>								
0151030	KE 91 L	Fe/CuNi	DIN LX	PVC-PVC	2 x 0.5	5.4		45
0161030	KE 91 L	Fe/CuNi	IEC JX	PVC-PVC	2 x 0.5	5.4		45
0152040	KN 91 L	NiCr/Ni	DIN KCA	PVC-PVC	2 x 0.5	5.4		45
0162040	KN 91 L	NiCr/Ni	IEC KCA	PVC-PVC	2 x 0.5	5.4		45
0151040	KE 41 L-SIL	Fe/CuNi	DIN LX	SIL-SIL-S ovale	2 x 0.5		6.4 x 4.4	51
0161040	KE 41 L-SIL	Fe/CuNi	IEC JX	SIL-SIL-S ovale	2 x 0.5		6.4 x 4.4	51
0152030	KN 41 L-SIL	NiCr/Ni	DIN KCA	SIL-SIL-S ovale	2 x 0.5		6.4 x 4.4	51
0162030	KN 41 L-SIL	NiCr/Ni	IEC KCA	SIL-SIL-S ovale	2 x 0.5		6.4 x 4.4	51
<b>0.75 mm<sup>2</sup> extension and compensating cables</b>								
0151035	KE 92 L	Fe/CuNi	DIN LX	PVC-PVC	2 x 0.75	6.0		56
0161035	KE 92 L	Fe/CuNi	IEC JX	PVC-PVC	2 x 0.75	6.0		56
0152045	KN 92 L	NiCr/Ni	DIN KCA	PVC-PVC	2 x 0.75	6.0		56
0162045	KN 92 L	NiCr/Ni	IEC KCA	PVC-PVC	2 x 0.75	6.0		56
0151050	KE 42 L-SIL	Fe/CuNi	DIN LX	SIL-SIL-S ovale	2 x 0.75		6.4 x 4.4	58
0161050	KE 42 L-SIL	Fe/CuNi	IEC JX	SIL-SIL-S ovale	2 x 0.75		6.4 x 4.4	58
0152035	KN 42 L-SIL	NiCr/Ni	DIN KCA	SIL-SIL-S ovale	2 x 0.75		6.4 x 4.4	58
0162035	KN 42 L-SIL	NiCr/Ni	IEC KCA	SIL-SIL-S ovale	2 x 0.75		6.4 x 4.4	58
<b>PVC-insulated versions 1,5 mm<sup>2</sup></b>								
0151001	KE 1 L	Fe/CuNi	DIN LX	PVC	2 x 1.5	5.4		40
0161001	KE 1 L	Fe/CuNi	IEC JX	PVC	2 x 1.5	5.4		40
0152001	KN 1 L	NiCr/Ni	DIN KCA	PVC	2 x 1.5	5.4		40
0162001	KN 1 L	NiCr/Ni	IEC KCA	PVC	2 x 1.5	5.4		40
0151010	KE 9 L	Fe/CuNi	DIN LX	PVC-PVC round	2 x 1.5	7.1		79
0161010	KE 9 L	Fe/CuNi	IEC JX	PVC-PVC round	2 x 1.5	7.1		79
0152010	KN 9 L	NiCr/Ni	DIN KCA	PVC-PVC round	2 x 1.5	7.1		79
0162010	KN 9 L	NiCr/Ni	IEC KCA	PVC-PVC round	2 x 1.5	7.1		79
0154010	KXN 9 L	NiCr/Ni	DIN KX	PVC-PVC round	2 x 1.5	7.1		79
0164010	KXN 9 L	NiCr/Ni	IEC KX	PVC-PVC round	2 x 1.5	7.1		79
0153010	KP 9 L	PtRh/Pt	DIN RCB, SCB	PVC-PVC round	2 x 1.5	7.1		79
0163010	KP 9 L	PtRh/Pt	IEC RCB, SCB	PVC-PVC round	2 x 1.5	7.1		79
0151017	KE 12 L	Fe/CuNi	DIN LX	PVC-PVC ovale	2 x 1.5		7.2 x 4.4	69
0161017	KE 12 L	Fe/CuNi	IEC JX	PVC-PVC ovale	2 x 1.5		7.2 x 4.4	69
0152017	KN 12 L	NiCr/Ni	DIN KCA	PVC-PVC ovale	2 x 1.5		7.2 x 4.4	69
0162017	KN 12 L	NiCr/Ni	IEC KCA	PVC-PVC ovale	2 x 1.5		7.2 x 4.4	69
0154011	KE 20 L	Fe/CuNi	DIN LX	PVC-ST-PVC	2 x 1.5	7.6		85
0164011	KE 20 L	Fe/CuNi	IEC JX	PVC-ST-PVC	2 x 1.5	7.6		85
0154012	KN 20 L	NiCr/Ni	DIN KCA	PVC-ST-PVC	2 x 1.5	7.6		85
0164012	KN 20 L	NiCr/Ni	IEC KCA	PVC-ST-PVC	2 x 1.5	7.6		85
0154013	KXN 20 L	NiCr/Ni	DIN KX	PVC-ST-PVC	2 x 1.5	7.6		85
0164013	KXN 20 L	NiCr/Ni	IEC KX	PVC-ST-PVC	2 x 1.5	7.6		85
0154014	KP 20 L	PtRh/Pt	DIN RCB, SCB	PVC-ST-PVC	2 x 1.5	7.6		85
0164014	KP 20 L	PtRh/Pt	IEC RCB, SCB	PVC-ST-PVC	2 x 1.5	7.6		85
0151011	KE 9 L-S	Fe/CuNi	DIN LX	PVC-PVC-S	2 x 1.5	8.0		140
0161011	KE 9 L-S	Fe/CuNi	IEC JX	PVC-PVC-S	2 x 1.5	8.0		140
0152011	KN 9 L-S	NiCr/Ni	DIN KCA	PVC-PVC-S	2 x 1.5	8.0		140
0162011	KN 9 L-S	NiCr/Ni	IEC KCA	PVC-PVC-S	2 x 1.5	8.0		140
0157514	KE 9 L-SY	Fe/CuNi	DIN LX	PVC-PVC-S-PVC	2 x 1.5	10.3		160
0167514	KE 9 L-SY	Fe/CuNi	IEC JX	PVC-PVC-S-PVC	2 x 1.5	10.3		160
0157513	KN 9 L-SY	NiCr/Ni	DIN KCA	PVC-PVC-S-PVC	2 x 1.5	10.3		160
0167513	KN 9 L-SY	NiCr/Ni	IEC KCA	PVC-PVC-S-PVC	2 x 1.5	10.3		160
0157515	KP 9 L-SY	PtRh/Pt	DIN RCB, SCB	PVC-PVC-S-PVC	2 x 1.5	10.3		160
0167515	KP 9 L-SY	PtRh/Pt	IEC RCB, SCB	PVC-PVC-S-PVC	2 x 1.5	10.3		160
<b>Silicone-insulated versions 1.5 mm<sup>2</sup></b>								
0151003	KE 1 L-SIL	Fe/CuNi	DIN LX	SIL	2 x 1.5	5.4		40
0161003	KE 1 L-SIL	Fe/CuNi	IEC JX	SIL	2 x 1.5	5.4		40
0152003	KN 1 L-SIL	NiCr/Ni	DIN KCA	SIL	2 x 1.5	5.4		40
0162003	KN 1 L-SIL	NiCr/Ni	IEC KCA	SIL	2 x 1.5	5.4		40
0151022	KE 15 L-SIL	Fe/CuNi	DIN LX	SIL-SIL round	2 x 1.5	7.0		76
0161022	KE 15 L-SIL	Fe/CuNi	IEC JX	SIL-SIL round	2 x 1.5	7.0		76
0152022	KN 15 L-SIL	NiCr/Ni	DIN KCA	SIL-SIL round	2 x 1.5	7.0		76
0162022	KN 15 L-SIL	NiCr/Ni	IEC KCA	SIL-SIL round	2 x 1.5	7.0		76
0153022	KP 15 L-SIL	PtRh/Pt	DIN RCB, SCB	SIL-SIL round	2 x 1.5	7.0		76
0163022	KP 15 L-SIL	PtRh/Pt	IEC RCB, SCB	SIL-SIL round	2 x 1.5	7.0		76
0151023	KE 15 L-SIL-S	Fe/CuNi	DIN LX	SIL-SIL-S round	2 x 1.5	7.8		105
0161023	KE 15 L-SIL-S	Fe/CuNi	IEC JX	SIL-SIL-S round	2 x 1.5	7.8		105

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Article number	Reference/article designation	Thermocouple	Product Make-up	Cable design	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Outer dimensions, width x height (mm)	Weight (kg/km)
0152023	KN 15 L-SIL-S	NiCr/Ni	DIN KCA	SIL-SIL-S round	2 x 1.5	7.8		105
0162023	KN 15 L-SIL-S	NiCr/Ni	IEC KCA	SIL-SIL-S round	2 x 1.5	7.8		105
0153023	KP 15 L-SIL-S	PtRh/Pt	DIN RCB, SCB	SIL-SIL-S round	2 x 1.5	7.8		105
0163023	KP 15 L-SIL-S	PtRh/Pt	IEC RCB, SCB	SIL-SIL-S round	2 x 1.5	7.8		105
0151007	KE 4 L-SIL-S	Fe/CuNi	DIN LX	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0161007	KE 4 L-SIL-S	Fe/CuNi	IEC JX	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0152007	KN 4 L-SIL-S	NiCr/Ni	DIN KCA	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0162007	KN 4 L-SIL-S	NiCr/Ni	IEC KCA	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0153007	KP 4 L-SIL-S	PtRh/Pt	DIN RCB, SCB	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0163007	KP 4 L-SIL-S	PtRh/Pt	IEC RCB, SCB	SIL-SIL-S ovale	2 x 1.5		8.0 x 5.2	85
0151019	KE 13 L-SIL	Fe/CuNi	DIN LX	SIL-GL ovale	2 x 1.5		6.0 x 3.3	50
0161019	KE 13 L-SIL	Fe/CuNi	IEC JX	SIL-GL ovale	2 x 1.5		6.0 x 3.3	50
0152019	KN 13 L-SIL	NiCr/Ni	DIN KCA	SIL-GL ovale	2 x 1.5		6.0 x 3.3	50
0162019	KN 13 L-SIL	NiCr/Ni	IEC KCA	SIL-GL ovale	2 x 1.5		6.0 x 3.3	50
0153019	KP 13 L-SIL	PtRh/Pt	DIN RCB, SCB	SIL-GL ovale	2 x 1.5		6.0 x 3.3	50
0151015	KE 11 L-SIL-S	Fe/CuNi	DIN LX	SIL-GL-S	2 x 1.5	6.7		82
0161015	KE 11 L-SIL-S	Fe/CuNi	IEC JX	SIL-GL-S	2 x 1.5	6.7		82
0152015	KN 11 L-SIL-S	NiCr/Ni	DIN KCA	SIL-GL-S	2 x 1.5	6.7		82
0162015	KN 11 L-SIL-S	NiCr/Ni	IEC KCA	SIL-GL-S	2 x 1.5	6.7		82
0153015	KP 11 L-SIL-S	PtRh/Pt	DIN RCB, SCB	SIL-GL-S	2 x 1.5	6.7		82
0163015	KP 11 L-SIL-S	PtRh/Pt	IEC RCB, SCB	SIL-GL-S	2 x 1.5	6.7		82
1161012	KP 11 L-SIL-S	NiCr/Ni	IEC KCA	SIL-GL-S ovale	2 x 1.5		6.8 x 4.1	82
<b>Glass fibre-insulated versions 1.5 mm<sup>2</sup></b>								
0151005	KE 3 L	Fe/CuNi	DIN LX	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0161005	KE 3 L	Fe/CuNi	IEC JX	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0152005	KN 3 L	NiCr/Ni	DIN KCA	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0162005	KN 3 L	NiCr/Ni	IEC KCA	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0153005	KP 3 L	PtRh/Pt	DIN RCB, SCB	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0163005	KP 3 L	PtRh/Pt	IEC RCB, SCB	GL-GL ovale	2 x 1.5		5.1 x 2.7	64
0151006	KE 4 L-S	Fe/CuNi	DIN LX	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87
0161006	KE 4 L-S	Fe/CuNi	IEC JX	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87
0152006	KN 4 L-S	NiCr/Ni	DIN KCA	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87
0162006	KN 4 L-S	NiCr/Ni	IEC KCA	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87
0153006	KP 4 L-S	PtRh/Pt	DIN RCB, SCB	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87
0163006	KP 4 L-S	PtRh/Pt	IEC RCB, SCB	GL-GL-S ovale	2 x 1.5		5.9 x 3.7	87

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

## Extension- and compensating cables, multi-paired

PVC insulated - with and without steel wire armouring or foil screen



**Info**

- Version SY - Armoured against mechanical loads
- Version ST - Screened against electromagnetic interference

### Product Make-up

- Version Y:**
  - Fine-wire conductor alloy
  - PVC core insulation
  - Cores twisted into layers
  - PVC outer sheath
- Version SY:**
  - Design as version Y
  - Additional galvanised steel wire braiding
  - PVC outer sheath
- Version ST:**
  - Design as version Y
  - Cores twisted in pairs, pairs twisted in layers
  - Aluminium foil screening + drain wire
  - PVC outer sheath
- Design, for example PVC-ST-PVC:**
  - PVC core insulation
  - STatic foil screen
  - PVC outer sheath
- Colour identity code**  
**DIN 43710**  
Negative conductor and outer sheath:  
Fe/CuNi: blue  
NiCr/Ni: green  
PtRh/Pt: white  
Positive conductor: always red  
**IEC 60 584**  
Positive conductor and outer sheath:  
Fe/CuNi: black  
NiCr/Ni: green  
PtRh/Pt: orange  
Negative conductor: always white
- Extension-conductor alloys** are identified with **X**, e.g. JX (Fe/CuNi)  
**Compensating-conductor alloys** are identified with **C**, e.g. KCA (NiCr/Ni)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000838  
ETIM 5.0 Class-Description: Thermocouple cable
- Core identification code**  
From 4 cores in pairs with consecutively marked numbers (1-1, 2-2, 3-3, 4-4...)
- Based on**  
Limiting deviation in accordance with DIN and IEC in accordance with class 2
- Conductor stranding**  
48 x 0.20 mm
- Minimum bending radius**  
For flexible use:  
12.5 x outer diameter  
Type SY with steel braid:  
15 x outer diameter  
Type ST with foil screen:  
15 x outer diameter
- Temperature range**  
(referring to insulation and sheath material)  
Flexing: -5°C to +80°C  
Fixed installation: -40°C to +80°C

Article number	Thermocouple	Product Make-up	Cable design	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Weight (kg/km)
<b>Type Y without steel wire braiding</b>						
0155001	Fe/CuNi	DIN-LX	PVC-PVC	4 x 1.5	8.2	130
0165001	Fe/CuNi	IEC-JX	PVC-PVC	4 x 1.5	8.2	130
0156001	NiCr/Ni	DIN-KCA	PVC-PVC	4 x 1.5	8.2	130
0166001	NiCr/Ni	IEC-KCA	PVC-PVC	4 x 1.5	8.2	130
0157001	PtRh/Pt	DIN-RCB/SCB	PVC-PVC	4 x 1.5	8.2	130
0167001	PtRh/Pt	IEC-RCB/SCB	PVC-PVC	4 x 1.5	8.2	130
0155002	Fe/CuNi	DIN-LX	PVC-PVC	6 x 1.5	10.2	200
0165002	Fe/CuNi	IEC-JX	PVC-PVC	6 x 1.5	10.2	200
0156002	NiCr/Ni	DIN-KCA	PVC-PVC	6 x 1.5	10.2	200
0166002	NiCr/Ni	IEC-KCA	PVC-PVC	6 x 1.5	10.2	200
0157002	PtRh/Pt	DIN-RCB/SCB	PVC-PVC	6 x 1.5	10.2	200
0167002	PtRh/Pt	IEC-RCB/SCB	PVC-PVC	6 x 1.5	10.2	200
0155003	Fe/CuNi	DIN-LX	PVC-PVC	8 x 1.5	11.2	238
0165003	Fe/CuNi	IEC-JX	PVC-PVC	8 x 1.5	11.2	238
0156003	NiCr/Ni	DIN-KCA	PVC-PVC	8 x 1.5	11.2	238
0166003	NiCr/Ni	IEC-KCA	PVC-PVC	8 x 1.5	11.2	238
0155005	Fe/CuNi	DIN-LX	PVC-PVC	12 x 1.5	13.3	335
0165005	Fe/CuNi	IEC-JX	PVC-PVC	12 x 1.5	13.3	335
0155007	Fe/CuNi	DIN-LX	PVC-PVC	16 x 1.5	15.0	447
0165007	Fe/CuNi	IEC-JX	PVC-PVC	16 x 1.5	15.0	447
0156007	NiCr/Ni	DIN-KCA	PVC-PVC	16 x 1.5	15.0	447
0166007	NiCr/Ni	IEC-KCA	PVC-PVC	16 x 1.5	15.0	447
0155010	Fe/CuNi	DIN-LX	PVC-PVC	24 x 1.5	19.0	555
0165010	Fe/CuNi	IEC-JX	PVC-PVC	24 x 1.5	19.0	555
0156010	NiCr/Ni	DIN-KCA	PVC-PVC	24 x 1.5	19.0	555
0166010	NiCr/Ni	IEC-KCA	PVC-PVC	24 x 1.5	19.0	555
<b>Type SY with steel wire braiding</b>						
0155501	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	4 x 1.5	11.4	240
0165501	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	4 x 1.5	11.4	240
0156501	NiCr/Ni	DIN-KCA	PVC-PVC-S-PVC	4 x 1.5	11.4	240
0166501	NiCr/Ni	IEC-KCA	PVC-PVC-S-PVC	4 x 1.5	11.4	240
0157501	PtRh/Pt	DIN-RCB/SCB	PVC-PVC-S-PVC	4 x 1.5	11.4	240

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Article number	Thermocouple	Product Make-up	Cable design	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Weight (kg/km)
0167501	PtRh/Pt	IEC-RCB/SCB	PVC-PVC-S-PVC	4 x 1.5	11.4	240
0155502	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0165502	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0156502	NiCr/Ni	DIN-KCA	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0166502	NiCr/Ni	IEC-KCA	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0157502	PtRh/Pt	DIN-RCB/SCB	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0167502	PtRh/Pt	IEC-RCB/SCB	PVC-PVC-S-PVC	6 x 1.5	13.0	355
0155503	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	8 x 1.5	13.8	410
0165503	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	8 x 1.5	13.8	410
0156503	NiCr/Ni	DIN-KCA	PVC-PVC-S-PVC	8 x 1.5	13.8	410
0166503	NiCr/Ni	IEC-KCA	PVC-PVC-S-PVC	8 x 1.5	13.8	410
0155505	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	12 x 1.5	17.9	550
0165505	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	12 x 1.5	17.9	550
0156505	NiCr/Ni	DIN-KCA	PVC-PVC-S-PVC	12 x 1.5	17.9	550
0166505	NiCr/Ni	IEC-KCA	PVC-PVC-S-PVC	12 x 1.5	17.9	550
0155507	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	16 x 1.5	19.4	730
0165507	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	16 x 1.5	19.4	730
0155510	Fe/CuNi	DIN-LX	PVC-PVC-S-PVC	24 x 1.5	23.8	847
0165510	Fe/CuNi	IEC-JX	PVC-PVC-S-PVC	24 x 1.5	23.8	847

**Type ST with static overall screening**

0158500	Fe/CuNi	DIN-LX	PVC-ST-PVC	2 x 2 x 1.5	11.4	145
0168500	Fe/CuNi	IEC-JX	PVC-ST-PVC	2 x 2 x 1.5	11.4	145
0158501	NiCr/Ni	DIN-KCA	PVC-ST-PVC	2 x 2 x 1.5	11.4	145
0168501	NiCr/Ni	IEC-KCA	PVC-ST-PVC	2 x 2 x 1.5	11.4	145
0158503	Fe/CuNi	DIN-LX	PVC-ST-PVC	4 x 2 x 1.5	13.7	257
0168503	Fe/CuNi	IEC-JX	PVC-ST-PVC	4 x 2 x 1.5	13.7	257
0158504	NiCr/Ni	DIN-KCA	PVC-ST-PVC	4 x 2 x 1.5	13.7	257
0168504	NiCr/Ni	IEC-KCA	PVC-ST-PVC	4 x 2 x 1.5	13.7	257
0158506	Fe/CuNi	DIN-LX	PVC-ST-PVC	8 x 2 x 1.5	18.3	469
0168506	Fe/CuNi	IEC-JX	PVC-ST-PVC	8 x 2 x 1.5	18.3	469
0158507	NiCr/Ni	DIN-KCA	PVC-ST-PVC	8 x 2 x 1.5	18.3	469
0168507	NiCr/Ni	IEC-KCA	PVC-ST-PVC	8 x 2 x 1.5	18.3	469
0158509	Fe/CuNi	DIN-LX	PVC-ST-PVC	12 x 2 x 1.5	22.2	573
0168509	Fe/CuNi	IEC-JX	PVC-ST-PVC	12 x 2 x 1.5	22.2	573
0158510	NiCr/Ni	DIN-KCA	PVC-ST-PVC	12 x 2 x 1.5	22.2	573
0168510	NiCr/Ni	IEC-KCA	PVC-ST-PVC	12 x 2 x 1.5	22.2	573

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.



# ÖLFLEX® CRANE NSHTÖU

Reelable cables for low and medium mechanical stress



**Info**

- Robust and efficient
- Suitable for outdoor use
- Integrated sheath supporting braid

### Benefits

- Can be used as hawser, drum and towing cable as well as for energy supply chains
- Integrated supporting braid prevents undesirable cable twists, and the formation of so-called corkscrew effects

### Application range

- For use in hoists, transport and conveyor systems
- Reeling/unreeling during operation without fixing
- In dry or damp interiors, outdoors, or not more than 2 weeks without interruption in industrial water
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404
- Good chemical, thermal and mechanical-resistance
- For connecting mobile equipment in hazardous areas acc. to DIN VDE 0165
- UV-resistant

### Norm references / Approvals

- <VDE> NSHTÖU cable type certification acc. VDE 0250-814

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: rubber compound, type 3GI3
- Support braid integrated in the outer sheath
- Outer sheath: rubber compound, type 5GM3

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
Flexible use:  
Cables with outer diameter < 21,5 mm: 5 x outer diameter  
Cables with outer diameter > 21,5 mm: 6,25 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Current rating**  
VDE 0298 Part 4

**Temperature range**  
Flexible use: -25°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE NSHTÖU</b>				
0043006	3 G 1.5	12.2	43.2	190
00430053	4 G 1.5	14.8	57.6	220
00430073	5 G 1.5	15.7	72	260
0043008	7 G 1.5	18.2	100.8	380
0043009	12 G 1.5	23.9	172.8	720
0043010	18 G 1.5	23.9	259.2	770
0043011	24 G 1.5	27.1	345.6	1000
0043012	30 G 1.5	30.2	432	1320
0043013	3 G 2.5	13.5	72	250
00430303	4 G 2.5	16.9	96	330
00430143	5 G 2.5	18	120	390
0043015	7 G 2.5	20.6	168	510
0043016	12 G 2.5	27.4	288	970
0043017	18 G 2.5	27.4	432	1100

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0043018	24 G 2.5	31.6	576	1450
0043019	30 G 2.5	36.3	720	1950
00430203	4 G 4	18.4	153.6	440
00430333	5 G 4	19.6	192	520
00430213	4 G 6	19.8	230.4	530
00430343	5 G 6	21.7	288	690
00430223	4 G 10	23.4	384	830
00430003	5 G 10	25.2	480	1000
00430233	4 G 16	25.5	614.4	1170
00430323	5 G 16	27.5	768	1400
00430243	4 G 25	32.6	960	1830
00430253	4 G 35	34.8	1344	2280
00430263	4 G 50	40.6	1920	3220
00430283	4 G 70	44.8	2688	4200
00430293	4 G 95	51.2	3648	5530

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE VS (N)SHTÖU refer to page 163
- ÖLFLEX® CRANE PUR refer to page 164

### Accessories

- STAR STRIP stripping tool refer to page 1000
- KT cable shears refer to page 999

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



## ÖLFLEX® CRANE VS (N)SHTÖU

Reelable cables for medium to high mechanical stress

**Info**

- Reinforced outer sheath design
- Central and tear-resistant supporting element
- Suitable for extreme tensile stress



### Benefits

- The central supporting element absorbs the tensile loads that occur, thereby allowing reeling, unreeling and deflection for free-hanging cables even over large distances.
- Reeling, unreeling and guiding operations also impose tensile stresses on the cables
- Integrated supporting braid prevents undesirable cable twists, and the formation of so-called corkscrew effects

### Application range

- For use in hoists, transport and conveyor systems
- Cables are reeled, unreeling, and guided by roller trains
- In dry or damp interiors, outdoors, or not more than 2 weeks without interruption in industrial water
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant according to EN 60811-404
- Good chemical, thermal and mechanical-resistance
- For connecting mobile equipment in hazardous areas acc. to DIN VDE 0165

### Norm references / Approvals

- Based on VDE 0250-814 (NSHTÖU)

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: rubber compound, type 3G13
- Central supporting element
- Support braid integrated in the outer sheath
- Outer sheath: rubber compound, type 5GM5

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000057 ETIM 5.0 Class-Description: Low voltage power cable
	<b>Core identification code</b> Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Minimum bending radius</b> Flexible use: 7.5 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 600/1000 V
	<b>Test voltage</b> 3000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Current rating</b> VDE 298 Part 4
	<b>Temperature range</b> Flexible use: -25°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Tensile strength (N)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE VS (N)SHTÖU</b>					
0044008	7 G 1.5	18.8	2000	100.8	430
0044009	12 G 1.5	25.3	2000	172.8	820
0044010	18 G 1.5	25.3	2000	259.2	930
0044011	24 G 1.5	30.1	2000	345.6	1260
0044036	36 G 1.5	34	2000	518.4	1650
0044015	7 G 2.5	21.6	2000	168	630
0044016	12 G 2.5	29.4	2000	288	1150
00440333	5 G 4	19.6	2000	192	510
00440223	4 G 10	23.4	2000	384	830
00440233	4 G 16	25.5	2000	614.4	1170
00440323	5 G 16	27.5	2400	768	1400
00440243	4 G 25	32.6	3000	960	1850
00440253	4 G 35	34.8	4000	1344	2250
00440263	4 G 50	40.6	6000	1920	3200
00440283	4 G 70	44.8	8000	2688	4200
00440293	4 G 95	51.2	11000	3648	5550

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE NSHTÖU refer to page 162
- ÖLFLEX® CRANE PUR refer to page 164

### Accessories

- EASY STRIP stripping and cutting tool refer to page 1004
- V 1311-A pressing pliers, hydraulic refer to page 1030
- STAR STRIP stripping tool refer to page 1000
- KT cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031



## ÖLFLEX® CRANE PUR

Reelable polyurethane cables for low, medium and high mechanical stress



**Info**

- Multifunctional application possibilities, flexible use down to -40°C
- Lightweight due to minimised diameters
- Halogen-free

### Benefits

- Designed with a smaller outer diameter to save space and weight
- Cost-saving due to the use of smaller drums, guide rollers, as well as drive engines when possible
- Reeling, unreeling and guiding operations also impose tensile stresses on the cables
- The central supporting element absorbs the tensile loads that occur, thereby allowing reeling, unreeling and deflection for free-hanging cables even over large distances.
- Integrated supporting braid prevents undesirable cable twists, and the formation of so-called corkscrew effects

- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

### Product features

- Halogen-free and flame-retardant (IEC 60332-1-2)
- Oil-resistant according to EN 60811-404
- Good chemical, thermal and mechanical-resistance
- For connecting mobile equipment in hazardous areas acc. to DIN VDE 0165

### Application range

- For use in hoists, transport and conveyor systems
- Cables are reeled, unreeling, and guided by roller trains
- In dry or damp interiors, outdoors, or not more than 2 weeks without interruption in industrial water

### Product Make-up

- Strands of bare copper wires
- Core insulation: TPE compound
- Central supporting element
- Support braid integrated in the outer sheath
- Outer sheath: PUR compound, halogen-free

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
Flexible use: 7.5 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 600/1000 V

**Test voltage**  
3500 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Current rating**  
VDE 298 Part 4

**Temperature range**  
Flexible use: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Tensile strength (N)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE PUR</b>					
0045207	4 G 1.5	10.9	500	57.6	169
0045209	5 G 1.5	11.6	1000	72	197
0045210	7 G 1.5	12.9	2500	100.8	239
0045211	12 G 1.5	17.6	2500	172.8	401
0045212	18 G 1.5	17.5	2500	259.2	507
0045213	24 G 1.5	20.7	2500	345.6	673
0045215	30 G 1.5	28.9	3000	432	1100
0045214	36 G 1.5	31.4	3000	518.4	1350
0045216	4 G 2.5	12.2	500	96	227
0045218	5 G 2.5	13.2	2000	120	274
0045220	7 G 2.5	15.4	3000	168	358
0045221	12 G 2.5	21.6	3000	288	619
0045222	18 G 2.5	21.5	3000	432	793
0045223	24 G 2.5	25.5	3000	576	1123
0045224	30 G 2.5	34.7	3000	720	1641

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Tensile strength (N)	Copper index (kg/km)	Weight (kg/km)
0045225	4 G 4	14.3	1000	153.6	341
0045227	5 G 4	15.5	2000	192	411
0045228	4 G 6	16.6	1500	230.4	457
0045229	5 G 6	17.7	2000	288	538
0045235	7 G 6	21.5	2500	403	750
0045230	4 G 10	19.2	2000	384	674
0045237	5 G 10	21.6	2500	480	825
0045231	4 G 16	22.2	2500	614.4	966
0045238	5 G 16	25.6	3500	768	1222
0045232	4 G 25	27.6	3500	960	1506
0045233	4 G 35	31	4500	1344	2004
0045234	4 G 50	36.1	6000	1920	2838
0045240	3x25+3G6	25.7	2000	892.8	1380
0045241	3x35+3G6	27.6	2500	1180.8	1695
0045242	3x50+3G10	32.1	3500	1728	2307

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE NSHTÖU refer to page 162
- ÖLFLEX® CRANE VS (N)SHTÖU refer to page 163

### Accessories

- EASY STRIP stripping and cutting tool refer to page 1004
- KT cable shears refer to page 999





## ÖLFLEX® CRANE

Highly flexible and weather-proof rubber cables with support element

**Info**

- Suitable for outdoor use
- Integrated supporting element
- Also suitable for power chains and cable trolley systems



### Benefits

- Weather-resistant for harsh environmental conditions
- Very flexible due to extra-fine wire conductor design
- Cables up to a max. 24 cores can also be used in power chains

### Application range

- Machinery and equipment that are permanently exposed to the weather; conveying and hoisting equipment; construction machinery; shipyard machinery
- Suitable for use in special conditions, such as not more than 2 weeks without interruption of submersion in industrial or sea water
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5
- For highly flexible applications, please follow the assembly guidelines for ÖLFLEX® FD cables in power chains; see appendix T3

### Product features

- Flame-retardant according IEC 60332-1-2
- Not suitable for use on guide pulleys or drums under tensile load
- Refer to the article table for the tensile strength of the support element
- The cable should be installed in a way that the supporting element can absorb the tensile forces
- The mobility of the cores must not be affected by the clamps

### Norm references / Approvals

- Based on VDE 0250

### Product Make-up

- Strands of bare copper wires
- Core insulation: rubber compound
- Special supporting element as strain relief
- Outer sheath: rubber compound, type EM2

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
0.15 mm wire diameter at 1.0 mm<sup>2</sup>  
0.20 mm wire diameter from 1.5 mm<sup>2</sup>

**Minimum bending radius**  
Flexible use: 12.5 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexible use: -25°C to +80°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Tensile strength (N)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE</b>					
0039001	2 X 1.0	7.4	300	19.2	89
0039002	3 G 1.0	8.3	300	28.8	106
00390033	4 G 1.0	8.9	300	38.4	127
00390043	5 G 1.0	10.4	300	48	149
0039107	7 G 1.0	12.9	300	67.2	206
0039109	9 G 1.0	14.4	300	86.4	281
0039054	12 G 1.0	18.5	360	115.2	422
0039055	18 G 1.0	19.2	540	172.8	451
0039056	24 G 1.0	22.1	720	230.4	646
0039057	36 G 1.0	26.1	1080	345.6	863
0039017	2 X 1.5	8	300	28.8	108
0039018	3 G 1.5	8.7	300	43.2	128
00390193	4 G 1.5	9.9	300	57.6	158
00390203	5 G 1.5	10.9	300	72	188
0039061	7 G 1.5	14	315	100.8	260
0039208	8 G 1.5	15.2	360	115.2	300
0039209	9 G 1.5	15.9	405	129.6	375
0039210	10 G 1.5	17	450	144	427
0039058	12 G 1.5	19.9	540	172.8	557

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Tensile strength (N)	Copper index (kg/km)	Weight (kg/km)
0039059	18 G 1.5	20.9	810	259.2	608
0039060	24 G 1.5	23.4	1080	345.6	825
0039034	2 X 2.5	9.7	300	48	145
0039035	3 G 2.5	10.2	300	72	173
00390363	4 G 2.5	11.6	300	96	219
00390373	5 G 2.5	12.4	375	120	259
0039307	7 G 2.5	16.6	525	168	378
0039309	9 G 2.5	18.9	675	216	518
0039312	12 G 2.5	23.3	900	288	770
0039316	16 G 2.5	22.8	1200	384	749
0039318	18 G 2.5	24.4	1350	432	837
0039324	24 G 2.5	28.5	1800	576	1184
00390463	4 G 4	15.2	480	153.6	307
00390473	5 G 4	16.8	600	192	394
00390483	4 G 6	16.8	720	230.4	409
00390493	5 G 6	19.2	900	288	528
00390503	4 G 10	21.8	1200	384	698
00390513	5 G 10	24.6	1500	480	853
00390523	4 G 16	25.4	1920	614.4	974
00390533	5 G 16	28	2400	768	1226

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE NSHTÖU refer to page 162
- ÖLFLEX® CRANE VS (N)SHTÖU refer to page 163

### Accessories

- SKINTOP® CLICK System

Conveyor technology • For push-button control units



## ÖLFLEX® CRANE 2S

Flexible at cold temperatures, PVC cables with external steel supporting elements



**Info**

- Double tensile strength safety
- Teach pad cable

### Benefits

- Two steel support elements that are integrated into the outer sheath on opposite sides absorb the tensile forces during operation
- Tensile strength of 2100 N per supporting element

### Application range

- For connecting movable control panels and consoles
- As a self-supporting shaft cable; in high rack systems
- Suitable for outdoor applications
- Do not use for lift applications!
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3

### Product features

- Flame-retardant according IEC 60332-1-2
- Flexible at low temperatures

### Norm references / Approvals

- Based on VDE 0250

### Product Make-up

- Strands of bare copper wires
- Special PVC-based core insulation
- Special textile wrapping to improve sliding movement between the sheath and cores
- Special PVC-based outer sheath
- Opposing, integrated steel supporting elements

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable

**Core identification code**  
 Black with white numbers acc. to VDE 0293-1

**Conductor stranding**  
 Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
 Flexible use: 20 x outer diameter

**Nominal voltage**  
 $U_0/U$ : 300/500 V

**Test voltage**  
 3000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Flexible use: -15°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Cable Ø (mm)	Distance between strain wires (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE 2S</b>					
0027503	8 G 1.5	14.7	20	115	373
0027504	12 G 1.5	16.2	21	172.8	439
0027505	20 G 1.5	20.1	25	288	674

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EASY STRIP stripping and cutting tool refer to page 1004



## ÖLFLEX® LIFT

Flexible at cold temperatures, PVC lift cables with supporting element

**Info**

- High operating efficiency
- Suspension length up to 90 m
- VDE-tested and registered



**Benefits**

- Special cable design for a long service life
- Attractive price and maximum operational efficiency
- Very flexible due to extra-fine wire conductor design

**Application range**

- Lift cable that ensures the electrical integrity in various areas of lift construction
- Suitable for use in outdoor lifts
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

**Product features**

- Flame-retardant according IEC 60332-1-2
- Good weather-resistance

**Norm references / Approvals**

- VDE registration under VDE reg. no. 7039

**Product Make-up**

- Strands of bare copper wires
- Special PVC-based core insulation
- Supporting element made of hemp or aramid
- Fleece-wrapping between cores and sheath
- Special PVC-based outer sheath

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000826  
ETIM 5.0 Class-Description: Elevator cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Suspension length**  
refer to article table
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
Flexible use: 20 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexible use: -15°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Max. suspension length (m)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® LIFT</b>					
0027020	7 G 1.0	11.5	80	67.2	178
0027022	12 G 1.0	16.3	80	115.2	332
0027024	18 G 1.0	16.4	70	172.8	405
0027027	24 G 1.0	19.4	60	230.4	533
0027029	36 G 1.0	25.1	90	345.6	887

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® LIFT T refer to page 168
- ÖLFLEX® LIFT S refer to page 169

**Accessories**

- Round cable wedged clamps
- KT cable shears refer to page 999



## ÖLFLEX® LIFT T

Flexible at cold temperatures, PVC lift cables with textile braiding and supporting element



**Info**

- Robust cable design
- Suspension length up to 90 m
- VDE-tested and registered

### Benefits

- Special cable design for a long service life
- Able to withstand mechanical stress at high suspension lengths
- Very flexible due to extra-fine wire conductor design

### Application range

- Lift cable that ensures the electrical integrity in various areas of lift construction
- Suitable for use in outdoor lifts
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

### Product features

- Flame-retardant according IEC 60332-1-2
- Good weather-resistance
- Flexible at low temperatures

### Norm references / Approvals

- VDE registration under VDE reg. no. 7040

### Product Make-up

- Strands of bare copper wires
- Special PVC-based core insulation
- Supporting element made of hemp or aramid
- Fleece-wrapping between cores and sheath
- Support braid made of textile fibre blend
- Special PVC-based outer sheath

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000826  
 ETIM 5.0 Class-Description: Elevator cable

**Core identification code**  
 Black with white numbers acc. to VDE 0293-1

**Suspension length**  
 refer to article table

**Conductor stranding**  
 Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6

**Minimum bending radius**  
 Flexible use: 20 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 4000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Flexible use: -15°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Max. suspension length (m)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® LIFT T</b>					
0027001	7 G 1.0	14.5	80	67	225
0027002	12 G 1.0	19.2	80	115	410
0027008	18 G 1.0	19.5	70	172.8	475
0027004	20 G 1.0	20.3	70	192	525
0027005	24 G 1.0	22.1	60	230	600
0027007	36 G 1.0	28.6	90	345.6	950
0027006	28 G 1,0 + 2 x (0,5) C	25.2	90	293	765

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® LIFT refer to page 167
- ÖLFLEX® LIFT S refer to page 169

### Accessories

- Round cable wedged clamps
- KT cable shears refer to page 999



## ÖLFLEX® LIFT S

Flexible at cold temperatures, PVC lift cables with textile braiding and steel supporting element

**Info**

- Robust cable design
- Suspension length up to 150 m



### Benefits

- Special cable design for a long service life
- Practical experience and long-term tests proved that the cable can withstand extreme stress
- High suspension lengths due to the steel wire supporting element
- Very flexible due to extra-fine wire conductor design

### Application range

- Lift cable that ensures the electrical integrity in various areas of lift construction
- Suitable for use in outdoor lifts
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3
- The assembly and handling guidelines for ÖLFLEX® CRANE cables can be found in the catalogue appendix, technical table T4; for ÖLFLEX® LIFT cables please see the catalogue appendix, technical table T5

### Product features

- Flame-retardant according IEC 60332-1-2
- Good weather-resistance
- Flexible at low temperatures

### Product Make-up

- Strands of bare copper wires
- Special PVC-based core insulation
- Steel support element
- Fleece-wrapping between cores and sheath
- Support braid made of textile fibre blend
- Special PVC-based outer sheath

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000826  
ETIM 5.0 Class-Description: Elevator cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Suspension length**  
refer to article table
- Conductor stranding**  
Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Minimum bending radius**  
Flexible use: 20 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexible use: -15°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Max. suspension length (m)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® LIFT S</b>					
0027009	24 G 1.0	22.1	150	230	680
0027010	36 G 1.0	28.6	150	345.6	1092

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® LIFT refer to page 167
- ÖLFLEX® LIFT T refer to page 168

### Accessories

- Round cable wedged clamps
- STAR STRIP stripping tool refer to page 1000



## ÖLFLEX® CRANE F

Weather-resistant flat rubber cables



**Info**

- For outdoor cable trolley application
- Space-saving installation
- Also suitable for power chains and lift applications

### Benefits

- Weather-resistant for harsh environmental conditions
- Flat cables need less space than round cables
- Smaller bending radii is possible

### Application range

- In crane systems on building sites and shipyards for fixed installation, or for flexible use in cable trolley systems
- Sewage treatment plants, steelworks and high rack facilities
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0250 (NGFLGÖU)

### Product Make-up

- Strands of bare or tinned-copper wires
- Core insulation: rubber compound
- Outer sheath: special rubber compound

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000825  
ETIM 5.0 Class-Description: Flat cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Copper conductor according to VDE 0295/IEC 60228  
up to 25 mm<sup>2</sup>: extra-fine wire, class 6  
from 35 mm<sup>2</sup>: fine wire, class 5
- Minimum bending radius**  
Flexible use: 10 x cable thickness  
Fixed installation: 4 x cable thickness
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexible use: -25 °C to +90 °C  
Fixed installation: -40 °C to +90 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE F</b>				
0041041	4 G 1.5	17.5 x 6.2	57.6	200
0041042	5 G 1.5	21.5 x 6.2	72	240
0041043	7 G 1.5	29.0 x 6.2	100.8	360
0041044	8 G 1.5	31.5 x 6.2	115	370
0041045	10 G 1.5	40.0 x 6.5	144	520
0041046	12 G 1.5	47.0 x 6.5	172.8	620
0041047	4 G 2.5	21.0 x 7.5	96	280
0041048	5 G 2.5	27.0 x 7.5	120	400
0041049	7 G 2.5	35.0 x 7.5	168	520
0041050	8 G 2.5	39.0 x 7.5	192	550
0041051	12 G 2.5	56.0 x 8.0	288	800

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)	Weight (kg/km)
0041052	4 G 4	26.0 x 9.0	153.6	410
0041053	7 G 4	42.0 x 9.0	268.8	700
0041054	4 G 6	29.0 x 9.5	230	600
0041055	5 G 6	35.0 x 9.5	288	650
0041056	7 G 6	42.0 x 9.5	403	850
0041057	4 G 10	33.0 x 11.0	384	800
0041059	4 G 16	38.0 x 13.0	614	1150
0041060	4 G 25	49.5 x 15.0	960	1700
0041061	4 G 35	55.0 x 17.0	1344	2360
0041062	4 G 50	63.0 x 19.0	1920	3000
0041063	4 G 70	71.0 x 22.0	2688	4000

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® LIFT F refer to page 172

### Accessories

- Cable trolley systems
- Flat cable wedge clamps



## ÖLFLEX® CRANE CF

Weather-resistant flat rubber cables with copper screening

**Info**

- For outdoor cable trolley application
- EMC-compliant



### Benefits

- Weather-resistant for harsh environmental conditions
- Flat cables need less space than round cables
- Smaller bending radii is possible
- Copper braiding screens the cable against electromagnetic interference

### Application range

- In crane systems on building sites and shipyards for fixed installation, or for flexible use in cable trolley systems
- Sewage treatment plants, steelworks and high rack facilities
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0250 (NGFLGÖU)

### Product Make-up

- Strands of bare or tinned-copper wires
- Core insulation: rubber compound
- Individual core screening consist of
  - plastic foil wrapping
  - tin-plated copper braiding
  - plastic foil wrapping
- Outer sheath: special rubber compound

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000825  
ETIM 5.0 Class-Description: Flat cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Copper conductor according to VDE 0295/IEC 60228  
up to 25 mm<sup>2</sup>: extra-fine wire, class 6  
from 35 mm<sup>2</sup>: fine wire, class 5

**Minimum bending radius**  
Flexible use: 10 x cable thickness  
Fixed installation: 4 x cable thickness

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexible use: -25°C to +90°C  
Fixed installation: -40°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® CRANE CF</b>				
0041075	4 G 1.5	18.5 x 6.5	79	220
0041076	8 G 1.5	36.0 x 7.5	155	470
0041077	12 G 1.5	54.5 x 8.5	238	745
0041078	4 G 2.5	22.5 x 7.5	141	320
0041079	12 G 2.5	69.5 x 9.5	499	1180
0041080	4 G 4	29.0 x 10.5	219	505
0041081	4 G 6	31.0 x 10.5	302	605
0041082	4 G 10	36.0 x 11.5	472	840
0041083	4 G 16	41.5 x 13.5	687	1180
0041084	4 G 25	47.0 x 15.0	1114	1605
0041085	4 G 35	55.0 x 17.0	1482	2520
0041086	4 G 50	66.0 x 20.5	2238	3000

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE F refer to page 170
- ÖLFLEX® LIFT F refer to page 172

### Accessories

- Cable trolley systems
- Flat cable wedge clamps



## ÖLFLEX® LIFT F

Flexible at cold temperatures, PVC flat cables



### Benefits

- Flat cables need less space than round cables
- Smaller bending radii is possible

### Application range

- For hoisting equipment and conveyor systems
- Indoor cranes and high-rack facilities
- As supply line for moving machine parts
- According to VDE definition, this can also be used as a lift control cable with up to 35 m suspension length, and a maximum speed of travel at 1.6 m/s
- The application profiles for ÖLFLEX® CRANE and ÖLFLEX® LIFT cables can be found in the appendix, selection table A3

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on EN 50214/ VDE 0283-2 (H05VVH6-F or H07VVH6-F)
- Meets the requirements of the harmonised PVC flat cable H07VVH6-F

### Product Make-up

- Strands of bare copper wires
- Core insulation: Based on PVC
- Outer sheath: Based on PVC

### Info

- For cable trolley application
- Space-saving installation
- Also suitable for power chains and lift applications

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000825 ETIM 5.0 Class-Description: Flat cable
	<b>Core identification code</b> Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
	<b>Conductor stranding</b> U0/U 300/500 V versions, Fine wire according to VDE 0295 Class 5 or IEC 60228 Cl. 5 U0/U 450/750 V versions, extra-Fine wire according to VDE 0295 Class 6 or IEC 60228 Cl. 6 (from nominal conductor cross section 10 mm <sup>2</sup> : finely stranded/ class 5)
	<b>Minimum bending radius</b> Flexible use: 10 x cable thickness
	<b>Nominal voltage</b> Up to 1.0 mm <sup>2</sup> : U <sub>0</sub> /U: 300/500 V From 1.5 mm <sup>2</sup> : U <sub>0</sub> /U: 450/750 V
	<b>Test voltage</b> 3000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> Flexible use: 0 °C to +70 °C (up to 1.0 mm <sup>2</sup> ) -15 °C to +70 °C (as from 1.5 mm <sup>2</sup> )

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® LIFT F</b>				
<b>Nominal voltage U<sub>0</sub>/U: 300/500 V, temperature range: 0°C to +70°C</b>				
0042020	12 G 1.0	36.0 x 4.7	115	392
0042021	16 G 1.0	48.5 x 4.7	153.6	521
0042022	20 G 1.0	59.0 x 4.7	192	645
0042023	24 G 1.0	71.5 x 4.7	230	772
<b>Nominal voltage U<sub>0</sub>/U: 450/750 V, temperature range: -15°C to +70°C</b>				
00420013	4 G 1.5	15.5 x 5.2	57.6	132
00420023	5 G 1.5	19.7 x 5.2	72	170
0042003	7 G 1.5	27.0 x 5.2	100.8	236
0042004	8 G 1.5	29.0 x 5.2	115	266
0042005	10 G 1.5	36.5 x 5.2	144	333
0042006	12 G 1.5	42.0 x 5.2	172.8	422
00420073	4 G 2.5	19.0 x 5.9	96	206
00420083	5 G 2.5	24.0 x 5.9	120	257
0042009	7 G 2.5	32.5 x 5.9	168	345
0042010	8 G 2.5	35.0 x 5.9	192	390
0042050	12 G 2.5	52.5 x 5.9	288	580
00420113	4 G 4	21.0 x 6.8	153.6	343
0042012	7 G 4	38.0 x 6.8	268.8	589
00420133	4 G 6	24.0 x 7.3	230	425
00420143	4 G 10	30.5 x 9.5	384	709
00420153	4 G 16	35.0 x 10.8	614	1015
00420163	4 G 25	42.0 x 13.0	960	1366

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CRANE F refer to page 170

### Accessories

- Cable trolley systems
- Flat cable wedge clamps





# ÖLFLEX® HEAT 105 MC

Colour-coded connection cables made of high heat-resistant PVC

**Info**

- Based on H05V2V2-F



**Benefits**

- Possible to operate at higher peak temperature (almost 30% more) compared to conventional PVC cables

**Application range**

- For connection of motors, transformers, reels, plants, machines, appliances, switch cabinets and other installations with a higher operating or ambient temperature
- For indoor and outdoor use

**Product features**

- Resistant to acids, alkalis and certain oils at room temperature
- Flame-retardant according IEC 60332-1-2
- Good UV-resistance

**Norm references / Approvals**

- Based on EN 50525-2-11

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: PVC, high heat-resistance
- Cores twisted in layers
- Outer sheath: PVC, heat-resistant, black (RAL 9005)

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: ÖLFLEX® colour code, refer to Appendix T7
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2500 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Occasional flexing: +5°C to +90°C  
Fixed installation: -20°C to +90°C  
Short-term: +105 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 105 MC</b>				
0026001	2 X 0.75	6.2	14.4	53
0026002	3 G 0.75	6.5	21.6	62
00260033	4 G 0.75	7.1	28.8	76
00260043	5 G 0.75	8.0	36	95
0026005	7 G 0.75	9.7	50	113
0026006	2 X 1	6.5	19.2	61
0026007	3 G 1	6.9	29	74
00260083	4 G 1	7.7	38.4	89
00260093	5 G 1	8.4	48	110
0026010	7 G 1	10.2	67	130
0026011	2 X 1.5	7.5	29	78
0026012	3 G 1.5	8.1	43.2	98
00260133	4 G 1.5	8.9	57.6	122
00260143	5 G 1.5	10.0	72	144
0026015	7 G 1.5	12.3	101	180

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® HEAT 125 MC refer to page 174

**Accessories**

- SKINTOP® CLICK refer to page 715
- KS 20 cable shears refer to page 999



## ÖLFLEX® HEAT 125 MC

Electron beam cross-linked cables for more demanding application requirements



**Info**

- Substitutes previous ÖLFLEX® HEAT 145 MC
- Improved characteristics in the event of a fire
- GL - Germanischer Lloyd approved

### Benefits

- For safety in areas with high density of people
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire
- Minimises damage to buildings and equipment caused by the formation of toxic acid fumes in fires
- Certified for maritime applications

### Application range

- For the wiring and connection of lighting, heating appliances, control cabinets, and distributors in mechanical and plant engineering
- For use in traffic regulation systems and outdoors
- Coil winding, electromagnets, pumps, electrical systems
- Heat Treatment plants, pressure die casting, heating and cooling technology
- For outdoor applications

### Product features

- Fire behaviour:
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Flame-retardant (IEC 60332-1-2, NF C 32-070 (C1) and NF-F 16-101 (Class C))
  - Low toxicity (EN 50305)
- No flame-propagation according to IEC 60332-3-22, IEC 60332-3-24 and IEC 60332-3-25 (Flame spread on vertical cable bundle)
- Oil-resistant acc. IEC 60227-1 (ST9) and EN 50264-1 (EM104)
- UV-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- GL - Germanischer Lloyd approved
- Based on EN 50525-3-21 and EN 50525-3-41

### Product Make-up

- Fine-wire, tinned-copper conductor
- Electron beam cross-linked polyolefin copolymer insulation
- Cores twisted in layers
- Outer sheath: electron beam cross-linked polyolefin copolymer, black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
Up to 1.0mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
From 1.5mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
0.6/1kV from 1.5 mm<sup>2</sup> in the case of fixed and protected installation

**Test voltage**  
4000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Occasional flexing: -35 °C to +120 °C  
Fixed installation: -55°C to +125°C  
Temporary (3.000h): up to +145°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 125 MC 300/500V</b>				
1024300	2 X 0.5	6.0	9.6	38
1024301	3 G 0.5	6.3	14.4	46
1024307	2 X 0.75	6.4	14.4	40
1024308	3 G 0.75	6.8	21.6	53
1024309	4 G 0.75	7.4	28.8	69
1024310	5 G 0.75	8.3	36	86
1024311	7 G 0.75	9.0	50	127
1024315	2 X 1	6.6	19.2	50
1024316	3 G 1	7.0	28.8	67
1024317	4 G 1	7.8	38.4	87
1024318	5 G 1	8.6	48	107
1024319	7 G 1	9.5	67	152
1024320	12 G 1	12.8	115	221

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 125 MC 450/750V</b>				
1024323	2 X 1.5	7.6	29	71
1024324	3 G 1.5	8.3	43	96
1024325	4 G 1.5	9.0	58	123
1024326	5 G 1.5	10.1	72	156
1024327	7 G 1.5	11.2	101	224
1024328	12 G 1.5	15.1	173	316
1024333	2 X 2.5	9.0	48	102
1024334	3 G 2.5	9.8	72	145
1024335	4 G 2.5	10.8	96	189
1024336	5 G 2.5	11.9	120	235
1024337	7 G 2.5	13.2	168	344
1024341	4 G 4	12.7	154	276
1024342	5 G 4	14.0	192	334
1024346	4 G 6	14.1	230	341
1024347	5 G 6	15.8	288	431

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EASY STRIP stripping and cutting tool refer to page 1004
- SILVYN® HCX refer to page 919
- SILVYN® EMC AS-CU refer to page 899
- STAR STRIP stripping tool refer to page 1000



## ÖLFLEX® HEAT 125 C MC

Electron beam cross-linked cables for more demanding application requirements



- Info**
- Substitutes previous ÖLFLEX® HEAT 145 C MC
  - Improved characteristics in the event of a fire
  - GL - Germanischer Lloyd approved

### Benefits

- For safety in areas with high density of people
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire
- Minimises damage to buildings and equipment caused by the formation of toxic acid fumes in fires
- Certified for maritime applications
- Copper braiding screens the cable against electromagnetic interference

### Application range

- For outdoor applications
- For the wiring and connection of lighting, heating appliances, control cabinets, and distributors in mechanical and plant engineering
- For use in traffic regulation systems and outdoors
- Coil winding, electromagnets, pumps, electrical systems
- Heat Treatment plants, pressure die casting, heating and cooling technology

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-SC refer to page 794
- EASY STRIP stripping and cutting tool refer to page 1004
- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® EMC AS-CU refer to page 899
- STAR STRIP stripping tool refer to page 1000

### Product features

- Fire behaviour:
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Flame-retardant (IEC 60332-1-2, NF C 32-070 (C1) and NF-F 16-101 (Class C))
  - Low toxicity (EN 50305)
- No flame-propagation according to IEC 60332-3-22, IEC 60332-3-24 and IEC 60332-3-25 (Flame spread on vertical cable bundle)
- Oil-resistant acc. IEC 60227-1 (ST9) and EN 50264-1 (EM 104)
- UV-resistant according to ISO 4892-2
- Ozone-resistant according to EN 50396

### Norm references / Approvals

- GL - Germanischer Lloyd approved
- Based on EN 50525-3-21 and EN 50525-3-41

### Product Make-up

- Fine-wire, tinned-copper conductor
- Electron beam cross-linked polyolefin copolymer insulation
- Cores twisted in layers
- Tinned-copper braiding
- Outer sheath: electron beam cross-linked polyolefin copolymer, black

### Technical data

- Classification**  
 ETIM 5.0 Class-ID: EC000104  
 ETIM 5.0 Class-Description: Control cable
- Core identification code**  
 Colour-coded according to VDE 0293-308, refer to Appendix T9 or black with white numbers refer to article table
- Specific insulation resistance**  
 >2 TOhm x cm
- Conductor stranding**  
 Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 5 x outer diameter
- Nominal voltage**  
 Up to 1.0mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
 From 1.5mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
 0.6/1kV from 1.5 mm<sup>2</sup> in the case of fixed and protected installation
- Test voltage**  
 C/C 4000 V, C/S 2500 V
- Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor
- Temperature range**  
 Occasional flexing: -35 °C to +120 °C  
 Fixed installation: -55°C to +125°C  
 Temporary (3.000h): up to +145°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 125 C MC 300/500 V - colour-coded</b>				
1024400	2 X 0.5	6.8	41	45
1024401	3 G 0.5	7.1	45.5	59
1024407	2 X 0.75	7.2	46	79
1024408	3 G 0.75	7.6	57.9	96
1024409	4 G 0.75	8.4	64	116
1024410	5 G 0.75	9.1	77.4	139
1024415	2 X 1	7.4	56	90
1024416	3 G 1	8.0	65.3	104
1024417	4 G 1	8.6	78.1	129
1024418	5 G 1	9.6	89.4	153
<b>ÖLFLEX® HEAT 125 C MC 450/750 V - colour-coded</b>				
1024423	2 X 1.5	8.6	65	114
1024424	3 G 1.5	9.1	83	132
1024425	4 G 1.5	10.0	100	163
1024426	5 G 1.5	11.1	125	200
1024433	2 X 2.5	10.0	112	157
1024434	3 G 2.5	10.7	146	198
1024435	4 G 2.5	11.6	167	236
1024436	5 G 2.5	12.9	200	287
1024441	4 G 4	13.7	237	317
1024446	4 G 6	15.1	318	404
1024451	4 G 10	19.3	558	669

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 125 C MC 300/500 V - Black with white numbers</b>				
1024480	2 X 0.75	7.2	46	79
1024481	3 X 0.75	7.6	57.9	96
1024482	4 X 0.75	8.4	64	116
1024411	7 G 0.75	10.0	102	186
1024483	7 X 0.75	10.0	102	186
1024412	12 G 0.75	13.4	177	219
1024484	2 X 1	7.4	56	90
1024485	3 X 1	8.0	65.3	104
1024419	7 G 1	10.3	113.3	211
1024420	12 G 1	14.0	188.1	266
<b>ÖLFLEX® HEAT 125 C MC 450/750 V - Black with white numbers</b>				
1024486	2 X 1.5	8.6	65	114
1024487	4 X 1.5	10.0	100	163
1024427	7 G 1.5	12.0	149	273
1024488	7 X 1.5	12.0	149	273
1024428	12 G 1.5	16.3	280	371
1024489	3 X 2.5	10.7	146	198
1024490	4 X 2.5	11.6	167	236
1024437	7 G 2.5	14.4	288	385
1024438	12 G 2.5	19.3	477.3	569

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® HEAT 180 SiHF

Silicone cables with extended temperature range



**Info**

- The classic for multi-functional use

### Benefits

- Flexibility simplifies installation where space is limited
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where insulating and sheath materials of conventional cables will embrittle after a short while
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2), flame-retardant (IEC 60332-1-2)
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

- Based on EN 50525-2-83

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted in layers
- Silicone-based outer sheath, colour red-brown

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-50 °C to +180 °C  
(adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 SiHF</b>				
0046001	2 X 0.75	6.4	14.4	59
0046002	3 G 0.75	6.8	21.6	70
00460033	4 G 0.75	7.6	28.8	89
00460043	5 G 0.75	8.5	36	112
0046005	6 G 0.75	9.2	43.2	131
0046006	7 G 0.75	9.2	50.4	136
0046007	2 X 1	6.6	19.2	66
0046008	3 G 1	7.0	29	79
00460093	4 G 1	7.9	38.4	101
00460103	5 G 1	8.8	48	127
0046012	7 G 1	9.5	67	156
0046013	2 X 1.5	7.6	29	90
0046014	3 G 1.5	8.0	43	109
00460153	4 G 1.5	8.8	58	134
00460163	5 G 1.5	9.6	72	163
0046018	7 G 1.5	10.4	101	202
0046039	12 G 1.5	14.0	173	361
0046040	16 G 1.5	16.2	230.4	478
0046041	20 G 1.5	17.5	288	574

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0046042	24 G 1.5	19.8	345.6	720
0046019	2 X 2.5	8.8	48	128
0046020	3 G 2.5	9.7	72	167
00460213	4 G 2.5	10.6	96	206
00460223	5 G 2.5	11.6	120	251
0046024	7 G 2.5	12.6	168	313
0046025	2 X 4	10.8	76.8	196
0046026	3 G 4	11.5	115	241
00460273	4 G 4	12.6	154	300
00460283	5 G 4	14.0	192	374
0046030	7 G 4	15.6	269	486
0046031	2 X 6	12.4	116	268
0046032	3 G 6	13.2	173	333
00460333	4 G 6	14.7	230	425
00460343	5 G 6	16.6	288	538
0046036	7 G 6	18.6	403	705
00460373	4 G 10	19.4	384	707
00460453	5 G 10	21.6	480	878
00460383	4 G 16	21.4	614	1004

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 H05SS-F EWKF refer to page 177
- ÖLFLEX® HEAT 180 EWKF refer to page 180

### Accessories

- SILVYN® AS refer to page 896
- SKINDICHT® SHV-M-VITON® refer to page 757
- SILVYN® EDU-AS refer to page 898



# ÖLFLEX® HEAT 180 H05SS-F EWKF

Europe-wide standardised silicone connection cables with increased mechanical performance

**Info**

- International use in combination with proven EWKF quality



### Benefits

- Harmonised use in Europe
- Notch and tear-resistant silicone compounds reduce damage due to mechanical stress
- For harsh environments, more durable than conventional H05SS-F standardised cables
- Flexibility simplifies installation where space is limited
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures and occasionally mechanical stress
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- EWKF:**
  - Initial tear propagation and notch resistance
- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2), flame-retardant (IEC 60332-1-2)
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

- EN 50525-2-83 (H05SS-F)

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: based on EWKF silicone
- Cores twisted together
- Outer sheath: silicone-based EWKF, notch-resistant, black

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
-50 °C to +180 °C  
(adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 H05SS-F EWKF</b>				
0046900	2 X 0.75	6.4	14.4	54
0046901	3 G 0.75	7.0	21.6	67
00469023	4 G 0.75	7.6	28.8	87
00469033	5 G 0.75	8.5	36	105
0046904	2 X 1	6.8	19.2	63
0046905	3 G 1	7.2	28.8	81
00469063	4 G 1	7.9	38.4	98
00469073	5 G 1	8.8	48	121
0046908	2 X 1.5	8.4	28.8	84
0046909	3 G 1.5	8.9	43.2	103
00469103	4 G 1.5	9.9	57.6	128
00469113	5 G 1.5	10.9	72	154
0046912	2 X 2.5	9.8	48	141
0046913	3 G 2.5	10.4	72	158
00469143	4 G 2.5	11.6	96	195
00469153	5 G 2.5	12.9	120	241
0046916	3 G 4	12.3	115.2	239
00469173	4 G 4	13.7	153.6	312
0046919	3 G 6	14.0	172.8	345
00469203	4 G 6	15.6	230.4	451

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 EWKF refer to page 180
- ÖLFLEX® HEAT 180 EWKF C refer to page 181

### Accessories

- SILVYN® AS refer to page 896
- SKINDICHT® SHV-M refer to page 756
- SILVYN® EDU-AS refer to page 898



## ÖLFLEX® HEAT 180 MS

Certified silicone cables for North America (AWM recognized)



**Info**

- MS = Multi-Standard  
For use in the USA and Canada
- UL AWM Style 4476 (150°C/600V)
- Metric flexible conductor design

### Benefits

- Certified for the USA and Canada for export-oriented appliance and apparatus manufacturers
- Thicker cable design meets the requirements of the FT-1 flame test and also approved for the external interconnection of apparatuses and appliances
- Flexibility simplifies installation where space is limited
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where insulating and sheath materials of conventional cables will embrittle after a short while
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2)
- Flame-retardant acc. to IEC 60332-1-2, Cable Flame Test, CSA FT 1
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

- UL AWM 4476 and cUL AWM II A/B Construction B, External wiring
- UL File No. E63634

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted together
- Silicone-based outer sheath, colour black

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5 (Refer to Appendix T16 for the matching US conductor sizes in AWG standard)
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V  
Working voltage UL: 600 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
According to VDE: -50 °C to +180 °C  
UL/cUL: up to +150 °C (adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 MS</b>				
0046600	2 X 0.5	7.4	9.8	72
0046601	3 G 0.5	7.8	14.7	83
00466023	4 G 0.5	8.5	19.6	99
00466033	5 G 0.5	9.2	24.5	119
0046604	7 G 0.5	9.9	34.3	142
0046612	2 X 1	8.2	19.2	93
0046613	3 G 1	8.7	28.8	110
00466143	4 G 1	9.4	38.4	133
00466153	5 G 1	10.3	48	160
0046616	7 G 1	11.1	67.2	195
0046617	12 G 1	14.9	115.2	345
0046618	2 X 1.5	8.8	28.8	113
0046619	3 G 1.5	9.3	43.2	135
00466203	4 G 1.5	10.1	57.6	165

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00466213	5 G 1.5	11.1	72	200
0046622	7 G 1.5	12.0	100.8	246
0046623	12 G 1.5	16.1	172.8	437
0046625	18 G 1.5	18.8	259.2	613
0046626	25 G 1.5	22.9	360	904
0046628	2 X 2.5	9.6	48	146
0046629	3 G 2.5	10.2	72	178
00466303	4 G 2.5	11.1	96	220
00466313	5 G 2.5	12.2	120	269
0046633	3 G 4	11.5	115.2	246
00466343	4 G 4	12.6	153.6	307
00466353	5 G 4	14.2	192	389
0046636	3 G 6	14.9	172.8	396
00466373	4 G 6	16.4	230.4	495
00466383	5 G 6	18.0	288	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 SiF A refer to page 192
- ÖLFLEX® HEAT 180 C MS refer to page 179

### Accessories

- KS 20 cable shears refer to page 999



## ÖLFLEX® HEAT 180 C MS

Screened and approved silicone cables for North America (AWM recognized)

**Info**

- MS = Multi-Standard  
For use in the USA and Canada
- UL AWM Style 4476 (150°C/600V)
- Metric flexible conductor design



### Benefits

- Certified for the USA and Canada for export-oriented appliance and apparatus manufacturers
- Thicker cable design meets the requirements of the FT-1 flame test and also approved for the external interconnection of apparatuses and appliances
- Flexibility simplifies installation where space is limited
- Copper braiding screens the cable against electromagnetic interference

### Application range

- Areas with high ambient temperatures where insulating and sheath materials of conventional cables will embrittle after a short while
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2)
- Flame-retardant acc. to IEC 60332-1-2, Cable Flame Test, CSA FT 1
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

- UL AWM 4476 and cUL AWM II A/B Construction B, External wiring
- UL File No. E63634

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted together
- Tinned-copper screen braiding, interleaved plastic foil wrapping
- Silicone-based outer sheath, colour black

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Fine wire according to VDE 0295, class 5/IEC 60228 class 5  
(Refer to Appendix T16 for the matching US conductor sizes in AWG standard)
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V  
Working voltage UL: 600 V
- Test voltage**  
2000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
According to VDE: -50 °C to +180 °C  
UL/cUL: up to +150 °C  
(adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 C MS</b>				
0046701	3 G 0.5	8.6	43.4	100
0046702	4 G 0.5	9.3	55.4	122
0046703	5 G 0.5	10.0	60.2	137
0046708	2 X 1	9.0	48.2	104
0046709	3 G 1	9.5	65	131
0046710	4 G 1	10.2	74.6	152
0046711	5 G 1	11.0	91.5	181
0046712	7 G 1	11.9	117.9	228
0046716	2 X 1.5	9.6	65	126
0046717	3 G 1.5	10.1	79.4	152
0046718	4 G 1.5	10.9	101.1	186
0046719	5 G 1.5	11.8	122.7	222

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0046720	7 G 1.5	12.8	158.7	281
0046721	12 G 1.5	16.9	245.2	431
0046723	18 G 1.5	19.6	346.1	600
0046724	25 G 1.5	23.9	495.7	833
0046728	3 G 2.5	11.0	115.5	197
0046729	4 G 2.5	11.9	146.7	244
0046730	5 G 2.5	12.9	177.9	291
0046734	3 G 4	12.3	165.9	261
0046735	4 G 4	13.4	211.5	325
0046736	5 G 4	14.9	257.2	389
0046740	4 G 6	17.2	302.8	482
0046741	5 G 6	18.7	367.6	580
0046742	4 G 10	22.8	508.4	802

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 MS refer to page 178

### Accessories

- KS 20 cable shears refer to page 999



## ÖLFLEX® HEAT 180 EWKF

Silicone cables with increased mechanical characteristics



**Info**

- Proven notch-resistant EWKF quality

### Benefits

- Longer durability in harsh applications than conventional silicone cables
- Notch and tear-resistant silicone compounds reduce damage due to mechanical stress
- Due to the use of special additives in EWKF silicone, armoured cable versions will not be required
- Flexibility simplifies installation where space is limited
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures and occasionally mechanical stress
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- **EWKF:** Initial tear propagation and notch resistance
- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2), flame-retardant (IEC 60332-1-2)
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

- Based on EN 50525-2-83

### Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation: based on EWKF silicone
- Cores twisted together
- Outer sheath: silicone-based EWKF, notch-resistant, black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-50 °C to +180 °C  
(adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 EWKF</b>				
0046500	2 X 0.75	6.4	15	49
0046501	3 G 0.75	6.9	22	60
00465023	4 G 0.75	7.6	29	76
00465033	5 G 0.75	8.5	36	96
0046506	2 X 1	6.8	20	56
0046507	3 G 1	7.1	29	68
00465083	4 G 1	7.9	39	88
00465093	5 G 1	8.8	48	110
0046110	7 G 1	9.5	67.2	137
0046511	2 X 1.5	8.0	29	77
0046512	3 G 1.5	8.4	43	94
00465133	4 G 1.5	9.5	58	117
00465143	5 G 1.5	10.4	72	143

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0046115	7 G 1.5	11.0	101	180
0046116	12 G 1.5	14.9	173	319
0046117	16 G 1.5	17.1	230.4	424
0046119	24 G 1.5	21.0	345.6	637
0046520	2 X 2.5	9.4	48	110
0046521	3 G 2.5	9.8	72	146
00465223	4 G 2.5	11.1	96	181
00465233	5 G 2.5	12.4	120	222
0046131	3 G 4	11.5	114	213
00461323	4 G 4	12.5	152	267
00461333	5 G 4	13.9	190	334
0046141	3 G 6	13.2	174	297
00461423	4 G 6	14.7	232	381
00461433	5 G 6	16.5	290	481

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 H05SS-F EWKF refer to page 177
- ÖLFLEX® HEAT 180 EWKF C refer to page 181

### Accessories

- SILVYN® AS refer to page 896
- SKINDICHT® SHV-M refer to page 756
- SILVYN® EDU-AS refer to page 898
- KS 20 cable shears refer to page 999





## ÖLFLEX® HEAT 180 EWKF C

Screened silicone cables with increased mechanical characteristics

**Info**

- Proven notch-resistant EWKF quality
- EMC compliant copper screening



### Benefits

- Longer durability in harsh applications than conventional silicone cables
- Notch and tear-resistant outer sheath material reduces mechanical damage
- Copper braiding screens the cable against electromagnetic interference
- Flexibility simplifies installation where space is limited
- Due to the use of special additives in EWKF silicone, armoured cable versions will not be required

### Application range

- Areas with high ambient temperatures and occasionally mechanical stress
- Typical fields of application
  - Steel, ceramic and iron works
  - Bakery equipment and industrial furnaces
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Galvanisation technology

### Product features

- **EWKF:** Initial tear propagation and notch resistance
- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2), flame-retardant (IEC 60332-1-2)
- Good hydrolysis and UV-resistance
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Product Make-up

- Fine-wire, tinned-copper conductor
- Cores twisted together
- Silicone-based core insulation
- Silicone-based inner sheath
- Tinned-copper screen braiding, interleaved plastic foil wrapping
- Outer sheath: silicone-based EWKF, notch-resistant, black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
-50 °C to +180 °C  
(adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 EWKF C</b>				
0046301	2 X 0.75	8.6	37.5	104
0046302	3 G 0.75	8.9	46.1	118
00463033	4 G 0.75	10.2	57.3	152
00463043	5 G 0.75	10.9	67.3	176
0046307	2 X 1	9.0	43	116
0046308	3 G 1	9.7	55.7	142
00463093	4 G 1	10.9	67.8	175
00463103	5 G 1	11.6	80.3	203
0046312	7 G 1	12.3	113.9	250
0046313	2 X 1.5	10.8	58	166
0046314	3 G 1.5	11.2	74	188

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00463153	4 G 1.5	12.0	91.4	222
00463163	5 G 1.5	12.8	121.7	273
0046318	7 G 1.5	13.6	157.2	341
0046320	3 G 2.5	12.8	121.2	271
00463213	4 G 2.5	13.9	150.9	328
00463223	5 G 2.5	14.8	180.5	387
00463273	4 G 4	16.0	218	448
00463283	5 G 4	17.2	262.9	531
0046330	3 G 6	16.4	240.5	489
00463313	4 G 6	17.9	304.7	591
00463323	5 G 6	19.4	370	706

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 C MS refer to page 179
- ÖLFLEX® HEAT 180 EWKF refer to page 180

### Accessories

- SILVYN® AS refer to page 896
- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-M BRUSH refer to page 733
- SILVYN® EDU-AS refer to page 898
- KS 20 cable shears refer to page 999



## ÖLFLEX® HEAT 180 GLS

Steel-armoured silicone cables for increased mechanical stress



### Info

- Protected against thermal and mechanical loads

### Benefits

- Close-meshed braid made of galvanised steel wires protects against mechanical damage
- Longer durability in harsh applications than conventional silicone cables
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures and occasionally mechanical stress
- Typical fields of application
  - Steel and glass works
  - Cement and ceramic works
  - Foundries
  - Shipbuilding industry
  - Furnace construction

### Product features

- Halogen-free (IEC 60754-1), no corrosive gases (IEC 60754-2), flame-retardant (IEC 60332-1-2)
- Only suitable for use in dry conditions
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based core insulation
- Cores twisted together
- Silicone-based outer sheath, colour red-brown
- Glass fibre wrapping
- Galvanised steel wire braiding

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001578 ETIM 5.0 Class-Description: Flexible cable
	<b>Core identification code</b> Colours according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
	<b>Minimum bending radius</b> Occasional flexing: 20 x outer diameter Fixed installation: 4 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 300/500 V
	<b>Test voltage</b> 2000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> -50 °C to +180 °C (adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 GLS</b>				
0046201	2 X 0.75	7.6	14.4	84
0046202	3 G 0.75	8.0	21.6	96
00462033	4 G 0.75	8.8	28.8	118
00462043	5 G 0.75	9.7	36	145
0046205	6 G 0.75	10.4	43.2	167
0046206	7 G 0.75	10.4	50.4	171
0046207	2 X 1	7.8	19.2	92
0046208	3 G 1	8.2	28.8	106
00462093	4 G 1	9.1	38.4	132
00462103	5 G 1	10.0	48	161
0046212	7 G 1	10.7	67	205
0046213	2 X 1.5	8.8	29	119
0046214	3 G 1.5	9.2	43	140
00462153	4 G 1.5	10.0	57.6	168

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00462163	5 G 1.5	10.8	72	212
0046218	7 G 1.5	11.8	101	255
0046237	12 G 1.5	15.4	173	433
0046219	2 X 2.5	10.0	48	162
0046220	3 G 2.5	10.9	72	217
00462213	4 G 2.5	12.0	96	260
00462223	5 G 2.5	13.0	120	310
0046224	7 G 2.5	14.0	168	362
0046226	3 G 4	12.9	115	300
00462273	4 G 4	14.0	154	365
00462283	5 G 4	15.4	192	446
00462313	4 G 6	16.1	230	500
00462343	4 G 10	20.8	384	807
00462353	4 G 16	22.8	614	1117

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 260 GLS refer to page 186

### Accessories

- KS 20 cable shears refer to page 999



## ÖLFLEX® HEAT 205 MC

Fluorinated ethylene propylene cables for harsh applications



**Info**

- Good chemical resistance
- Wide temperature application range
- Thin, light and robust

**Info**

- EMC compliant copper screening

## ÖLFLEX® HEAT 205 PTFE/FEP

4-cored version with PTFE insulation and special core identity code



**Benefits**

- Space and weight-saving installations due to small cable diameters
- Resistant to contact with mostly all highly aggressive chemical media
- Low outgassing behaviour
- Due to good electrical and mechanical properties suitable for sensor technology

**Application range**

- For use in environments with very high operating temperatures, heavy usage of chemical agents or confined spaces
- Typical fields of application
  - Industrial furnace construction
  - Foundries
  - Chemical industry
  - Power plant engineering
  - Paint shop line technology
  - Heating elements
  - Polymer processing
  - Wind turbine engineering
- Sensor systems, e.g. level sensors

**Product features**

- ÖLFLEX® HEAT 205 made of FEP
  - Outstanding resistance against acids, solvents, lacquers, petrol, oils and many other chemical media
  - Difficult to inflame
  - High dielectric strength and high abrasion resistance
  - Low water absorption
  - Resistant to microbes
  - Adhesion free insulation materials
  - Weather and ozone resistant
  - Hydrophobic and dirt-repellent
  - High elongation and tear resistance
  - Resistant against hydraulic fluids
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

**ÖLFLEX® HEAT 205 MC**

- Fine-wire, tinned-copper conductor
- FEP-based core insulation
- Cores twisted together
- FEP-based outer sheath, black

**ÖLFLEX® HEAT 205 PTFE/FEP**

- Fine-wire, silver-plated copper conductor
- PTFE-based core insulation
- Cores twisted together
- Tinned-copper braiding
- Outer sheath: FEP-based, white

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC001578  
 ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
**ÖLFLEX® HEAT 205 MC**  
 Up to 5 cores: colour-coded acc. to VDE 0293-308  
 From 7 cores: ÖLFLEX® colour-codes, refer to Appendix T7  
**ÖLFLEX® HEAT 205 PTFE/FEP**  
 Blue, red, grey, black

**Conductor stranding**  
 Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>

**Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
**ÖLFLEX® HEAT 205 MC**  
 2500 V  
**ÖLFLEX® HEAT 205 PTFE/FEP**  
 C/C: 2500 V  
 C/S: 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Fixed installation: -100°C to +205°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 205 MC</b>				
0091200	2 X 0.25	3.1	5	17.2
0091201	3 G 0.25	3.3	7.5	22.2
00912023	4 G 0.25	3.6	10	27.5
0091210	2 X 0.5	3.8	9.8	21.6
0091211	3 G 0.5	4.0	14.7	32.8
00912123	4 G 0.5	4.4	19.6	44.4
0091220	2 X 0.75	4.2	14.4	31.5
0091221	3 G 0.75	4.6	21.6	46.1
00912223	4 G 0.75	4.9	29	57.9
0091230	2 X 1	4.5	19	41.6
0091231	3 G 1	4.8	29	55.6

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
00912323	4 G 1	5.3	38	70
0091100	3 G 1.5	5.6	43	70
00911033	4 G 1.5	6.1	58	98
00911013	5 G 1.5	6.8	72	117
0091102	7 G 1.5	7.4	101	184
0091236	3 G 2.5	6.6	72	86
00912353	4 G 2.5	7.3	96	115
00912373	5 G 2.5	8.2	120	144
00912423	4 G 4	8.7	154	180
00912433	5 G 4	9.6	192	225
<b>ÖLFLEX® HEAT 205 PTFE/FEP</b>				
30016373	4 X 0.75	5.9	49	78

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

**ÖLFLEX® HEAT 205 MC**

- ÖLFLEX® HEAT 260 MC refer to page 184

**Accessories**

- SILVYN® AS refer to page 896
- SKINDICHT® SHV-M refer to page 756
- SILVYN® EDU-AS refer to page 898
- KS 20 cable shears refer to page 999

Expanded ambient temperatures • PTFE cables (-190°C to +260°C)



## ÖLFLEX® HEAT 260 MC

Polytetrafluoroethylene cables for most extreme loads



**Info**

- Excellent chemical, thermal and electrical performance
- Thin, light and robust

### Benefits

- Space-saving installation due to small cable diameters
- Stress crack resistant to frequent ambient temperature fluctuations
- Due to good electrical and mechanical properties suitable for sensor technology
- Low outgassing behaviour

### Application range

- For use in environments with very high operating temperatures, heavy usage of chemical agents or confined spaces
- ÖLFLEX® HEAT 260 has proven to be an effective solution in harsh environments such as paint shop lines
- Typical fields of application
  - Industrial furnace construction
  - Foundries
  - Chemical industry
  - Power plant engineering
  - Paint shop line technology
  - Heating elements
  - Polymer processing
  - Wind turbine engineering
- Sensor systems, e.g. level sensors

### Product features

- ÖLFLEX® HEAT 260 made of PTFE
  - Outstanding resistance against acids, alkalis, solvents, lacquers, petrol, oils and many other chemical media
  - Difficult to inflame
  - High dielectric strength and high abrasion resistance
  - Low water absorption
  - Resistant to microbes
  - Adhesion-free insulation materials
  - Weather and ozone resistant
  - Hydrophobic and dirt-repellent
  - High elongation and tear resistance
  - Resists contact with liquid nitrogen
  - Resistant against hydraulic fluids
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- PTFE-based core insulation
- Cores twisted together
- PTFE-based outer sheath, black

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable
- Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2500 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Fixed installation:  
-190°C to +260°C  
Short-term: up to +300°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 260 MC</b>				
0091300	2 X 0.5	3.9	9.6	22
0091301	3 G 0.5	4.1	14.4	33
0091302	4 G 0.5	4.5	19.2	45
0091305	2 X 0.75	4.2	14.4	32
0091306	3 G 0.75	4.4	21.6	47
0091307	4 G 0.75	5.1	28.8	58
0091310	2 X 1	4.8	19.2	42
0091311	3 G 1	5.1	28.8	56
0091312	4 G 1	5.8	38.4	71
0091315	3 G 1.5	5.6	43.2	72
0091316	4 G 1.5	6.1	57.6	98
0091317	5 G 1.5	7.0	72	118
0091320	3 G 2.5	7.1	72	87
0091321	4 G 2.5	7.7	96	116
0091322	5 G 2.5	8.5	120	145

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 205 MC refer to page 183

### Accessories

- SILVYN® HIPROJACKET refer to page 914
- SILVYN® SSUE refer to page 908
- EASY STRIP stripping and cutting tool refer to page 1004
- STAR STRIP stripping tool refer to page 1000



## ÖLFLEX® HEAT 260 C MC

Copper-screened polytetrafluoroethylene cables for most extreme loads



**Info**

- Excellent chemical, thermal and electrical performance
- Thin, light and robust
- EMC compliant copper screening

**Benefits**

- Space and weight-saving installations due to small cable diameters
- Stress crack resistant to frequent ambient temperature fluctuations
- Resistant to contact with mostly all highly aggressive chemical media
- Low outgassing behaviour
- Due to good electrical and mechanical properties suitable for sensor technology

**Application range**

- For use in environments with very high operating temperatures, heavy usage of chemical agents or confined spaces
- ÖLFLEX® HEAT 260 has proven to be an effective solution in harsh environments such as paint shop lines
- Typical fields of application
  - Industrial furnace construction
  - Foundries
  - Chemical industry
  - Power plant engineering
  - Paint shop line technology
  - Heating elements
  - Polymer processing
  - Wind turbine engineering
- Sensor systems, e.g. level sensors

**Product features**

- Copper braiding of screened version complies with EMC requirements and protects against electromagnetic interference
- ÖLFLEX® HEAT 260 made of PTFE
  - Outstanding resistance against acids, alkalis, solvents, lacquers, petrol, oils and many other chemical media
  - Difficult to inflame
  - High dielectric strength and high abrasion resistance
  - Low water absorption
  - Resistant to microbes
  - Adhesion-free insulation materials
  - Weather and ozone resistant
  - Hydrophobic and dirt-repellent
  - High elongation and tear resistance
  - Resists contact with liquid nitrogen
  - Resistant against hydraulic fluids
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- Fine-wire strand made of nickel-plated copper
- PTFE-based core insulation
- Cores twisted together
- Special wrapping
- Nickel-plated copper braiding
- PTFE-based outer sheath, black

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC001578  
 ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
 Colours according to VDE 0293-308, refer to Appendix T9

**Conductor stranding**  
 Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 C/C: 2500 V  
 C/S: 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Fixed installation: -190°C to +260°C  
 Short-term: up to +300°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 260 C MC</b>				
0091330	3 G 0.75	5.5	46	75
0091331	4 G 0.75	5.9	51	87
0091332	3 G 1	5.8	48	81
0091333	4 G 1	6.4	65	104
0091334	3 G 1.5	6.3	65	101
0091335	4 G 1.5	7.2	86	134
0091336	5 G 1.5	7.8	105	162
0091337	3 G 2.5	7.9	114	160
0091338	4 G 2.5	8.7	140	204
0091339	5 G 2.5	9.4	209	270

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® SSUE refer to page 908
- EASY STRIP stripping and cutting tool refer to page 1004
- STAR STRIP stripping tool refer to page 1000



## ÖLFLEX® HEAT 260 GLS

Steel-armoured PTFE cables for increased mechanical stress



### Info

- Good thermal and mechanical performance
- Robust cable design
- GL - Germanischer Lloyd approved

### Benefits

- Close-meshed braid made of galvanised steel wires protects against mechanical damage
- Small outer diameters for maximum saving of space and weight
- Germanischer Lloyd certification for use with ship diesel engines

### Application range

- Extremely high temperatures and mechanical stress require special insulated and armoured cables
- Main applications
  - Ship-building
  - Signal systems
  - Monitoring devices
  - Diesel engines
  - Steam boiler units
  - Turbine manufacturing
- Electronics for industry and shipping, ship electrics

### Product features

- Flame-retardant
- Stress crack resistant to frequent ambient temperature fluctuations
- High dielectric strength and high abrasion resistance
- High elongation resistance and tear strength
- Only suitable for use in dry conditions

### Norm references / Approvals

- Germanischer Lloyd (GL) certificate no. 5449871 HH

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- PTFE-based core insulation
- Cores twisted together
- Impregnated glass fibre braiding
- Galvanised steel wire braiding

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable



#### Core identification code

Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
7-core version:  
gn/ye, bl, bn, bk, bk, bk, tr



#### Conductor stranding

Fine wire according to VDE 0295  
Class 5 / IEC 60228 Class 5



#### Minimum bending radius

In fixed installations:  
5 x cable diameter



#### Nominal voltage

$U_0/U$  300/500 V  
according to GL: 250 V



#### Test voltage

1500 V



#### Protective conductor

G = with GN-YE protective conductor  
X = without protective conductor



#### Temperature range

Fixed installation: -190°C to +260°C  
According to GL: +205 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 260 GLS</b>				
0091120	2 X 1.5	5.7	29	93
0091121	3 G 1.5	6.1	43	102
00911223	4 G 1.5	6.6	58	130
00911233	5 G 1.5	7.3	72	149
0091124	7 G 1.5	8.0	101	180

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 180 GLS refer to page 182

### Accessories

- EASY STRIP stripping and cutting tool refer to page 1004



## ÖLFLEX® HEAT 350 MC

Suitable for use in ambient temperature from -50 °C to +350 °C



**Info**

- Voltage rating: 230/400 V
- For use in dry conditions

### Benefits

- Low conductor-resistance due to the nickel-plated copper conductors
- Wide operating temperature range allows the product to be used in applications under Thermal Class C (>180°C).

### Application range

- Blast furnaces and glassworks
- Chemical and power station construction
- Motor and furnace construction
- Extrusion and drying systems
- Lighting, apparatus and instrument industry

### Product features

- Flame-retardant
- Halogen-free
- Only suitable for use in dry conditions
- ÖLFLEX® HEAT 1565 MC is recommended if the peak temperature of the application may briefly go beyond 350°C

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- Core insulation: glass fibre covering and impregnated glass fibre braids
- Cores twisted together
- Outer sheath: impregnated glass fibre braiding, white (natural)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description: Flexible cable

**Core identification code**  
Colours according to VDE 0293-308, refer to Appendix T9

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
Fixed installation: 6 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U 230/400 V

**Test voltage**  
1500 V

**Temperature range**  
Fixed installation: -50°C to +350°C (adequate ventilation required)

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 350 MC</b>				
0091375	2 X 1	6.8	19.2	56
0091376	3 G 1	7.4	28.8	70
0091377	4 G 1	8.2	38.4	88
0091380	2 X 1.5	7.8	28.8	77
0091381	3 G 1.5	8.4	43.2	93
0091382	4 G 1.5	9.4	57.6	118
0091383	5 G 1.5	10.3	72	140
0091390	3 G 2.5	8.9	72	124
0091391	4 G 2.5	9.8	96	160
0091392	5 G 2.5	10.1	120	194

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil ≤ 30 kg, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 350 SC refer to page 197
- ÖLFLEX® HEAT 1565 MC refer to page 188

### Accessories

- SILVYN® SSUE refer to page 908

Expanded ambient temperatures • Glass fibre cables (above +260°C)



## ÖLFLEX® HEAT 1565 MC

Suitable for use in ambient temperatures between -195°C to +400°C



### Info

- Short-term: up to +1565 °C
- For use in dry conditions

### Benefits

- Low conductor-resistance due to the nickel-plated copper conductors
- Able to withstand temporary contact with molten metal or glass

### Application range

- Guarantees the circuit even in areas with extremely high ambient temperatures
- Blast furnaces and coking plants
- Refineries
- Glassworks
- Aluminium and steelworks

### Product features

- Flame-retardant
- Halogen-free
- Only suitable for use in dry conditions

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- MICA tape wrapping and impregnated glass fibre braiding
- Cores twisted together
- Outer sheath: MICA tape-wrapping, impregnated glass fibre braiding, red

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001578  
ETIM 5.0 Class-Description:  
Flexible cable



#### Core identification code

2-core cable:  
blue, brown  
4-core cable:  
black, blue, yellow, red



#### Conductor stranding

Fine copper wire strands



#### Minimum bending radius

Fixed installation:  
5 x cable diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V



#### Test voltage

2200 V



#### Temperature range

-195°C to +400°C  
(adequate ventilation required)  
Short-term: up to +1565 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 1565 MC</b>				
30020808	2 x 0.5	7.0	9.6	48
30020809	2 x 0.75	7.4	14.4	66
30016609	2 x 1	7.7	19.2	74
30016603	2 x 1.5	8.2	28.8	87
30020810	2 x 2.5	9.7	48	114
30020811	2 x 4	11.2	76.8	161
30016606	4 x 1	8.9	38.4	123
30016600	4 x 1.5	9.5	57.6	148

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® SSUE refer to page 908





**ÖLFLEX® HEAT 125 SC**

VDE tested single cores according to EN 50525-3-41 (H05Z-K & H07Z-K) for more demanding requirements

**Info**

- Now available in cardboard boxes
- VDE-tested and -marked
- Improved characteristics in the event of a fire



**Benefits**

- For safety in areas with high density of people
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire
- Minimises damage to buildings and equipment caused by the formation of toxic acid fumes in fires
- Certified for maritime applications

**Application range**

- For the wiring and connection of lighting, heating appliances, control cabinets, and distributors in mechanical and plant engineering
- For installation in tubes, on, in and under plaster as well as in closed installation ducts
- Coil winding, electromagnets, pumps, electrical systems
- Heat Treatment plants, pressure die casting, heating and cooling technology
- Suitable for assembling cable harnesses and wiring during switch cabinet installation

**Product features**

- Fire behaviour:
  - Flame-retardant (IEC 60332-1-2)
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Low toxicity (EN 50305)
- Extended fire behaviour:
  - H05Z-K (0,5mm<sup>2</sup> up to 1,0mm<sup>2</sup>): see data sheet
  - H07Z-K (≥ 1,5mm<sup>2</sup>): no fire propagation according to IEC 60332-3-24 respectively IEC 60332-3-25
- Oil-resistant according to DIN EN 50290-2-22 (TM54)
- Abrasion and notch-resistant
- UV-resistant according to ISO 4892-2

**Norm references / Approvals**

- Type H05Z-K und H07Z-K according to EN 50525-3-41 with advanced features
- Germanischer Lloyd (GL) certificate no. 11118-14HH

**Product Make-up**

- Fine-wire, tinned-copper conductor
- Electron beam cross-linked polyolefin copolymer insulation

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>
- Minimum bending radius**  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
Up to 1.0mm<sup>2</sup> U<sub>0</sub>/U 300/500 V  
From 1.5mm<sup>2</sup> U<sub>0</sub>/U 450/750 V  
0.6/1kV from 1.5 mm<sup>2</sup> in the case of fixed and protected installation
- Test voltage**  
4000 V
- Temperature range**  
Fixed installation: -55°C to +125°C  
Temporary (3,000h): up to +145°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow	orange
<b>ÖLFLEX® HEAT 125 SC - H05Z-K - U<sub>0</sub>/U: 300/500V</b>											
0.5	2.2	100		4.8	8	1232003	1232001	1232106	1232002	1232000	1232009
0.5	2.2		3000	4.8	8		1232001K				
0.75	2.4	100		7.2	11	1233003	1233001	1233106	1233002	1233000	1233009
0.75	2.4		2500	7.2	11	1233003K	1233001K	1233106K	1233002K		1233009K
1	2.5	100		9.6	14	1234003	1234001	1234106	1234002	1234000	1234009
1	2.5		2500	9.6	14	1234003K	1234001K	1234106K	1234002K	1234000K	1234009K
<b>ÖLFLEX® HEAT 125 SC - H07Z-K - U<sub>0</sub>/U: 450/750V</b>											
1.5	3.0	100		14.4	21	1235003	1235001	1235106	1235002	1235000	1235009
1.5	3.0		2000	14.4	21	1235003K	1235001K	1235106K	1235002K	1235000K	1235009K
2.5	3.6	100		24	33	1236003	1236001	1236106	1236002	1236000	1236009
2.5	3.6		1200	24	33		1236001K				
4	4.3	100		38.4	49	1237003	1237001	1237106	1237002	1237000	1237009
6	4.8	100		57.6	67	1238003	1238001	1238106	1238002	1238000	
10	6.2	100		96	112	1239003	1239001		1239002	1239000	
16	7.2	100		153.6	172	1240003	1240001		1240002	1240000	
25	8.9	100		240	262		1241001			1241000	
35	10.1	100		336	362		1242001			1242000	
50	12.5	100		480	512		1243001			1243000	
70	14.2	100		672	710		1244001			1244000	
95	16.6	100		912	937		1245001			1245000	
120	18.2	100		1152	1159		1246001				
150	20.6	100		1440	1447		1247001			1247000	
185	22.5	100		1776	1790		1248001				
240	26.4	100		2304	2318		1249001				

Expanded ambient temperatures • Cross-linked single cores (-55°C to +125°C)

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	dark blue	white	green	yellow	violet	red
<b>ÖLFLEX® HEAT 125 SC - H05Z-K - U<sub>0</sub>/U: 300/500V</b>											
0.5	2.2	100		4.8	8	1232114	1232105	1232006	1232005	1232007	1232104
0.75	2.4	100		7.2	11	1233114	1233105	1233006	1233005	1233007	1233104
0.75	2.4		2500	7.2	11	1233114K	1233105K				1233104K
1	2.5	100		9.6	14	1234114	1234105	1234006	1234005	1234007	1234104
1	2.5		2500	9.6	14	1234114K	1234105K				1234104K
<b>ÖLFLEX® HEAT 125 SC - H07Z-K - U<sub>0</sub>/U: 450/750V</b>											
1.5	3.0	100		14.4	21	1235114	1235105	1235006	1235005	1235007	1235104
1.5	3.0		2000	14.4	21	1235114K	1235105K				1235104K
2.5	3.6	100		24	33	1236114	1236105	1236006	1236005	1236007	1236104
4	4.3	100		38.4	49	1237114	1237105				1237104
6	4.8	100		57.6	67	1238114					1238104
10	6.2	100		96	112						1239104
16	7.2	100		153.6	172	1240114					1240104

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

Cross-section 0.5 - 4 mm<sup>2</sup> only available as 100 m box

**Accessories**

- Conductor end sleeves AH, not insulated refer to page 1013
- UNIVERSAL STRIP stripping tool refer to page 1006
- KS 20 cable shears refer to page 999



# ÖLFLEX® HEAT 180 SiF

Versatile single core cable with extended temperature range

**i Info**

- Flexible fine-wire copper conductor

### Benefits

- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where conventional core insulation materials will embrittle after a short while
- Typical fields of application
  - Control cabinet manufacturing
  - Appliances and apparatus engineering
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Furnace construction
  - Polymer processing
  - Generator and transformer manufacturing

### Product features

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Flame-retardant according IEC 60332-1-2
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based insulation

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>
- Minimum bending radius**  
Fixed installation: 6 x core diameter  
One bend at end of core: 3 x cable diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Temperature range**  
-50 °C to +180 °C (adequate ventilation required)  
Short-term: +200 °C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow	orange	white
<b>ÖLFLEX® HEAT 180 SiF</b>										
0.25	1.9	2.4	5.4	0047003	0047001	0047106	0047002	0047000	0047009	0047105
0.5	2.1	4.8	9	0048003	0048001	0048106	0048002	0048000	0048009	0048105
0.75	2.4	7.2	12	0049003	0049001	0049106	0049002	0049000	0049009	0049105
1	2.5	9.6	15	0050003	0050001	0050106	0050002	0050000	0050009	0050105
1.5	2.8	14.4	20	0051003	0051001	0051106	0051002	0051000	0051009	0051105
2.5	3.4	24	32	0052003	0052001	0052106	0052002	0052000		0052105
4	4.2	38	50	0053003	0053001	0053106	0053002	0053000	0053009	0053105
6	5.0	58	73	0054003	0054001	0054106	0054002	0054000		0054105
10	6.6	96	118	0055003	0055001	0055106	0055002	0055000	0055009	0055105
16	7.4	154	177		0056001	0056106	0056002	0056000		0056105
25	9.2	240	277		0057001	0057106	0057002	0057000		
35	10.3	336	374		0058001		0058002	0058000		
50	12.2	480	530		0059001			0059000		
70	14.2	672	724		0060001		0060002			
95	16.6	912	982		0061001			0061000		0061105
120	18.0	1152	1219		0062001			0062000		
150	20.0	1440	1524		0063001					
185	22.5	1776	1915		0064001					

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	green	yellow	violet	red	pink
<b>ÖLFLEX® HEAT 180 SiF</b>								
0.25	1.9	2.4	5.4	0047006	0047005	0047007	0047104	0047008
0.5	2.1	4.8	9	0048006	0048005	0048007	0048104	0048008
0.75	2.4	7.2	12	0049006	0049005	0049007	0049104	0049008
1	2.5	9.6	15	0050006	0050005	0050007	0050104	0050008
1.5	2.8	14.4	20	0051006	0051005	0051007	0051104	0051008
2.5	3.4	24	32	0052006	0052005	0052007	0052104	
4	4.2	38	50	0053006	0053005		0053104	
6	5.0	58	73	0054006	0054005		0054104	
10	6.6	96	118				0055104	
16	7.4	154	177				0056104	
25	9.2	240	277				0057104	
35	10.3	336	374				0058104	
50	12.2	480	530				0059104	

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Also available on large spools and non-returnable drums.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Other colours are available upon request

### Similar products

- ÖLFLEX® HEAT 180 SiF A refer to page 192

Expanded ambient temperatures • Silicone single cores (-50°C to +180°C)



# ÖLFLEX® HEAT 180 SiF A

UL-AWM certified Silicone single core cable with extended temperature range



**Info**

- A for Advanced here: UL and CSA certifications
- UL AWM Style 3644 (150°C/1000V)

### Benefits

- Certified for the USA and Canada for export-oriented appliance and apparatus manufacturers
- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where conventional core insulation materials will embrittle after a short while
- Typical fields of application
  - Control cabinet manufacturing
  - Appliances and apparatus engineering
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Furnace construction
  - Polymer processing
  - Generator and transformer manufacturing

### Product features

- Fire behaviour:
  - Flame-retardant (IEC 60332-1-2)
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Low toxicity (EN 50305)
- Flame retardance rating (UL): VW-1, FT2 (Horizontal flame test)
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances

### Norm references / Approvals

- UL AWM Style 3644
- UL File No. E63634

### Product Make-up

- Fine-wire, tinned-copper conductor
- Silicone-based insulation

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>

**Minimum bending radius**  
Fixed installation: 6 x core diameter  
One bend at end of core: 3 x cable diameter

**Nominal voltage**  
UL: 1000 V  
IEC: U<sub>0</sub>/U 600/1000 V

**Test voltage**  
3000 V

**Temperature range**  
IEC: -50°C up to +180°C  
UL (AWM): up to +150°C (adequate ventilation required)

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow	orange	dark blue
<b>ÖLFLEX® HEAT 180 SiF A</b>										
0.25	2.2	2.4	6.8	1249560	1249520	1249620	1249540	1249500	1249680	1249660
0.5	2.4	4.8	10.9	1249562	1249522	1249622	1249542	1249502	1249682	1249662
0.75	2.7	7.2	14	1249563	1249523	1249623	1249543	1249503	1249683	1249663
1	2.8	9.6	17.2	1249564	1249524	1249624	1249544	1249504	1249684	1249664
1.5	3.1	14.4	22.2	1249565	1249525	1249625	1249545	1249505	1249685	1249665
2.5	3.5	24	33.1	1249566	1249526	1249626	1249546	1249506	1249686	1249666
4	4.1	38	49.5	1249567	1249527	1249627	1249547	1249507		
6	5.5	58	78.3	1249568	1249528	1249628	1249548	1249508		
10	7.6	96	132.7	1249569	1249529		1249549	1249509		
16	8.4	154	192	1249570	1249530		1249550	1249510		
25	9.8	240	288.9		1249531		1249551	1249511		
35	10.9	336	386		1249532					
50	13.5	480	557.6		1249533					
70	15.5	672.2	775.2		1249534					
95	17.5	912	1004.4		1249535					

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	white	green	yellow	violet	red
<b>ÖLFLEX® HEAT 180 SiF A</b>								
0.25	2.2	2.4	6.8	1249600	1249720	1249700	1249640	1249580
0.5	2.4	4.8	10.9	1249602	1249722	1249702	1249642	1249582
0.75	2.7	7.2	14	1249603	1249723	1249703	1249643	1249583
1	2.8	9.6	17.2	1249604	1249724	1249704	1249644	1249584
1.5	3.1	14.4	22.2	1249605	1249725	1249705	1249645	1249585
2.5	3.5	24	33.1	1249606	1249726	1249706	1249646	1249586
4	4.1	38	49.5	1249607				1249587
6	5.5	58	78.3	1249608				1249588
10	7.6	96	132.7	1249609				1249589
16	8.4	154	192	1249610				1249590
25	9.8	240	288.9	1249611				1249591
35	10.9	336	386					1249592
50	13.5	480	557.6					1249593

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Cross-section 0.25 - 4 mm<sup>2</sup> only available as 100 m box  
 Other colours are available upon request

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## ÖLFLEX® HEAT 180 SiD

Silicone single core cable with solid conductor

**Info**

- Solid single copper conductor

### Benefits

- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where conventional core insulation materials will embrittle after a short while
- Typical fields of application
  - Control cabinet manufacturing
  - Appliances and apparatus engineering
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Furnace construction
  - Polymer processing
  - Generator and transformer manufacturing

### Product features

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)
- Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Flame-retardant according IEC 60332-1-2
- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Product Make-up

- Tinned solid copper wire
- Silicone-based insulation

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000993  
 ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
 Solid single copper conductor

**Minimum bending radius**  
 Fixed installation: 6 x core diameter  
 One bend at end of core: 3 x cable diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 2000 V

**Temperature range**  
 -50 °C to +180 °C  
 (adequate ventilation required)  
 Short-term: +200 °C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	brown	black	blue	green/yellow	white
<b>ÖLFLEX® HEAT 180 SiD</b>								
0.5	2.0	4.8	9		0068001			0068105
0.75	2.2	7.2	12	0069003	0069001	0069002	0069000	0069105
1	2.3	9.6	15	0070003	0070001	0070002	0070000	0070105
1.5	2.6	14.4	20	0071003	0071001	0071002	0071000	0071105
2.5	3.2	24	32		0072001	0072002		
4	3.9	38	50		0073001			
6	4.6	58	64.5		0074001	0074002		

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Also available on large spools and non-returnable drums.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Other colours are available upon request

### Similar products

- ÖLFLEX® HEAT 180 SiF refer to page 191
- ÖLFLEX® HEAT 180 SiF A refer to page 192

Expanded ambient temperatures • Silicone single cores (-50°C to +180°C)



## ÖLFLEX® HEAT 180 SiF/GL



## ÖLFLEX® HEAT 180 SiZ



## ÖLFLEX® HEAT 180 FZLSi



### Benefits

- Possesses insulating properties after combustion due to remaining SiO<sub>2</sub> ash on the conductor

### Application range

- Areas with high ambient temperatures where conventional core insulation materials will embrittle after a short while
- Typical fields of application
  - Control cabinet manufacturing
  - Appliances and apparatus engineering
  - Electric motor industry
  - Sauna/solarium construction
  - Thermal and heating elements
  - Lighting technology
  - Ventilator engineering
  - Air-conditioning technology
  - Furnace construction
  - Polymer processing
  - Generator and transformer manufacturing
- ÖLFLEX® HEAT 180 SiZ is suitable as electrical sensor cable in pipe systems for modern solar hot water systems

### Product features

- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Flame-retardant according IEC 60332-1-2

- Resistant to a multitude of oils, alcohols, vegetable and animal fats and chemical substances
- Adequate ventilation must be ensured, since the mechanical properties of silicone cables decrease from +100°C in the absence of air

### Norm references / Approvals

#### ÖLFLEX® HEAT 180 FZLSi

- Increased voltage rating is not subject to the Low Voltage Directive 2014/35/EU

### Product Make-up

#### ÖLFLEX® HEAT 180 SiF/GL

- Fine-wire, tinned-copper conductor
- Silicone-based insulation
- Impregnated glass fibre braiding
- White, with natural glass fibre braiding

#### ÖLFLEX® HEAT 180 SiZ

- Fine-wire, tinned-copper conductor
- Silicone-based insulation
- Colour of core insulation: red
- Cores connected in parallel with a separating strip
- One of the two cores is marked for identification

#### ÖLFLEX® HEAT 180 FZLSi

- Fine-wire, tinned-copper conductor
- Silicone-based insulation
- Colour of core insulation: red

### Info

- With glass fibre protection braiding

### Info

- Separable twin conductor

### Info

- 10 kV high-voltage ignition wire

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable



#### Conductor stranding

Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>



#### Minimum bending radius

Fixed installation: 6 x core diameter  
One bend at end of core:  
3 x cable diameter



#### Nominal voltage

**Version SiF/GL / SiZ:**  
U<sub>0</sub>/U 300/500 V  
**Version FZLSi:**  
10 kV



#### Test voltage

**Version SiF/GL / SiZ:**  
2000 V  
**Version FZLSi:**  
20 kV



#### Temperature range

-50 °C to +180 °C  
(adequate ventilation required)  
Short-term: +200°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 180 SiF/GL hook-up wire with glass fibre braiding</b>				
0065102	0.5	2.5	4.8	11
0065103	0.75	2.8	7.2	14
0065104	1	2.9	9.6	17
0065105	1.5	3.2	14.4	23
0065106	2.5	3.8	24	36
0065107	4	4.6	38	54
0065108	6	5.4	58	80
0065109	10	7.6	96	133
0065110	16	8.4	154	198
0065111	25	10.2	240	301
0065112	35	11.3	336	401
0065113	50	13.4	480	567
<b>ÖLFLEX® HEAT 180 SiZ twin conductor</b>				
0065201	2 x 0.5	2.1 x 4.2	9.6	17
0065202	2 x 0.75	2.3 x 4.6	14.4	24
<b>ÖLFLEX® HEAT 180 FZLSi high-voltage ignition wire</b>				
2510001	1 (32 x 0,2)	7.0	9.6	68
2510005	1,5 (30 x 0,25)	7.6	14.4	83

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- UNIVERSAL STRIP stripping tool refer to page 1006
- KS 20 cable shears refer to page 999



# ÖLFLEX® HEAT 205 SC

For very high and low temperature requirements

**Info**

- Now available as spools
- Thermal and chemical resistance
- Space and weight-saving



**Benefits**

- Small outer diameters for maximum saving of space and weight
- Resistant to contact with mostly all highly aggressive chemical media

**Application range**

- For use in environments with very high operating temperatures, heavy usage of chemical agents or confined spaces
- Typical fields of application
  - Control cabinets with high heat generation
  - Measuring instruments
  - Furnaces and brickworks
  - Heating equipment and kitchen appliances
  - Electric motor building
  - Installations in the chemical industry

**Product features**

- Flame retardant acc. to IEC 60332-1-2
- ÖLFLEX® HEAT 205 made of FEP
  - Outstanding resistance against acids, solvents, lacquers, petrol, oils and many other chemical media
  - Difficult to inflame
  - High dielectric strength and high abrasion resistance
  - Low water absorption
  - Resistant to microbes
  - Adhesion free insulation materials
  - Weather and ozone resistant
  - Hydrophobic and dirt-repellent
  - High elongation and tear resistance
  - Resistant against hydraulic fluids

**Product Make-up**

- Fine-wire, tinned-copper conductor
- FEP core insulation
- FEP = fluorinated ethylene propylene

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire acc. to VDE 0295, class 5 / IEC 60228 class 5 from 0.5 mm<sup>2</sup>

**Minimum bending radius**  
Fixed installation: 4 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2500 V

**Temperature range**  
Fixed installation: -100°C to +205°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow	orange	white
<b>ÖLFLEX® HEAT 205 SC</b>												
0.14	1.0	100		1.35	2.6		0080001		0080002			0080105
0.25	1.2	100		2.4	4	0081003	0081001	0081106	0081002		0081009	0081105
0.25	1.2		500	2.4	4	0081003S	0081001S		0081002S			
0.5	1.4	100		4.8	6.8	0082003	0082001	0082106	0082002	0082000	0082009	0082105
0.5	1.4		500	4.8	6.8	0082003S	0082001S		0082002S			
0.75	1.8	100		7.2	10.1	0083003	0083001		0083002	0083000		0083105
0.75	1.8		500	7.2	10.1	0083003S	0083001S		0083002S	0083000S		
1	1.9	100		9.6	12.8	0084003	0084001	0084106	0084002	0084000		0084105
1	1.9		500	9.6	12.8	0084003S	0084001S		0084002S	0084000S		
1.5	2.1	100		14.4	18	0085003	0085001		0085002	0085000		0085105
1.5	2.1		500	14.4	18	0085003S	0085001S		0085002S	0085000S		
2.5	2.6	100		24	29.5	0086003	0086001	0086106	0086002	0086000		0086105
2.5	2.6		500	24	29.5	0086003S	0086001S		0086002S	0086000S		
4	3.1	100		38	45	0087003	0087001		0087002	0087000		0087105
6	3.8			58	68	0088003	0088001		0088002	0088000		
10	4.7			96	116	0089003	0089001	0089106	0089002	0089000		0089105
16	6.6			154	175		0090001		0090002	0090000		

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	green	yellow	violet	red	transparent
<b>ÖLFLEX® HEAT 205 SC</b>										
0.14	1.0	100		1.35	2.6	0080006	0080005		0080104	0080010
0.25	1.2	100		2.4	4	0081006	0081005		0081104	0081010
0.25	1.2		500	2.4	4				0081104S	
0.5	1.4	100		4.8	6.8	0082006	0082005	0082007	0082104	0082010
0.5	1.4		500	4.8	6.8				0082104S	
0.75	1.8	100		7.2	10.1	0083006	0083005		0083104	0083010
0.75	1.8		500	7.2	10.1				0083104S	
1	1.9	100		9.6	12.8	0084006	0084005	0084007	0084104	0084010
1	1.9		500	9.6	12.8				0084104S	
1.5	2.1	100		14.4	18		0085005		0085104	0085010
1.5	2.1		500	14.4	18				0085104S	
2.5	2.6	100		24	29.5			0086007	0086104	0086010
2.5	2.6		500	24	29.5				0086104S	
4	3.1	100		38	45		0087005		0087104	0087010
6	3.8			58	68				0088104	0088010
10	4.7			96	116				0089104	0089010
16	6.6			154	175				0090104	

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.  
Other colours are available upon request

**Similar products**

- ÖLFLEX® HEAT 260 SC refer to page 196

**Accessories**

- EASY STRIP stripping and cutting tool refer to page 1004
- KT 11 cable shears

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Expanded ambient temperatures • PTFE single cores (-190°C to +260°C)



## ÖLFLEX® HEAT 260 SC

For use in the most extreme conditions



**Info**

- Excellent chemical, thermal and electrical performance
- Space and weight-saving

### Benefits

- Small outer diameters for maximum saving of space and weight
- Resistant to contact with mostly all highly aggressive chemical media
- Stress crack resistant to frequent ambient temperature fluctuations

### Application range

- For use in environments with very high operating temperatures, heavy usage of chemical agents or confined spaces
- Typical fields of application
  - Aerospace engineering
  - High-frequency engineering
  - Control cabinets with high heat generation
  - Measuring instruments
  - Furnaces and brickworks
  - Heating equipment and kitchen appliances
  - Electric motor building
  - Installations in the chemical industry

### Product features

- Flame retardant acc. to IEC 60332-1-2
- ÖLFLEX® HEAT 260 made of PTFE
  - Outstanding resistance against acids, alkalis, solvents, lacquers, petrol, oils and many other chemical media
  - Difficult to inflame
  - High dielectric strength and high abrasion resistance
  - Low water absorption
  - Resistant to microbes
  - Adhesion-free insulation materials
  - Weather and ozone resistant
  - Hydrophobic and dirt-repellent
  - High elongation and tear resistance
  - Resists contact with liquid nitrogen
  - Resistant against hydraulic fluids
- Silver plated copper is characterized by good surface conductivity (skin effect) and good solderability

### Product Make-up

- Silver-plated AWG copper conductor
- PTFE core insulation
- PTFE= Polytetrafluoroethylene

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable
- Conductor stranding**  
AWG conductor sizes: 7, 19 or 37 wires
- Minimum bending radius**  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
3400 V
- Temperature range**  
Fixed installation: -190°C to +260°C

AWG No. and wire number	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow	orange
<b>ÖLFLEX® HEAT 260 SC</b>									
28 (7)	0.8	0.9	2	0094003	0094001	0094106	0094002	0094000	0094009
26 (7)	0.9	1.4	2.7		0095001	0095106	0095002		0095009
26 (19)	0.9	1.5	2.9		0096001	0106011		0096000	
24 (7)	1.1	2.2	3.8	0097003	0097001		0097002		
24 (19)	1.1	2.3	4	0098003	0098001	0098106	0098002	0098000	
22 (7)	1.2	3.4	5.4	0099003	0099001		0099002		
22 (19)	1.2	3.7	5.7	0100003	0100001		0100002		0100009
20 (7)	1.4	5.4	7.7	0101003	0101001		0101002		
20 (19)	1.4	5.9	8.2	0102003	0102001	0102106	0102002	0102000	0102009
18 (7)	1.7	8.6	12		0103001				
18 (19)	1.7	9.3	12	0104003	0104001		0104002	0104000	0104009
16 (19)	2.0	11.8	16	0105003	0105001		0105002	0105000	0105009
14 (19)	2.4	18.7	23	0106003	0106001	0106106	0106002	0106000	
12 (19)	2.8	29.6	35	0107003	0107001		0107002	0107000	0107009
10 (37)	3.4	45.6	51		0108001		0108002	0108000	

AWG No. and wire number	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)	white	green	yellow	violet	red
<b>ÖLFLEX® HEAT 260 SC</b>								
28 (7)	0.8	0.9	2	0094105	0094006	0094005	0094007	0094104
26 (7)	0.9	1.4	2.7	0095105	0095006		0095007	0095104
26 (19)	0.9	1.5	2.9		0096006			0096104
24 (7)	1.1	2.2	3.8	0097105				0097104
24 (19)	1.1	2.3	4	0098105	0098006			0098104
22 (7)	1.2	3.4	5.4	0099105	0099006	0099005	0099007	0099104
22 (19)	1.2	3.7	5.7	0100105		0100005		0100104
20 (7)	1.4	5.4	7.7	0101105	0101006			0101104
20 (19)	1.4	5.9	8.2	0102105	0102006	0102005	0102007	0102104
18 (7)	1.7	8.6	12					0103104
18 (19)	1.7	9.3	12	0104105	0104006	0104005	0104007	0104104
16 (19)	2.0	11.8	16	0105105	0105006	0105005	0105007	0105104
14 (19)	2.4	18.7	23	0106105	0106006	0106005		0106104
12 (19)	2.8	29.6	35	0107105	0107006	0107005		
10 (37)	3.4	45.6	51	0108105				0108104

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Packaging size: Coil 100m  
 Available as original coil goods only  
 Also available on large spools and non-returnable drums.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Other colours are available upon request

**Similar products**

- ÖLFLEX® HEAT 205 SC refer to page 195

**Accessories**

- EASY STRIP stripping and cutting tool refer to page 1004
- KT 11 cable shears





## ÖLFLEX® HEAT 350 SC

Suitable for use in ambient temperature from -50 °C to +350 °C

**Info**

- For use in dry conditions



### Benefits

- Low conductor-resistance due to the nickel-plated copper conductors

### Application range

- Wide operating temperature range allows the product to be used in applications under Thermal Class C (>180°C).
- Blast furnaces and glassworks
- Chemical and power station construction
- Motor and furnace construction
- Lighting, apparatus and instrument industry

### Product features

- Flame-retardant
- Halogen-free
- Only suitable for use in dry conditions
- ÖLFLEX® HEAT 650 SC and ÖLFLEX® HEAT 1565 SC are recommended if the peak temperature of the application may go beyond +350°C

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- Core insulation: glass fibre covering and impregnated glass fibre braids
- Core insulation from 16 mm<sup>2</sup>: mica wrapping and impregnated glass fibre braid
- Colour of core insulation: white

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
Fixed installation: 5 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
1500 V
- Temperature range**  
Fixed installation: -50°C to +350°C (adequate ventilation required)

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 350 SC</b>				
0091350	0.5	2.5	4.8	13
0091351	0.75	3.0	7.2	15
0091352	1	3.4	9.6	17
0091353	1.5	3.5	14.4	23
0091354	2.5	3.7	24	34
0091355	4	4.2	38.4	54
0091356	6	6.2	57.6	84
0091357	10	7.3	96	120
0091358	16	8.0	153.6	199
0091359	25	9.5	240	300
0091360	35	10.9	336	399
0091361	50	13.2	480	540

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil ≤ 30 kg, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® HEAT 650 SC refer to page 199
- ÖLFLEX® HEAT 1565 SC refer to page 198

### Accessories

- SILVYN® SSUE refer to page 908
- BULLI cable shears refer to page 998
- SMART STRIP stripping tool

Expanded ambient temperatures • Glass fibre single cores (above +260°C)



## ÖLFLEX® HEAT 1565 SC

Suitable for use in ambient temperatures between -195°C to +400°C



### Info

- Short-term: up to +1565 °C
- For use in dry conditions

### Benefits

- Low conductor-resistance due to the nickel-plated copper conductors
- Able to withstand temporary contact with molten metal or glass

### Application range

- Guarantees the circuit even in areas with extremely high ambient temperatures
- Blast furnaces and coking plants
- Refineries
- Glassworks
- Aluminium and steelworks

### Product features

- Flame-retardant
- Only suitable for use in dry conditions

### Product Make-up

- Fine-wire strand made of nickel-plated copper
- Mica tape wrapping
- Impregnated glass fibre braiding, core colour: red

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable



#### Conductor stranding

Fine copper wire strands



#### Minimum bending radius

Fixed installation: 5 x outer diameter



#### Nominal voltage

U<sub>0</sub>/U: 300/500 V



#### Test voltage

2200 V



#### Temperature range

-195°C to +400°C  
(adequate ventilation required)  
Short-term: up to +1565 °C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT SC 1565</b>				
3020780	0.75	2.9	7.2	15.9
3020781	1	3.0	9.6	18.8
3013234	1.5	3.3	14.4	24.3
3020782	2.5	3.8	24	35
3018942	4	4.8	38.4	56
3020783	6	5.6	57.6	86.4
3016697	10	6.2	96	123
3016698	16	7.9	153.6	202.5
3016699	25	9.2	240	295.1
3016771	35	10.6	336	403.9
3017861	50	12.2	480	545

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil ≤ 30 kg, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® SSUE refer to page 908
- STAR STRIP stripping tool refer to page 1000
- KS 15 cable shears



**ÖLFLEX® HEAT 650 SC**

Suitable for use in ambient temperature from -50°C to +700°C

**Info**

- For use in dry conditions



**Benefits**

- Suitable for areas where the installation temperature and ambient temperature is very high
- Good electrical conductivity at high temperatures, low conductor resistance due to nickel strand

**Application range**

- Heating modules, electric heating devices, heat lockers
- Furnaces, electric ranges, night storage heater
- Heavy industry, iron and steel works, foundries, glass and ceramic processing, chemical industries
- Machinery, apparatus and power plant construction

**Product features**

- Flame-retardant
- Halogen-free
- Only suitable for use in dry conditions
- ÖLFLEX® HEAT 1565 SC is recommended if the peak temperature of the application may briefly go beyond 700°C

**Product Make-up**

- Strand made of nickel
- Core insulation: glass fibre covering and impregnated glass fibre braids

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000993  
 ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
 Fine wire  
 see data sheet

**Minimum bending radius**  
 Fixed installation: 5 x outer diameter

**Nominal voltage**  
 U<sub>0</sub>/U: 300/500 V

**Test voltage**  
 1800 V

**Temperature range**  
 Occasional flexing: -50°C to +650°C  
 Fixed installation: -50°C to +700°C (adequate ventilation required)

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Ni-index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® HEAT 650 SC</b>				
1232650	0.5	2.4	4.8	13
1232651	0.75	2.5	7.6	15
1232652	1	2.7	9.7	17
1232653	1.5	3.0	14.8	23
1232654	2.5	3.5	23.5	34
1232655	4	3.9	38.6	54
1232656	6	4.6	57.9	84
1232657	10	6.8	96.5	120
1232658	16	7.5	152	199
1232659	25	9.0	236.4	300
1232660	35	10.4	332.8	399
1232661	50	12.7	481.1	540

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil ≤ 30 kg, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ÖLFLEX® HEAT 1565 SC refer to page 198

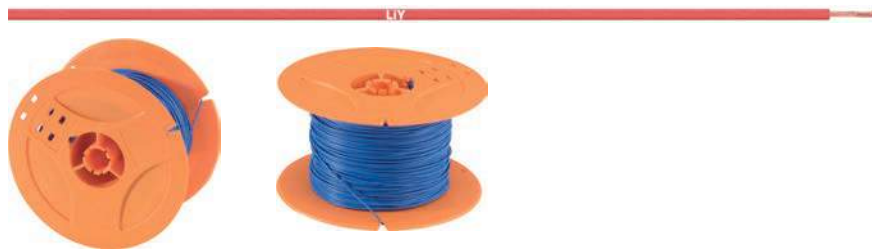
**Accessories**

- SILVYN® UI 511 refer to page 912
- SMART STRIP stripping tool
- KS 20 cable shears refer to page 999



## LiY

Stranded hook-up wire for telecommunication devices and electronic components



### Info

- PVC control hook-up wire
- Cost-effective

### Application range

- Stranded hook-up wires for wiring of telecommunication devices and electronic components within devices

### Product features

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 150 mm; b = 85 mm

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Stranded copper wire
- Core insulation: PVC-based, type YI 2/TI 2 according to VDE 0207-4

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable



#### Peak operating voltage

500 V (0.14 mm<sup>2</sup>)  
900 V (0.25 sq.mm)



#### Conductor stranding

0.14 mm<sup>2</sup>: ≥ 18 strands  
(each with 0.10 mm Ø)  
0.25 mm<sup>2</sup>: ≥ 14 strands  
(each with 0.15 mm Ø)



#### Nominal voltage

Operating voltage < 50 VAC  
UPP - peak-to-peak voltage: ≤ 250 V



#### Test voltage

1200 V (0.14 mm<sup>2</sup>)  
2500 V (0.25 mm<sup>2</sup>)



#### Temperature range

Fixed installation: -30°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	brown	black	grey	blue	green/yellow
0.14	1.1	500	1.35	4125003S	4125001S	4125106S	4125002S	4125000S
0.25	1.3	250	2.4	4126003S	4126001S	4126106S	4126002S	4126000S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	orange	dark blue	white	green	yellow
0.14	1.1	500	1.35	4125009S		4125105S	4125006S	4125005S
0.25	1.3	250	2.4	4126009S	4126014S	4126105S	4126006S	4126005S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	violet	red	pink
0.14	1.1	500	1.35	4125007S	4125104S	4125008S
0.25	1.3	250	2.4	4126007S	4126104S	4126008S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.



## LiY with twin colour helix insulation

Stranded hook-up wire with telecommunication conductor and coloured stripes



**Info**

- PVC control hook-up wire
- Cost-effective
- Twin-colour spiralized PVC

### Application range

- Stranded hook-up wires for wiring of telecommunication devices and electronic components within devices

### Product features

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 150 mm; b = 85 mm

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Stranded copper wire
- Core insulation: PVC-based, type YI 2/TI 2 according to VDE 0207-4
- Labelled with coloured stripes

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Peak operating voltage**  
900 V (0.25 sq.mm)
- Conductor stranding**  
0.25 mm<sup>2</sup>: ≥ 14 strands (each with 0.15 mm Ø)
- Nominal voltage**  
Operating voltage < 50 VAC  
UPP - peak-to-peak voltage: ≤ 250 V
- Test voltage**  
2500 V (0.25 mm<sup>2</sup>)
- Temperature range**  
Fixed installation: -30°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	blue/white	blue/black	brown/green	brown/white
0.25	1.5	250	2.4	4502262S	4502232S	4502282S	4502292S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	green-white	orange-white	white-blue	white-red
0.25	1.5	250	2.4	4502342S	4502392S	4502442S	4502462S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.



## H05V-K <VDE>

<VDE> cable type certification



**i Info**

- <VDE>

### Benefits

- Cables' <VDE> marking is a testing mark / proof of the successful testing according to VDE / EN / HD / IEC standards as well as possible health and safety regulations. <VDE> is issued by the VDE testing and certification institute.

### Application range

- Internal wiring of devices
- Protected installation in and on lighting equipments
- Signal systems in and on plaster in tubes

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- <VDE> cable type certification acc. EN 50525-2-31

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000993 ETIM 5.0 Class-Description: Single core cable
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
	<b>Minimum bending radius</b> According to EN 50565-1 4 x outer diameter (OD) for normal use; 2 x OD for cautions bending
	<b>Nominal voltage</b> U <sub>0</sub> /U: 300/500 V
	<b>Test voltage</b> 2000 V
	<b>Current rating</b> VDE 0298 Part 4 EN 50565-1 / VDE 0298-565-1
	<b>Temperature range</b> Fixed installation: -40°C to +80°C Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
1	2.4 - 2.8	100	9.6	15	8110033	8110013	8110063	8110023	8110003

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**H05V-K <HAR>**

European <HAR> cable type certification

**Info**

- <HAR>



**Benefits**

- Cables' <HAR>marking also stands for the international endorsement of national certification institutes' testing marks and certificates, e. g. <VDE><HAR>. The <HAR>marking is of special importance in case of goods traffic between European countries.

**Application range**

- Internal wiring of devices
- Protected installation in and on lighting equipments
- Signal systems in and on plaster in tubes

**Product features**

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 200 mm; b = 85 mm

**Norm references / Approvals**

- <HAR> cable type certification acc. EN 50525-2-31

**Product Make-up**

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
4 x outer diameter (OD) for normal use; 2 x OD for cautions bending

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
0.5	2.1 - 2.5	100		4.8	9	4510031	4510011	4510061	4510021	4510001
0.75	2.2 - 2.7	100		7.2	12	4510032	4510012	4510062	4510022	4510002
1	2.4 - 2.8	100		9.6	15	4510033	4510013	4510063	4510023	4510003
0.5	2.1 - 2.5		250	4.8	9	4510031S	4510011S	4510061S	4510021S	4510001S
0.75	2.2 - 2.7		250	7.2	12	4510032S	4510012S	4510062S	4510022S	4510002S
1	2.4 - 2.8		250	9.6	15	4510033S	4510013S	4510063S	4510023S	4510003S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	orange	dark blue	white	green	yellow
0.5	2.1 - 2.5	100		4.8	9	4510091	4510141	4510051	4510121	4510111
0.75	2.2 - 2.7	100		7.2	12	4510092	4510142	4510052	4510122	4510112
1	2.4 - 2.8	100		9.6	15	4510093	4510143	4510053	4510123	4510113
0.5	2.1 - 2.5		250	4.8	9	4510091S	4510141S	4510051S	4510121S	4510111S
0.75	2.2 - 2.7		250	7.2	12	4510092S	4510142S	4510052S	4510122S	4510112S
1	2.4 - 2.8		250	9.6	15	4510093S	4510143S	4510053S	4510123S	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	violet	red	ultra-marine blue	Dark blue/white	transparent
0.5	2.1 - 2.5	100		4.8	9	4510071	4510041	4510161	4510921	
0.75	2.2 - 2.7	100		7.2	12	4510072	4510042		4510922	
1	2.4 - 2.8	100		9.6	15	4510073	4510043	4510163	4510923	
0.5	2.1 - 2.5		250	4.8	9	4510071S	4510041S			
0.75	2.2 - 2.7		250	7.2	12	4510072S	4510042S	4510162S		4510102S
1	2.4 - 2.8		250	9.6	15	4510073S	4510043S	4510163S		4510103S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	pink
0.5	2.1 - 2.5	100		4.8	9	4510081
0.75	2.2 - 2.7	100		7.2	12	4510082
1	2.4 - 2.8	100		9.6	15	4510083
0.75	2.2 - 2.7		250	7.2	12	4510082S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.



## H05V-K in big one-way cardboard box

Harmonised, flexible single conductor for protected, fixed installation



**Info**

- Efficient
- <HAR>

### Benefits

- Higher cost-effectiveness due to optimum processing volumes
- Single cores are embossed so that an additional, subsequent marking by ink jet printing is readable
- The comparatively low weight of the cardboard boxes makes handling easy
- Time-saving assembly

### Application range

- Ideal for assembling to achieve longer operating times and trouble-free printing
- Suitable for assembling cable harnesses and wiring during switch cabinet installation

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- <HAR> cable type certification acc. EN 50525-2-31

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
4 x outer diameter (OD) for normal use;  
2 x OD for cautions bending

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V

**Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
0.5	2.1 - 2.5	3000	4.8	9	4511065K	4510011K	4511073K	4510021K	4510001K
0.5	2.1 - 2.5	9000	4.8	9				4510021E	
0.75	2.2 - 2.7	2500	7.2	12	4510032K	4510012K	4510062K	4510022K	4510002K
0.75	2.2 - 2.7	7500	7.2	12				4510022E	
1	2.4 - 2.8	2000	9.6	15	4510033K	4510013K	4510063K	4510023K	4510003K
1	2.4 - 2.8	6000	9.6	15		4510013E		4510023E	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	orange	dark blue	white	green	yellow
0.5	2.1 - 2.5	3000	4.8	9		4511064K	4511072K		
0.5	2.1 - 2.5	9000	4.8	9		4511060E			
0.75	2.2 - 2.7	2500	7.2	12	4510092K	4510142K	4510052K	4510122K	4510112K
0.75	2.2 - 2.7	7500	7.2	12		4511061E			
1	2.4 - 2.8	2000	9.6	15	4510093K	4510143K	4510053K		4510113K
1	2.4 - 2.8	6000	9.6	15		4511062E			

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	violet	red	ultra-marine blue	blue/white	Dark blue/white
0.5	2.1 - 2.5	3000	4.8	9	4511068K	4511071K	4510161K		4510921K
0.75	2.2 - 2.7	2500	7.2	12	4510072K	4510042K	4510162K	4510262K	4510922K
1	2.4 - 2.8	2000	9.6	15	4510073K	4510043K	4510163K	4510263K	4510923K

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	pink
0.75	2.2 - 2.7	2500	7.2	12	4510082K

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
The outer diameters stated in the part number table are maximum values.

### Similar products

- H05V-K <VDE> refer to page 202
- H05V-K <HAR> refer to page 203

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- EASY STRIP stripping and cutting tool refer to page 1004
- BULLI cable shears refer to page 998
- PEW 8.87 crimping pliers refer to page 1016





## X05V-K with twin colour helix insulation

**Info**

- Twin-colour spiralized PVC



### Application range

- Internal wiring of devices
- Protected installation in and on lighting equipments
- Signal systems in and on plaster in tubes

### Product features

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 200 mm; b = 85 mm

### Norm references / Approvals

- Based on EN 50525-2-31

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC
- Labelled with coloured stripes

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
4 x outer diameter (OD) if used as defined for H05V-K; 2 x OD for cautious bending
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1
- Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	blue/white	Dark blue/white	black/white	blue/black
0.5	2.1 - 2.5	250	4.8	9	4512261S	4512921S	4512221S	4512231S
0.75	2.2 - 2.7	250	7.2	12	4512262S	4512922S	4512222S	4512232S
1	2.4 - 2.8	250	9.6	15	4512263S	4512923S	4512223S	4512233S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	m/box	Copper index (kg/km)	Weight (kg/km)	blue/green	blue / red	brown/black	brown/white
0.5	2.1 - 2.5	250		4.8	9	4512241S	4512251S		4512291S
0.75	2.2 - 2.7	250		7.2	12	4512242S	4512252S	4512272S	4512292S
0.75	2.2 - 2.7		4000	7.2	12		4512252K		
1	2.4 - 2.8	250		9.6	15	4512243S	4512253S		4512293S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	yellow-white	violet-black	violet-white	orange-black
0.5	2.1 - 2.5	250	4.8	9	4512321S	4512351S	4512371S	4512381S
0.75	2.2 - 2.7	250	7.2	12	4512322S	4512352S	4512372S	4512382S
1	2.4 - 2.8	250	9.6	15	4512323S	4512353S	4512373S	4512383S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	m/box	Copper index (kg/km)	Weight (kg/km)	orange-white	red-black	red-white	white=black
0.5	2.1 - 2.5	250		4.8	9	4512391S	4512401S	4512421S	4512431S
0.75	2.2 - 2.7	250		7.2	12	4512392S	4512402S	4512422S	4512432S
1	2.4 - 2.8	250		9.6	15	4512393S	4512403S	4512423S	4512433S
1	2.4 - 2.8		2000	9.6	15	4512393K		4512423K	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	white-blue	grey-black
0.5	2.1 - 2.5	250	4.8	9	4512441S	4512471S
0.75	2.2 - 2.7	250	7.2	12	4512442S	4512472S
1	2.4 - 2.8	250	9.6	15	4512443S	4512473S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.



## H07V-K <VDE>

<VDE> cable type certification



**i Info**

- <VDE>

### Benefits

- Cables' <VDE> marking is a testing mark / proof of the successful testing according to VDE / EN / HD / IEC standards as well as possible health and safety regulations. <VDE> is issued by the VDE testing and certification institute.

### Application range

- Laying in tubes, exposed or buried in plaster, and in closed installation ducts
- For direct laying on racks, troughs and tubes only as potential equalisation conductor

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- <VDE> cable type certification acc. EN 50525-2-31

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000993 ETIM 5.0 Class-Description: Single core cable
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
	<b>Minimum bending radius</b> According to EN 50565-1 4 x outer diameter (OD) for normal use; 2 x OD for cautions bending
	<b>Nominal voltage</b> U <sub>0</sub> /U: 450/750 V
	<b>Test voltage</b> 2500 V
	<b>Current rating</b> VDE 0298 Part 4 EN 50565-1 / VDE 0298-565-1
	<b>Temperature range</b> Fixed installation: -40°C to +80°C Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
1.5	2.8 - 3.4	100	14.4	22	8120031	8120011	8120061	8120021	8120001
2.5	3.4 - 4.1	100	24	37	8120032	8120012	8120062	8120022	8120002
4	3.9 - 4.8	100	38.4	45	8120033	8120013	8120063	8120023	8120003
6	4.4 - 5.3	100	57.6	71	8120034	8120014	8120064	8120024	8120004

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.



**H07V-K <HAR>**

European <HAR> cable type certification

**Info**

- <HAR>



**Benefits**

- Cables' <HAR>marking also stands for the international endorsement of national certification institutes' testing marks and certificates, e. g. <VDE><HAR>. The <HAR>marking is of special importance in case of goods traffic between European countries.

**Application range**

- Laying in tubes, exposed or buried in plaster, and in closed installation ducts
- For direct laying on racks, troughs and tubes only as potential equalisation conductor

**Product features**

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 200 mm; b = 85 mm

**Norm references / Approvals**

- <HAR> cable type certification acc. EN 50525-2-31
- No cable type certified core insulation colours according to EN 50525-1/ VDE 0285-525-1: transparent, green (single colour), yellow (single colour), all double colours (except of green-yellow and yellow-green)

**Product Make-up**

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
OD ≤ 8 mm: 4 x OD\*/2 x OD\*\*;  
8 < OD ≤ 12 mm: 5 x OD\*/3 x OD\*\*;  
OD > 12 mm: 6 x OD\*/4 x OD\*\*

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V

**Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
1.5	2.8 - 3.4		150	14.4	22	4520031S	4520011S	4520061S	4520021S	4520001S
2.5	3.4 - 4.1		100	24	37	4520032S	4520012S	4520062S	4520022S	4520002S
1.5	2.8 - 3.4	100		14.4	22	4520031	4520011	4520061	4520021	4520001
2.5	3.4 - 4.1	100		24	37	4520032	4520012	4520062	4520022	4520002
4	3.9 - 4.8	100		38.4	45	4520033	4520013	4520063	4520023	4520003
6	4.4 - 5.3	100		57.6	71	4520034	4520014	4520064	4520024	4520004
10	5.7 - 6.8	100		96	120	4520035	4520015	4520065	4520025	4520005
16	6.7 - 8.1			153.6	187	4520036	4520016	4520066	4520026	4520006
25	8.4 - 10.2			240	290	4521031	4521011		4521021	4521001
35	9.7 - 11.7			336	399	4521032	4521012	4521062	4521022	4521002
50	11.5 - 13.9			480	559		4521013		4521023	4521003
70	13.2 - 16			672	776		4521014		4521024	4521004
95	15.1 - 18.2			912	1031		4521015		4521025	4521005
120	16.7 - 20.2			1152	1285		4521016			4521006
150	18.6 - 22.5			1440	1563		4521017			4521007
185	20.6 - 24.9			1776	1915		4521018			4521008
240	23.5 - 28.4			2304	2550		4521019			4521009

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	orange	dark blue	white	green	yellow
1.5	2.8 - 3.4		150	14.4	22		4520141S	4520051S		
2.5	3.4 - 4.1		100	24	37		4520142S	4520052S		
1.5	2.8 - 3.4	100		14.4	22	4520091	4520141	4520051	4520121	4520111
2.5	3.4 - 4.1	100		24	37	4520092	4520142	4520052	4520122	4520112
4	3.9 - 4.8	100		38.4	45	4520093	4520143	4520053	4520123	4520113
6	4.4 - 5.3	100		57.6	71	4520094	4520144	4520054	4520124	4520114
10	5.7 - 6.8	100		96	120	4520095	4520145	4520055		
16	6.7 - 8.1			153.6	187	4520096	4520146	4520056	4520126	
25	8.4 - 10.2			240	290	4521091				
35	9.7 - 11.7			336	399	4521092				

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/spool	Copper index (kg/km)	Weight (kg/km)	violet	red	ultra-marine blue
1.5	2.8 - 3.4		150	14.4	22		4520041S	
2.5	3.4 - 4.1		100	24	37		4520042S	
1.5	2.8 - 3.4	100		14.4	22	4520071	4520041	4520161
2.5	3.4 - 4.1	100		24	37	4520072	4520042	4520162
4	3.9 - 4.8	100		38.4	45		4520043	4520163
6	4.4 - 5.3	100		57.6	71	4520074	4520044	4520164
10	5.7 - 6.8	100		96	120		4520045	
16	6.7 - 8.1			153.6	187		4520046	
25	8.4 - 10.2			240	290		4521041	
35	9.7 - 11.7			336	399		4521042	
50	11.5 - 13.9			480	559		4521043	
70	13.2 - 16			672	776		4521044	

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

\*for conventional use, \*\*for careful bending; "OD" = outer diameter

The outer diameters stated in the part number table are maximum values.

**Similar products**

- MULTI-STANDARD SC 2.1 refer to page 212
- MULTI-STANDARD SC 2.2 refer to page 214

**Accessories**

- Mobile crimp tool crimping pliers refer to page 1033
- DIN-assorted boxes conductor end sleeves refer to page 1011
- PEW 8.87 crimping pliers refer to page 1016
- FLEXIMARK® Collar Snap-on refer to page 985



## H07V-K in big one-way cardboard box

Harmonised, flexible single conductor for protected, fixed installation

**Info**

- Efficient
- <HAR>



### Benefits

- Higher cost-effectiveness due to optimum processing volumes
- Single cores are embossed so that an additional, subsequent marking by ink jet printing is readable
- The comparatively low weight of the cardboard boxes makes handling easy
- Time-saving assembly

### Application range

- Ideal for assembling to achieve longer operating times and trouble-free printing
- Suitable for assembling cable harnesses and wiring during switch cabinet installation

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- <HAR> cable type certification acc. EN 50525-2-31
- No cable type certified core insulation colours according to EN 50525-1/ VDE 0285-525-1: transparent, green (single colour), yellow (single colour), all double colours (except of green-yellow and yellow-green)

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
4 x outer diameter (OD) for normal use;  
2 x OD for cautions bending

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V AC

**Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue	green/yellow
1.5	2.8 - 3.4	1500	14.4	22	4520031K	4520011K	4520061K	4520021K	4520001K
1.5	2.8 - 3.4	4000	14.4	22		4520011E		4520021E	4520001E
2.5	3.4 - 4.1	900	24	37	4520032K	4520012K	4520062K	4520022K	4520002K
2.5	3.4 - 4.1	2500	24	37		4520012E		4520022E	4520002E
4	3.9 - 4.8	600	38.4	45	4520033K	4520013K	4520063K	4520023K	4520003K
4	3.9 - 4.8	2000	38.4	45		4520013E			
6	4.4 - 5.3	400	57.6	71		4520014K		4520024K	4520004K
6	4.4 - 5.3	1500	57.6	71		4520014E		4520024E	4520004E

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	orange	dark blue	white	green	yellow
1.5	2.8 - 3.4	1500	14.4	22	4520091K	4520141K	4520051K		4520111K
1.5	2.8 - 3.4	4000	14.4	22		4520141E			
2.5	3.4 - 4.1	900	24	37	4520092K	4520142K	4520052K	4520122K	
4	3.9 - 4.8	600	38.4	45	4520093K	4520143K			
6	4.4 - 5.3	400	57.6	71	4520094K				

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/box	Copper index (kg/km)	Weight (kg/km)	violet	red	blue/white	Dark blue/white
1.5	2.8 - 3.4	1500	14.4	22	4520071K	4520041K		
1.5	2.8 - 3.4	4000	14.4	22		4520041E		
2.5	3.4 - 4.1	900	24	37		4520042K		4520922K
4	3.9 - 4.8	600	38.4	45		4520043K	4520263K	4520923K
6	4.4 - 5.3	400	57.6	71		4520044K	4520264K	4520924K
6	4.4 - 5.3	1500	57.6	71		4520044E		

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.

### Similar products

- H05V-K <HAR> refer to page 203
- H07V-K <HAR> refer to page 207

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- EASY STRIP stripping and cutting tool refer to page 1004
- BULLI cable shears refer to page 998
- PEW 8.87 crimping pliers refer to page 1016



## X07V-K with twin colour helix insulation



**Info**

- Twin-colour spiralized PVC

### Application range

- Laying in tubes, exposed or buried in plaster, and in closed installation ducts
- For direct laying on racks, troughs and tubes only as potential equalisation conductor

### Product features

- Flame-retardant according IEC 60332-1-2
- Spool: d1 = 18 mm; d2 = 200 mm; b = 85 mm

### Norm references / Approvals

- Based on EN 50525-2-31

### Product Make-up

- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Core insulation: Based on PVC
- Labelled with coloured stripes

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
4 x outer diameter if used as defined for H07V-K; 2 x outer diameter for short-term bending

**Nominal voltage**  
U<sub>0</sub>/U: 450/750 V

**Test voltage**  
2500 V

**Current rating**  
VDE 0298 Part 4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
Fixed installation: -40°C to +80°C  
Moved: +5°C to +70°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	blue/white	Dark blue/white	black/red	black/white	blue/black	blue / red	brown/white
1.5	2.8 - 3.4	150	14.4	22	4522261S	4522921S	4522211S	4522221S	4522231S	4522251S	4522291S
2.5	3.4 - 4.1	100	24	37	4522262S	4522922S		4522222S		4522252S	4522292S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	yellow-red	yellow-white	violet-white	orange-black	orange-white	red-black	red-white
1.5	2.8 - 3.4	150	14.4	22	4522311S	4522321S	4522371S	4522381S	4522391S	4522401S	4522421S
2.5	3.4 - 4.1	100	24	37					4522392S		4522422S

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/spool	Copper index (kg/km)	Weight (kg/km)	white-blue	white-red
1.5	2.8 - 3.4	150	14.4	22	4522441S	4522461S

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
The outer diameters stated in the part number table are maximum values.

### Similar products

- X05V-K with twin colour helix insulation refer to page 205

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- EASY STRIP stripping and cutting tool refer to page 1004
- PEW 8.87 crimping pliers refer to page 1016



## MULTI-STANDARD SC 1

UL-recognised (AWM) + CSA AWM I A/B + <HAR> H05V-K, tinned-copper strands

**Info**

- Formerly: Multi-Standard single core UL-CSA-HAR 1007/1569



### Benefits

- For use in the most important global markets
- Reduction in technical documentation
- Easy storage
- Increases the cost-effectiveness of the production process

### Application range

- Factory wiring
- Internal wiring of devices
- Control cabinet wiring

### Product features

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1/CSA FT1
- Oil-resistant

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H05V-K acc. EN 50525-2-31, UL AWM styles 1007 & 1569 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), CSA AWM I A/B (by CSA acc. CSA standard CSA C22.2 No. 210-05, CSA class 5851-01)

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
4 x outer diameter (OD) for normal use;  
2 x OD for cautions bending

**Nominal voltage**  
HAR / IEC: U<sub>0</sub>/U: 300/500 V;  
UL (AWM): U: 300 V;  
CSA (AWM I A/B): U: 300 V

**Test voltage**  
2000 V

**Temperature range**  
Fixed installation:  
HAR/IEC: -40°C to +70°C;  
UL (AWM): -40°C to +105°C;  
CSA (AWM I A/B): -40°C to +105°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	brown	black	grey
0.5	2.5	100	4.8	9	4180403	4180401	4180406
0.75	2.6	100	7.2	12	4180503	4180501	4180506
1	2.8	100	9.6	15	4180603	4180601	4180606

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	blue	green/yellow	orange
0.5	2.5	100		4.8	9	4180402	4180400	4180409
0.75	2.6	100		7.2	12	4180502	4180500	4180509
1	2.8	100		9.6	15	4180602	4180600	4180609
1	2.8		2000	9.6	15		4180600K	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	dark blue	white	violet
0.5	2.5	100		4.8	9	4180414	4180405	
0.5	2.5		3000	4.8	9	4180414K		
0.75	2.6	100		7.2	12	4180514		4180507
0.75	2.6		2500	7.2	12	4180514K		
1	2.8	100		9.6	15	4180614	4180605	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	red
0.5	2.5	100	4.8	9	4180404
0.75	2.6	100	7.2	12	4180504
1	2.8	100	9.6	15	4180604

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
The outer diameters stated in the part number table are maximum values.

### Similar products

- H05V-K <HAR> refer to page 203
- MULTI-STANDARD SC 2.1 refer to page 212

### Accessories

- DIN-assorted boxes conductor end sleeves refer to page 1011
- EASY STRIP stripping and cutting tool refer to page 1004
- PEW 8.87 crimping pliers refer to page 1016
- FLEXIMARK® Collar Snap-on refer to page 985



## MULTI-STANDARD SC 2.1

USA: UL-listed (MTW), Canada: CSA (TEW), Europe: <HAR> H07V-K (depending on cross s.), tin-coated strands



### Benefits

- For use in the most important global markets
- Reduction in technical documentation
- Easier storage; increases the cost-effectiveness of the production process
- Works with "Conductor end sleeves XL, insulated"

### Application range

- Factory wiring
- Field wiring
- Internal wiring of devices
- Control cabinet wiring

### Product features

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1/CSA FT1
- Oil-resistant

### Norm references / Approvals

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T 16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H07V-K acc. EN 50525-2-31, UL AWM style 1015 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), (UL) MTW (by UL acc. UL standard UL 1063, U.I. Lapp GmbH's (UL) MTW file number: E198296), CSA TEW (by CSA acc. CSA standard CSA C22.2 No. 127, CSA class 5835-01)

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

### Info

- The all-rounder for many markets

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description:  
Single core cable
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
OD ≤ 8 mm: 4 x OD\* / 2 x OD\*\*;  
8 < OD ≤ 12 mm: 5 x OD\* / 3 x OD\*\*;  
OD > 12 mm: 6 x OD\* / 4 x OD\*\*
- Nominal voltage**  
HAR / IEC: U<sub>0</sub>/U: 450/750 V;  
UL (AWM): U: 600 V;  
UL (MTW): U: 600 V;  
CSA (TEW): U: 600 V
- Temperature range**  
Fixed installation:  
HAR/IEC: -40°C to +70°C;  
UL (AWM): -40°C to +105°C;  
UL (MTW): -40°C to +90°C;  
CSA (TEW): -40°C to +105°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black
0.5	2.7	100		4.8	11	4160103	4160101
0.5	2.7		3000	4.8	11		4160101K
0.75	2.9	100		7.2	14	4160203	4160201
0.75	2.9		2500	7.2	14	4160203K	4160201K
1	3.1	100		9.6	16	4160303	4160301
1	3.1		2000	9.6	16	4160303K	4160301K
1.5	3.4	100		14.4	22	4160403	4160401
1.5	3.4		1500	14.4	22	4160403K	4160401K
2.5	4	100		24	37	4160503	4160501
2.5	4		900	24	37		4160501K
4	4.6	100		38.4	49	4160603	4160601
4	4.6		600	38.4	49		4160601K
6	5.1	100		57.6	67	4160703	4160701
6	5.1		400	57.6	67		4160701K
10	6.8	100		96	120	4160803	4160801
16	9	100		153.6	185	4160903	4160901
25	10.2	100		240	260	4161003	4161001
35	11.7			336	360		4161101
50	13.9			480	535		4161201
70	16			672	735		4161301
95	18.2			912	930		4161401
120	19.8			1152	1160		4161501

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	grey	blue
0.5	2.7	100		4.8	11	4160106	4160102
0.5	2.7		3000	4.8	11	4160106K	4160102K
0.75	2.9	100		7.2	14	4160206	4160202
0.75	2.9		2500	7.2	14		4160202K
1	3.1	100		9.6	16	4160306	4160302
1	3.1		2000	9.6	16		4160302K
1.5	3.4	100		14.4	22	4160406	4160402
1.5	3.4		1500	14.4	22	4160406K	4160402K
2.5	4	100		24	37	4160506	4160502
2.5	4		900	24	37	4160506K	4160502K
4	4.6	100		38.4	49	4160606	4160602
4	4.6		600	38.4	49		4160602K
6	5.1	100		57.6	67	4160706	4160702
6	5.1		400	57.6	67		4160702K
10	6.8	100		96	120	4160806	4160802
16	9	100		153.6	185	4160906	4160902
25	10.2	100		240	260	4161006	4161002
35	11.7			336	360		4161102
50	13.9			480	535		4161202
70	16			672	735		4161302
95	18.2			912	930		4161402
120	19.8			1152	1160		4161502



Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green/yellow	orange
0.5	2.7	100		4.8	11	4160100	4160109
0.5	2.7		3000	4.8	11		4160109K
0.75	2.9	100		7.2	14	4160200	4160209
0.75	2.9		2500	7.2	14		4160209K
1	3.1	100		9.6	16	4160300	4160309
1	3.1		2000	9.6	16	4160300K	4160309K
1.5	3.4	100		14.4	22	4160400	4160409
1.5	3.4		1500	14.4	22	4160400K	4160409K
2.5	4	100		24	37	4160500	4160509
2.5	4		900	24	37	4160500K	4160509K
4	4.6	100		38.4	49	4160600	4160609
4	4.6		600	38.4	49	4160600K	4160609K
6	5.1	100		57.6	67	4160700	4160709
6	5.1		400	57.6	67	4160700K	4160709K
10	6.8	100		96	120	4160800	4160809
16	9	100		153.6	185	4160900	4160909
25	10.2	100		240	260	4161000	4161009
35	11.7			336	360	4161100	
50	13.9			480	535	4161200	
70	16			672	735	4161300	
95	18.2			912	930	4161400	
120	19.8			1152	1160	4161500	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	dark blue	white
0.5	2.7	100		4.8	11	4160114	4160105
0.5	2.7		3000	4.8	11	4160114K	
0.75	2.9	100		7.2	14	4160214	4160205
0.75	2.9		2500	7.2	14	4160214K	
1	3.1	100		9.6	16	4160314	4160305
1	3.1		2000	9.6	16	4160314K	4160305K
1.5	3.4	100		14.4	22	4160414	4160405
1.5	3.4		1500	14.4	22	4160414K	4160405K
2.5	4	100		24	37	4160514	4160505
2.5	4		900	24	37	4160514K	4160505K
4	4.6	100		38.4	49	4160614	4160605
6	5.1	100		57.6	67	4160714	4160705
6	5.1		400	57.6	67	4160714K	
10	6.8	100		96	120	4160814	4160805
16	9	100		153.6	185	4160914	4160905

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green	yellow
0.5	2.7	100		4.8	11	4160111	4160110
0.75	2.9	100		7.2	14		4160210
1	3.1	100		9.6	16	4160311	4160310
1.5	3.4	100		14.4	22	4160411	4160410
2.5	4	100		24	37	4160511	4160510
4	4.6	100		38.4	49	4160611	4160610
4	4.6		600	38.4	49		4160610K
6	5.1	100		57.6	67	4160711	4160710
10	6.8	100		96	120	4160811	4160810
16	9	100		153.6	185	4160911	4160910
25	10.2	100		240	260	4161011	4161010
35	11.7			336	360	4161111	
50	13.9			480	535	4161211	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	violet	red
0.5	2.7	100		4.8	11	4160107	4160104
0.5	2.7		3000	4.8	11		4160104K
0.75	2.9	100		7.2	14	4160207	4160204
1	3.1	100		9.6	16	4160307	4160304
1	3.1		2000	9.6	16		4160304K
1.5	3.4	100		14.4	22	4160407	4160404
1.5	3.4		1500	14.4	22		4160404K
2.5	4	100		24	37	4160507	4160504
2.5	4		900	24	37		4160504K
4	4.6	100		38.4	49		4160604
6	5.1	100		57.6	67		4160704
6	5.1		400	57.6	67		4160704K
10	6.8	100		96	120		4160804
16	9	100		153.6	185		4160904
25	10.2	100		240	260		4161004
35	11.7			336	360		4161104

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	blue/white	pink
0.5	2.7	100		4.8	11	4160126	
0.75	2.9	100		7.2	14	4160226	
0.75	2.9		2500	7.2	14	4160226K	
1	3.1	100		9.6	16	4160326	4160308
1	3.1		2000	9.6	16	4160326K	
1.5	3.4	100		14.4	22	4160426	4160408
1.5	3.4		1500	14.4	22	4160426K	
2.5	4	100		24	37	4160526	
4	4.6	100		38.4	49	4160626	
6	5.1	100		57.6	67	4160726	
10	6.8	100		96	120	4160826	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	white-blue
0.5	2.7		3000	4.8	11	4160144K
0.75	2.9	100		7.2	14	4160244
0.75	2.9		2500	7.2	14	4160244K
1	3.1	100		9.6	16	4160344
1	3.1		2000	9.6	16	4160344K
1.5	3.4	100		14.4	22	4160444
2.5	4	100		24	37	4160544
2.5	4		900	24	37	4160544K
4	4.6	100		38.4	49	4160644
6	5.1	100		57.6	67	4160744
10	6.8	100		96	120	4160844

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

Non-harmonised, nominal cross-sections: 0.5 mm<sup>2</sup>, 0.75 mm<sup>2</sup>, 1 mm<sup>2</sup>, 16 mm<sup>2</sup>

\*for conventional use, \*\*for careful bending; "OD" = outer diameter

The outer diameters stated in the part number table are maximum values.

**Similar products**

- H07V-K <HAR> refer to page 207
- MULTI-STANDARD SC 2.2 refer to page 214

**Accessories**

- DIN-assorted boxes conductor end sleeves refer to page 1011
- Conductor end sleeves XL, insulated refer to page 1012
- PEW 8.87 crimping pliers refer to page 1016



**MULTI-STANDARD SC 2.2**

UL-listed (MTW), CSA (TEW), <HAR> H07V2-K: max. +90°C, UL (AWM): U<sub>max</sub> = 1 kV, tinned-copper strands



**Info**

- Higher maximum conductor temperature - H07V2-K: +90 °C according to EN 50525-2-31
- Higher voltage range according to UL

**Benefits**

- For use in the most important global markets
- Reduction in technical documentation
- Easier storage; increases the cost-effectiveness of the production process
- Works with "Conductor end sleeves XL, insulated"

**Application range**

- Factory wiring
- Field wiring
- Frequency converter power supply
- Internal wiring of devices and in control cabinets
- Protected installation in and on lighting equipments

**Product features**

- Flame-retardant according IEC 60332-1-2
- Flame-retardant according to UL VW1/CSA FT1
- Oil-resistant

**Norm references / Approvals**

- Multi-standard cables have conductor strands with nominal sizes in mm<sup>2</sup> or AWG/kcmil. The master size is mentioned in the table below, while the equivalent size of the other system can be found in the Appendix T16 of this catalogue. For this related secondary size the cross-section of the conductor mostly works out to be greater than the specified nominal value.
- Cable type certifications: <HAR> H07V2-K acc. EN 50525-2-31, UL AWM style 10269 (by UL acc. UL standard UL 758, U.I. Lapp GmbH's UL AWM file number: E63634), (UL) MTW (by UL acc. UL standard UL 1063, U.I. Lapp GmbH's (UL) MTW file number: E198296), CSA TEW (by CSA acc. CSA standard CSA C22.2 No. 127, CSA class 5835-01)

**Product Make-up**

- Fine-wire strand made of tinned-copper wires
- Special PVC-based core insulation

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
OD ≤ 8 mm: 4 x OD\*/2 x OD\*\*;  
8 < OD ≤ 12 mm: 5 x OD\*/3 x OD\*\*;  
OD > 12 mm: 6 x OD\*/4 x OD\*\*

**Nominal voltage**  
HAR / IEC: U<sub>0</sub>/U: 450/750 V;  
UL (AWM): U: 1000 V;  
UL (MTW): U: 600 V;  
CSA (TEW): U: 600 V

**Temperature range**  
Fixed installation:  
HAR/IEC: -40°C to +90°C;  
UL (AWM): -40°C to +105°C;  
UL (MTW): -40°C to +90°C;  
CSA (TEW): -40°C to +105°C

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey
0.5	2.7	100		4.8	10	4150103	4150101	
0.75	2.9	100		7.2	13		4150201	
1	3.1	100		9.6	16	4150303	4150301	
1	3.1		2000	9.6	16		4150301K	
1.5	3.4	100		14.4	22	4150403	4150401	4150406
2.5	4	100		24	37	4150503	4150501	4150506
2.5	4		900	24	37		4150501K	
4	4.6	100		38.4	49	4150603	4150601	
4	4.6		600	38.4	49		4150601K	
6	5.1	100		57.6	71		4150701	4150706
10	6.8	100		96	120		4150801	
16	9	100		153.6	185		4150901	
25	10.2	100		240	260		4151001	
35	11.7			336	360		4151101	
50	13.9			480	535		4151201	
70	16			672	735		4151301	
95	18.2			912	930		4151401	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	blue	green/yellow	orange
0.5	2.7	100	4.8	10	4150102		
0.75	2.9	100	7.2	13	4150202		
1	3.1	100	9.6	16	4150302		4150309
1.5	3.4	100	14.4	22	4150402	4150400	4150409
2.5	4	100	24	37	4150502	4150500	4150509
4	4.6	100	38.4	49	4150602	4150600	
6	5.1	100	57.6	71	4150702	4150700	
10	6.8	100	96	120	4150802	4150800	
16	9	100	153.6	185		4150900	
25	10.2	100	240	260		4151000	
35	11.7		336	360		4151100	

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	dark blue	white	yellow
0.5	2.7	100	4.8	10	4150114	4150105	
0.75	2.9	100	7.2	13	4150214	4150205	
1	3.1	100	9.6	16		4150305	
1.5	3.4	100	14.4	22	4150414	4150405	4150410
4	4.6	100	38.4	49	4150614	4150605	4150610

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	Copper index (kg/km)	Weight (kg/km)	red
0.5	2.7	100	4.8	10	4150104
0.75	2.9	100	7.2	13	4150204
1	3.1	100	9.6	16	4150304
1.5	3.4	100	14.4	22	4150404
2.5	4	100	24	37	4150504
4	4.6	100	38.4	49	4150604
6	5.1	100	57.6	71	4150704

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

Non-harmonised, nominal cross-sections: 0.5 mm<sup>2</sup>, 0.75 mm<sup>2</sup>, 1 mm<sup>2</sup>, 16 mm<sup>2</sup>, 50 mm<sup>2</sup>, 70 mm<sup>2</sup>, 95 mm<sup>2</sup>, 120 mm<sup>2</sup>

\*for conventional use, \*\*for careful bending; "OD" = outer diameter

The outer diameters stated in the part number table are maximum values.

**Similar products**

- MULTI-STANDARD SC 2.1 refer to page 212

**Accessories**

- DIN-assorted boxes conductor end sleeves refer to page 1011
- Conductor end sleeves XL, insulated refer to page 1012
- EASY STRIP stripping and cutting tool refer to page 1004
- PEW 8.87 crimping pliers refer to page 1016
- FLEXIMARK® Collar Snap-on refer to page 985



# H05Z-K 90°C

Harmonised; halogen-free to protect human life, the environment and material assets



**Info**

- Halogen-free and harmonised (HAR)
- For expanded ambient temperatures see ÖLFLEX® HEAT 125 SC

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
4 x outer diameter (OD) for normal use;  
2 x OD for cautions bending

**Nominal voltage**  
U<sub>0</sub>/U: 300/500 V

**Test voltage**  
2000 V AC

**Current rating**  
VDE 0298-4  
EN 50565-1 / VDE 0298-565-1

**Temperature range**  
During installation: -5 °C bis +90 °C  
Fixed installation: -40 °C bis +90 °C

**Benefits**

- Protection of human life and the environment thanks to the avoidance of the formation of acid in case of fire
- Time-saving assembly

**Application range**

- For wiring of lamps, devices, switchgear cabinets and distribution boxes
- For installation in tubes, on, in and under plaster as well as in closed installation ducts
- In building with a high density of people or valuable assets
- For use in dry rooms
- For expanded ambient temperatures see ÖLFLEX® HEAT 125 SC

**Product features**

- The insulation material is halogen-free and free of other materials which could release toxic gases in the event of fire
- Low amount of corrosive gases in the event of fire
- Low smokes/low smoke density in the event of fire according to IEC 61034
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- <HAR> cable type certification acc. EN 50525-3-41

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free

Conductor cross-section (mm²)	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue
0.5	2.1 - 2.6	100		4.8	9	4725031	4725011	4725061	4725021
0.5	2.1 - 2.6		3000	4.8	9	4725031K	4725011K	4725061K	4725021K
0.75	2.2 - 2.8	100		7.2	11	4725032	4725012	4725062	4725022
0.75	2.2 - 2.8		2500	7.2	11	4725032K	4725012K	4725062K	4725022K
1	2.4 - 2.9	100		9.6	14	4725033	4725013	4725063	4725023
1	2.4 - 2.9		2000	9.6	14	4725033K	4725013K	4725063K	4725023K

Conductor cross-section (mm²)	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green/yellow	orange	dark blue	white
0.5	2.1 - 2.6	100		4.8	9	4725001	4725091	4725141	4725051
0.5	2.1 - 2.6		3000	4.8	9	4725001K	4725091K	4725141K	4725051K
0.75	2.2 - 2.8	100		7.2	11	4725002	4725092	4725142	4725052
0.75	2.2 - 2.8		2500	7.2	11	4725002K	4725092K	4725142K	4725052K
1	2.4 - 2.9	100		9.6	14	4725003	4725093	4725143	4725053
1	2.4 - 2.9		2000	9.6	14	4725003K	4725093K	4725143K	4725053K

Conductor cross-section (mm²)	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green	yellow	violet	red
0.5	2.1 - 2.6	100		4.8	9	4725121	4725111	4725071	4725041
0.5	2.1 - 2.6		3000	4.8	9	4725121K	4725111K	4725071K	4725041K
0.75	2.2 - 2.8	100		7.2	11	4725122	4725112	4725072	4725042
0.75	2.2 - 2.8		2500	7.2	11	4725122K	4725112K	4725072K	4725042K
1	2.4 - 2.9	100		9.6	14	4725123	4725113	4725073	4725043
1	2.4 - 2.9		2000	9.6	14	4725123K	4725113K	4725073K	4725043K

Conductor cross-section (mm²)	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	blue/white	pink
0.5	2.1 - 2.6	100		4.8	9		4725081
0.5	2.1 - 2.6		3000	4.8	9		4725081K
0.75	2.2 - 2.8	100		7.2	11		4725082
0.75	2.2 - 2.8		2500	7.2	11		4725082K
1	2.4 - 2.9	100		9.6	14		4725083
1	2.4 - 2.9		2000	9.6	14	4725263K	4725083K

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Packaging size: Coil ≤ 30 kg, otherwise drum. Photographs are not to scale and do not represent detailed images of the respective products. The outer diameters stated in the part number table are maximum values.

**Similar products**

- ÖLFLEX® HEAT 125 SC refer to page 189

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**H07Z-K 90°C**

Harmonised; halogen-free to protect human life, the environment and material assets

**Info**

- Halogen-free and harmonised (HAR)
- For expanded ambient temperatures and higher conductor cross-sections see ÖLFLEX® HEAT 125 SC



**Benefits**

- Protection of human life and the environment thanks to the avoidance of the formation of acid in case of fire
- Time-saving assembly

**Application range**

- For wiring of lamps, devices, switchgear cabinets and distribution boxes
- For installation in tubes, on, in and under plaster as well as in closed installation ducts
- In building with a high density of people or valuable assets
- For use in dry rooms
- For expanded ambient temperatures and higher conductor cross-sections see ÖLFLEX® HEAT 125 SC

**Product features**

- The insulation material is halogen-free and free of other materials which could release toxic gases in the event of fire
- Low amount of corrosive gases in the event of fire
- Low smokes/low smoke density in the event of fire according to IEC 61034
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- <HAR> cable type certification acc. EN 50525-3-41
- No cable type certified core insulation colours according to EN 50525-1/ VDE 0285-525-1: transparent, green (single colour), yellow (single colour), all double colours (except of green-yellow and yellow-green)

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
According to EN 50565-1  
OD ≤ 8 mm: 4 x OD\* / 2 x OD\*\*;  
8 < OD ≤ 12 mm: 5 x OD\* / 3 x OD\*\*;  
OD > 12 mm: 6 x OD\* / 4 x OD\*\*

**Nominal voltage**  
U<sub>0</sub>/U: 450/ 750 V

**Test voltage**  
2500 V

**Current rating**  
VDE 0298-4  
EN 50565-1/ VDE 0298-565-1

**Temperature range**  
During installation: -5°C bis +90°C  
Fixed installation: -40°C bis +90°C

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	brown	black	grey	blue
1.5	2.8 - 3.5	100		14.4	20	4726031	4726011	4726061	4726021
1.5	2.8 - 3.5		1500	14.4	20	4726031K	4726011K	4726061K	4726021K
2.5	3.4 - 4.3	100		24	32	4726032	4726012	4726062	4726022
2.5	3.4 - 4.3		900	24	32	4726032K	4726012K	4726062K	4726022K
4	3.9 - 4.9	100		38.4	45	4726033	4726013	4726063	4726023
4	3.9 - 4.9		600	38.4	45	4726033K	4726013K	4726063K	4726023K
6	4.4 - 5.5	100		57.6	65	4726034	4726014	4726064	4726024
6	4.4 - 5.5		400	57.6	65	4726034K	4726014K	4726064K	4726024K
10	5.7 - 7.1	100		96	110	4726035	4726015	4726065	4726025
16	6.7 - 8.4	100		153.6	170	4726036	4726016	4726066	4726026
25	8.4 - 10.6	100		240	290	4726037	4726017	4726067	4726027
35	9.7 - 12.1			336	380	4726038	4726018	4726068	4726028
50	11.5 - 14.4			480	530	4726039	4726019	4726069	4726029
70	13.2 - 16.6			672	750	4727031	4727011	4727061	4727021
95	15.1 - 18.8			912	1000	4727032	4727012	4727062	4727022

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green/yellow	orange	dark blue	white
1.5	2.8 - 3.5	100		14.4	20	4726001	4726091	4726141	4726051
1.5	2.8 - 3.5		1500	14.4	20	4726001K	4726091K	4726141K	4726051K
2.5	3.4 - 4.3	100		24	32	4726002	4726092	4726142	4726052
2.5	3.4 - 4.3		900	24	32	4726002K	4726092K	4726142K	4726052K
4	3.9 - 4.9	100		38.4	45	4726003	4726093	4726143	4726053
4	3.9 - 4.9		600	38.4	45	4726003K	4726093K	4726143K	4726053K
6	4.4 - 5.5	100		57.6	65	4726004	4726094	4726144	4726054
6	4.4 - 5.5		400	57.6	65	4726004K	4726094K	4726144K	4726054K
10	5.7 - 7.1	100		96	110	4726005	4726095	4726145	4726055
16	6.7 - 8.4	100		153.6	170	4726006	4726096	4726146	4726056
25	8.4 - 10.6	100		240	290	4726007	4726097	4726147	4726057
35	9.7 - 12.1			336	380	4726008	4726098	4726148	4726058
50	11.5 - 14.4			480	530	4726009	4726099	4726149	4726059
70	13.2 - 16.6			672	750	4727001	4727091	4727141	4727051
95	15.1 - 18.8			912	1000	4727002	4727092	4727142	4727052

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	green	yellow	violet	red
1.5	2.8 - 3.5	100		14.4	20	4726121	4726111	4726071	4726041
1.5	2.8 - 3.5		1500	14.4	20	4726121K	4726111K	4726071K	4726041K
2.5	3.4 - 4.3	100		24	32	4726122	4726112	4726072	4726042
2.5	3.4 - 4.3		900	24	32	4726122K	4726112K	4726072K	4726042K
4	3.9 - 4.9	100		38.4	45	4726123	4726113	4726073	4726043
4	3.9 - 4.9		600	38.4	45	4726123K	4726113K	4726073K	4726043K
6	4.4 - 5.5	100		57.6	65	4726124	4726114	4726074	4726044
6	4.4 - 5.5		400	57.6	65	4726124K	4726114K	4726074K	4726044K
10	5.7 - 7.1	100		96	110	4726125	4726115	4726075	4726045
16	6.7 - 8.4	100		153.6	170	4726126	4726116	4726076	4726046
25	8.4 - 10.6	100		240	290	4726127	4726117	4726077	4726047
35	9.7 - 12.1			336	380	4726128	4726118	4726078	4726048
50	11.5 - 14.4			480	530	4726129	4726119	4726079	4726049
70	13.2 - 16.6			672	750	4727121	4727111	4727071	4727041
95	15.1 - 18.8			912	1000	4727122	4727112	4727072	4727042

Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	m/ring	m/box	Copper index (kg/km)	Weight (kg/km)	blue/white	pink
1.5	2.8 - 3.5	100		14.4	20		4726081
1.5	2.8 - 3.5		1500	14.4	20	4726261K	4726081K
2.5	3.4 - 4.3	100		24	32		4726082
2.5	3.4 - 4.3		900	24	32	4726262K	4726082K
4	3.9 - 4.9	100		38.4	45		4726083
4	3.9 - 4.9		600	38.4	45		4726083K
6	4.4 - 5.5	100		57.6	65		4726084
6	4.4 - 5.5		400	57.6	65		4726084K
10	5.7 - 7.1	100		96	110		4726085
16	6.7 - 8.4	100		153.6	170		4726086
25	8.4 - 10.6	100		240	290		4726087
35	9.7 - 12.1			336	380		4726088
50	11.5 - 14.4			480	530		4726089
70	13.2 - 16.6			672	750		4727081
95	15.1 - 18.8			912	1000		4727082

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Packaging size: Coil ≤ 30 kg, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

\*for conventional use, \*\*for careful bending; "OD" = outer diameter

The outer diameters stated in the part number table are maximum values.

**Similar products**

- ÖLFLEX® HEAT 125 SC refer to page 189



## LiYCY

Screened, PVC-based wiring single core



### Benefits

- Prevention of electromagnetic interference to other components

### Application range

- Wiring of measuring instruments, switch cabinets, electrical components, transmitters and receivers
- In EMC-sensitive environments

### Product features

- Flame-retardant according IEC 60332-1-2
- The outer diameters stated in the part number table are maximum values

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: Based on PVC
- Tinned-copper braiding
- Outer sheath: Based on PVC, transparent

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Peak operating voltage**  
350 V (not for power transmission)
- Test voltage**  
800 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -30°C to +80°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>LiYCY</b>				
4530101	0.14	2.8	7	13
4530102	0.25	3.3	9	18
4530103	0.5	3.6	15	20
4530104	0.75	3.9	18	31
4530105	1	4.7	25	35.9
4530106	1.5	5.1	30	39
4530107	2.5	6	35	55.3

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SENSOR STRIP stripping tool refer to page 1003



## Li2YCY

Low-capacitance, screened wiring single-core with PVC-based outer sheath



### Benefits

- Prevention of electromagnetic interference to other components

### Application range

- Wiring of measuring instruments, switch cabinets, electrical components, transmitters and receivers
- In EMC-sensitive environments

### Product features

- Flame-retardant according IEC 60332-1-2
- Low cable capacitance, short signal transmission time
- The outer diameters stated in the part number table are maximum values

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: PE
- Wrapped screening made from tinned copper wire
- Outer sheath: Based on PVC, transparent

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000993  
ETIM 5.0 Class-Description: Single core cable
- Peak operating voltage**  
350 V (not for power transmission)
- Test voltage**  
1200 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -30°C to +80°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Li2YCY</b>				
4550115	0.14	2.4	7	10
4550116	0.25	2.6	9	15
4550117	0.5	3.2	15	19.5
4550118	0.75	3.4	18	28
4550119	1	3.8	25	30

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil  
Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® STATIC CY black

Closely screened, doubly insulated PVC single core for fixed installation



**Info**

- An alternative to single-core NYY with overall braiding used as EMC-relevant screening
- EMC-compliant

### Benefits

- Cost-effective, double-insulated/sheathed single-core cable for fixed, unprotected installation indoors or outdoors, at most occasional flexing taking into account the higher minimum bending radii of 12.5 x cable outer diameter
- High degree of screening enables a very good EMC performance
- No additional protection such as a closed cable duct or protective conduit is required for installation

### Application range

- Very suitable for power circuits as an external connection or for the internal wirings in electric and electronic equipment
- In dry or damp interiors with low mechanical stress conditions
- Can be used indoors as a connecting cable to the inverter in the photovoltaic sector
- Outdoor use is possible within the indicated operating temperature range

### Product features

- Flame retardant acc. to IEC 60332-1-2
- UV and weather-resistant according to ISO 4892-2
- Oil-resistant according to DIN EN 50290-2-22 (TM54)

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Based on PVC
- Nonwoven wrapping/plastic foil
- Tinned-copper braiding
- Outer sheath: Based on PVC

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000057  
 ETIM 5.0 Class-Description:  
 Low voltage power cable

**Conductor stranding**  
 Fine wire according to VDE 0295  
 Class 5/ IEC 60228 Class 5

**Minimum bending radius**  
 Fixed installation: 6 x outer diameter  
 Occasional flexing: 12.5 x outer diameter

**Nominal voltage**  
 $U_0/U$ : 600/1000 V

**Test voltage**  
 Core/screen: 2000 V

**Temperature range**  
 Fixed installation: -40°C to +80°C  
 Occasional flexing: -30°C to +70°C

Article number	Conductor cross-section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ÖLFLEX® STATIC CY black</b>				
4600023	16	10.3	177	275
4600024	25	12.7	267	396
4600025	35	14.3	384	542
4600026	50	16.9	537	752
4600027	70	18.7	763	1004
4600028	95	21.7	1012	1368
4600029	120	24.7	1264	1719

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil ≤ 30 kg, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CHAIN 90 CP
- ÖLFLEX® FD 90 CY refer to page 124

### Accessories

- KS 20 cable shears refer to page 999





## NYM-J

Standard cable for plaster, brickwork and immovable concrete

**Info**

- Standard cable for plaster and brickwork



### Application range

- For installation on or under the plaster
- In bricks and concrete, except direct embedding in vibrated or compressed concrete
- In dry, damp or wet interiors
- Also suitable for outdoor use if protected against direct sunlight

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- VDE 0250 Part 204

### Product Make-up

- Bare copper wire conductor
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Outer sheath: Based on PVC

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000043  
ETIM 5.0 Class-Description: House wiring cable
- Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers
- Conductor stranding**  
Single or multi-wire  
≥ 16 mm<sup>2</sup>: multi-wire
- Minimum bending radius**  
Fixed installation: 4 x outer diameter
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
2000 V
- Protective conductor**  
“J” in NYM-J/Dimension with “G”:  
With protection earth PE conductor  
“O” in NYM-O/Dimension with “X”:  
No protection earth PE conductor
- Temperature range**  
During installation: +5°C to +60°C  
Fixed installation: -40°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NYM-J</b>				
1600008	1 G 2.5	6.0	24	60
1600009	1 G 4	6.7	38	85
1600010	1 G 6	7.2	58	105
1600011	1 G 10	8.6	96	160
1600012	1 G 16	9.6	154	220
16000003	3 G 1.5	8.4	43	120
16000013	4 G 1.5	9.2	58	150
16000023	5 G 1.5	9.9	72	175
1600003	7 G 1.5	11.6	101	235
16000213	3 G 2.5	9.6	72	170
16000053	4 G 2.5	10.6	96	210
16000063	5 G 2.5	11.5	120	290
1600071	7 G 2.5	13.7	168	380
16010223	3 G 4	11.3	115	250
16000313	4 G 4	12.7	154	315
16000513	5 G 4	14.0	192	370
16010233	3 G 6	12.8	173	335
16000323	4 G 6	13.8	230	410
16000523	5 G 6	15.5	288	500
16000333	4 G 10	18.0	384	680
16000533	5 G 10	19.5	480	810
16000543	5 G 16	23.0	768	1200
16000353	4 G 25	26.0	960	1500
16000553	5 G 25	28.0	1200	1800

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- NYJ, NYO refer to page 223
- (N)HXM refer to page 222

### Accessories

- STAR STRIP stripping tool refer to page 1000
- KS 20 cable shears refer to page 999



## (N)HXMH

Halogen-free; for plaster, bricks, concrete; at high density of people and valuable assets



**Info**

- Halogen-free alternative to the PVC installation cable NYM

### Application range

- For installation on or under the plaster
- In bricks and concrete, except direct embedding in vibrated or compressed concrete
- In dry, damp or wet interiors
- For buildings or industrial plants with a high density of people or valuable assets

### Product features

- Due to the use of halogen-free materials, the formation of toxic dioxins and furans is considerably reduced in the event of a fire
- Minimizes damages to buildings and equipments that are caused by acidic fumes produced during combustion
- Flame-retardant according IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-24

### Norm references / Approvals

- Based on VDE 0250 part 214

### Product Make-up

- Bare copper wire conductor
- Core insulation: PE
- Filling compound over the core assembly
- Outer sheath: halogen-free polymer

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000043  
 ETIM 5.0 Class-Description: House wiring cable

**Core identification code**  
 Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
 From 6 cores: black with white numbers

**Conductor stranding**  
 Single or multi-wire

**Minimum bending radius**  
 Fixed installation: 4 x outer diameter

**Nominal voltage**  
 $U_0/U$ : 300/500 V

**Test voltage**  
 2000 V

**Protective conductor**  
 G = with GN-YE protective conductor  
 X = without protective conductor

**Temperature range**  
 Maximum conductor temperature: +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>(N)HXMH</b>				
16020003	3 G 1.5	8.5	43	120
16020013	4 G 1.5	9.3	58	145
16020023	5 G 1.5	10.0	72	170
1602003	7 G 1.5	10.8	101	210
16020103	3 G 2.5	9.4	72	160
16020123	5 G 2.5	11.0	120	230

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- NYM-J refer to page 221

### Accessories

- STAR STRIP stripping tool refer to page 1000



**NYJ, NYJ-O**

Fixed installation, direct burial; PVC cable with different application areas

**Info**

- Standard cable for direct burial with different application areas
- 0,6/1,0 kV alternative to the PVC installation cable NYM



**Application range**

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

**Product features**

- Flame-retardant according IEC 60332-1-2
- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

**Norm references / Approvals**

- HD 603/VDE 0276-603 (for 1 to 5 cores)
- HD 627/VDE 0276-627 (as from 7 cores)

**Product Make-up**

- Bare copper wire conductor
- Abbreviations “re”, “rm”, “se”, “sm”:  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
m = multi-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Outer sheath: Based on PVC

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Single or multi-wire

**Minimum bending radius**  
Single-core: 15 x outer diameter  
Multi-core: 12 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 0.6/1.0 kV

**Test voltage**  
4000 V

**Protective conductor**  
J = with GN-YE protective conductor  
O = without protective conductor

**Temperature range**  
During installation: -5°C to +50°C  
Fixed installation: -40°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NYJ</b>				
1550030	1 x 25rm	13.0	240	380
1550038	1 x 35rm	14.0	336	447
1550032	1 x 50rm	15.0	480	650
1550033	1 x 70rm	17.0	672	864
1550037	1 x 185rm	25.0	1776	2080
15500013	3 x 1,5re	12.0	43	223
15500023	4 x 1,5re	13.0	58	256
15500033	5 x 1,5re	14.0	72	293
1550004	7 x 1,5re	15.0	101	360
1550005	10 x 1,5re	18.0	144	520
1550006	12 x 1,5re	19.0	173	560
1550084	14 x 1,5re	20.0	202	620
1550007	16 x 1,5re	21.0	230	680
1550008	19 x 1,5re	22.0	274	760
1550009	24 x 1,5re	24.0	346	900

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1550086	30 x 1,5re	26.0	432	1100
15500103	3 x 2,5re	13.0	72	272
15500113	4 x 2,5re	14.0	96	316
15500123	5 x 2,5re	15.0	120	323
1550013	7 x 2,5re	16.0	168	450
1550090	10 x 2,5re	20.0	240	630
1550091	12 x 2,5re	20.0	288	680
1550092	14 x 2,5re	21.0	336	790
1550094	19 x 2,5re	23.0	456	990
1550096	24 x 2,5re	26.0	576	1300
1550097	30 x 2,5re	28.0	720	1400
15500583	3 x 4re	15.0	115	373
15500203	4 x 4re	16.0	154	439
15500263	5 x 4re	17.0	192	510
15500593	3 x 6re	16.0	173	466
15500213	4 x 6re	17.0	230	547
15500273	5 x 6re	19.0	288	640
15500603	3 x 10re	18.0	288	629
15500223	4 x 10re	19.0	384	743
15500823	5 x 10re	21.0	480	899
15500613	3 x 16re	20.0	461	850
15500233	4 x 16re	22.0	614	1039
15500833	5 x 16re	23.0	768	1240
15500713	3 x 25rm/16re	25.0	874	1595
15500243	4 x 25rm	27.0	960	1620
15500153	3 x 35sm/16re	27.0	1162	1718
15500753	4 x 35sm	27.0	1344	1916
15500163	3 x 50sm/25rm	31.0	1680	2383
15500253	4 x 50sm	31.0	1920	2639
15500173	3 x 70sm/35sm	33.0	2352	3196
15500763	4 x 70sm	35.0	2688	3576
15500183	3 x 95sm/50sm	38.0	3216	4271
15500773	4 x 95sm	40.0	3648	4746
15500723	3 x 120sm/70sm	41.0	4128	5281
15500783	4 x 120sm	43.0	4608	5813
15500733	3 x 150sm/70sm	46.0	4992	6408
15500793	4 x 150sm	48.0	5760	7263
15500743	3 x 185sm/95sm	50.0	6240	7909
15500803	4 x 185sm	53.0	7104	8905
15500193	3 x 240sm/120sm	57.0	8064	10162
15500813	4 x 240sm	60.0	9216	11430
<b>NY-Y-O</b>				
1550205	1 x 10re	10.0	96	176
1550206	1 x 16re	11.0	154	239
1550207	1 x 25rm	13.0	240	380
1550208	1 x 35rm	14.0	336	447
1550209	1 x 50rm	15.0	480	650
1550210	1 x 70rm	17.0	672	864
1550211	1 x 95rm	19.0	912	1132
1550212	1 x 120rm	21.0	1152	1405
1550213	1 x 150rm	22.0	1440	1710
1550214	1 x 185rm	25.0	1776	2080
1550215	1 x 240rm	27.0	2304	2669
1550216	1 x 300rm	30.0	2880	3305
1550218	1 x 500rm	39.0	4800	5400
15502003	2 x 1,5re	11.0	29	210
15502193	2 x 2,5re	12.0	48	250
15502203	2 x 4re	14.0	77	360
15502213	2 x 6re	15.0	115	400
15502223	2 x 10re	17.0	192	500
15502533	4 x 16re	22.0	614	1039
15502543	4 x 25rm	27.0	960	1620
15502563	4 x 50sm	31.0	1920	2639
15502573	4 x 70sm	35.0	2688	3576
15502583	4 x 95sm	40.0	3648	4746

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: excluding copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- NYCY refer to page 228
- NYCWY refer to page 229
- NAYY-J refer to page 230

#### Accessories

- V 1311-A pressing pliers, hydraulic refer to page 1030
- STAR STRIP stripping tool refer to page 1000
- KT cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031

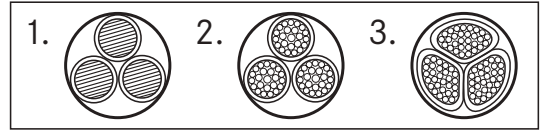


N2XH

Halogen-free power cable with rated voltage 0,6/1 kV for fixed installation

**Info**

- Halogen-free alternative to the PVC installation cable NYY-J, NYY-O



**Application range**

- For installation on or under the plaster
- Fixed installation indoor, in air or concrete
- For buildings or industrial plants with a high density of people or valuable assets
- No direct burial or installation in water
- Outdoor laying only when protected from direct sunlight and other external impacts

**Product features**

- Flame-retardant according IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-24
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

**Norm references / Approvals**

- HD 604/VDE 0276-604

**Product Make-up**

- Bare copper wire conductor
- Abbreviations "re", "rm", "se", "sm":  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
m = multi-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: PE
- Filling compound over the core assembly
- Outer sheath: halogen-free, thermoplastic polyolefin compound

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Single or multi-wire

**Minimum bending radius**  
Single-core: 15 x outer diameter  
Multi-core: 12 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 0.6/1.0 kV

**Test voltage**  
4000 V

**Protective conductor**  
J = with GN-YE protective conductor  
O = without protective conductor

**Temperature range**  
During installation: -5°C bis +90°C  
Fixed installation: -40°C bis +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>N2XH-O</b>				
1550556	1x1,5 RE	6.0	14	53
1550557	1x2,5 RE	6,5	24	90
3017600	1x4 RE	8,5	38	69
30017645	1x6 RE	6,5	58	90
30017646	1x10 RE	7,3	96	131
30017647	1x16 RM	8,6	154	197
30017648	1x25 RM	10,2	240	293
30017649	1x35 RM	11,3	336	389
30017650	1x50 RM	12,7	480	517
30017651	1x70 RM	14,6	672	717
30017652	1x95 RM	16,3	912	972
30017653	1x120 RM	18,3	1152	1215
3017601	1x150 RM	20.0	1440	1494
3017602	1x185 RM	22,6	1776	1855
3017603	1x240 RM	25,2	2304	2387
1112935	1x300 RM	27,9	2880	2971
30017654	2x1,5 RE	12.0	29	185
30017655	2x2,5 RE	13.0	48	220
30017656	2x4 RE	14.0	77	275
30017657	2x6 RE	15.0	115	335
30017658	2x10 RE	16.0	192	450
3017604	2x16 RM	18.0	307	625
3017605	2x25 RM	21.0	480	950
35002466	3x1,5 RM	13.0	43	179
1550581	3x2,5 RM	14.0	72	225
<b>N2XH-J</b>				
1112940	1x25 RM	10,2	240	293
1112941	1x35 RM	11,3	336	389
1112942	1x50 RM	12,7	480	517

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1112943	1x70 RM	14,6	672	717
1112944	1x95 RM	16,3	912	972
1112945	1x120 RM	18,3	1152	1215
1112946	1x150 RM	20,0	1440	1494
1112947	1x185 RM	22,6	1776	1855
1112948	1x240 RM	25,2	2304	2387
1112949	1x300 RM	27,9	2880	2971
30017659	3x1,5 RE	8,9	43	125
30017660	3x2,5 RE	9,8	72	163
30017661	3x4 RE	10,8	115	219
30017662	3x6 RE	11,8	173	289
30017663	3x10 RE	13,6	288	431
30017664	3x16 RM	16,7	461	638
30017665	3x25 RM	20,2	720	1015
30017666	3x35 RM	22,3	952	1231
30017667	3x50 RM	25,5	1440	1652
30017668	3x70 RM	30,0	2160	2455
30017669	3x95 RM	32,0	2736	3260
30017670	3x120 RM	35,0	3456	4000
3017606	3x150 RM	39,0	4320	5100
3017607	3x185 RM	44,0	5328	6160
3017608	3x240 RM	49,0	6912	8000
30017671	4x1,5 RE	9,7	58	147
30017672	4x2,5 RE	10,6	96	195
30017673	4x4 RE	11,7	154	266
30017674	4x6 RE	12,9	230	355
30017675	4x10 RE	15,2	384	547
30017676	4x16 RM	18,3	614	839
30017677	4x25 RM	22,6	960	1294
30017678	4x35 RM	25,8	1344	1605

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
30017679	4x50 RM	29,4	1920	2154
30017680	4x70 RM	34,4	2688	3047
30017681	4x95 RM	38,6	3648	4102
30017682	4x120 RM	42,4	4608	5062
3017609	4x150 RM	47,2	5760	6256
3017610	4x185 RM	52,0	7104	7751
3017611	4x240 RM	58,6	9216	10047
30017683	5x1,5 RE	10,5	72	174
30017684	5x2,5 RE	11,5	120	233
30017685	5x4 RE	12,7	192	319
30017686	5x6 RE	14,2	288	437
30017687	5x10 RE	17,0	480	682
30017688	5x16 RM	20,2	768	1036
30017689	5x25 RM	24,9	1200	1584
1550633	5x35 RM	28,4	1680	2155
30017690	7x1,5 RE	11,3	101	214
30017691	7x2,5 RE	12,4	168	291
30017692	7x4 RE	17,0	269	540
3017612	10x1,5 RE	14,0	144	299

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
3017613	10x2,5 RE	15,8	240	419
30017693	12x1,5 RE	14,7	173	342
30017694	12x2,5 RE	16,4	288	480
3017614	12x4 RE	21,0	461	805
3017615	14x1,5 RE	17,0	202	480
3017616	14x2,5 RE	19,0	336	635
3017617	19x1,5 RE	18,0	274	600
3017618	19x2,5 RE	21,0	456	810
3017619	24x1,5 RE	20,2	346	625
3017620	14x2,5 RE	24,0	576	990
3017621	30x1,5 RE	21,3	432	738
3017622	30x2,5 RE	23,7	720	1045
1550649	3x50/25 SM	28,5	1680	2100
1550650	3x70/35 SM	31,4	2352	2800
1550651	3x95/50 SM	34,9	3216	3750
1550652	3x120/70 SM	38,0	4128	4750
1550653	3x150/70 SM	43,3	4992	5750
1550654	3x185/95 SM	47,2	6240	7200
1550655	3x240/120 SM	53,4	8064	9300

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- NYY-J, NYY-O refer to page 223

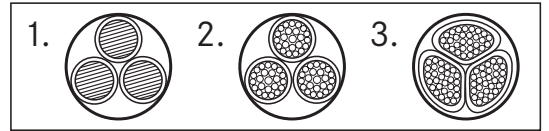


**N2XCH**

Halogen-free power cable with concentric copper conductor

**Info**

- Halogen-free alternative to the PVC installation cable NYCY
- With concentric copper conductor



**Benefits**

- Concentric conductor above all as PE

**Application range**

- For installation on or under the plaster
- Fixed installation indoor, in air or concrete
- For buildings or industrial plants with a high density of people or valuable assets
- No direct burial or installation in water
- Outdoor laying only when protected from direct sunlight and other external impacts

**Product features**

- Flame-retardant according to IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-24
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
- Low smoke density according to IEC 61034-2

**Norm references / Approvals**

- HD 604/VDE 0276-604

**Product Make-up**

- Bare copper wire conductor
- Abbreviations “re”, “rm”, “se”, “sm”:  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
m = multi-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: PE
- Filling compound over the core assembly
- Concentric conductor: bare copper wires
- Outer sheath: halogen-free, thermoplastic polyolefin compound

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description:  
Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Single or multi-wire

**Minimum bending radius**  
Single-core: 15 x outer diameter  
Multi-core: 12 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 0.6/1.0 kV

**Test voltage**  
4000 V

**Temperature range**  
During installation: -5°C bis +90°C  
Fixed installation: -40°C bis +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>N2XCH</b>				
30017695	2x1,5 RE/1,5	11,1	52	172
30017696	2x2,5 RE/2,5	11,9	80	213
30017697	2x4 RE/4	14,0	122	322
30017698	2x6 RE/6	15,0	183	410
30017699	2x10 RE/10	17,0	311	550
30017700	2x16 RM/16	19,0	490	790
30017701	3x1,5 RE/1,5	11,5	66	190
30017702	3x2,5 RE/2,5	12,3	103	239
30017703	3x4 RE/4	13,5	160	314
30017704	3x6 RE/6	14,9	242	410
30017705	3x10 RE/10	16,8	408	600
30017706	3x16 RM/16	19,9	643	896
30017707	3x25 RM/16	25,3	1001	1360
30017708	3x35 RM/16	29,2	1400	1795
30017709	3x50 RM/25	32,0	2003	2460
30017710	3x70 RM/35	36,0	2794	3080
30017711	3x95 RM/50	39,0	3790	4310
30017712	3x120 RM/70	42,0	4785	5233
30017713	3x150 RM/70	44,0	5100	5788
30017714	3x185 RM/95	48,0	6381	7150
30017715	3x240 RM/120	54,0	8240	9273
30017716	4x1,5 RE/1,5	12,2	81	217
30017717	4x2,5 RE/2,5	13,2	129	275
30017718	4x4 RE/4	14,5	202	365
30017719	4x6 RE/6	15,9	296	479

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
30017720	4x10 RE/10	18,0	504	709
30017721	4x16 RM/16	21,5	796	1068
30017722	4x25 RM/16	25,6	1142	1526
30017723	4x35 RM/16	26,9	1526	1814
30017724	4x50 RM/25	29,6	2203	2405
30017725	4x70 RM/35	34,0	3082	3378
30017726	4x95 RM/50	38,5	4208	4568
30017727	4x120 RM/70	42,7	5388	5773
30017728	4x150 RM/70	46,6	6540	6921
30017729	4x185 RM/95	51,8	8195	8866
30017732	4x240 RM/120	57,6	10546	11167
30017730	7x1,5 RE/1,5	15,0	133	380
30017731	7x2,5 RE/2,5	15,0	200	378
30017733	7x4 RE/4	18,0	315	599
30017734	7x6 RE/6	19,0	470	850
1550696	10x1,5 RE/2,5	17,2	177	420
1550697	10x2,5 RE/4	18,9	287	550
30017735	12x1,5 RE/2,5	17,2	205	437
30017736	12x2,5 RE/4	19,0	334	589
30017737	12x4 RE/6	23,0	528	920
1550701	16x1,5 RE/4	20,0	275	686
1550702	16x2,5 RE/6	20,9	450	805
30017738	24x1,5 RE/6	22,7	413	764
30017739	24x2,5 RE/10	26,0	695	1189
30017740	30x1,5 RE/6	23,9	499	880
3017741	30x2,5 RE/10	26,6	840	1238

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- NYCY refer to page 228
- NYCWY refer to page 229



## NYCY

Fixed installation, direct burial; PVC cable with concentric, helical copper conductor and cross-conductive spiral



**Info**

- With concentric, helical copper conductor

### Benefits

- Concentric conductor above all as PE

### Application range

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

### Product features

- Flame-retardant according IEC 60332-1-2
- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

### Norm references / Approvals

- HD 603/VDE 0276-603 for NYCY with 3 or 4 cores and the relevant additional concentric protective conductor
- HD 627/VDE 0276-627 for NYCY as from 7 cores and with the additional, concentric protective conductor

### Product Make-up

- Bare copper wire conductor
- Abbreviations “re”, “rm”, “se”, “sm”:  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
m = multi-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Concentric, helical, outer conductor made of bare copper strands with inductance-reducing, cross-conductive copper bond counter spiral
- Outer sheath: Based on PVC

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Single or multi-wire

**Minimum bending radius**  
Fixed installation: 12 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 0.6/1.0 kV

**Test voltage**  
4000 V

**Temperature range**  
During installation: -5 °C to +50 °C  
Fixed installation: -40 °C to +70 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NYCY</b>				
15503003	2 x 1,5re/1,5	14.0	52	245
15503103	3 x 1,5re/1,5	14.0	66	280
15503203	4 x 1,5re/1,5	15.0	81	302
1550330	7 x 1,5re/2,5	17.0	133	450
1550332	12 x 1,5re/2,5	20.0	205	580
1550337	24 x 1,5re/6	26.0	413	1100
15503113	3 x 2,5re/2,5	15.0	104	316
15503213	4 x 2,5re/2,5	16.0	128	360
1550350	7 x 2,5re/2,5	18.0	200	530
1550355	16 x 2,5re/6	23.0	451	950
15503223	4 x 4re/4	18.0	200	485
15503233	4 x 6re/6	19.0	297	616

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: excluding copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- NYY-J, NYY-O refer to page 223



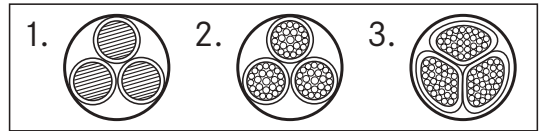


NYCWY

Fixed installation, direct burial; PVC cable with concentric, wave-like copper conductor and cross-conductive spiral

**Info**

- With concentric, wave-like copper conductor



**Benefits**

- Concentric conductor above all as PE
- Easier connection due to the waveform of the concentric copper conductor

**Application range**

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

**Product features**

- Flame-retardant according IEC 60332-1-2

- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

**Norm references / Approvals**

- HD 603/VDE 0276-603 for NYCWY with 3 or 4 cores and the relevant concentric protective conductor

**Product Make-up**

- Bare copper wire conductor
- Abbreviations “re”, “rm”, “se”, “sm”:  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
m = multi-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: Based on PVC

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000057  
ETIM 5.0 Class-Description: Low voltage power cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9

**Conductor stranding**  
Single or multi-wire

**Minimum bending radius**  
Fixed installation: 12 x outer diameter

**Nominal voltage**  
U<sub>0</sub>/U: 0.6/1.0 kV

**Test voltage**  
4000 V

**Temperature range**  
During installation: -5°C to +50°C  
Fixed installation: -40°C to +70°C

- Filling compound over the core assembly
- Concentric, wave-like, outer conductor made of bare copper strands with inductance-reducing, cross-conductive copper bond counter spiral
- Outer sheath: Based on PVC

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>NYCWY</b>				
15505003	2 x 10re/10	19.0	312	610
15505263	3 x 10re/10	20.0	408	775
15505403	4 x 10re/10	21.0	504	897
15505273	3 x 16re/16	22.0	643	1066
15505413	4 x 16re/16	24.0	796	1250
15505283	3 x 25rm/25	26.0	1003	1584
15505423	4 x 25rm/16	28.0	1142	1822
15505303	3 x 35sm/35	26.0	1402	1710
15505433	4 x 35sm/16	29.0	1526	2146
15505163	3 x 50sm/50	30.0	2000	2368
15505443	4 x 50sm/25	33.0	2203	3031
15505453	4 x 70sm/35	38.0	3082	4056
15505143	3 x 95sm/50	38.0	3296	4256
15505323	3 x 95sm/95	39.0	3791	4600
15505463	4 x 95sm/50	43.0	4208	5364
15505153	3 x 120sm/70	41.0	4236	5314
15505473	4 x 120sm/70	46.0	5388	6748
15505353	3 x 150sm/70	45.0	5100	6344
15505483	4 x 150sm/70	51.0	6540	8159
15505173	3 x 185sm/95	50.0	6383	8054

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: excluding copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- NYY-J, NYY-O refer to page 223

**Accessories**

- V 1311-A pressing pliers, hydraulic refer to page 1030
- KT cable shears refer to page 999
- PVL 1300 pressing pliers battery-operated refer to page 1031



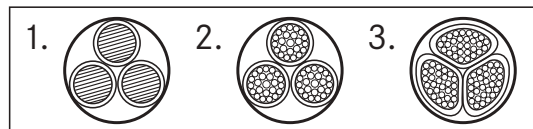
## NAYY-J

Fixed installation, direct burial; PVC cable with solid aluminium conductors



### Info

- With solid aluminium conductor



### Application range

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

### Norm references / Approvals

- HD 603/VDE 0276-603

### Product Make-up

- Aluminium conductor
- Abbreviations “re”, “se”:  
r = round conductor form;  
s = sectorial conductor form;  
e = single-wire conductor;  
Picture 1. = re  
Picture 2. = rm  
Picture 3. = sm
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Outer sheath: Based on PVC

### Product features

- Flame-retardant according IEC 60332-1-2
- Maximum tensile strain for aluminium conductors during installation is 30 N/mm<sup>2</sup> according to HD 603/VDE 0276-603: Part 1 Appendix A.4.12 and Part 3-G point 4

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000057 ETIM 5.0 Class-Description: Low voltage power cable
	<b>Core identification code</b> According to VDE 0293-308 (table T9)
	<b>Conductor stranding</b> Single-wire
	<b>Minimum bending radius</b> Fixed installation: 12 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 0.6/1.0 kV
	<b>Test voltage</b> 4000 V
	<b>Protective conductor</b> J = with GN-YE protective conductor
	<b>Temperature range</b> During installation: -5 °C to +50 °C Fixed installation: -30 °C to +70 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Alu index (kg/km)	Weight (kg/km)
<b>NAYY-J</b>				
1552010	4 x 35re	29.0	406	1170
1552011	4 x 50se	30.0	580	1305
1552012	4 x 70se	35.0	812	1730
1552013	4 x 95se	39.0	1102	2205
1552014	4 x 120se	42.0	1392	2655
1552015	4 x 150se	46.0	1740	3150
1552016	4 x 185se	51.0	2146	3925
1552017	4 x 240se	60.0	2784	4880

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Aluminium price basis: excludes aluminium. Refer to catalogue appendix T17 for the application and definition of “Metal price basis” and “Metal index”.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- NYY-J, NYY-O refer to page 223

### Accessories

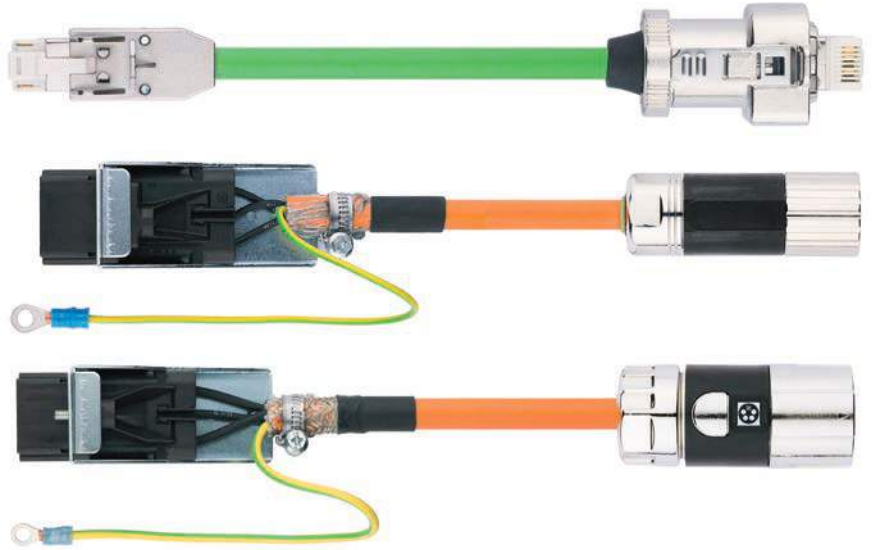
- V 1311-A pressing pliers, hydraulic refer to page 1030
- STAR STRIP stripping tool refer to page 1000
- PVL 1300 pressing pliers battery-operated refer to page 1031
- Cable lugs and other connectors made of aluminium or bi-metal Al-Cu are available upon request



## ÖLFLEX® SERVO Basic Line according to Siemens 6FX5002 (PVC)

### Info

- Cables in application-oriented performance categories
- Custom length available
- PVC outer sheath



### Benefits

- Regional manufactured worldwide available
- Lapp quality standards
- Optional overmoulding

### Application range

- Food production and packaging machinery
- Woodworking Machinery

### Product features

- New Power PVC servo cable, shielded
- Designed for average operational demands in industrial applications
- Innovative connector concept (optionally overmolded)

### Norm references / Approvals

- Design according to SIEMENS® standard 6FX 5002
- Flame-retardant according to IEC 60332-1-2, VW-1, FT1

### Product Make-up

- Full range of types
- Brake wire with 1mm<sup>2</sup> wire gauge
- Basic Line for static applications and with resistant PVC outer mantle

### Technical data



**Minimum bending radius**  
Flexing: 15 x outer diameter  
Power cable up to 6mm<sup>2</sup>: 7,5xD



**Nominal voltage**  
Signal cables:  
30 V AC (IEC)  
30 V AC/DC (UL/CSA)  
Power cable:  
- Power cores:  
1000 V (UL/CSA)  
600/1000 V (IEC)  
- Control cores:  
750 V (UL/CSA)  
30 V AC (IEC)

**Distance of Travel**  
Power cable up to 6mm<sup>2</sup>: 5m

**Acceleration**  
Power cable up to 6mm<sup>2</sup>: 10m/s<sup>2</sup>

**Speed of Travel**  
Power cable up to 6mm<sup>2</sup>: 3m/s

**Max. bending cycles**  
Power cable up to 6mm<sup>2</sup>: 2 Mio.



**Temperature range**  
Flexible use: 0°C to +60°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
<b>ÖLFLEX® SERVO Basic Line according to Siemens 6FX5002 (PVC)</b>					
5470000415	10.0	2DC10	370	Other lengths available	1
5470000416	10.0	2DC20	370	Other lengths available	1
5470000427	10.0	5CN05	880	Other lengths available	1
5470000428	10.0	5CN11	1320	Other lengths available	1
5470000437	10.0	5CQ28	880	Other lengths available	1
5470000442	10.0	5CS01	880	Other lengths available	1
5470000450	10.0	5CS31	1320	Other lengths available	1
5470000479	10.0	5DQ28	1560	Other lengths available	1
5470000484	10.0	5DS01	1560	Other lengths available	1
5470000488	10.0	5DS31	1940	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only.  
Other lengths and cable terminations are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

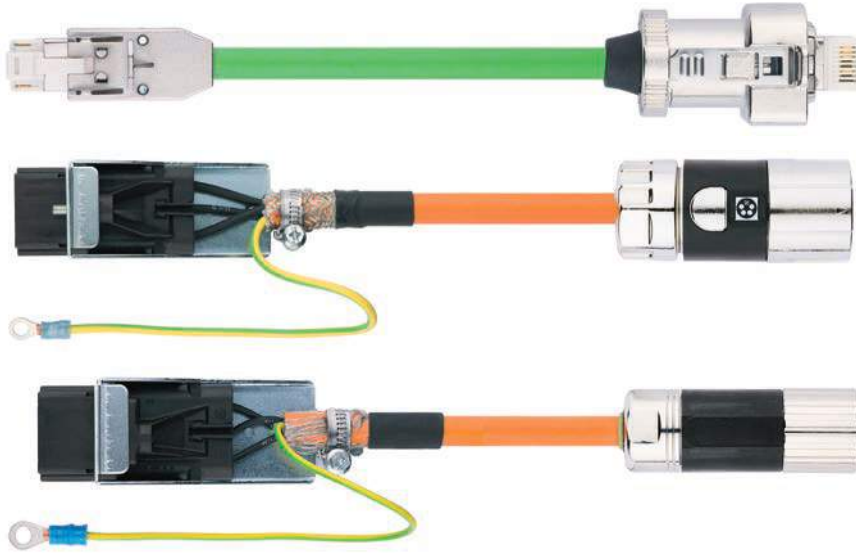


## ÖLFLEX® SERVO Core Line according to Siemens (PUR)



### Info

- Cables in application-oriented performance categories
- Custom length available
- Optimized for harnessings up to 30m



### Benefits

- Regional manufactured worldwide available
- Lapp quality standards
- Optional overmoulding

### Application range

- Specifically for machine tool building
- For travel distances up to 10 m.
- For dynamic applications

### Product features

- New PUR servo cable, halogen-free & shielded
- Innovative connector concept (optionally overmolded)

### Norm references / Approvals

- Design according to SIEMENS® standard

### Product Make-up

- Brake wire with 1mm<sup>2</sup> wire gauge
- Core Line for light duty power chain applications

### Technical data

#### Distance of Travel

Power cables up to 6mm<sup>2</sup>: 10m/s

#### Acceleration

Power cable up to 6mm<sup>2</sup>: 20m/s<sup>2</sup>

#### Speed of Travel

Power cables up to 6mm<sup>2</sup>: 10m/s

#### Max. bending cycles

Power cable up to 6mm<sup>2</sup>: 5 Mio.



#### Temperature range

Moved: -40°C to +90°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
<b>ÖLFLEX® SERVO Core Line according to Siemens (PUR)</b>					
5470000519	10.0	5CA05	1660	other lengths up to 30m available	1
5470000520	10.0	5CA15	1970	other lengths up to 30m available	1
5470000521	10.0	5CA28	1660	other lengths up to 30m available	1
5470000522	10.0	5CA38	1970	other lengths up to 30m available	1
5470000523	10.0	5CA48	3590	other lengths up to 30m available	1
5470000526	10.0	5CN01	1660	other lengths up to 30m available	1
5470000527	10.0	5CN05	1660	other lengths up to 30m available	1
5470000528	10.0	5CN11	1970	other lengths up to 30m available	1
5470000529	10.0	5CN21	1660	other lengths up to 30m available	1
5470000530	10.0	5CN31	1970	other lengths up to 30m available	1
5470000531	10.0	5CN41	3590	other lengths up to 30m available	1
5470000536	10.0	5CQ15	1970	other lengths up to 30m available	1
5470000537	10.0	5CQ28	1660	other lengths up to 30m available	1
5470000538	10.0	5CQ38	1970	other lengths up to 30m available	1
5470000539	10.0	5CQ48	3590	other lengths up to 30m available	1
5470000542	10.0	5CS01	1660	other lengths up to 30m available	1
5470000543	10.0	5CS02	1660	other lengths up to 30m available	1
5470000544	10.0	5CS11	1970	other lengths up to 30m available	1
5470000545	10.0	5CS12	1970	other lengths up to 30m available	1
5470000548	10.0	5CS21	1660	other lengths up to 30m available	1
5470000550	10.0	5CS31	1970	other lengths up to 30m available	1
5470000551	10.0	5CS41	3590	other lengths up to 30m available	1
5470000561	10.0	5DA05	2620	other lengths up to 30m available	1
5470000562	10.0	5DA15	1810	other lengths up to 30m available	1
5470000563	10.0	5DA28	2620	other lengths up to 30m available	1
5470000564	10.0	5DA38	1810	other lengths up to 30m available	1
5470000565	10.0	5DA48	4830	other lengths up to 30m available	1
5470000568	10.0	5DN01	2620	other lengths up to 30m available	1
5470000569	10.0	5DN05	2620	other lengths up to 30m available	1
5470000570	10.0	5DN11	1810	other lengths up to 30m available	1
5470000571	10.0	5DN21	2620	other lengths up to 30m available	1
5470000572	10.0	5DN31	1810	other lengths up to 30m available	1
5470000573	10.0	5DN41	4830	other lengths up to 30m available	1
5470000578	10.0	5DQ15	1810	other lengths up to 30m available	1

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
5470000579	10.0	5DQ28	2620	other lengths up to 30m available	1
5470000580	10.0	5DQ38	1810	other lengths up to 30m available	1
5470000581	10.0	5DQ48	4830	other lengths up to 30m available	1
5470000584	10.0	5DS01	2620	other lengths up to 30m available	1
5470000585	10.0	5DS11	1810	other lengths up to 30m available	1
5470000587	10.0	5DS21	2620	other lengths up to 30m available	1
5470000588	10.0	5DS31	1810	other lengths up to 30m available	1
5470000589	10.0	5DS41	4830	other lengths up to 30m available	1

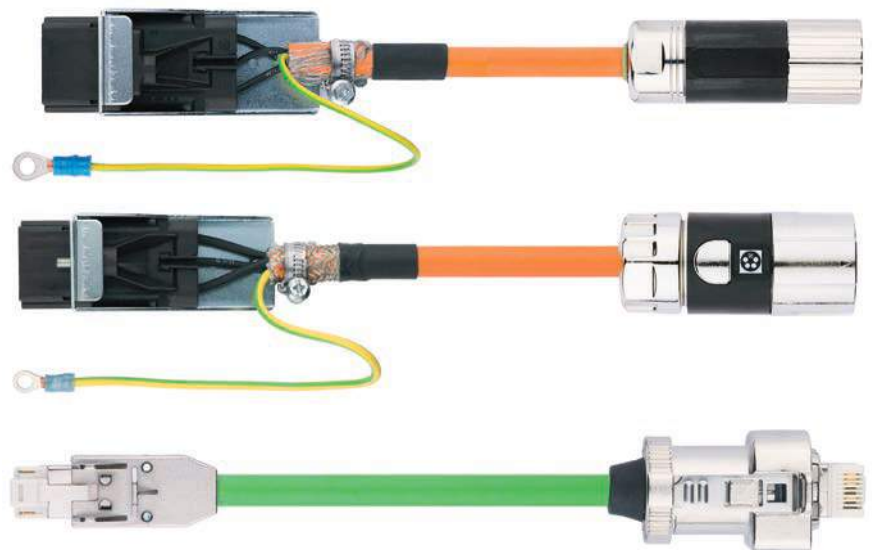
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only.  
 Other lengths and cable terminations are available upon request.  
 Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SERVO Extended Line according to Siemens 6FX8002 (PUR)

**i Info**

- Cables in application-oriented performance categories
- Connector with novel, safe screen connection
- For the most demanding mechanical requirements



### Benefits

- Regional manufactured worldwide available
- Lapp quality standards
- Optional overmoulding

### Application range

- Specifically for machine tool building
- Designed for power chain use: for travel distances up to 100 m (horizontal)
- For very high dynamic motion sequences

### Product features

- Proven for high dynamic stresses and long distances
- Classical production and assembly

### Norm references / Approvals

- Design according to SIEMENS® standard 6FX 8002
- Flame-retardant according to IEC 60332-1-2, VW-1, FT1

### Product Make-up

- Full range of types
- Proven PUR servo cable, halogen-free & shielded
- Extended Line for high mechanical stress in Power chains

### Technical data

**Minimum bending radius**  
 Flexible use: 7.5 x outer diameter  
 Flexible Use: from 25mm<sup>2</sup> 10x outer diameter

**Distance of Travel**  
 100m

**Acceleration**  
 50m/s<sup>2</sup>

**Speed of Travel**  
 5m/s<sup>2</sup>

**Max. bending cycles**  
 10 Mio.

**Temperature range**  
 Flexing: -40°C to +90°C

Article number	Length (m)	SIEMENS® assembly designation	Copper index kg/1.000 pieces	Other dimensions	PU
<b>Assemblies for signal transmission systems</b>					
5470000500	10.0	2AD00	700	Other lengths available	1
5470000501	10.0	2AD04	700	Other lengths available	1
5470000502	10.0	2AH00	510	Other lengths available	1
5470000503	10.0	2AH04	510	Other lengths available	1
5470000504	10.0	2CA11	510	Other lengths available	1
5470000505	10.0	2CA14	510	Other lengths available	1
5470000506	10.0	2CA31	700	Other lengths available	1
5470000507	10.0	2CA34	700	Other lengths available	1
5470000508	10.0	2CF02	700	Other lengths available	1
5470000509	10.0	2CF04	700	Other lengths available	1
5470000510	10.0	2CG00	510	Other lengths available	1
5470000511	10.0	2CH00	700	Other lengths available	1
5470000512	10.0	2CQ31	700	Other lengths available	1
5470000513	10.0	2CQ34	700	Other lengths available	1
5470000514	10.0	2DC00	420	Other lengths available	1
5470000515	10.0	2DC10	420	Other lengths available	1
5470000516	10.0	2DC20	420	Other lengths available	1
5470000517	10.0	2EQ10	700	Other lengths available	1
5470000518	10.0	2EQ14	700	Other lengths available	1
5470000524	10.0	5CA58	3970	Other lengths available	1
5470000525	10.0	5CA68	5910	Other lengths available	1
5470000532	10.0	5CN51	3970	Other lengths available	1
5470000533	10.0	5CN54	3970	Other lengths available	1
5470000534	10.0	5CN61	5910	Other lengths available	1
5470000535	10.0	5CN64	5910	Other lengths available	1
5470000540	10.0	5CQ58	3970	Other lengths available	1
5470000541	10.0	5CQ68	5910	Other lengths available	1
5470000546	10.0	5CS13	5910	Other lengths available	1
5470000547	10.0	5CS14	5910	Other lengths available	1
5470000549	10.0	5CS23	9550	Other lengths available	1
5470000552	10.0	5CS51	3970	Other lengths available	1
5470000553	10.0	5CS54	3970	Other lengths available	1
5470000554	10.0	5CS61	5910	Other lengths available	1
5470000555	10.0	5CS64	5910	Other lengths available	1
5470000556	10.0	5CX18	5910	Other lengths available	1
5470000557	10.0	5CX28	9550	Other lengths available	1
5470000558	10.0	5CX38	13370	Other lengths available	1
5470000559	10.0	5CX48	17690	Other lengths available	1
5470000560	10.0	5CX58	24680	Other lengths available	1
5470000566	10.0	5DA58	4860	Other lengths available	1
5470000567	10.0	5DA68	7010	Other lengths available	1
5470000574	10.0	5DN51	4860	Other lengths available	1
5470000575	10.0	5DN54	4860	Other lengths available	1
5470000576	10.0	5DN61	7010	Other lengths available	1
5470000577	10.0	5DN64	7010	Other lengths available	1
5470000582	10.0	5DQ58	4860	Other lengths available	1
5470000583	10.0	5DQ68	7010	Other lengths available	1
5470000586	10.0	5DS13	7010	Other lengths available	1
5470000590	10.0	5DS51	4860	Other lengths available	1
5470000591	10.0	5DS61	7010	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only

Other lengths and cable terminations are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## Servo harnessing according to SIEMENS® 6FX5002-



### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable
- Certifications**  
Power cable:  
VDE-registered  
UL/CSA AWM Style 2570  
Signal cables:  
UL/CSA AWM style 2502
- Conductor stranding**  
Extra-fine wire strand made of bare copper wires according to VDE 0295 class 6/IEC 60228 class 6
- Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexible use: 12 x outer diameter
- Nominal voltage**  
Signal cables:  
30 V AC (IEC)  
30 V AC/DC (UL/CSA)  
Power cable:  
- Power cores:  
1000 V (UL/CSA)  
600/1000 V (IEC)  
- Control cores:  
750 V (UL/CSA)  
30 V AC (IEC)
- Temperature range**  
Fixed installation: -20°C to +80°C  
Flexible use: 0°C to +60°C

### Benefits

- This cable is designed according to SIEMENS® standard. 6FX5002 is the high-quality, yet more economical, version of the highly flexible 6FX8002 version.
- 100% compatible with SIEMENS® systems
- The oil-resistant PVC sheath enables usage in industrial environments
- Fixed installation

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Product Make-up

- Design according to SIEMENS® standard 6FX 5002
- Outer sheath: special PVC compound, flame-retardant according to IEC 332.1,

### Note

- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

### Product Make-up

- Other versions and lengths can be delivered upon request.

Article number	Length (m)	SIEMENS® assembly designation	SIEMENS® cable designation	Other dimensions	PU
<b>Assemblies for signal transmission systems</b>					
74305559	10.0	6FX5002-2AD00-1BA0	6FX5008-1BD41	Other lengths available	1
74305659	10.0	6FX5002-2AD04-1BA0	6FX5008-1BD41	Other lengths available	1
74305759	10.0	6FX5002-2AH00-1BA0	6FX5008-1BD21	Other lengths available	1
74305859	10.0	6FX5002-2CA11-1BA0	6FX5008-1BD21	Other lengths available	1
74306059	10.0	6FX5002-2CA31-1BA0	6FX5008-1BD51	Other lengths available	1
74306159	10.0	6FX5002-2CA34-1BA0	6FX5008-1BD51	Other lengths available	1
74306659	10.0	6FX5002-2CF01-1BA0	6FX5008-1BD41	Other lengths available	1
74306759	10.0	6FX5002-2CF02-1BA0	6FX5008-1BD41	Other lengths available	1
74306859	10.0	6FX5002-2CH00-1BA0	6FX5008-1BD41	Other lengths available	1
74307059	10.0	6FX5002-2EQ10-1BA0	6FX5008-1BD51	Other lengths available	1
74307159	10.0	6FX5002-2EQ14-1BA0	6FX5008-1BD51	Other lengths available	1
70430150	10.0	6FX5002-2DC00-1BA0	6FX2008-1DC00	Other lengths available	1
70430069	10.0	6FX5002-2DC10-1BA0	6FX2008-1DC00	Other lengths available	1
70430151	10.0	6FX5002-2DC20-1BA0	6FX2008-1DC00	Other lengths available	1
<b>Assemblies for motors without brake</b>					
74307259	10.0	6FX5002-5CA01-1BA0	6FX5008-1BB11	Other lengths available	1
74307459	10.0	6FX5002-5CA05-1BA0	6FX5008-1BB11	Other lengths available	1
74308259	10.0	6FX5002-5CA31-1BA0	6FX5008-1BB21	Other lengths available	1
74308559	10.0	6FX5002-5CA41-1BA0	6FX5008-1BB31	Other lengths available	1
74308659	10.0	6FX5002-5CA51-1BA0	6FX5008-1BB41	Other lengths available	1
70430003	10.0	6FX5002-5CS01-1BA0	6FX5008-1BB11	Other lengths available	1
70430004	10.0	6FX5002-5CS11-1BA0	6FX5008-1BB21	Other lengths available	1
<b>Assemblies for motors with brake</b>					
74308959	10.0	6FX5002-5DA01-1BA0	6FX5008-1BA11	Other lengths available	1
74309159	10.0	6FX5002-5DA05-1BA0	6FX5008-1BA11	Other lengths available	1
74309960	10.0	6FX5002-5DA31-1BA0	6FX5008-1BA21	Other lengths available	1
74313361	10.0	6FX5002-5DA41-1BA0	6FX5008-1BA31	Other lengths available	1
74313661	10.0	6FX5002-5DA51-1BA0	6FX5008-1BA41	Other lengths available	1
70430001	10.0	6FX5002-5DS01-1BA0	6FX5008-1BA11	Other lengths available	1
70430002	10.0	6FX5002-5DS11-1BA0	6FX5008-1BA21	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.  
Article numbers refer to genuine Lapp products.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Servo harnessing according to SIEMENS® 6FX 8002-



### Benefits

- Highly flexible servomotor and sensor cables that are designed for use in power chains
- 100% compatible with SIEMENS® systems
- The oil-resistant PUR sheath enables usage in industrial environments

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Product features

- Abrasion and cut-resistant, halogen-free, oil-resistant

### Product Make-up

- Extra-fine strand made of copper wires:
  - > Signal cables: tinned
  - > Power cables: bare

- Design according to SIEMENS® standard 6FX 8002
- PUR outer sheath
- Signal cables: green (RAL 6018)
- Servo cable: orange (RAL 2003)

### Note

- Please comply with the assembly guidelines for cables in power chain systems.
- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

### Product Make-up

- Other versions and lengths can be delivered upon request.

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable
- Certifications**  
Power cable:  
VDE-registered  
UL AWM Style 21223  
CSA AWM I/II, A/B 1000 V 80° FT 1  
Signal cables:  
UL/CSA AWM Style 20236
- Minimum bending radius**  
Power cable:  
Fixed: 4 x Diameter  
Dynamic:  
1.5 mm² - 16 mm²: 7.5 x Diameter  
25 mm² - 50 mm²: 10 x Diameter  
Signal cable:  
Fixed: 4 x Diameter  
Dynamic: 8 x Diameter
- Nominal voltage**  
Signal cables:  
30 V AC (IEC)  
30 V AC/DC (UL/CSA)  
Power cable:  
- Power cores:  
U<sub>0</sub>/U 600/1000 V (IEC)  
1000 V (UL/CSA)  
- Control cores:  
250 V AC (IEC)  
1000 V (UL/CSA)
- Temperature range**  
Fixed installation: -50°C to +80°C  
Flexing: -20°C to +60°C

Article number	Length (m)	SIEMENS® assembly designation	SIEMENS® cable designation	Other dimensions	PU
<b>Assemblies for signal transmission systems</b>					
70301549	10.0	6FX8002-2AD00-1BA0	6FX8008-1BD41	Other lengths available	1
74303559	10.0	6FX8002-2AD04-1BA0	6FX8008-1BD41	Other lengths available	1
70389020	10.0	6FX8002-2AH00-1BA0	6FX8008-1BD41	Other lengths available	1
70301550	10.0	6FX8002-2CA11-1BA0	6FX8008-1BD21	Other lengths available	1
70301553	10.0	6FX8002-2CA31-1BA0	6FX8008-1BD51	Other lengths available	1
70301554	10.0	6FX8002-2CA34-1BA0	6FX8008-1BD51	Other lengths available	1
70301563	10.0	6FX8002-2CG00-1BA0	6FX8008-1BD21	Other lengths available	1
70301564	10.0	6FX8002-2CH00-1BA0	6FX8008-1BD41	Other lengths available	1
70301567	10.0	6FX8002-2EQ10-1BA0	6FX8008-1BD51	Other lengths available	1
70391522	10.0	6FX8002-2EQ14-1BA0	6FX8008-1BD51	Other lengths available	1
70301568	10.0	6FX8002-2CF01-1BA0	6FX8008-1BD41	Other lengths available	1
70301569	10.0	6FX8002-2CF02-1BA0	6FX8008-1BD41	Other lengths available	1
70301575	10.0	6FX8002-4AA21-1BA0	6FX8008-1BD61	Other lengths available	1
70430149	10.0	6FX8002-2DC00-1BA0	6FX8008-2DC00	Other lengths available	1
70431018	10.0	6FX8002-2DC10-1BA0	6FX8008-2DC00	Other lengths available	1
70430096	10.0	6FX8002-2DC20-1BA0	6FX8008-2DC00	Other lengths available	1
<b>Assemblies for motors without brake</b>					
70301578	10.0	6FX8002-5CA01-1BA0	6FX8008-1BB11	Other lengths available	1
70301601	10.0	6FX8002-5CA05-1BA0	6FX8008-1BB11	Other lengths available	1
70301583	10.0	6FX8002-5CA31-1BA0	6FX8008-1BB21	Other lengths available	1
70301585	10.0	6FX8002-5CA41-1BA0	6FX8008-1BB31	Other lengths available	1
70301586	10.0	6FX8002-5CA51-1BA0	6FX8008-1BB41	Other lengths available	1
70430007	10.0	6FX8002-5CS01-1BA0	6FX8008-1BB11	Other lengths available	1
70430008	10.0	6FX8002-5CS11-1BA0	6FX8008-1BB21	Other lengths available	1
<b>Assemblies for motors with brake</b>					
70301588	10.0	6FX8002-5DA01-1BA0	6FX8008-1BA11	Other lengths available	1
70301600	10.0	6FX8002-5DA05-1BA0	6FX8008-1BA11	Other lengths available	1
70301594	10.0	6FX8002-5DA31-1BA0	6FX8008-1BA21	Other lengths available	1
70301597	10.0	6FX8002-5DA41-1BA0	6FX8008-1BA31	Other lengths available	1
70301598	10.0	6FX8002-5DA51-1BA0	6FX8008-1BA41	Other lengths available	1
70430005	10.0	6FX8002-5DS01-1BA0	6FX8008-1BA11	Other lengths available	1
70430006	10.0	6FX8002-5DS11-1BA0	6FX8008-1BA21	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Siemens part designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of Siemens AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.  
Article numbers refer to genuine Lapp products.  
Other designs and lengths are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX





## Servo harnessing according to INDRAMAT® IKG / RKL



### Benefits

- Highly flexible servomotor cables that are designed for use in power chains.
- 100% compatible with INDRAMAT® systems
- The oil-resistant PUR sheath enables usage in industrial environments

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Product Make-up

- In accordance with INDRAMAT® standard IKG/RKL

### Note

- Please comply with the assembly guidelines for cables in power chain systems.
- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

### Product Make-up

- Other versions and lengths can be delivered upon request.

### Technical data



**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



**Certifications**  
UL/CSA AWM Style 20234



**Minimum bending radius**  
Fixed installation: 6 x outer diameter  
Flexible use: 10 x outer diameter



**Nominal voltage**  
Power cores:  
- 1000 V (UL/CSA)  
- 600/1000 V (IEC)  
Control cores:  
250 V AC (IEC)  
1000 V (UL/CSA)



**Temperature range**  
Fixed installation: -50 °C to +80 °C  
Flexible: -30 °C to +60 °C

Article number	Length (m)	INDRAMAT® ordering designation	Cable designation	Other dimensions	PU
<b>Assemblies to INDRAMAT® standard IKG</b>					
70345476	10.0	IKG4009-010	INK0653	Other lengths available	1
70345503	10.0	IKG4087-010	INK0603	Other lengths available	1
70345521	10.0	IKG4163-010	INK0605	Other lengths available	1
70345522	10.0	IKG4170-010	INK0605	Other lengths available	1
70345541	10.0	IKG4020-010	INK0653	Other lengths available	1
70345542	10.0	IKG4018-010	INK0653	Other lengths available	1
70345543	10.0	IKG4016-010	INK0653	Other lengths available	1
70345545	10.0	IKG4050-010	INK0650	Other lengths available	1
<b>Assemblies to INDRAMAT® standard RKL</b>					
70410000	10.0	RKL4330-010	INK0606	Other lengths available	1
70392839	10.0	RKL4302-010	INK0653	Other lengths available	1
70410001	10.0	RKL4303-010	INK0653	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Indramat part designations (IKG, IKS, INK, INS, RKL and RKG) are registered trademarks of Bosch Rexroth AG, and are listed for comparison purposes only.

Article numbers refer to genuine Lapp products.

Other designs and lengths are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## Servo harnessing according to INDRAMAT® IKS / RKG



### Benefits

- Highly flexible feedback cables that are designed for use in power chains
- 100% compatible with INDRAMAT® systems
- The oil-resistant PUR sheath enables usage in industrial environments

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Product Make-up

- In accordance with INDRAMAT® standard IKS/RKG

### Note

- Please comply with the assembly guidelines for cables in power chain systems.
- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

### Product Make-up

- Other versions and lengths can be delivered upon request.

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

**Certifications**  
UL/CSA AWM Style 20236

**Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexible use: 10 x outer diameter

**Nominal voltage**  
300 V

**Temperature range**  
Fixed installation: -30 °C to +90 °C  
Flexible: -30 °C to +80 °C

Article number	Length (m)	INDRAMAT® ordering designation	Cable designation	Other dimensions	PU
<b>Assemblies to INDRAMAT® standard IKS</b>					
70335583	10.0	IKS4374-010	INK0448	Other lengths available	1
70335584	10.0	IKS4376-010	INK0448	Other lengths available	1
70335595	10.0	IKS4103-010	INK0448	Other lengths available	1
70335596	10.0	IKS4153-010	INK0448	Other lengths available	1
<b>Assemblies to INDRAMAT® standard RKG</b>					
70392984	10.0	RKG4200-010	INK0448	Other lengths available	1
70410002	10.0	RKG4201-010	INK0448	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Indramat part designations (IKG, IKS, INK, INS, RKL and RKG) are registered trademarks of Bosch Rexroth AG, and are listed for comparison purposes only.  
Article numbers refer to genuine Lapp products.  
Other designs and lengths are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



**Servo harnessing according to LENZE®**



**Benefits**

- Servomotors, resolvers and encoder cables for fixed installation or application in power supply chains
- 100% compatible with specific drive systems
- Outer sheath makes them particularly suitable for use in industrial areas

**Application range**

- Plant engineering
- Servo drives and servo assemblies

**Product Make-up**

- Design according to specific drive systems:
- Designs for fixed installation: PVC outer sheath, PP core insulation.
- Designs for highly flexible use: PUR outer sheath, TPE core insulation

**Note**

- For the highly flexible version, please observe the assembly guidelines for cables in power chain systems.
- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

**Product Make-up**

- Other versions and lengths can be delivered upon request.

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description: Control cable

**Certifications**  
Resolver and encoder cable:  
UL AWM Style 2464 for fixed installation versions,  
UL AWM Style 21165 for highly flexible applications,  
CSA AWM I/II A/B  
Motor cable:  
UL AWM Style 2570 for fixed installation version,  
UL AWM Style 20940 for high flexibility use,  
CSA AWM I/II A/B

**Minimum bending radius**  
Fixed installation: 7.5 x outer diameter  
Flexible use: 10 x outer diameter

**Nominal voltage**  
Signal cables:  
30 V (VDE), 300 V (UL/CSA)  
Signal cables:  
30 V (VDE), 300 V (UL/CSA)

**Test voltage**  
Signal cable: 1.5 kV  
Motor cable:  
- Power cores: 4 kV  
- Control cores: 2 kV

**Temperature range**  
Fixed installation: -25°C to +80°C  
Flexible use: -5°C to +70°C

Article number	Length (m)	LENZE® item designation	Static	Highly flexible	Number of cores and mm² per conductor	Other dimensions	PU
<b>Servo cables</b>							
74320320	10.0	EWLM-010GM-015	•		4 G 1,5+(2x0,5)	Other lengths available	1
74320499	10.0	EWLM-010GM-025	•		4 G 2,5+(2x0,5)	Other lengths available	1
74321272	10.0	EWLM-010GMS-015		•	4 G 1,5+(2x0,5)	Other lengths available	1
74321426	10.0	EWLM-010GMS-025		•	4 G 2,5+(2x0,5)	Other lengths available	1
70415002	10.0	EYP-0003-A-0100-M01-A00	•		4 G 1.5	Other lengths available	1
<b>Fan cables</b>							
74322480	10.0	EWLL-010GM	•		5 G 0.5	Other lengths available	1
74322629	10.0	EWLL-010GMS		•	5 G 0.5	Other lengths available	1
70415001	10.0	EYL-0001-V-0100L02-J02		•	5 G 0.75	Other lengths available	1
<b>Resolver cables</b>							
74320540	10.0	EWLR-010GM-T	•		3x (2x0,14) + 1x (2x0,5)	Other lengths available	1
74323073	10.0	EWLR-010GMS-T		•	3x (2x0,14) + 1x (2x0,5)	Other lengths available	1
70415005	10.0	EYF-0020-A-0100-F01-S04		•	3x (2x0,14) + 3x 0,14	Other lengths available	1
<b>Encoder cables</b>							
74323522	10.0	EWLE-010GM-T	•		4x (2x0,14) + 1x (2x1,0)	Other lengths available	1
74323672	10.0	EWLE-010GMS-T		•	4x (2x0,14) + 1x (2x1,0)	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Lenze® part designations (EWLM\_, EWLR\_, EWLE\_, EWLL\_, EYL und EYP) are registered trademarks of Lenze® AG, and are listed for comparison purposes only. DESINA® is a registered trademark of the German Machine Tool Builders' Association.  
Article numbers refer to genuine Lapp products.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Servo harnessing according to SEW®



### Benefits

- Servomotors, resolvers and encoder cables for fixed installation or application in power supply chains
- Outer sheath makes them particularly suitable for use in industrial areas

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Product Make-up

- Design according to specific drive systems:
- Flame-retardant according IEC 60332-1-2

### Note

- For the highly flexible version, please observe the assembly guidelines for cables in power chain systems.
- Maximum cable length must comply with the specifications set by the manufacturer of the respective servo drives
- The technical data correspond to the cables used

### Product Make-up

- Other versions and lengths can be delivered upon request.

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable



#### Certifications

Power cable: UL AWM Style 2587



#### Minimum bending radius

Power cable occasional flexing:  
15 x cable diameter  
Signal cable for flexible installation:  
15 x outer diameter



#### Nominal voltage

Power cable: power cores: IEC 750 V,  
UL 600 V  
Signal cores: IEC 350 V, UL 600 V  
Signal cable: 250 V



#### Test voltage

Power cable: 2 KV  
Signal cable: 1.5 KV



#### Temperature range

Flexing power cable: -10 °C to +80 °C  
Signal cable flexing: -5 °C to +70 °C

Article number	Length (m)	SEW item designation	Static	Highly flexible	Number of cores and mm <sup>2</sup> per conductor	Other dimensions	PU
<b>Motor cables</b>							
70430251	10.0	05904544	•		4G 1,5	Other lengths available	1
70430250	10.0	13324853	•		4G1,5+3x1	Other lengths available	1
<b>Assemblies for signal transmission systems</b>							
70430249	10.0	13324535	•		6x2x0,25	Other lengths available	1
70430252	10.0	1995405		•	6x2x0,25	Other lengths available	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

SEW® is a registered trademark of SEW Eurodrive GmbH & Co KG, Ernst-Blickle Str. 42, D-76646 Bruchsal

Article numbers refer to genuine Lapp products.

Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® SPIRAL 400 P

PUR spiral cable with increased chemical resistance

**Info**

- High resistance to benzols, benzines and other substances listed in Appendix T1
- Good oil resistance
- High mechanical strength



### Benefits

- High restoring forces and extension lengths up to 3 times the unextended spiral length
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- As control and power cables in machines
- Mechanical engineering
- Apparatus construction

### Product features

- Resistant to microbes, hydrolysis and almost all mineral oils
- High chemical-resistance to benzols, benzenes and other agents listed in the selection table in Appendix T1
- Abrasion and notch-resistant

### Norm references / Approvals

- Core based on VDE 0812/0285
- Outer sheath based on VDE 0250/0285

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation: Special PVC P8/1
- Use of talcum
- Outer sheath made of special polyurethane
- Length of straight ends: 1st end = 200 mm, 2nd end = 600 mm
- Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

### Technical data

- ETIM 5.0 Class-ID: EC000247  
ETIM 5.0 Class-Description: Spiralized cable
- Core identification code**  
Black with white numbers acc. to VDE 0293-1
- Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
- Nominal voltage**  
U<sub>0</sub>/U: 300/500 V
- Test voltage**  
3000 V
- Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor
- Temperature range**  
Flexible use: +5°C to +50°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
<b>ÖLFLEX® SPIRAL 400 P</b>					
70002622	2 X 0.75	1500	500	5.4	19.5
70002623	2 X 0.75	3000	1000	5.4	19.5
70002624	2 X 0.75	4500	1500	5.4	19.5
70002625	2 X 0.75	6000	2000	5.4	19.5
70002628	3 G 0.75	1500	500	5.7	20
70002629	3 G 0.75	3000	1000	5.7	20
70002630	3 G 0.75	4500	1500	5.7	20
70002631	3 G 0.75	6000	2000	5.7	20
70002634	4 G 0.75	1500	500	6.2	21
70002635	4 G 0.75	3000	1000	6.2	21
70002636	4 G 0.75	4500	1500	6.2	21
70002637	4 G 0.75	6000	2000	6.2	21
70002640	5 G 0.75	1500	500	6.7	24
70002641	5 G 0.75	3000	1000	6.7	24
70002642	5 G 0.75	4500	1500	6.7	24
70002643	5 G 0.75	6000	2000	6.7	24
70002726	7 G 0.75	1500	500	7.3	27
70002727	7 G 0.75	3000	1000	7.3	27
70002728	7 G 0.75	4500	1500	7.3	27
70002729	7 G 0.75	6000	2000	7.3	27
70002731	12 G 0.75	1500	500	9.9	35
70002732	12 G 0.75	3000	1000	9.9	35
70002734	18 G 0.75	1500	500	11.7	40
70002735	18 G 0.75	3000	1000	11.7	40
70002646	2 X 1	1500	500	5.7	20
70002647	2 X 1	3000	1000	5.7	20
70002648	2 X 1	4500	1500	5.7	20
70002649	2 X 1	6000	2000	5.7	20
70002651	3 G 1	1500	500	6	21
70002652	3 G 1	3000	1000	6	21
70002653	3 G 1	4500	1500	6	21
70002654	3 G 1	6000	2000	6	21
70002656	4 G 1	1500	500	6.5	24
70002657	4 G 1	3000	1000	6.5	24
70002658	4 G 1	4500	1500	6.5	24
70002659	4 G 1	6000	2000	6.5	24
70002661	5 G 1	1500	500	7.1	25

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
70002662	5 G 1	3000	1000	7.1	25
70002663	5 G 1	4500	1500	7.1	25
70002664	5 G 1	6000	2000	7.1	25
70002666	7 G 1	1250	500	8	30
70002667	7 G 1	2500	1000	8	30
70002668	7 G 1	3750	1500	8	30
70002669	7 G 1	5000	2000	8	30
70002670	12 G 1	1500	500	10.5	37
70002671	12 G 1	3000	1000	10.5	37
70002672	18 G 1	1500	500	12.7	45
70002673	18 G 1	3000	1000	12.7	45
70002681	2 X 1.5	1500	500	6.3	23
70002682	2 X 1.5	3000	1000	6.3	23
70002683	2 X 1.5	4500	1500	6.3	23
70002684	2 X 1.5	6000	2000	6.3	23
70002687	3 G 1.5	1500	500	6.7	24
70002688	3 G 1.5	3000	1000	6.7	24
70002689	3 G 1.5	4500	1500	6.7	24
70002690	3 G 1.5	6000	2000	6.7	24
70002699	5 G 1.5	1250	500	8.1	30
70002700	5 G 1.5	2500	1000	8.1	30
70002701	5 G 1.5	3750	1500	8.1	30
70002702	5 G 1.5	5000	2000	8.1	30
70002705	7 G 1.5	1250	500	8.9	31
70002706	7 G 1.5	2500	1000	8.9	31
70002707	7 G 1.5	3750	1500	8.9	31
70002708	7 G 1.5	5000	2000	8.9	31
70002709	12 G 1.5	1500	500	12	46
70002710	12 G 1.5	3000	1000	12	46
70002711	18 G 1.5	1500	500	13.4	52
70002712	18 G 1.5	3000	1000	13.4	52
70002716	3 G 2.5	1250	500	8.1	28.5
70002717	3 G 2.5	2500	1000	8.1	28.5
70002718	3 G 2.5	3750	1500	8.1	28.5
70002719	3 G 2.5	5000	2000	8.1	28.5
70002721	5 G 2.5	1250	500	10	37
70002722	5 G 2.5	2500	1000	10	37
70002723	5 G 2.5	3750	1500	10	37
70002724	5 G 2.5	5000	2000	10	37

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

#### Similar products

- ÖLFLEX® SPIRAL 540 P refer to page 244

#### Accessories

- SKINTOP® CLICK System



## SPIRAL H07BQ-F BLACK

Black, robust PUR spiral cable with high recoiling forces

**Info**

- Heavy construction type
- Outer sheath: PUR, with high recoiling forces
- Voltage rating 450/750 V



**Benefits**

- Good cost-benefit ratio
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide application range

**Application range**

- Construction of engines and appliances with flexible power connections as well as at dockyards
- Construction of machinery and powered doors
- Measurement and control technology
- Any commercial/industrial/agricultural facility: connection of tools, appliances and mobile motors
- For indoor and outdoor use

**Product features**

- Black, robust outer PUR sheath
- High tensile strength and abrasion-resistance
- High restoring forces
- High resistance to oil, low temperatures, microbes and hydrolysis

**Norm references / Approvals**

- Based on EN 50525-2-21 H07BQ-F
- The spiralling modifies the properties of the <HAR> certified H07BQ-F cable (sold by the metre) that certain technical requirements stipulated by the H07BQ-F standards are no longer complied with following spiralling. As a result, the <HAR> H07BQ-F design certification of the H07BQ-F cable, also identifiable on the spiral cable, is no longer valid in conjunction with the spiralled piece good design of the "SPIRAL H07BQ-F BLACK". This is a completely logical consequence of the spiralling processing steps.

**Product Make-up**

- Tinned stranded copper wire of braided conductor class 5 according to IEC 60228/VDE 0295
- Core insulation: EI6 rubber according to EN 50525-1 & EN 50363-1/ VDE 0207-363-1; coloured according to HD 308/ VDE 0293-308; VDE and HAR marking of the unspiralled H07BQ-F (sold by the metre) as the basic material for the spiralling
- Use of talcum
- Black, outer PUR sheath made of TMPU according to EN 50525-2-21; marking "H07BQ-F ..."
- For the 4 standard solid lengths available, please see the article table below
- Radial outflow shape at cable ends - length of ends: 200 mm at the first end/600 mm at the other end
- Versions with other solid lengths, end lengths and end forms available on request

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000247  
ETIM 5.0 Class-Description: Spiralled cable
- Core identification code** Coloured according to VDE 0293-308 (HD 308)
- Conductor stranding** Fine wire according to IEC 60228/ VDE 0295, class 5 tinned strands
- Minimum bending radius** Flexible use: 12.5 x outer diameter
- Nominal voltage** U<sub>0</sub>/U: 450/750 V
- Test voltage** 3000 V
- Protective conductor** G = with GN-YE protective conductor
- Temperature range** -25 °C to +50 °C (spiralled)

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
<b>SPIRAL H07BQ-F BLACK</b>					
70002750	3 G 1.5	1500	500	9	31
70002751	3 G 1.5	3000	1000	9	31
70002752	3 G 1.5	4500	1500	9	31
70002753	3 G 1.5	6000	2000	9	31
70002754	4 G 1.5	1500	500	10	38
70002755	4 G 1.5	3000	1000	10	38
70002756	4 G 1.5	4500	1500	10	38
70002757	4 G 1.5	6000	2000	10	38
70002758	5 G 1.5	1500	500	11	40
70002759	5 G 1.5	3000	1000	11	40
70002760	5 G 1.5	4500	1500	11	40
70002761	5 G 1.5	6000	2000	11	40

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. Each item is packed separately in a plastic bag. Versions with other solid lengths, end lengths and end forms available on request

**Similar products**

- ÖLFLEX® SPIRAL 400 P refer to page 241
- ÖLFLEX® SPIRAL 540 P refer to page 244

**Accessories**

- SKINTOP® CLICK System
- SKINTOP® BS refer to page 790
- SKINTOP® BS-M refer to page 719
- SKINTOP® BT refer to page 791
- SKINTOP® CLICK BS refer to page 720



## ÖLFLEX® SPIRAL 540 P

Robust, halogen-free PUR spiral cable with high restoring forces



**Info**

- High restoring forces
- Halogen-free
- Voltage class from 1.5 mm<sup>2</sup> 450/750 V

### Benefits

- Extension lengths of up to 3.5 times the unextended spiral length, high recoiling forces
- The signal colour of the outer sheath increases safety and visual perception
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Harsh conditions
- Mechanical engineering
- Construction industry
- Medical equipment
- In damp interiors or outdoors

### Product features

- Halogen-free
- Good resistance of the outer sheath to cutting and abrasion
- High resistance to oil, low temperatures, microbes and hydrolysis
- Flexible down to -30°C

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: TPE
- Outer sheath made of special polyurethane
- Length of straight ends: 1st end = 200 mm, 2nd end = 600 mm
- Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

### Technical data

ETIM 5.0 Class-ID: EC000247  
ETIM 5.0 Class-Description: Spiralized cable

**Core identification code**  
Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9  
From 6 cores: black with white numbers

**Conductor stranding**  
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

**Nominal voltage**  
0.75 - 1 mm<sup>2</sup>: U<sub>0</sub>/U: 300/500 Vac  
As from 1.5 mm<sup>2</sup>: U<sub>0</sub>/U = 450/750 Vac

**Test voltage**  
3000 V

**Protective conductor**  
G = with GN-YE protective conductor  
X = without protective conductor

**Temperature range**  
Flexible use: -30°C to +50°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
<b>U<sub>0</sub>/U: 300/500 V</b>					
73220107	2 X 0.75	1000	300	6.6	23
73220108	2 X 0.75	2000	600	6.6	23
73220109	2 X 0.75	3500	1000	6.6	23
73220110	2 X 0.75	5000	1500	6.6	23
73220111	3 G 0.75	1000	300	7	24
73220112	3 G 0.75	2000	600	7	24
73220113	3 G 0.75	3500	1000	7	24
73220114	3 G 0.75	5000	1500	7	24
71220115	4 G 0.75	1000	300	7.6	29
71220116	4 G 0.75	2000	600	7.6	29
71220117	4 G 0.75	3500	1000	7.6	29
71220118	4 G 0.75	5000	1500	7.6	29
71220119	5 G 0.75	1000	300	8.5	31
71220120	5 G 0.75	2000	600	8.5	31
71220121	5 G 0.75	3500	1000	8.5	31
71220122	5 G 0.75	5000	1500	8.5	31
73220123	2 X 1	1000	300	7	24
73220124	2 X 1	2000	600	7	24
73220125	2 X 1	3500	1000	7	24
73220126	2 X 1	5000	1500	7	24
73220127	3 G 1	1000	300	7.4	29
73220128	3 G 1	2000	600	7.4	29
73220129	3 G 1	3500	1000	7.4	29
73220130	3 G 1	5000	1500	7.4	29
71220131	4 G 1	1000	300	8.2	30
71220132	4 G 1	2000	600	8.2	30
71220133	4 G 1	3500	1000	8.2	30
71220134	4 G 1	5000	1500	8.2	30
71220135	5 G 1	1000	300	9	32
71220136	5 G 1	2000	600	9	32
71220137	5 G 1	3500	1000	9	32
71220138	5 G 1	5000	1500	9	32
73220139	7 G 1	1000	350	10.9	40
73220140	7 G 1	2000	700	10.9	40
73220141	7 G 1	3500	1200	10.9	40
73220142	7 G 1	5000	1700	10.9	40



Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
<b>U<sub>0</sub>/U: 450/750 V</b>					
73220143	2 X 1.5	1000	300	8.4	31
73220144	2 X 1.5	2000	600	8.4	31
73220145	2 X 1.5	3500	1000	8.4	31
73220146	2 X 1.5	5000	1500	8.4	31
73220147	3 G 1.5	1000	300	8.9	32
73220148	3 G 1.5	2000	600	8.9	32
73220149	3 G 1.5	3500	1000	8.9	32
73220150	3 G 1.5	5000	1500	8.9	32
71220151	5 G 1.5	1000	350	10.9	40
71220152	5 G 1.5	2000	700	10.9	40
71220153	5 G 1.5	3500	1200	10.9	40
71220154	5 G 1.5	5000	1700	10.9	40
73220155	7 G 1.5	1000	350	13.5	52
73220156	7 G 1.5	2000	700	13.5	52
73220157	7 G 1.5	3500	1200	13.5	52
73220158	7 G 1.5	5000	1700	13.5	52
73220159	3 G 2.5	1000	350	10.6	40
73220160	3 G 2.5	2000	700	10.6	40
73220161	3 G 2.5	3500	1200	10.6	40
73220162	3 G 2.5	5000	1700	10.6	40
71220163	5 G 2.5	1000	350	13.4	51
71220164	5 G 2.5	2000	700	13.4	51
71220165	5 G 2.5	3500	1200	13.4	51
71220166	5 G 2.5	5000	1700	13.4	51

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

**Similar products**

- ÖLFLEX® SPIRAL 400 P refer to page 241
- ÖLFLEX® SPIRAL 540 P with angular, isolated ground plug refer to page 246

**Accessories**

- SKINTOP® CLICK System



## ÖLFLEX® SPIRAL 540 P with angular, isolated ground plug

Robust spiral cable with high restoring forces and earthing-type plug



### Info

- Robust
- High restoring forces

### Benefits

- Extension lengths of up to 3.5 times the unextended spiral length, high recoiling forces
- The signal colour of the outer sheath increases safety and visual perception
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Wide temperature range for applications in harsh climatic environments

### Application range

- Harsh conditions
- Mechanical engineering
- Construction industry
- Medical equipment
- In damp interiors or outdoors

### Product features

- Good resistance of the outer sheath to cutting and abrasion
- High resistance to oil, low temperatures, microbes and hydrolysis
- Flexible down to -30°C
- 16-A connector with protection rating IP 20

### Norm references / Approvals

- Plug: DIN VDE 620-1/standard sheet DIN 49441 R2
- The VDE marking approval (VDE type certification) refers to the connector

### Product Make-up

- Cable: ÖLFLEX® SPIRAL 540 P based on ÖLFLEX® 540 P
- Strands of tinned-copper wires
- Core insulation: TPE
- Outer sheath made of special polyurethane
- Length of straight ends: 1st end = 200 mm with moulded angular earthing-type plug, 2nd end = 600 mm with 30 mm stripping
- Other solid lengths, end lengths and end forms available on request
- 2-pin, angular plug with twin earthed contact system, extruded

### Technical data

	ETIM 5.0 Class-ID: EC000247 ETIM 5.0 Class-Description: Spiralized cable
	<b>Core identification code</b> HD 308/VDE 0293-308: 3-core with protective conductor
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Nominal voltage</b> U <sub>0</sub> : 250 V AC
	<b>Test voltage</b> 2000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor
	<b>Temperature range</b> Flexible use: -30°C to +50°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)
<b>ÖLFLEX® SPIRAL 540 P with angular, isolated ground plug</b>					
73220852	3 G 0.75	1000	300	7	24
73220853	3 G 0.75	2000	600	7	24
73220854	3 G 0.75	3500	1000	7	24
73220855	3 G 1	1000	300	7.4	29
73220856	3 G 1	2000	600	7.4	29
73220863	3 G 1	3500	1000	7.4	29
73220860	3 G 1.5	1000	300	8.9	32
73220861	3 G 1.5	2000	600	8.9	32
73220862	3 G 1.5	3500	1000	8.9	32

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

1 piece in each polyester bag

Photographs are not to scale and do not represent detailed images of the respective products.

Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms (not necessarily VDE-registered) available on request

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"

### Similar products

- ÖLFLEX® SPIRAL 540 P refer to page 244



## UNITRONIC® SPIRAL

Spiral cable with outer PUR sheath and overall shielding for exact impulse transmission



### Info

- Secure against electrical interferences
- PUR outer sheath



### Benefits

- Overall screening prevents high frequency interference and guarantees accurate signal transmission
- Extended lengths of up to 4 times the unextended spiral length

### Application range

- In measurement and control engineering
- Wherever screened cables with smallest dimensions are required

### Product features

- Abrasion and cut-resistant
- Very high flexibility

### Product Make-up

- Strands of bare copper wires
- Core insulation: Based on PVC
- Screening: wrapped with braided copper wires
- Outer sheath: PUR compound
- Length of straight ends: 1st end = 200 mm, 2nd end = 600 mm
- Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

### Technical data

	ETIM 5.0 Class-ID: EC000247 ETIM 5.0 Class-Description: Spiralized cable
	<b>Core identification code</b> DIN 47100
	<b>Peak operating voltage</b> 250 V (not for power transmission)
	<b>Conductor stranding</b> Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
	<b>Test voltage</b> 1200 V
	<b>Temperature range</b> Flexing: -5°C to +50°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Spiral length, extended (mm)	Spiral length, unextended (mm)	Cable diameter (mm)	Spiral outer diameter (mm)	Pieces / PU
<b>UNITRONIC® SPIRAL</b>						
73220200	2 x 0.14	400	100	4.1	15	5
73220201	2 x 0.14	800	200	4.1	15	5
73220202	2 x 0.14	1200	300	4.1	15	5
73220203	2 x 0.14	1600	400	4.1	15	5
73220204	2 x 0.14	2000	500	4.1	15	5
73220205	3 x 0.14	400	100	4.3	18	5
73220206	3 x 0.14	800	200	4.3	18	5
73220207	3 x 0.14	1200	300	4.3	18	5
73220208	3 x 0.14	1600	400	4.3	18	5
73220209	3 x 0.14	2000	500	4.3	18	5
73220210	4 x 0.14	400	100	4.5	19	5
73220211	4 x 0.14	800	200	4.5	19	5
73220212	4 x 0.14	1200	300	4.5	19	5
73220213	4 x 0.14	1600	400	4.5	19	5
73220214	4 x 0.14	2000	500	4.5	19	5
73220215	5 x 0.14	400	100	4.8	20	5
73220216	5 x 0.14	800	200	4.8	20	5
73220217	5 x 0.14	1200	300	4.8	20	5
73220218	5 x 0.14	1600	400	4.8	20	5
73220219	5 x 0.14	2000	500	4.8	20	5
73220220	6 x 0.14	400	100	5.5	21	5
73220221	6 x 0.14	800	200	5.5	21	5
73220222	6 x 0.14	1200	300	5.5	21	5
73220223	6 x 0.14	1600	400	5.5	21	5
73220224	6 x 0.14	2000	500	5.5	21	5
73220230	12 x 0.14	400	100	7.2	27	1
73220231	12 x 0.14	800	200	7.2	27	1
73220232	12 x 0.14	1200	300	7.2	27	1
73220233	12 x 0.14	1600	400	7.2	27	1
73220234	12 x 0.14	2000	500	7.2	27	1
73220235	18 x 0.14	400	100	8	29	1
73220236	18 x 0.14	800	200	8	29	1
73220237	18 x 0.14	1200	300	8	29	1
73220238	18 x 0.14	1600	400	8	29	1
73220239	18 x 0.14	2000	500	8	29	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Versions without the mandatory LAPP designation, but with other solid lengths, end lengths and end forms available on request

### Accessories

- SKINTOP® CLICK System



## ÖLFLEX® PLUG H03VV-F Net Connection Cable\*

PVC net connection cable for electrical devices and machines



### Info

- Other colours and designs are available upon request

### Application range

- Electrical devices
- Appliances and machinery

### Product features

- For additional information regarding international plugs, please refer to our cable configurator at [www.lappkabel.de](http://www.lappkabel.de)
- Apart from the cable related application restrictions to be paid attention to according to the application standard EN 50565-2 for this PVC cable H03VV-F, the fact that brighter outer sheath colours deviating from black significantly reduce the UV resistance of the outer sheath and, thus, the outdoor usability of the entire, finished cable has to be respected, too

### Product Make-up

- 1st end: Gated, rectangular earthing-type plug with double earthing contact
- Other end: 30 mm dismantled, with protection sleeves for the ends of the conductor
- Alternatively, on request: 1st end with moulded angular earthing-type plug with twin earthed contact, 2nd end with moulded, straight IEC coupling (see image)

### Technical data

	ETIM 5.0 Class-ID: EC001576 ETIM 5.0 Class-Description: Power cord
	<b>Core identification code</b> HD 308/VDE 0293-308: 3-core with protective conductor
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Nominal voltage</b> U <sub>0</sub> : 250 V AC
	<b>Test voltage</b> 2000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor
	<b>Temperature range</b> Flexible use: -5°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Colour	Outer diameter (mm)	Length (m)	Copper index kg/1.000 pieces
<b>1st end: moulded angular earthing-type plug with double earthed contact</b>					
<b>2nd end: 30 mm stripped, with conductor end sleeves</b>					
70261130	3 G 0.75	black	5.4 - 6.8	1.5	32.4
70261131	3 G 0.75	black	5.4 - 6.8	2	43.2
70261132	3 G 0.75	black	5.4 - 6.8	3	64.8
70261136	3 G 0.75	grey	5.4 - 6.8	1.5	32.4
70261137	3 G 0.75	grey	5.4 - 6.8	2	43.2
70261138	3 G 0.75	grey	5.4 - 6.8	3	64.8
70261133	3 G 0.75	white	5.4 - 6.8	1.5	32.4
70261134	3 G 0.75	white	5.4 - 6.8	2	43.2
70261135	3 G 0.75	white	5.4 - 6.8	3	64.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"



## ÖLFLEX® PLUG H05VV-F Net Connection Cable\*

PVC net connection cable for electrical devices and machines



**Info**

- Other colours and designs are available upon request

### Application range

- Electrical devices
- Appliances and machinery

### Product features

- For additional information regarding international plugs, please refer to our cable configurator at [www.lappkabel.de](http://www.lappkabel.de)
- Apart from the cable related application restrictions to be paid attention to according to the application standard EN 50565-2 for this PVC cable H05VV-F, the fact that brighter outer sheath colours deviating from black significantly reduce the UV resistance of the outer sheath and, thus, the outdoor usability of the entire, finished cable at direct sun irradiation has to be respected, too

### Product Make-up

- 1st end: Gated, rectangular earthing-type plug with double earthing contact
- Other end: 30 mm dismantled, with protection sleeves for the ends of the conductor
- Alternatively
- 1st end: Gated, rectangular earthing-type plug with double earthing contact
- 2nd end: straight, 3-pin IEC coupling, moulded

### Technical data

	ETIM 5.0 Class-ID: EC001576 ETIM 5.0 Class-Description: Power cord
	<b>Core identification code</b> According to VDE 0293-308 (table T9)
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Nominal voltage</b> U <sub>0</sub> : 250 V AC
	<b>Test voltage</b> 2000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor
	<b>Temperature range</b> Flexible use: -5°C to +70°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Colour	Outer diameter (mm)	Length (m)	Copper index kg/1.000 pieces
<b>1st end: moulded angular earthing-type plug with double earthed contact</b>					
<b>2nd end: straight, 3-pin C13 IEC coupling, moulded</b>					
73222334	3 G 1	black	6.3 - 8.0	2.5	72.0
73222336	3 G 1	grey	6.3 - 8.0	2.5	72.0
73222381	3 G 1.5	grey	7.4 - 9.4	5	216.0
73222335	3 G 1	white	6.3 - 8.0	2.5	72.0
<b>2nd end: rectangular, 3-pin C13 IEC coupling, moulded</b>					
74320106	3 G 1.5	black	7.4 - 9.4	3.5	151.2
74320092	3 G 1.5	black	7.4 - 9.4	7.5	324.0
<b>1st end: moulded angular earthing-type plug with double earthed contact</b>					
<b>2nd end: 30 mm stripped, with conductor end sleeves</b>					
70261139	3 G 1	black	6.3 - 8.0	1.5	43.2
70261140	3 G 1	black	6.3 - 8.0	2	57.6
70261141	3 G 1	black	6.3 - 8.0	3	86.4
70261166	3 G 1	black	6.3 - 8.0	5	144.0
70261145	3 G 1	grey	6.3 - 8.0	1.5	43.2
70261146	3 G 1	grey	6.3 - 8.0	2	57.6
70261147	3 G 1	grey	6.3 - 8.0	3	86.4
70261143	3 G 1	white	6.3 - 8.0	2	57.6
70261144	3 G 1	white	6.3 - 8.0	3	86.4
70261148	3 G 1.5	black	7.4 - 9.4	1.5	64.5
70261149	3 G 1.5	black	7.4 - 9.4	2	86.0
70261150	3 G 1.5	black	7.4 - 9.4	3	129.0
70261160	3 G 1.5	black	7.4 - 9.4	5	215.0
70261185	3 G 1.5	grey	7.4 - 9.4	1	43.2
70261154	3 G 1.5	grey	7.4 - 9.4	1.5	64.5
70261155	3 G 1.5	grey	7.4 - 9.4	2	86.0
70261156	3 G 1.5	grey	7.4 - 9.4	3	129.0
70362272	3 G 1.5	grey	7.4 - 9.4	4	172.0
70261151	3 G 1.5	white	7.4 - 9.4	1.5	64.5
70261152	3 G 1.5	white	7.4 - 9.4	2	86.0
70261153	3 G 1.5	white	7.4 - 9.4	3	129.0
70261163	3 G 2.5	black	9.2 - 11.4	3	216.0

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"



## ÖLFLEX® PLUG 540 P Connection Cable

Robust, VDE-registered connecting cable with DIN/VDE or international plugs



**Info**

- Available with international plugs
- Safety colour: yellow

### Benefits

- VDE cable registration: LAPP ÖLFLEX® 540 P, sold by the metre and assembled to size
- Safety colour: yellow
- VDE marking approval/VDE type certification for the straight central plug according to DIN/VDE in the item numbers table

### Application range

- Harsh conditions
- Mechanical engineering
- Construction industry
- Medical equipment
- In damp interiors or outdoors

### Product features

- Good resistance of the outer sheath to cutting and abrasion
- High resistance to oil, low temperatures, microbes and hydrolysis
- Special, flame-retardant polyurethane sheath compound

### Norm references / Approvals

- Cable ÖLFLEX® 540 P: VDE reg. no. 6583 - 300/500 VAC up to 1.0 mm<sup>2</sup>; VDE reg. no. 6584 - 450/750 VAC as from 1.5 mm<sup>2</sup>

### Product Make-up

- Strands of tinned-copper wires
- Core insulation: TPE
- Outer sheath made of special polyurethane
- 1st option: 2-core ÖLFLEX® 540 P cable in conjunction with straight, extruded, round, shaped DIN/VDE central 2-pin attachment contour plug (CEE 7/17) without earthed contact according to DIN VDE 0620-1/DIN 49406-R and with plug protection rating IP 20 as well as with non-contacting hole in the overmould for the round earthing pin of the French plug system type E
- 2<sup>nd</sup> alternative: 3-core ÖLFLEX® 540 P cable incl. green-yellow, protective equipment grounding conductor in conjunction with 3-pole, straight, moulded, splash water protected, central, isolated ground DIN/ VDE hybrid plug (CEE 7/7 combining the French type E with the German "Schuko" type E) incl. double protection/ earthing contact/ pin system according to DIN VDE 0620-1/ DIN 49441-R2/ DIN 49441-2-AR2 as well as with plug protection type/ category IP 44 and with contacting hole for the round earthing pin of the French plug system type E
- Other end: 30 mm dismantled, with protection sleeves for the ends of the conductor
- Other, international plug versions in conjunction with the cable ÖLFLEX® 540 P on request

### Technical data

	ETIM 5.0 Class-ID: EC001576 ETIM 5.0 Class-Description: Power cord
	<b>Core identification code</b> According to VDE 0293-308 (table T9)
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 4 x outer diameter
	<b>Nominal voltage</b> U <sub>0</sub> : 250 V AC
	<b>Test voltage</b> Assembly: 2000 V ÖLFLEX® 540 P: 3000 V
	<b>Protective conductor</b> G = with GN-YE protective conductor X = without protective conductor
	<b>Temperature range</b> Occasional flexing and fixed installation: -40 °C to +80 °C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Length (m)	Copper index kg/ 1.000 pieces
<b>1<sup>st</sup> option: 2-core ÖLFLEX® 540 P cable with DIN/VDE central 2-pin attachment contour plug (CEE 7/17)</b>				
73220842	2 X 1	7.0	2	38.4
73220843	2 X 1	7.0	3.5	67.2
73220844	2 X 1	7.0	5	96.0
73221558	2 X 1.5	8.4	2	57.6
73221559	2 X 1.5	8.4	3.5	86.4
73221560	2 X 1.5	8.4	5	144.0
<b>2<sup>nd</sup> alternative: 3-core ÖLFLEX® 540 P cable incl. green-yellow, protective equipment grounding conductor with 3-pole DIN/ VDE hybrid plug (CEE 7/7)</b>				
73220846	3 G 0.75	7.0	2	43.2
73220847	3 G 0.75	7.0	3.5	75.6
73220848	3 G 0.75	7.0	5	108.0
73221561	3 G 1	7.4	2	57.6
73221562	3 G 1	7.4	3.5	100.8
73221563	3 G 1	7.4	5	144.0
73220849	3 G 1.5	8.9	2	86.0
73220850	3 G 1.5	8.9	3.5	150.6
73220851	3 G 1.5	8.9	5	215.0

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

1 piece in each polyester bag

Photographs are not to scale and do not represent detailed images of the respective products.

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"

### Accessories

- SKINTOP® CLICK System



## ÖLFLEX® PLUG Extension Cable 540 P safety yellow\*

Earthing-type extension cable with straight plug and coupling



### Application range

- Mechanical engineering
- Construction industry
- Agricultural equipment
- In damp interiors or outdoors

### Product features

- Other lengths, customised versions, cable types and plug versions are available upon request

### Product Make-up

- Mounted, straight earthing-type plug (16 amp., 250 V, solid rubber, colour: black) in accordance with DIN 49440/441, protection rating: IP 44
- Mounted, straight earthing-type coupling with rubber cover (16 A, 250 V, solid rubber, colour: black) in accordance with DIN 49440/441, protection rating: IP 44

### Technical data

	ETIM 5.0 Class-ID: EC001576 ETIM 5.0 Class-Description: Power cord
	<b>Nominal voltage</b> U <sub>0</sub> : 250 V AC

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Length (m)	Copper index kg/1.000 pieces
<b>ÖLFLEX® PLUG Extension Cable 540 P safety yellow*</b>				
73222337	3 G 1.5	8.9	5	215.0
73222322	3 G 1.5	8.9	10	430.0
73222375	3 G 1.5	8.9	15	645.0
73222323	3 G 1.5	8.9	25	1075.0
73222324	3 G 1.5	8.9	50	2150.0
73222385	3 G 2.5	10.6	5	360.0
73222325	3 G 2.5	10.6	10	720.0
73222386	3 G 2.5	10.6	15	1080.0
73222326	3 G 2.5	10.6	25	1800.0
73222327	3 G 2.5	10.6	50	3600.0

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.



## ÖLFLEX® PLUG CEE Connection/ Extension Cable without phase shifter\*

H07RN-F-based connecting and extension cable for three-phase current



**Info**

- Formerly: ÖLFLEX PLUG CEE (400 V) Connection / Extension Cable

### Application range

- For connections to any three-phase A.C. consumers
- Machines and systems on building sites
- According to EN 50565-2: Dry or damp rooms as well as outdoors

### Product features

- Also available with phase shifter (engine direction can be changed)
- Other dimensions, lengths, connectors, designs and customised versions are available upon request

### Norm references / Approvals

- <HAR> H07RN-F cable type approval according to EN 50525-2-21
- Based on VDE 0285

### Product Make-up

- Mounted 5-pin CEE plug, 400 V, red, 6 o'clock in accordance with VDE 0623/ EN 60309-2, splash-proof IP 44
- 80 mm stripped, with conductor end sleeves
- From 10 mm<sup>2</sup>: 100 mm stripped, with conductor end sleeves
- Mounted 5-pin CEE coupling, 400 V, red, 6 o'clock in accordance with VDE 0623/ EN 60309-2, splash-proof IP 44

### Technical data

- ETIM 5.0 Class-ID: EC001576  
ETIM 5.0 Class-Description: Power cord
- Core identification code**  
According to VDE 0293-308 (table T9)
- Conductor stranding**  
Fine wire according to VDE 0295  
Class 5/ IEC 60228 Class 5
- Minimum bending radius**  
Flexible use: 15 x cable diameter
- Nominal voltage**  
U<sub>0</sub>/U: 450/750 V
- Test voltage**  
2500 V
- Temperature range**  
Flexible use: -25°C to +60°C

Article number	Plug amps	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Length (m)	Copper index kg/1.000 pieces
<b>ÖLFLEX® PLUG CEE connection cable</b>					
71222231	16	5 G 1.5	11.2 - 14.4	2.5	180.0
71222239	16	5 G 1.5	11.2 - 14.4	5	360.0
71222232	16	5 G 2.5	13.3 - 17.0	2.5	300.0
71222240	16	5 G 2.5	13.3 - 17.0	5	600.0
71222241	32	5 G 2.5	13.3 - 17.0	5	600.0
71222234	32	5 G 4	15.6 - 19.9	2.5	480.0
71222242	32	5 G 4	15.6 - 19.9	5	960.0
71222243	32	5 G 6	17.5 - 22.2	5	1440.0
<b>ÖLFLEX® PLUG CEE extension cable</b>					
71222292	16	5 G 1.5	11.2 - 14.4	10	720.0
71222295	16	5 G 2.5	13.3 - 17.0	10	1200.0
71222296	16	5 G 2.5	13.3 - 17.0	25	3000.0
71222298	32	5 G 2.5	13.3 - 17.0	10	1200.0
71222299	32	5 G 2.5	13.3 - 17.0	25	3000.0
71222301	32	5 G 4	15.6 - 19.9	10	1920.0
71222302	32	5 G 4	15.6 - 19.9	25	4800.0
71222304	32	5 G 6	17.5 - 22.2	10	2880.0
71222305	32	5 G 6	17.5 - 22.2	25	7200.0

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"





## ÖLFLEX® PLUG CEE connecting cable with phase shifter\*

H07RN-F-based CEE connecting cable with phase shifter for three-phase current

**Info**

- Formerly: ÖLFLEX PLUG CEE (400 V) Connection / Extension Cable



### Application range

- For connections to any three-phase A.C. consumers
- Machines and systems on building sites
- According to EN 50565-2: Dry or damp rooms as well as outdoors

### Product features

- Also available with phase shifter (engine direction can be changed)
- Other dimensions, lengths, connectors, designs and customised versions are available upon request

### Norm references / Approvals

- <HAR> H07RN-F cable type approval according to EN 50525-2-21
- Based on VDE 0285

### Product Make-up

- Mounted 5-pin CEE plug, 400 V, red, 6 o'clock in accordance with VDE 0623/ EN 60309-2, splash-proof IP 44
- 80 mm stripped, with conductor end sleeves
- From 10 mm<sup>2</sup>: 100 mm stripped, with conductor end sleeves

### Technical data

	ETIM 5.0 Class-ID: EC001576 ETIM 5.0 Class-Description: Power cord
	<b>Core identification code</b> According to VDE 0293-308 (table T9)
	<b>Conductor stranding</b> Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5
	<b>Minimum bending radius</b> Flexible use: 15 x cable diameter
	<b>Nominal voltage</b> U <sub>0</sub> /U: 450/750 V
	<b>Test voltage</b> 2500 V
	<b>Temperature range</b> Flexible use: -25°C to +60°C

Article number	Plug amps	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Length (m)	Copper index kg/1.000 pieces
<b>ÖLFLEX® PLUG CEE connecting cable with phase shifter*</b>					
71002843	16	5 G 1.5	11.2 - 14.4	3.5	252
71002844	16	5 G 1.5	11.2 - 14.4	5	360
71002846	16	5 G 2.5	13.3 - 17.0	3.5	420
71002847	16	5 G 2.5	13.3 - 17.0	5	600

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

Please observe the safety information as per DIN VDE 0620-1, Plugs and socket-outlets for household and similar purposes - Part 1: General requirements, appendix E: "Installation only by persons with the relevant electrotechnical expertise and experience!"

## Pre-wired front plug for PLC SIMATIC® S7-300



### Info

- In addition to our standard types, other versions with different colours are also available upon request as UNITRONIC® LiYCY, or in tension spring design
- We would be glad to help you find solutions for your specific requirements

### Benefits

- Pre-assembled and pre-wired front plugs for \*SIMATIC® S7, the leading supplier of programmable controllers (PLCs) around the world
- Single cores used are extra-thin and allow space-saving installation

### Product features

- Original Siemens-connectors are used exclusively
- The diameter is smaller than that of a H05V-K single core (0.5 mm<sup>2</sup>)

### Norm references / Approvals

- For more information on multi-standard single cores, see UL(MTW)-CSA-HAR Style 1015

### Product Make-up

- The front plugs are in full contact with the single cores of 0.75 mm<sup>2</sup> or AWG 22 in dark blue (RAL 5010), cores numbered in white according to the allocation in the plug, spacing approx. 20 mm, opposite end cleanly cut
- Conductor end-sleeves or other contacts are available upon request

### Note

- Cutting, marking, stripping, crimping and screwing used to be separate operations but the pre-wired front plug for \*SIMATIC® S7 provides you with the following advantages:

### Technical data



ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

Article number	Colour	mm <sup>2</sup>	Length (m)	Copper index kg/1.000 pieces	Weight (kg/1000 pieces)
<b>Pre-wired front plug for PLC SIMATIC® S7-300 (392-1AJ00-0AA0) 20-pin, screw-on version</b>					
70268724	dark blue (RAL 5010)	0.75	1.0	144	350
70268409	dark blue (RAL 5010)	0.75	2.0	288	500
70267059	dark blue (RAL 5010)	0.75	3.0	432	700
70262618	dark blue (RAL 5010)	0.75	4.0	576	900
70267060	dark blue (RAL 5010)	0.75	5.0	720	1150
<b>Pre-wired front plug for PLC SIMATIC® S7-300 (392-1AM00-0AA0) 40-pin, screw-on version</b>					
70268725	dark blue (RAL 5010)	0.75	1.0	288	800
70268410	dark blue (RAL 5010)	0.75	2.0	576	1000
70268411	dark blue (RAL 5010)	0.75	3.0	864	1400
70260001	dark blue (RAL 5010)	0.75	4.0	1152	1800
70268412	dark blue (RAL 5010)	0.75	5.0	1440	2250
70260018	dark blue (RAL 5010) - with UL(MTW) single cores	0.50 / AWG22	2.0	384	1000
70260021	dark blue (RAL 5010) - with UL(MTW) single cores	0.50 / AWG22	5.0	960	2250

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Siemens part designations (SIMATIC® etc.) are registered trademarks of Siemens AG, and are listed for comparison purposes only. Article numbers refer to genuine Lapp products. Photographs are not to scale and do not represent detailed images of the respective products.

## Pre-wired front plug for PLC SIMATIC® S7-400



### Info

- Crimp, screw and spring model for SIMATIC® S7-400
- We would be glad to help you find solutions for your specific requirements



### Benefits

- Single cores used are extra-thin and allow space-saving installation

### Product features

- Original Siemens-connectors are used exclusively
- The diameter is smaller than that of a H05V-K single core (0.5 mm<sup>2</sup>)

### Norm references / Approvals

- For more information on multi-standard single cores, see UL(MTW)-CSA-HAR Style 1015

### Product Make-up

- The front plugs are in full contact with the single cores of 0.75 mm<sup>2</sup> or AWG 22 in dark blue (RAL 5010), cores numbered in white according to the allocation in the plug, spacing approx. 20 mm, opposite end cleanly cut
- Conductor end-sleeves or other contacts are available upon request

### Technical data



ETIM 5.0 Class-ID: EC000104  
ETIM 5.0 Class-Description:  
Control cable

Article number	Colour	mm <sup>2</sup>	Length (m)	Copper index kg/1.000 pieces	Weight (kg/1000 pieces)
<b>Pre-wired front plug for PLC SIMATIC® S7-400 (492-1CL00-0AA0) 48-pin, crimp version</b>					
70268421	dark blue (RAL 5010)	0.75	5.0	1695	2500
<b>Pre-wired front plug for PLC SIMATIC® S7-400 (492-1AL00-0AA0) 48-pin, screw-on version</b>					
70268423	dark blue (RAL 5010)	0.75	3.0	1017	1600
70268424	dark blue (RAL 5010)	0.75	5.0	1695	2500
<b>Pre-wired front plug for PLC SIMATIC® S7-400 (492-1BL00-0AA0) 48-pin, spring version</b>					
70260046	dark blue (RAL 5010)	0.75	4.0	1356	2000
70268427	dark blue (RAL 5010)	0.75	5.0	1695	2500
70260053	dark blue (RAL 5010) - with UL(MTW) single cores	0.50 / AWG22	2.0	442	1100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. SIMATIC® is a registered trademark of Siemens AG. Article numbers refer to genuine Lapp products. Photographs are not to scale and do not represent detailed images of the respective products.



## CHARGE M3 —/T2C S



### Info

- For charging stations

## CHARGE M3 —/T1C S



### Info

- For charging stations

### Benefits

#### CHARGE M3 —/T2C S

- Resistant to microbes
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

#### CHARGE M3 —/T1C S

- New two-chamber system for environmental protection of moving parts to the connection part
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

### Product Make-up

#### CHARGE M3 —/T2C S

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 3-phase charging up to 20A: ÖLFLEX® Charge 5G2.5mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>
- Cable for 3-phase charging up to 32 A: ÖLFLEX® Charge 5G6mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics

#### CHARGE M3 —/T1C S

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>

### Technical data

ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description: Accessories for battery/charger

**Certifications**  
according to VDE-AR-E2283-5  
according to EN 61851-1

**Temperature range**  
Flexing: -30°C to +50°C

### Application range

- For installation in charging stations

Article number	Version	Effective length (mm)	Copper index kg/1.000 pieces	Weight (kg/ 1000 pieces)	PU
<b>Cut off clean, charging cable, vehicle connector type 2 (Total length: effective length +1m straight)</b>					
74880134	Charging: 1 phase 20A	5000	473	1280	1
74880135	Charging: 1 phase 20A	7000	627	1600	1
74880137	Charging: 3 phase 20A	5000	770	1840	1
74880138	Charging: 3 phase 20A	7000	1020	2360	1
74880141	Charging: 1 phase 32A	5000	1096	2160	1
74880142	Charging: 1 phase 32A	7000	1452	2800	1
74880145	Charging: 3 phase 32A	5000	1717	2900	1
74880146	Charging: 3 phase 32A	7000	2303	3820	1
<b>Cut off clean, charging cable, vehicle connector type 1 (Total length: effective length +1m straight)</b>					
74880127	Charging: 1 phase 20A	5000	479	1240	1
74880128	Charging: 1 phase 20A	7000	633	1540	1
74880130	Charging: 1 phase 32A	5000	1057	2100	1
74880131	Charging: 1 phase 32A	7000	1413	2740	1

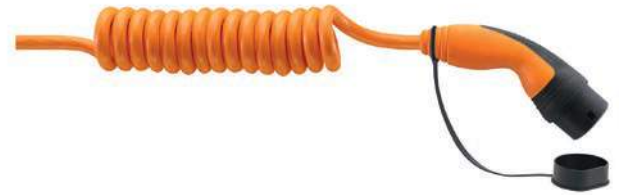
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Further colour combinations and lengths on request



**i Info**

- For charging stations

**CHARGE M3 —/T2C C**



**i Info**

- For charging stations

**CHARGE M3 —/T1C C**



**Benefits**

**CHARGE M3 —/T2C C**

- Resistant to microbes
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

**CHARGE M3 —/T1C C**

- New two-chamber system for environmental protection of moving parts to the connection part
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

**Application range**

- For installation in charging stations

**Product Make-up**

**CHARGE M3 —/T2C C**

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 3-phase charging up to 20A: ÖLFLEX® Charge 5G2.5mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>
- Cable for 3-phase charging up to 32 A: ÖLFLEX® Charge 5G6mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics

**CHARGE M3 —/T1C C**

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>

**Technical data**



ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description: Accessories for battery/charger



**Certifications**  
according to VDE-AR-E2283-5 according to EN 61851-1



**Temperature range**  
Flexing: -30°C to +50°C

Article number	Version	Effective length (mm)	Copper index kg/ 1.000 pieces	Weight (kg/ 1000 pieces)	PU
<b>Cut off clean, charging cable spirialized, vehicle connector type 2 (Total length: effective length + 1m straight)</b>					
74880136	Charging: 1 phase 20A	5000	1064	2480	1
74880139	Charging: 3 phase 20A	5000	1845	4060	1
74880143	Charging: 1 phase 32A	5000	2609	4880	1
<b>Cut off clean, charging cable spirialized, vehicle connector type 1 (Total length: effective length + 1m straight)</b>					
74880129	Charging: 1 phase 20A	5000	1048	2420	1
74880132	Charging: 1 phase 32A	5000	2570	4820	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. Further colour combinations and lengths on request



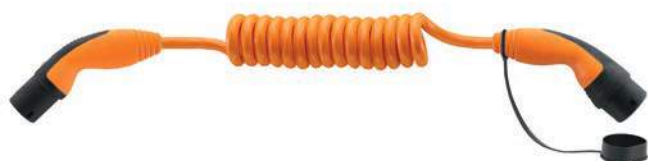
### CHARGE M3 T2P/T2C S



**Info**

- For electric vehicles with type 2 vehicle inlet

### CHARGE M3 T2P/T2C C



**Info**

- For electric vehicles with type 2 vehicle inlet

### CHARGE M3 T2P/T2C H



**Info**

- For electric vehicles with type 2 vehicle inlet

#### Benefits

- Resistant to microbes
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

#### Application range

- For charging stations, electric and Plug-in Hybrid vehicles

#### Product Make-up

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 3-phase charging up to 20A: ÖLFLEX® Charge 5G2.5mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>
- Cable for 3-phase charging up to 32 A: ÖLFLEX® Charge 5G6mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics

#### Technical data

- ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description: Accessories for battery/charger
- Certifications**  
according to VDE-AR-E2283-5  
according to EN 61851-1
- Temperature range**  
Flexing: -30°C to +50°C

Article number	Version	Effective length (mm)	Copper index kg/1.000 pieces	Weight (kg/1000 pieces)	PU
<b>Plug type 2, charging cable, vehicle connector type 2</b>					
74880153	Charging: 1 phase 20A	5000	409	1740	1
74880167	Charging: 1 phase 20A	7000	562	2060	1
74880169	Charging: 3 phase 20A	5000	665	2280	1
74880170	Charging: 3 phase 20A	7000	915	2800	1
74880160	Charging: 1 phase 32A	5000	947	2620	1
74880161	Charging: 1 phase 32A	7000	1303	3260	1
74880164	Charging: 3 phase 32A	5000	1559	3360	1
74880092	Charging: 3 phase 32A	7000	2145	4280	1
<b>Plug type 2, Charging cable spiralsised, Vehicle connector type 2</b>					
74880168	Charging: 1 phase 20A	5000	1000	2940	1
74880158	Charging: 3 phase 20A	5000	1740	4520	1
74880162	Charging: 1 phase 32A	5000	2460	5340	1
<b>Plug type 2, charging cable Helix, vehicle connector type 2</b>					
74880159	Charging: 3 phase 20A	5000	734	2220	1
74880163	Charging: 1 phase 32A	5000	1045	2700	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Further colour combinations and lengths on request

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**i Info**

- For electric vehicles with type 1 vehicle inlet



**CHARGE M3 T2P/T1C S**

**i Info**

- For electric vehicles with type 1 vehicle inlet



**CHARGE M3 T2P/T1C C**

**i Info**

- For electric vehicles with type 1 vehicle inlet



**CHARGE M3 T2P/T1C H**

**Benefits**

- New two-chamber system for environmental protection of moving parts to the connection part
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

**Product Make-up**

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description: Accessories for battery/charger

**DIN VDE** **Certifications** according to VDE-AR-E2283-5 according to EN 61851-1

**Temperature range** Flexing: -30°C to +50°C

**Application range**

- For charging stations, electric and Plug-in Hybrid vehicles

Article number	Version	Effective length (mm)	Copper index kg/1.000 pieces	Weight (kg/1000 pieces)	PU
<b>Plug type 2, charging cable, vehicle connector type 1</b>					
74880152	Charging: 1 phase 20A	5000	409	2740	1
74880147	Charging: 1 phase 20A	7000	571	2000	1
74880149	Charging: 1 phase 32A	5000	961	2560	1
74880093	Charging: 1 phase 32A	7000	1317	3200	1
<b>Plug type 2, charging cable spiralsised, vehicle connector type 1</b>					
74880148	Charging: 1 phase 20A	5000	1006	2880	1
74880151	Charging: 1 phase 32A	5000	2474	5280	1
<b>Plug type 2, charging cable Helix, vehicle connector type 1</b>					
74880270	Charging: 1 phase 32A	5000	1059	1680	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. Further colour combinations and lengths on request



## CHARGE M3 T3P/T2C S



### Info

- For electric vehicles with type 2 vehicle inlet

## CHARGE M3 T3P/T1C S



### Info

- For electric vehicles with type 1 vehicle inlet

### Benefits

#### CHARGE M3 T3P/T2C S

- Resistant to microbes
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

#### CHARGE M3 T3P/T1C S

- New two-chamber system for environmental protection of moving parts to the connection part
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

### Product Make-up

#### CHARGE M3 T3P/T2C S

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 3-phase charging up to 20A: ÖLFLEX® Charge 5G2.5mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>
- Cable for 3-phase charging up to 32 A: ÖLFLEX® Charge 5G6mm<sup>2</sup>+1x0.5mm<sup>2</sup>
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics

#### CHARGE M3 T3P/T1C S

- Cable for 1-phase charging up to 20A: ÖLFLEX® Charge 3G2.5 mm<sup>2</sup>+1x0.5 mm<sup>2</sup>
- Cable for 1-phase charging up to 32A: ÖLFLEX® Charge 3G6mm<sup>2</sup>+1x0,5mm<sup>2</sup>

### Technical data



ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description:  
Accessories for battery/charger



**Certifications**  
according to VDE-AR-E2283-5  
according to EN 61851-1



**Temperature range**  
Flexing: -30°C to +50°C

### Application range

- For charging stations, electric and Plug-in Hybrid vehicles

Article number	Version	Effective length (mm)	Copper index kg/1.000 pieces	Weight (kg/1000 pieces)	PU
<b>Plug type 3, charging cable, vehicle connector type 2</b>					
74880097	Charging: 1 phase 20A	5000	407	1580	1
74880171	Charging: 3 phase 20A	5000	663	2140	1
74880098	Charging: 3 phase 32A	5000	1554	3200	1
74880559	Charging: 3 phase 32A	7000	2140	4120	1
<b>Plug type 3, charging cable, vehicle connector type 1</b>					
74880173	Charging: 1 phase 20A	5000	414	1540	1
74880174	Charging: 1 phase 32A	5000	959	2400	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Further colour combinations and lengths on request





**i Info**

- Harnessing with In-Cable Control Box for charging mode 2 for electric vehicles with type 2 vehicle inlet

**i Info**

- Harnessing with In-Cable Control Box for charging mode 2 for electric vehicles with type 1 vehicle inlet

**CHARGE M2 TFP/T2C S**



**CHARGE M2 TFP/T1C S**



**Benefits**

**CHARGE M2 TFP/T2C S**

- Resistant to microbes
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

**CHARGE M2 TFP/T1C S**

- New two-chamber system for environmental protection of moving parts to the connection part
- Resistant to oil, dust and water
- Special cable design for a long service life
- Flexible at low temperatures
- Withstands high mechanical stress, in particular abrasion and sliding demands

**Product features**

- Charging current from 6-13A in 5 steps
- Monitoring of protective earth conductor
- PUR outer sheath
- Suitable for all weather conditions

**Product Make-up**

- H07BQ-F: Cable from Typ F plug up to ICCB
- Type 2 connectors are injection moulded in two-components process for optimal ergonomics
- Type F cable connectors are injection moulded

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002839  
ETIM 5.0 Class-Description: Accessories for battery/charger

**DIN VDE** **Certifications** according to VDE-AR-E2283-5 according to EN 61851-1

**Temperature range** Flexing: -30°C to +50°C

**Application range**

- For charging stations, electric and Plug-in Hybrid vehicles

Article number	Version	Effective length (mm)	Copper index kg/1.000 pieces	Weight (kg/ 1000 pieces)	PU
<b>Plug type F, charging cable with ICCB, connector type 2</b>					
74880085	Charging: 1 phase 13A	4.000	344	2570	1
<b>Plug type F, charging cable with ICCB, connector type 1</b>					
74880086	Charging: 1 phase 13A	4.000	344	2570	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Further colour combinations and lengths on request



### Socket outlet Type 2 IP54 up to 63A and connector locking flat



#### Info

- Sturdy and durable socket outlet for frequent connection

### Socket outlet Type 2 IP54 up to 63A with cover and connector locking



#### Info

- Sturdy and durable socket outlet for frequent connection

### Socket outlet Type 2 IP54 up to 63A with RGB LED as well as cover and connector locking



#### Info

- Sturdy and durable socket outlet for frequent connection

### Socket outlet Type 2 IP54 up to 63A and connector locking



#### Info

- Sturdy and durable socket outlet for frequent connection

### Socket outlet Type 2 IP54 up to 63A with RGB LED and connector locking



#### Info

- Sturdy and durable socket outlet for frequent connection

#### Benefits

- Socket outlet and controller fits perfectly together

#### Application range

- For installation in charging stations

#### Product features

- 5 different versions for all installation situations
- Socket outlet type 2 according to IEC62196-1,2 and IEC 61851-1
- Optionally available: Hinged lid locking, RGB LED, flat design

#### Product Make-up

- Screw terminals for 3P+N+PE as well as PP and CP
- With easy CONTACT and silver plated contacts
- Plug interlock with integrated actuator
- Hinged lid included

#### Technical data

	<b>Nominal voltage</b> 200/346V 240/415V
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -30°C up to +50°C

Article number	Charging current	Article designation	PU
<b>Socket outlet type 2 flat</b>			
74880200	bis 20A	EVCP2 Controller 74880215 or 74880218	1
74880201	bis 32A	EVCP2 Controller 74880215 or 74880218	1
74880202	bis 63A	EVCP2 Controller 74880215 or 74880218	1
<b>Socket outlet type 2 with hinged lid locking</b>			
74880203	bis 20A	EVCP2 Controller 74880217 or 74880220	1
74880204	bis 32A	EVCP2 Controller 74880217 or 74880220	1
74880205	bis 63A	EVCP2 Controller 74880217 or 74880220	1
<b>Socket outlet type 2 with hinged lid locking and RGB LED</b>			
74880206	bis 20A	EVCP2 Controller 74880217 or 74880220	1
74880207	bis 32A	EVCP2 Controller 74880217 or 74880220	1
74880208	bis 63A	EVCP2 Controller 74880217 or 74880220	1
<b>Socket outlet type 2</b>			
74880209	bis 20A	EVCP2 Controller 74880215 or 74880218	1
74880210	bis 32A	EVCP2 Controller 74880215 or 74880218	1
74880211	bis 63A	EVCP2 Controller 74880215 or 74880218	1
<b>Socket outlet type 2 with RGB LED</b>			
74880212	bis 20A	EVCP2 Controller 74880215 or 74880218	1
74880213	bis 32A	EVCP2 Controller 74880215 or 74880218	1
74880214	bis 63A	EVCP2 Controller 74880215 or 74880218	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## EVCP2 Controller Mode 3/ Typ 2

### Benefits

- For safe and continuous charging
- Power reserve for plug release in case of power failure
- Additional 12V outputs for peripherals

### Product features

- Integrated power supply unit 230V/12V with power supply in case of power failure
- Adjustable charging current of 6A-80A by means of rotary switch
- For each type 2 socket outlet EVCP2 one controller is necessary
- Possibility to control the RGB LED lighting
- Control of charging contactor and connector lock

### Info

- For optimal control of the type 2 socket outlets

### Technical data

- Nominal voltage**  
95 ... 265 V AC
- Protection rating**  
IP 30
- Temperature range**  
Operation: -20 °C to +70 °C



Article number	Article designation	PU
<b>EVCP2 Controller Mode 3 / Type 2</b>		
74880215	Standard + query via RS485	1
74880216	Vehicle connector firmly connected to EVSE, suitable for type 1 and type 2, query via RS485	1
74880217	Standard + query via RS485 + hinged lid locking + limit switch	1
74880218	Standard + query via RS485 + analog input	1
74880219	Vehicle connector firmly connected to EVSE, suitable for Type 1 and Type 2, query via RS485 + analog input	1
74880220	Standard + query via RS485 + hinged lid locking + limit switch + analog input	1
<b>Software for EVCP2 controllers including manual</b>		
74880221	To adjust and for query via RS232 / RS485	1
<b>Connecting cable for plug and hinged lid locking</b>		
74880222	Acutator coupler with single cores 3x0.5, length 1000mm	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Vehicle connector Type 1 up to 32A



### Benefits

- Dust cover enclosed
- New two-chamber system for environmental protection of moving parts to the connection part

### Product features

- Suitable for field assembly

### Product Make-up

- L1+L2/N+PE and CP+CS

### Info

- Field harnessable

### Technical data

**Nominal voltage**  
200-250V

**Protection rating**  
IP 44

**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Vehicle connector Type 1 up to 32A</b>		
74880223	Vehicle connector Type 1 20A	1
74880224	Vehicle connector Type 1 32A	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Plug Type 2 up to 63A



### Benefits

- With integrated resistance coding

### Product features

- Suitable for field assembly

### Info

- Field harnessable

### Technical data

**Nominal voltage**  
200-250V (1p+N+PE)  
200/380-250/480V (3p+N+PE)

**Protection rating**  
IP 44

**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Plug Type 2 up to 63A</b>		
74880225	Plug type 2, 20A, 1-phase	1
74880226	Plug type 2, 32A, 1-phase	1
74880227	Plug Typ 2, 32A, 3-phase	1
74880228	Plug type 2, 32A, 3-phase	1
74880229	Plug type 2, 63A, 3-phase	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## Vehicle connector Type 2 up to 63A



### Benefits

- With integrated resistance coding
- Dust cover enclosed

### Product features

- Suitable for field assembly



### Info

- Field harnessable

### Technical data



#### Nominal voltage

200-250V (1p+N+PE)  
200/380-250/480V (3p+N+PE)



#### Protection rating

IP 44



#### Temperature range

-30°C up to +50°C

Article number	Article designation	PU
<b>Vehicle connector Type 2 up to 63A</b>		
74880230	Vehicle connector type 2, 20A, 1-phase	1
74880231	Vehicle connector type 2, 32A, 1-phase	1
74880232	Vehicle connector type 2, 20A, 3-phase	1
74880233	Vehicle connector type 2, 32A, 3-phase	1
74880234	Vehicle connector type 2, 63A, 3-phase	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle 16A 230V, German System



### Benefits

- With auxiliary contact "closing"

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



#### Nominal voltage

250V



#### Protection rating

IP 54



#### Temperature range

-30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet ground receptacle 16A 230V, German System</b>		
74880235	Socket outlet colour blue	1
74880236	Socket outlet black colour	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle 16A 230V, German System



### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly
- Without hinged cover



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 40



**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet ground receptacle 16A 230V, German System</b>		
74880237	Socket outlet colour blue	1
74880238	Socket outlet black colour	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle 16A 230V, Belgian/French System



### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 54



**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet ground receptacle 16A 230V, Belgian/French System</b>		
74880239	Socket outlet colour blue	1
74880240	Socket outlet black colour	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet Type 23, Swiss System

### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data

	<b>Nominal voltage</b> 250V
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -30°C up to +50°C



Article number	Article designation	PU
<b>Socket outlet Type 23, Swiss System</b>		
74880241	Socket outlet colour blue	1
74880242	Socket outlet black colour	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle with flat design

### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data

	<b>Nominal voltage</b> 250V
	<b>Protection rating</b> IP 44
	<b>Temperature range</b> -30°C up to +50°C



Article number	Article designation	PU
<b>Socket outlet ground receptacle with flat design</b>		
74880243	German system	1
74880244	Belgian / French system	1
74880245	Swiss system	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle with hinged cover locking



### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 44



**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet ground receptacle with hinged cover locking</b>		
74880246	German system	1
74880247	Belgian / French system	1
74880248	Swiss system	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle with hinged cover locking and LED



### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 44



**Temperature range**  
-30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet ground receptacle with hinged cover locking and LED</b>		
74880249	German system	1
74880250	Belgian / French system	1
74880251	Swiss system	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.





## Socket outlet ground receptacle

### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 44



**Temperature range**  
-30°C up to +50°C



Article number	Article designation	PU
<b>Socket outlet ground receptacle</b>		
74880252	German system	1
74880253	Belgian / French system	1
74880254	Swiss system	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet ground receptacle with LED

### Benefits

- With auxiliary contact “closing”

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- Suitable for 16A continuous load

### Technical data



**Nominal voltage**  
250V



**Protection rating**  
IP 44



**Temperature range**  
-30°C up to +50°C



Article number	Article designation	PU
<b>Socket outlet ground receptacle with LED</b>		
74880255	German system	1
74880256	Belgian / French system	1
74880257	Swiss system	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet CEE 3-way 230V



### Benefits

- With inclination

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- With auxiliary contact “closing” and “break”

### Technical data

	<b>Nominal voltage</b> 200-250V
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet CEE 3-way 230V</b>		
74880258	16A	1
74880259	32A	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.



## Socket outlet CEE 5-way 400V



### Benefits

- With inclination

### Application range

- For installation in charging stations

### Product features

- Suitable for field assembly



### Info

- With auxiliary contact “closing” and “break”

### Technical data

	<b>Nominal voltage</b> 200-250V / 380-415V
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -30°C up to +50°C

Article number	Article designation	PU
<b>Socket outlet CEE 5-way 400V</b>		
74880260	16A	1
74880261	32A	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

# UNITRONIC®

## Data communication systems



Our high-quality UNITRONIC® data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures – we offer a dependable cabling and connection solution for almost every situation.

### Application range

- Industrial machinery and plant engineering
- Sensors and actuating elements
- Appliances
- Measurement and control technology
- Automated production processes and industrial robots
- Bus systems
- Computing and communication systems

### Low frequency data transmission cables

#### UNITRONIC® colour codes

UNITRONIC® 100	276
UNITRONIC® 100 CY	276

#### DIN colour code

UNITRONIC® LiYY	278
UNITRONIC® LiYCY	279
UNITRONIC® LiYY (TP)	281
UNITRONIC® LiYCY (TP)	282
UNITRONIC® EB CY (TP)	283
UNITRONIC® LiYCY-CY	284
UNITRONIC® LiFYCY (TP)	285
UNITRONIC® CY PiDY (TP)	286
UNITRONIC® ST	287
UNITRONIC® LiYD11Y	288
UNITRONIC® PUR CP	289
UNITRONIC® PUR CP (TP)	290

#### Low capacitance

UNITRONIC® Li2YCY (TP)	291
UNITRONIC® Li2YCY (TP) fine-wire	291
UNITRONIC® Li2YCYv (TP)	291
UNITRONIC® Li2YCY PiMF	293

#### Halogen-free

UNITRONIC® ROBUST	New	294
UNITRONIC® ROBUST C	New	295
UNITRONIC® ROBUST C (TP)	New	296
UNITRONIC® LiHH		297
UNITRONIC® LiHCH		298
UNITRONIC® LiHCH (TP)		299

#### UL/CSA-certified

UNITRONIC® LiYY A		300
UNITRONIC® LiYCY A		301
UNITRONIC® LiYCY (TP) A		302
UNITRONIC® 300 / UNITRONIC® 300 S		303
UNITRONIC® 300 STP	New	304

#### Highly flexible application

UNITRONIC® FD		305
UNITRONIC® FD CY		306

#### Highly flexible and UL/CSA-certified

UNITRONIC® FD P plus	New	307
UNITRONIC® FD CP plus	New	308
UNITRONIC® FD CP (TP) plus	New	309

#### Computer cables (RE)

RE-2Y(ST)Yv		311
RE-2Y(ST)Yv PiMF		312

#### Process control cables (RD)

RD-Y(ST)Y		313
-----------	--	-----

#### Installation cable for industrial electronics

JE-Y(ST)Y...BD		314
JE-Y(ST)Y...BD EB		314
JE-LiYCY...BD		315
JE-LiYCY...BD EB		315

### Telephone cables

#### Indoor cables

J-Y(ST)Y...LG Indoor Cable		316
J-Y(ST)Y...LG Fire Alarm Cable		317
J-2Y(ST)Y...ST III BD		318

#### Halogen-free installation and fire alarm cables

J-H(ST)H...BD		319
J-H(ST)H...BD Fire Alarm Cable		319

#### Outdoor cables

A-2Y(L)2Y...ST III BD Telephone Outdoor Cable		320
A-2YF(L)2Y...ST III BD Outdoor Cable		320

### Coaxial cables

#### Fixed installation and conditional flexible use

Coaxial - RG		321
Multi coaxial cables RG 59 B/U		322
Coaxial cables RGB		322

### Bus systems with interface RS485/RS422

#### Fixed installation

UNITRONIC® BUS LD		323
-------------------	--	-----

#### Continuous flexing application

UNITRONIC® BUS LD FD P		324
------------------------	--	-----

### Bus system AS-Interface

#### Fixed installation

UNITRONIC® BUS ASI		325
--------------------	--	-----

#### Continuous flexing application

UNITRONIC® BUS ASI FD		326
-----------------------	--	-----

#### AS-Interface accessories

ASI Distributor		327
-----------------	--	-----

### Bus system PROFIBUS-DP/FMS/FIP

#### Fixed installation

UNITRONIC® BUS PB TRAY	New	328
UNITRONIC® BUS PB		329
UNITRONIC® BUS PB ROBUST		330
UNITRONIC® BUS PB 105		331
UNITRONIC® BUS PB 105 plus	New	331
UNITRONIC® BUS PB HEAT 180	New	332
UNITRONIC® BUS PB ARM		332
UNITRONIC® BUS PB FRNC FC		333
UNITRONIC® BUS PB Yv		334
UNITRONIC® BUS PB YY		335
UNITRONIC® BUS PB BURIAL FC		336
UNITRONIC® BUS PB Y 7-W FC BK	New	337

#### Continuous flexing application

UNITRONIC® BUS PB FD P		338
UNITRONIC® BUS PB FD P A		339
UNITRONIC® BUS PB FD P FC		340
UNITRONIC® BUS PB FD FRNC FC		341
UNITRONIC® BUS PB FD P COMBI		342
UNITRONIC® BUS PB FD P HYBRID		343
UNITRONIC® BUS PB FD Y HYBRID		344
UNITRONIC® BUS PB TORSION		345
UNITRONIC® BUS PB FESTOON		346

#### Sub-D Bus-Connectors

EPIC® DATA PB Sub-D		347
EPIC® DATA PB Sub-D FC		348
EPIC® DATA PB Sub-D M12		349
EPIC® DATA PB Sub-D PRO		350
EPIC® DATA PB Sub-D FO		351

#### M12 Cordsets

UNITRONIC® BUS PB M12 / UNITRONIC® BUS PB M12-M12		352
---	--	-----

#### M12 Connectors and accessories

EPIC® DATA PB M12		353
EPIC® DATA PB M12/M12		354
EPIC® DATA PB TR M12		354
EPIC® DATA PB M12T		355
EPIC® DATA PB CCR	New	355

### Bus system PROFIBUS-PA

#### Fixed installation

UNITRONIC® BUS PA		356
-------------------	--	-----

### Bus system CAN / DeviceNet

#### DeviceNet - fixed installation

UNITRONIC® DeviceNet THICK + THIN		357
-----------------------------------	--	-----

#### DeviceNet - continuous flexing application

UNITRONIC® DeviceNet FD THICK+THIN		358
------------------------------------	--	-----

#### CAN - Fixed installation and high flexibility application

UNITRONIC® BUS CAN		359
UNITRONIC® BUS CAN FD P		359

#### CAN - fixed installation

UNITRONIC® BUS CAN TRAY	New	360
UNITRONIC® BUS CAN BURIAL	New	361

#### Sub-D Bus-Connectors

EPIC® DATA CAN Sub-D		362
EPIC® DATA CAN Sub-D PRO		363

#### M12 Cordsets

UNITRONIC® BUS CAN M12 / UNITRONIC® BUS CAN M12-M12		364
---	--	-----

#### M12 Connectors and accessories

EPIC® DATA CAN M12		365
EPIC® DATA CAN M12/M12		365
EPIC® DATA CAN TR M12		366
EPIC® DATA CAN M12T		367
EPIC® DATA CAN CCR	New	367

### Bus system ISOBUS

#### Flexible application

UNITRONIC® BUS IS	New	368
-------------------	-----	-----

**Bus system Foundation Fieldbus**

**Fixed installation**

UNITRONIC® BUS FF 369

**Bus system CC-Link**

**Fixed / continuous flexing application**

UNITRONIC® BUS CC 370

UNITRONIC® BUS CC FD P FRNC 370

**Bus system SAFETY BUS**

UNITRONIC® BUS SAFETY 371

**Bus system INTERBUS (IBS)**

**Fixed installation**

UNITRONIC® BUS IBS 372

UNITRONIC® BUS IBS Yv 373

**Continuous flexing application**

UNITRONIC® BUS IBS FD P 374

**Bus system EIB**

**Fixed installation**

UNITRONIC® BUS EIB / KNX 375

**Sensor/actuator cabling**

**Flexible / highly flexible applications**

UNITRONIC® SENSOR master cable 376

UNITRONIC® SENSOR 377

**M8 cordsets**

UNITRONIC® SENSOR M8 378

UNITRONIC® SENSOR M8-M8 379

UNITRONIC® SENSOR M8-M12 380

UNITRONIC® SENSOR PVC M8 381

New

**M8 Field mountable connectors and wall ducts**

EPIC® SENSOR M8 382

EPIC® SENSOR Flush-type M8 383

**M12 cordsets**

UNITRONIC® SENSOR M12 384

UNITRONIC® SENSOR M12-M12 385

UNITRONIC® SENSOR M12-M8 387

UNITRONIC® SENSOR SH M12 388

UNITRONIC® SENSOR PVC M12 | M12-M12 New 389

**M12 Cordsets for Food&Beverage**

UNITRONIC® SENSOR HD M12 New 390

**M12 Field mountable connectors and wall ducts**

EPIC® SENSOR M12 391

EPIC® SENSOR M12 V4A 392

EPIC® SENSOR M12/M12 392

EPIC® SENSOR Flush-type M12 393

EPIC® SENSOR M12T 394

EPIC® SENSOR CCR New 394

**Valve connectors**

UNITRONIC® SENSOR Valve 395

UNITRONIC® SENSOR Valve-M12 396

**Y connectors**

UNITRONIC® SENSOR M12Y 397

UNITRONIC® SENSOR M12Y-M8 398

UNITRONIC® SENSOR M12Y-M12 399

EPIC® SENSOR M8Y | M12Y 400

**Distribution boxes**

Distribution Box M8 401

Distribution Box M12 402

**Accessories for distribution boxes**

UNITRONIC® SENSOR M16 403

**M12 Power cordsets (A-coded)**

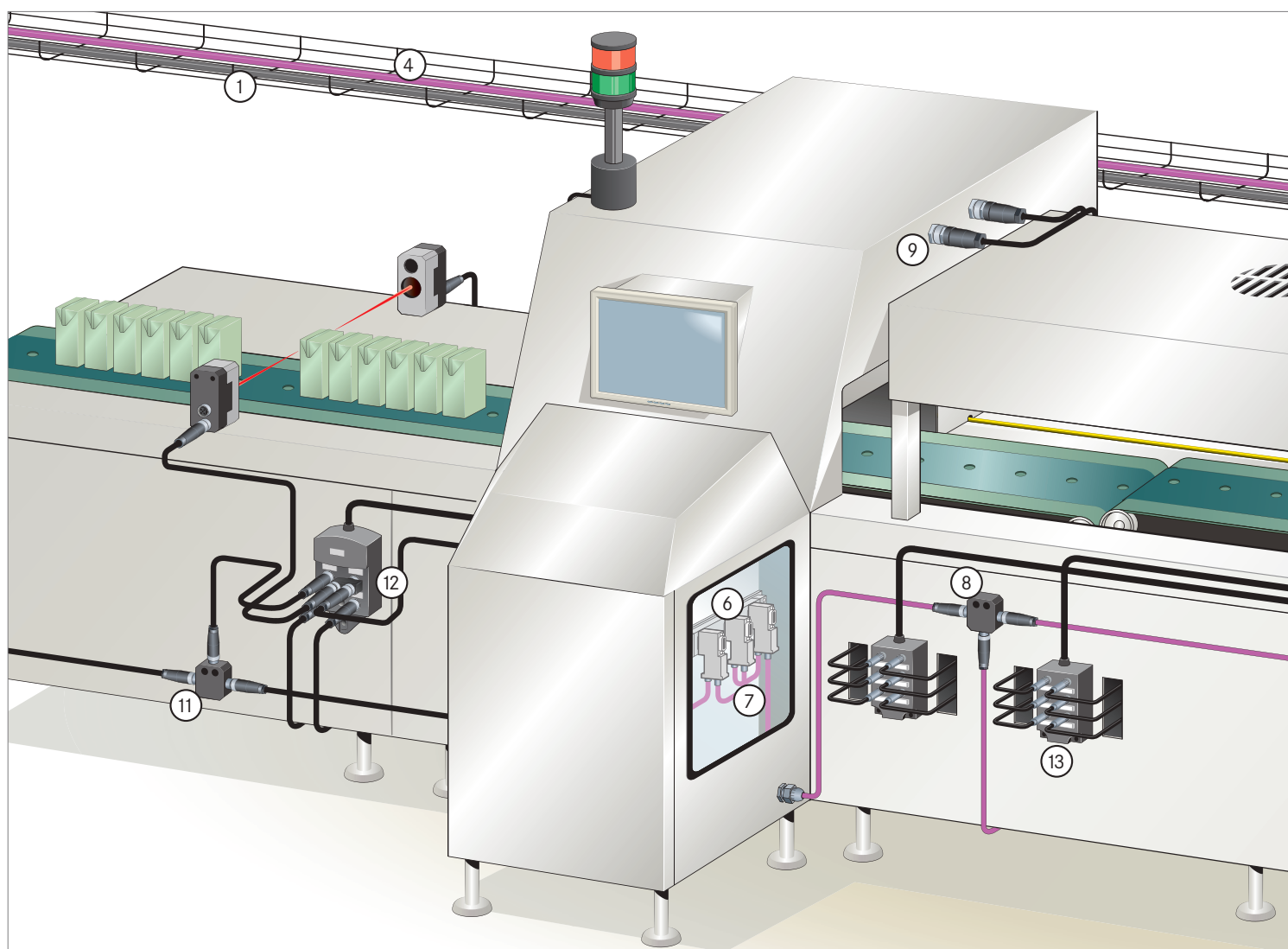
UNITRONIC® SENSOR M12 Power / 404

UNITRONIC® SENSOR M12-M12 Power 404

**M12 Connectors for power transmission (T-coded)**

EPIC® POWER M12 60V 405

EPIC® POWER M12 60V flush-type connectors 406



- ① Low frequency data cables (fixed installation) from page 276
- ② Low frequency data cables (highly flexible) from page 305
- ③ AS-interface cables from page 325
- ④ PROFIBUS® cables (fixed installation) from page 328
- ⑤ PROFIBUS® cables (highly flexible) from page 338
- ⑥ PROFIBUS® Sub-D connector from page 347
- ⑦ PROFIBUS® M12 cordsets, page 352
- ⑧ PROFIBUS® M12 T distributor, page 355
- ⑨ Sensor/actuator M12 connector from page 391
- ⑩ Valve connectors from page 395
- ⑪ Sensor/actuator T distributor, page 394
- ⑫ Sensor/actuator Y distributor from page 397
- ⑬ Sensor/actuator M8 distribution boxes, page 401
- ⑭ Sensor/actuator M12 distribution boxes, page 402

**Low frequency data cables**

Page 276 to page 320



**Coaxial cables**

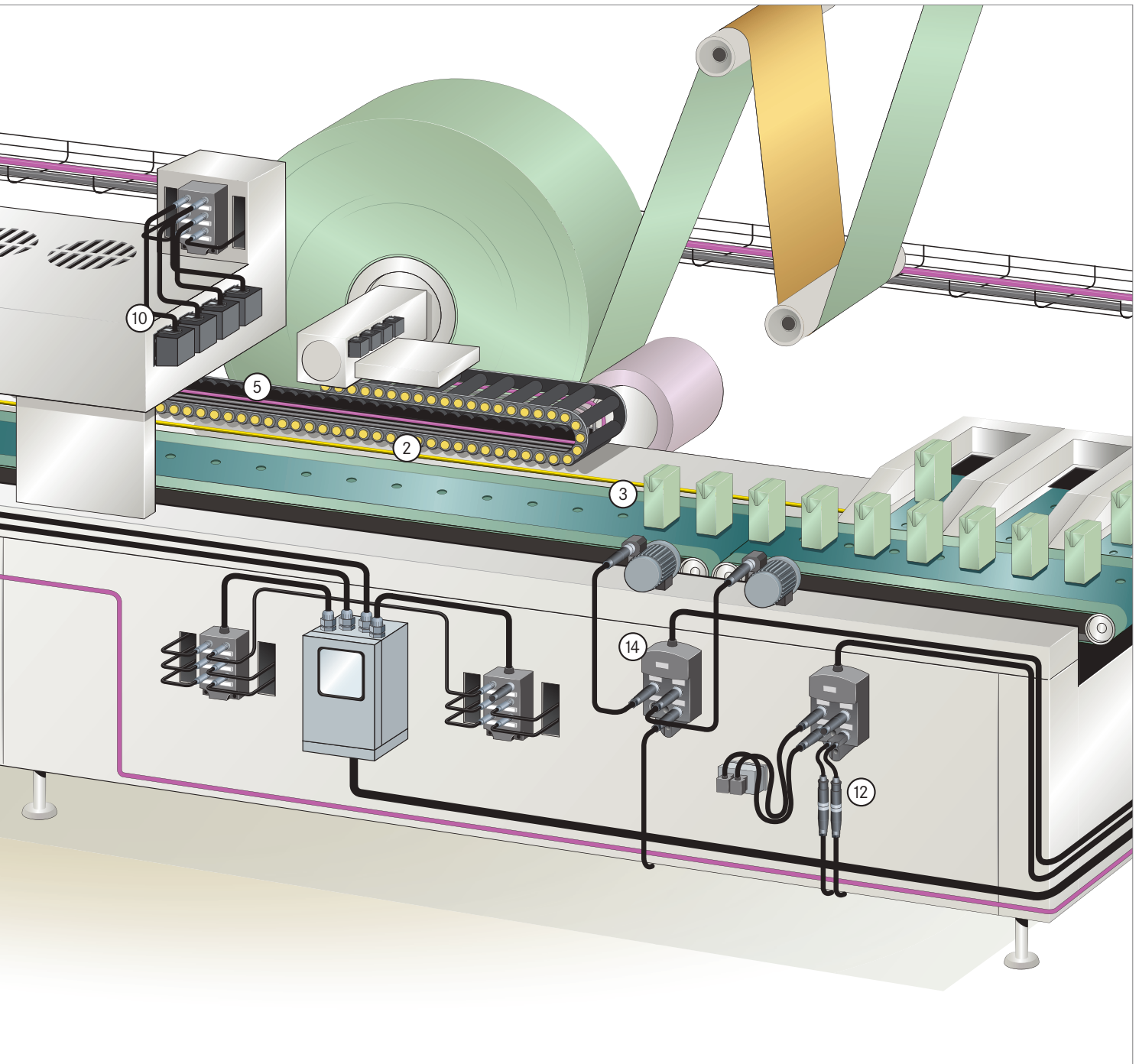
Page 321 to page 322



Installation/data cables for low frequency transmission – for fixed and flexible installation, continuous flexing application.

RG (MIL-DTL 17 H) and RGB cables for high frequency data transmission, fixed and conditional flexing, in- and outdoor applications, extreme temperatures.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**Bus systems**  
Page 323 to page 375



Support of all major fieldbus systems, among others PROFIBUS® (DP and PA), CAN, DeviceNet™, CC-Link®, AS-Interface, ISOBUS, Foundation Fieldbus™, KNX®. Cables for in- and outdoor, extreme temperatures, fixed/flexible installation and high flexible application. M12- and Sub-D connectors, cordsets and accessories.

**Sensor/actuator cabling**  
Page 376 to page 406



The complete range of M8-, M12- and valve connectors, cables, cordsets, matching distribution boxes and accessories. Available as shielded/unshielded version, optional LEDs, with different cable materials and connection technologies.



## UNITRONIC® 100

Control and signal cable with small cross-sections



### Info

- UNITRONIC® colour code with protective conductor

## UNITRONIC® 100 CY

Screened control and signal cable with small cross-sections



### Application range

- These control and signal cables are used in the milliampere range for computer systems, electronic control equipment, office machines, balances etc. and wherever the thinnest possible control cables are required.

### Product features

#### UNITRONIC® 100

- Robust, flexible and resistant outer sheath
- Small outer diameter despite high number of cores
- Flame-retardant according IEC 60332-1-2
- 3 cores with earth wire (green-yellow)  
2 cores (black/blue)

#### UNITRONIC® 100 CY

- Robust, flexible and resistant outer sheath
- Small outer diameter despite high number of cores
- Cable similar to UNITRONIC® 100, but with copper braiding
- Flame-retardant according IEC 60332-1-2
- 3 cores with earth wire (green-yellow)  
2 cores (black/blue)

### Norm references / Approvals

- Based on: VDE 0814 or VDE 0812

### Product Make-up

#### UNITRONIC® 100

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of PVC
- Outer sheath made of PVC  
Outer sheath colour: grey (RAL 7001)

#### UNITRONIC® 100 CY

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of PVC
- Inner sheath made of PVC
- For the cross section of 0.14 mm<sup>2</sup>, a polyester tape is used underneath the screen braiding instead of the inner sheath.
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: grey (RAL 7001)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

Refer to Appendix T7 for the UNITRONIC® colour codes



#### Mutual capacitance

Approx. 120 nF/km



#### Peak operating voltage

(not for power applications)  
500 V



#### Inductivity

approx. 0.7 mH/km



#### Conductor stranding

Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire



#### Minimum bending radius

##### UNITRONIC® 100

Occasional flexing: 15 x outer diameter  
Fixed installation: 4 x outer diameter

##### UNITRONIC® 100 CY

Occasional flexing: 20 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

Core/core: 1500 V rms  
Core/screen: 1500 V



#### Protective conductor

Green-yellow



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® 100</b>				
0028009	2 x 0,14	3	2.8	12
0028010	3 x 0,14	3.2	4.2	17
0028012	5 x 0,14	3.7	7	22
0028014	7 x 0,14	4	9.8	27
0028015	10 x 0,14	5	14	41
0028019	24 x 0,14	7.2	33.6	94
0028025	52 x 0,14	10	72.8	198
0028030	3 x 0,25	3.8	7.5	21
0028031	7 x 0,25	4.9	17.5	48
0028032	10 x 0,25	6.4	25	77
0028033	14 x 0,25	6.9	35	95
0028034	16 x 0,25	7.3	40	112
0028035	21 x 0,25	8.5	52.5	139
0028036	24 x 0,25	9	60	163
0028037	27 x 0,25	9.2	67.5	171



Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0028038	30 x 0,25	9.9	75	187
0028039	36 x 0,25	10.7	90	235
0028040	40 x 0,25	11.6	100	266
0028042	52 x 0,25	12.5	130	343
0028044	61 x 0,25	13.3	152.5	398
0028047	3 x 0,34	4.2	10.5	33
0028048	7 x 0,34	5.5	22.8	62
0028051	16 x 0,34	8.3	54.4	131
<b>UNITRONIC® 100 CY</b>				
0034006	2 x 0,14	3.7	12	20
0034007	3 x 0,14	3.9	13	28
0034008	4 x 0,14	4.1	14.3	33
0034009	5 x 0,14	4.4	15.5	38
0034010	7 x 0,14	4.7	20.3	49
0034011	10 x 0,14	5.7	34.3	66
0034012	14 x 0,14	6.3	32	80
0034013	16 x 0,14	6.6	40.9	90
0034016	27 x 0,14	8.1	70.6	148
0031031	3 x 0,25	5.4	20.2	48
0031066	4 x 0,25	5.7	24	61
0031067	5 x 0,25	6.3	29	72
0031032	7 x 0,25	6.7	37.6	82
0031033	10 x 0,25	8.2	48.8	129
0031034	14 x 0,25	8.7	64.6	147
0031068	2 x 0,34	5.6	20	45
0031048	3 x 0,34	5.8	24.1	62
0031069	4 x 0,34	6.4	29	65
0031070	5 x 0,34	6.9	42	95
0031049	7 x 0,34	7.3	50	106
0031050	10 x 0,34	9	67.7	167
0031052	16 x 0,34	10.5	95	219
0031060	52 x 0,34	17.6	336	629

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® LiYY refer to page 278
- UNITRONIC® LiYCY refer to page 279

**Accessories**

- UNIVERSAL STRIP stripping tool refer to page 1006
- STAR STRIP stripping tool refer to page 1000



## UNITRONIC® LiYY

Data transmission cable with colour code acc. to DIN 47100



**Info**

- The classic for multi-functional use

### Benefits

- Space-saving installation due to small cable diameters
- Multifunctional application possibilities
- Depending on the quantity, the outer sheath can also be produced in other colours to match your application needs

### Application range

- UNITRONIC® LiYY is also used as a control and signal cable in electronics of computer systems, electronic control equipment, office machines, balances, etc.
- Dry or damp rooms
- Occasional flexing

### Product features

- Despite the large number of cores, LiYY data cables have small outer diameters
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of PVC
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9

**Mutual capacitance**  
Approx. 120 nF/km

**Peak operating voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V

**Inductivity**  
approx. 0.65 mH/km

**Conductor stranding**  
Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Test voltage**  
At 0.14 mm<sup>2</sup>: 1200 V

**Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYY</b>				
0028202	2 x 0.14	3.2	2.7	13.2
0028203	3 x 0.14	3.4	4.05	16
0028204	4 x 0.14	3.6	5.4	18.9
0028205	5 x 0.14	3.9	6.72	22.2
0028207	7 x 0.14	4.2	9.45	28.4
0028208	8 x 0.14	4.9	10.2	35.2
0028210	10 x 0.14	5.2	13.5	41.2
0028212	12 x 0.14	5.6	16.2	48.4
0028214	14 x 0.14	5.8	18.9	52.9
0028216	16 x 0.14	6.1	21.6	59.1
0028220	20 x 0.14	7	27	70.8
0028225	25 x 0.14	7.8	33.6	87.2
0028236	36 x 0.14	8.6	48.6	126.8
0028237	37 x 0.14	8.9	49.7	118
0028240	40 x 0.14	9.3	54	139.1
0028250	50 x 0.14	10.4	67.5	170.9
0028256	56 x 0.14	10.7	78.4	187
0028302	2 x 0.25	3.8	4.8	18
0028303	3 x 0.25	4	7.2	22
0028304	4 x 0.25	4.3	9.6	26.2
0028305	5 x 0.25	4.7	12	31
0028306	6 x 0.25	5.1	14.4	39
0028307	7 x 0.25	5.1	16.8	42
0028308	8 x 0.25	6.2	19.2	49.2
0028310	10 x 0.25	6.8	24	58
0028312	12 x 0.25	7	28.8	67
0028314	14 x 0.25	7.3	33.6	75.3
0028316	16 x 0.25	7.7	38.4	84.3
0028318	18 x 0.25	8.1	43.2	93
0028320	20 x 0.25	8.6	48	102
0028325	25 x 0.25	9.6	60	134
0028330	30 x 0.25	10.3	72	155
0028332	32 x 0.25	10.7	76.8	164
0028336	36 x 0.25	11.1	86.4	182.2
0028337	37 x 0.25	11.4	88.8	185
0028340	40 x 0.25	12	96.1	200
0028350	50 x 0.25	12.9	120	257.1
0028402	2 x 0.34	4.2	6.6	25
0028403	3 x 0.34	4.4	9.9	31
0028404	4 x 0.34	4.8	13.1	43.2

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0028405	5 x 0.34	5.5	16.5	53.8
0028406	6 x 0.34	5.9	19.6	55
0028407	7 x 0.34	5.9	22.8	62
0028408	8 x 0.34	7.1	26.1	73.1
0028410	10 x 0.34	7.6	32.6	82
0028412	12 x 0.34	7.8	39.1	102
0028414	14 x 0.34	8.2	45.7	109
0028416	16 x 0.34	8.7	52	127
0028420	20 x 0.34	9.6	65.2	159.3
0028421	21 x 0.34	10.4	68.6	167
0028425	25 x 0.34	11.2	81.6	190
0028430	30 x 0.34	11.6	98	226
0028436	36 x 0.34	12.5	118	284
0028440	40 x 0.34	13.5	131	317
0028450	50 x 0.34	15	163	407
0028502	2 x 0.50	4.7	9.6	40
0028503	3 x 0.50	5	14.4	47
0028504	4 x 0.50	5.6	19.2	56
0028505	5 x 0.50	6.1	24	65
0028507	7 x 0.50	6.9	33.6	82
0028508	8 x 0.50	8	38.4	90
0028510	10 x 0.50	8.6	48	117
0028512	12 x 0.50	8.9	58	133
0028516	16 x 0.50	10.2	77	170
0028520	20 x 0.50	11.4	96	214
0028525	25 x 0.50	12.7	120	265
0028530	30 x 0.50	13.2	144	304
0028540	40 x 0.50	15.8	192	392
0028602	2 x 0.75	5.1	14.4	48
0028603	3 x 0.75	5.6	21.6	57
0028604	4 x 0.75	6.1	28.8	69
0028605	5 x 0.75	6.9	36	78
0028607	7 x 0.75	7.5	50	112
0028608	8 x 0.75	8.7	58	126
0028610	10 x 0.75	9.4	72	149
0028612	12 x 0.75	10.1	86	176
0028616	16 x 0.75	11.2	115	218
0028620	20 x 0.75	12.4	144	274
0028625	25 x 0.75	14	180	285
0028702	2 x 1.00	5.6	19.2	55
0028703	3 x 1.00	5.9	29	70

APPENDIX ACCESSORIES FLEXIMARK® SILVYN® SKINTOP® EPIC® HITRONIC® ETHERLINE® UNITRONIC® ÖLFLEX®

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0028704	4 x 1.00	6.4	38.4	79
0028705	5 x 1.00	7.3	48	98
0028802	2 x 1.50	6.2	29	74

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0028803	3 x 1.50	6.8	43	89
0028804	4 x 1.50	7.4	58	105

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® LiYY (TP) refer to page 281
- UNITRONIC® LiYY A refer to page 300

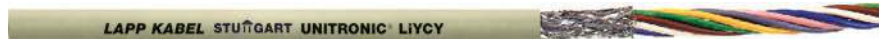
**Accessories**

- SKINTOP® ST-M refer to page 712
- STAR STRIP stripping tool refer to page 1000
- SENSOR STRIP stripping tool refer to page 1003



**UNITRONIC® LiYCY**

Screened data transmission cable with colour code acc. to DIN 47100



**Benefits**

- Overall braid minimises electrical interference
- Multifunctional application possibilities

**Application range**

- Screened cables with small dimensions are suitable for use in computer systems, instrumentation technology, office equipment, balances.
- Dry or damp rooms

**Product features**

- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Based on VDE 0812

**Product Make-up**

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of PVC
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable		<b>Inductivity</b> approx. 0.65 mH/km
	<b>Core identification code</b> DIN 47100 without colour repetition, refer to Appendix T9		<b>Conductor stranding</b> Stranded, fine-wire 0.34 mm <sup>2</sup> : 7-wire
	<b>Mutual capacitance</b> C/C: approx. 120 nF/km C/S: approx. 160 nF/km		<b>Minimum bending radius</b> Occasional flexing: 15 x outer diameter Fixed installation: 6 x outer diameter
	<b>Peak operating voltage</b> (not for power applications) at 0.14 mm <sup>2</sup> : 350 V at ≥ 0.25 mm <sup>2</sup> : 500 V		<b>Test voltage</b> At 0.14 mm <sup>2</sup> : 1200 V
			<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYCY</b>				
0034302	2 x 0.14	3.9	12	20
0034303	3 x 0.14	4.1	13	28
0034304	4 x 0.14	4.3	14.3	33
0034305	5 x 0.14	4.6	15.5	38
0034306	6 x 0.14	4.9	18.2	38
0034307	7 x 0.14	4.9	19	49
0034308	8 x 0.14	5.8	21.2	56
0034310	10 x 0.14	6.1	28.5	66
0034312	12 x 0.14	6.3	30.4	78
0034314	14 x 0.14	6.7	32	80
0034315	15 x 0.14	6.9	37.8	86
0034316	16 x 0.14	7	43	90
0034318	18 x 0.14	7.3	48.8	104
0034320	20 x 0.14	7.7	53.9	116
0034321	21 x 0.14	7.9	55.5	121
0034324	24 x 0.14	8.4	61	132
0034325	25 x 0.14	8.5	63	149
0034328	28 x 0.14	8.5	66.1	153
0034330	30 x 0.14	8.7	69	158
0034336	36 x 0.14	9.3	83	183
0034340	40 x 0.14	10.4	87.5	210
0034344	44 x 0.14	10.7	110.5	225
0034350	50 x 0.14	11.1	122.5	253
0034402	2 x 0.25	4.5	16	32
0034403	3 x 0.25	4.7	21	37
0034404	4 x 0.25	5	24	41.3
0034405	5 x 0.25	5.6	29	51.2

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0034406	6 x 0.25	6	30	58
0034407	7 x 0.25	6	37	65
0034408	8 x 0.25	7.1	42	73
0034410	10 x 0.25	7.5	46	82
0034412	12 x 0.25	7.7	53	98
0034414	14 x 0.25	8	59	99
0034415	15 x 0.25	8.3	61	111
0034416	16 x 0.25	8.4	64	124
0034418	18 x 0.25	8.8	83	143
0034420	20 x 0.25	9.3	88	152.3
0034421	21 x 0.25	9.6	93	161
0034425	25 x 0.25	10.7	114	172
0034428	28 x 0.25	10.8	126	181.1
0034432	32 x 0.25	11.4	138	203
0034436	36 x 0.25	11.8	148	220
0034440	40 x 0.25	12.7	157	248
0034450	50 x 0.25	13.8	178	318
0034461	61 x 0.25	15	205	365.2
0034502	2 x 0.34	4.9	21	37
0034503	3 x 0.34	5.1	27	49
0034504	4 x 0.34	5.7	28	59
0034505	5 x 0.34	6.2	30	66
0034506	6 x 0.34	6.8	45	79
0034507	7 x 0.34	6.8	48	83
0034508	8 x 0.34	7.8	52	94
0034510	10 x 0.34	8.3	74	129.2
0034512	12 x 0.34	8.5	80	142
0034514	14 x 0.34	8.9	86	154
0034515	15 x 0.34	9.2	90	155
0034516	16 x 0.34	9.4	94	160
0034518	18 x 0.34	10.2	103	173
0034520	20 x 0.34	10.7	112	192
0034521	21 x 0.34	11.1	116	199.2
0034525	25 x 0.34	11.9	135	259
0034528	28 x 0.34	12	153	280
0034530	30 x 0.34	12.3	159	291.1
0034532	32 x 0.34	13	165	305
0034536	36 x 0.34	13.4	179	331
0034540	40 x 0.34	14.8	200	365
0034550	50 x 0.34	15.9	235	431
0034602	2 x 0.50	5.6	29	54
0034603	3 x 0.50	5.9	38	67
0034604	4 x 0.50	6.3	43	77
0034605	5 x 0.50	7	51	90
0034606	6 x 0.50	7.6	59	104
0034607	7 x 0.50	7.6	65	112
0034608	8 x 0.50	8.7	70	135
0034610	10 x 0.50	9.3	88	160
0034612	12 x 0.50	9.6	99	177
0034618	18 x 0.50	11.8	134	239
0034620	20 x 0.50	12.1	149	276
0034625	25 x 0.50	13.7	211	352
0034630	30 x 0.50	14.5	230	397
0034702	2 x 0.75	6	38	64
0034703	3 x 0.75	6.3	49	76
0034704	4 x 0.75	7	58	92
0034705	5 x 0.75	7.6	67	109
0034707	7 x 0.75	8.2	100	156
0034710	10 x 0.75	10.5	130	187
0034712	12 x 0.75	10.8	154	218
0034718	18 x 0.75	13	195	327
0034725	25 x 0.75	15.3	280	454
0034730	30 x 0.75	15.8	312	486
0034802	2 x 1.00	6.3	43	72
0034803	3 x 1.00	6.8	56	90
0034804	4 x 1.00	7.3	68	109
0034805	5 x 1.00	8	79	126
0034807	7 x 1.00	8.6	118	171
0034810	10 x 1.00	11.1	140	228
0034812	12 x 1.00	11.4	168	259
0034818	18 x 1.00	13.4	252	389
0034825	25 x 1.00	16.2	335	517
0034902	2 x 1.50	7.1	58	90
0034903	3 x 1.50	7.5	74	115
0034904	4 x 1.50	8.1	108	153
0034905	5 x 1.50	8.8	129	176
0034907	7 x 1.50	9.5	164	220
0034912	12 x 1.50	12.7	254	376
0034918	18 x 1.50	15.3	350	519
0034925	25 x 1.50	17.9	550	901

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- UNITRONIC® LiYCY (TP) refer to page 282
- UNITRONIC® PUR CP refer to page 289
- UNITRONIC® LiYCY A refer to page 301

#### Accessories

- SKINTOP® MS-SC refer to page 794
- Multipurpose shears A and B refer to page 998
- UNIVERSAL STRIP stripping tool refer to page 1006



## UNITRONIC® LiYY (TP)

Data transmission cable with colour code acc. to DIN 47100 and twisted pairs



**Info**

- TP = twisted pair

### Benefits

- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Electronic devices tend to leave little room for installing cables, meaning short travel distances and small bending radii are required. This cable ideally meets these requirements.
- Dry or damp rooms

### Product features

- Twisted in pairs to reduce decoupling. As a result, additional screening is often not required.
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- TP structure
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> Approx. 120 nF/km
	<b>Peak operating voltage</b> (not for power applications) at 0.14 mm <sup>2</sup> : 350 V at ≥ 0.25 mm <sup>2</sup> : 500 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Fine copper wire strands
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 4 x Outer diameter
	<b>Test voltage</b> At 0.14 mm <sup>2</sup> : 1200 V
	<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of pairs and conductor cross section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYY (TP)</b>				
0035101	2 x 2 x 0.14	4.8	5.4	25.5
0035102	3 x 2 x 0.14	4.9	8	32
0035103	4 x 2 x 0.14	5.5	10.7	38.5
0035104	5 x 2 x 0.14	5.7	13.4	45.5
0035105	6 x 2 x 0.14	6.2	16.1	51
0035108	10 x 2 x 0.14	8	26.9	77.5
0035110	12 x 2 x 0.14	8.2	32.3	94.5
0035113	16 x 2 x 0.14	9.1	43	110.5
0035160	2 x 2 x 0.25	6.1	9.6	38
0035161	3 x 2 x 0.25	6.2	14.4	48
0035162	4 x 2 x 0.25	6.9	19.2	59
0035163	6 x 2 x 0.25	7.8	28.8	80
0035164	8 x 2 x 0.25	9.2	38.4	98
0035170	2 x 2 x 0.5	7.9	19.2	72
0035171	3 x 2 x 0.5	8	28.8	83
0035172	4 x 2 x 0.5	8.7	38.4	115
0035174	8 x 2 x 0.5	12.2	76.8	206
0035175	10 x 2 x 0.5	13.2	96	247

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® LiYCY (TP) refer to page 282
- UNITRONIC® LiYCY (TP) A refer to page 302

### Accessories

- SKINTOP® CLICK refer to page 715
- KS 15 cable shears



## UNITRONIC® LiYCY (TP)

Screened data transmission cable with colour code acc. to DIN 47100 and twisted pairs



### Info

- TP = twisted pair

### Benefits

- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- Overall braid minimises electrical interference

### Application range

- Can be used multifunctional in electronics of computer systems, electronic control equipment, office machines, balances, etc.
- Dry or damp rooms

### Product features

- Good protection against capacitive interference from electric fields (e.g. power cable)
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

DIN 47100, refer to Appendix T9



#### Mutual capacitance

C/C: approx. 120 nF/km  
C/S: approx. 160 nF/km



#### Peak operating voltage

(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V



#### Inductivity

approx. 0.65 mH/km



#### Conductor stranding

Fine copper wire strands



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

At 0.14 mm<sup>2</sup>: 1200 V

#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Dimension and cross section in mm <sup>2</sup>	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYCY (TP)</b>				
0035131	2 x 2 x 0,14	5.3	18.5	39
0035141	3 x 2 x 0,14	5.8	23	48
0035132	4 x 2 x 0,14	6.2	26.6	54
0035133	6 x 2 x 0,14	7.1	48.5	85
0035150	8 x 2 x 0,14	8.2	53.7	97
0035134	10 x 2 x 0,14	8.7	59	110
0035135	12 x 2 x 0,14	8.9	66	142
0035136	16 x 2 x 0,14	10.2	79	154
0035142	20 x 2 x 0,14	11.3	97	184
0035137	25 x 2 x 0,14	12.5	113	238
0035800	2 x 2 x 0,25	6.3	28	54
0035801	3 x 2 x 0,25	7.1	39.6	68.5
0035802	4 x 2 x 0,25	7.6	44.9	81
0035803	6 x 2 x 0,25	8.5	69.5	115
0035804	8 x 2 x 0,25	10.3	76.9	130
0035805	10 x 2 x 0,25	11	102	158
0035806	12 x 2 x 0,25	11.3	120	190
0035807	16 x 2 x 0,25	12.5	146.5	238

Article number	Dimension and cross section in mm <sup>2</sup>	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0035808	25 x 2 x 0,25	16.1	205	344
0035810	2 x 2 x 0,5	7.9	48.1	93
0035811	3 x 2 x 0,5	8.7	73.7	129
0035812	4 x 2 x 0,5	9.4	82	146
0035813	6 x 2 x 0,5	11.1	110	198
0035814	8 x 2 x 0,5	13.1	139	259
0035816	12 x 2 x 0,5	14.9	198.3	354
0035817	16 x 2 x 0,5	16.5	240	459
0035820	2 x 2 x 0,75	8.5	58	106
0035821	3 x 2 x 0,75	9.4	84	140
0035822	4 x 2 x 0,75	10.7	108	179
0035827	5 x 2 x 0,75	11.1	126	215
0035823	6 x 2 x 0,75	12.1	146	246
0035824	8 x 2 x 0,75	14.7	180	305
0035825	12 x 2 x 0,75	16.2	261	456
0035830	2 x 2 x 1	9	84	142
0035831	3 x 2 x 1	10.4	96	173
0035832	4 x 2 x 1	11.3	121	212
0035836	5 x 2 x 1	11.8	161	266

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® CY PiDY (TP) refer to page 286
- UNITRONIC® PUR CP (TP) refer to page 290
- UNITRONIC® Li2YCY (TP) fine-wire refer to page 291
- UNITRONIC® LiYCY (TP) A refer to page 302

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- Multipurpose shears A and B refer to page 998
- STAR STRIP stripping tool refer to page 1000



## UNITRONIC® EB CY (TP)

Screened data transmission cable with twisted pairs and blue outer sheath



**Info**

- Hazard protection type -i- is required where there is a risk of explosion

### Benefits

- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Reliable data transmission in intrinsically safe circuits
- In EMC-sensitive environments (electromagnetic compatibility)

### Product features

- For intrinsically safe circuits (type of protection i - intrinsic safety) according to IEC 60079-14:2013 / EN 60079-14:2014 / VDE 0165-1:2014, section 16.2.2
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: sky blue (RAL 5015)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 100 nF/km  
C/S approx. 140 nF/km
- Peak operating voltage**  
(not for power applications)  
900 V
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Strand, fine-wire in accordance with IEC 60228 Cl. 5
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter
- Test voltage**  
2500 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of pairs and conductor cross section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® EB CY (TP)</b>				
0012620	2 x 2 x 0.75	8.7	58	106
0012621	3 x 2 x 0.75	9.6	84	140
0012622	4 x 2 x 0.75	10.9	108	179
0012624	6 x 2 x 0.75	12.3	146	246
0012626	10 x 2 x 0.75	16.1	220	392

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

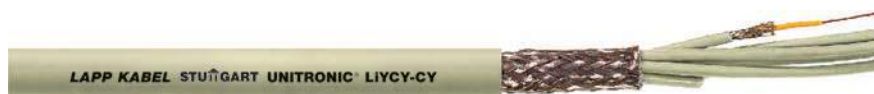
- JE-LiYCY...BD EB refer to page 315

### Accessories

- Multipurpose shears A and B refer to page 998
- SKINTOP® K-M ATEX plus blue refer to page 723

**UNITRONIC® LiYCY-CY**

Screened data transmission cable with individually screened cores

**Benefits**

- Overall braid minimises electrical interference
- Individually screened cores minimise crosstalk between cables routed in parallel

**Application range**

- When a lossless transmission of data has to be guaranteed in fields with strong interference, cables with individually-screened cores and an additional overall screening are used
- Dry or damp rooms

**Product features**

- Wire-screen can be used as outer conductor
- The cable remains flexible despite multiple screening
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Based on VDE 0812

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- Tinned-copper braiding for each core
- Inner sheath made of PVC over each screened core
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**

DIN 47100, refer to Appendix T9

**Mutual capacitance**

Approx. 230 nF/km

**Peak operating voltage**

(not for power applications) 250 V

**Inductivity**

Approx. 0.2 mH/km

**Conductor stranding**

Stranded conductor, fine-wire

**Minimum bending radius**

Occasional flexing: 15 x outer diameter  
Fixed installation: 7.5 x outer diameter

**Test voltage**

1200 V

**Temperature range**

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYCY-CY</b>				
0032302	2 x 0.25	6.9	41.5	69
0032303	3 x 0.25	7.2	53	106
0032304	4 x 0.25	7.8	65	130
0032305	5 x 0.25	8.5	78	161

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® CY PiDY (TP) refer to page 286

**Accessories**

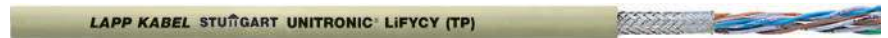
- SKINTOP® MS-SC-M refer to page 732
- Multipurpose shears A and B refer to page 998
- UNIVERSAL STRIP stripping tool refer to page 1006
- DATA STRIP stripping tool refer to page 1001





# UNITRONIC® LiFYCY (TP)

Screened miniature data transmission cable



**Info**

- For requirements of microelectronics

### Benefits

- Space-saving installation due to small cable diameters
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- Overall braid minimises electrical interference

### Application range

- For protection against high-frequency interference, screened, fine-wire cables are used in many devices.
- Wherever screened cables with smallest dimensions are required
- Examples: microelectronics, hearing aids etc.

### Product features

- Very small dimensions
- Flame-retardant according IEC 60332-1-2

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation made of PVC
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 80 nF/km  
C/S approx. 120 nF/km
- Peak operating voltage**  
(not for power applications) 150 V
- Coupling**  
At 1 kHz: approx. 300 pF/100 m
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Stranded, extra-fine wire, cross-section 0.08 mm<sup>2</sup>
- Minimum bending radius**  
Occasional flexing: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Test voltage**  
800 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiFYCY (TP)</b>				
0034231	4 x 2 x 0.08	5.4	19.4	37
0034233	8 x 2 x 0.08	7.1	23.7	76

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- EASY STRIP stripping and cutting tool refer to page 1004
- Multipurpose shears A and B refer to page 998
- DATA STRIP stripping tool refer to page 1001

**UNITRONIC® CY PiDY (TP)**

Screened data transmission cable with copper-wrapped twisted pairs

**Info**

- PiDY = Pairs with copper wire wrapping and PVC sheath

**Benefits**

- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- Individually screened pairs and the overall braid minimise electrical interference

**Application range**

- Cable should be used in areas with high levels of electromagnetic interferences
- Data processing, process control systems, machining centres, security systems and electronics
- Suitable for the transmission with varying in frequency and voltage or sensitive signals
- For fixed installation and flexible use
- Dry or damp rooms

**Product features**

- The cable remains flexible despite multiple screening
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- Based on VDE 0812

**Product Make-up**

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- Cores twisted into pairs
- Copper wrapping over pairs
- Inner sheath made of PVC over screened pairs
- Tinned-copper braiding
- Outer sheath made of PVC
- Outer sheath colour: pebble grey (RAL 7032)

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**

DIN 47100, refer to Appendix T9

**Mutual capacitance**

C/C: approx. 120 nF/km  
C/S: approx. 160 nF/km

**Peak operating voltage**

(not for power applications)  
350 V

**Inductivity**

approx. 0.65 mH/km

**Conductor stranding**

Stranded conductor, fine-wire

**Minimum bending radius**

Fixed installation: 6 x outer diameter

**Test voltage**

1200 V

**Loop resistance**

< 160 Ohm/km

**Characteristic impedance**

Approx. 65 Ohm

**Temperature range**

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® CY PiDY (TP)</b>				
0034250	2 x 2 x 0.25	9.3	59.6	112
0034251	3 x 2 x 0.25	9.8	72.7	136
0034252	4 x 2 x 0.25	11.1	88.2	168
0034253	5 x 2 x 0.25	11.8	103.8	201
0034254	6 x 2 x 0.25	12.8	125.7	244
0034256	8 x 2 x 0.25	15.4	161	325
0034257	10 x 2 x 0.25	17.1	186.8	342
0034258	12 x 2 x 0.25	18.3	239.5	416
0034259	16 x 2 x 0.25	20.3	316.7	542

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® Li2YCY PiMF refer to page 293

**Accessories**

- SKINTOP® MS-SC-M refer to page 732
- UNIVERSAL STRIP stripping tool refer to page 1006
- STAR STRIP stripping tool refer to page 1000



## UNITRONIC® ST

Static screened data transmission cable similar to UL AWM 2092



### Benefits

- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields

### Application range

- Especially designed for the transmission of the smallest measurement and control signals at minimal space requirements
- Internal wiring of electronic equipment
- For fixed and limited flexible installation
- For use in dry, damp and wet rooms

### Product features

- Protection against interferences at medium and high frequencies by aluminium-laminated plastic foil, combination of flexibility and good screening (normal requirements)
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on UL AWM Style 2092 / 2093

### Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- Plastic-laminated aluminium foil with tinned copper drain wire
- Outer sheath made of PVC, Colour of the outer sheath: Similar to Silver-grey/ RAL 7001

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> 2 cores: black, transparent 3 cores: black, red, transparent
	<b>Mutual capacitance</b> C/C approx. 90 nF/km C/S approx. 160 nF/km
	<b>Peak operating voltage</b> (not for power applications) 500 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 6 x outer diameter
	<b>Test voltage</b> 1500 V
	<b>Characteristic impedance</b> Approx. 95 Ohm
	<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of conductors and AWG size	Conductor cross-section (mm <sup>2</sup> )	Core insulation material	Outer sheath material	Outer diameter (mm)	Copper index (kg/km)
<b>UNITRONIC® ST</b>						
0033000	2 x AWG 20/7	0.52	PE	PVC	5.2	17.2
0033001	3 x AWG 20/7	0.52	PE	PVC	5.3	23

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- UNIVERSAL STRIP stripping tool refer to page 1006
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® LiYD11Y

Data transmission cable with copper wrapping and PUR outer sheath



### Benefits

- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

### Application range

- Intended for use in industrial environments, where cables should have excellent mechanical and chemical resistance.
- Screened cables with small dimensions are suitable for use in computer systems, instrumentation technology, office equipment, balances.
- Can be used in dry or damp rooms
- Outdoor use is possible within the indicated operating temperature range

### Product features

- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion
- Low-adhesive surface
- Good UV-resistance
- Flame retardant according to IEC 60332-2-2
- Spiral versions with similar properties are also available: "UNITRONIC® SPIRAL"

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation made of PVC
- Wrapped with bare copper wires
- Outer sheath made of PUR
- Outer sheath colour: black (RAL 9005)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

DIN 47100 without colour repetition, refer to Appendix T9



#### Mutual capacitance

C/C approx. 140 nF/km  
C/S approx. 150 nF/km



#### Peak operating voltage

(not for power applications) 250 V



#### Inductivity

approx. 0.65 mH/km



#### Conductor stranding

Stranded, extra-fine wire



#### Minimum bending radius

Occasional flexing: 10 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

1200 V



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYD11Y</b>				
0033202	2 x 0.14	4.1	9.6	20
0033203	3 x 0.14	4.3	11	25
0033204	4 x 0.14	4.5	12	27
0033205	5 x 0.14	4.8	14.4	33
0033206	6 x 0.14	5.5	17.6	38
0033207	7 x 0.14	5.9	21.5	41
0033212	12 x 0.14	7.2	33.2	62
0033218	18 x 0.14	8	44.2	83
0033302	2 x 0.25	4.7	11.8	25
0033303	3 x 0.25	5.3	15.6	31
0033304	4 x 0.25	5.6	18.2	36
0033306	6 x 0.25	6.8	26.1	49
0033312	12 x 0.25	8.4	48.1	81

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® SPIRAL refer to page 247

### Accessories

- Multipurpose shears A and B refer to page 998
- UNIVERSAL STRIP stripping tool refer to page 1006
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® PUR CP

Screened data transmission cable with PUR outer sheath for harsh conditions



### Benefits

- Data transmission cable with PUR sheath for increased mechanical stress, wear- and tear-resistant
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Overall braid minimises electrical interference

### Application range

- Further development of the UNITRONIC® range for harsher ambient conditions where robust and screened cables in small dimensions are required.

### Product features

- Low-adhesive surface
- PUR outer sheath is resistant to most oils and hydraulic fluids
- Special notch and tear-resistance
- Good UV-resistance
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of PVC
- Tinned-copper braiding
- Outer sheath made of PUR  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> C/C: approx. 120 nF/km C/S: approx. 160 nF/km
	<b>Peak operating voltage</b> (not for power applications) at 0.14 mm <sup>2</sup> : 350 V at ≥ 0.25 mm <sup>2</sup> : 500 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Stranded, fine-wire 0.34 mm <sup>2</sup> : 7-wire
	<b>Minimum bending radius</b> Occasional flexing: 15 x outer diameter Fixed installation: 6 x outer diameter
	<b>Test voltage</b> 0.14 mm <sup>2</sup> : 1200 V ≥ 0.25 mm <sup>2</sup> : 1500 V
	<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® PUR CP</b>				
0032801	3 x 0.25	4.7	21	40
0032802	4 x 0.25	5	24	44
0032803	5 x 0.25	5.6	29	55
0032804	7 x 0.25	6	37	68
0032805	10 x 0.25	7.5	46	85
0032806	12 x 0.25	7.7	59	91
0032812	4 x 0.34	5.7	28	63
0032813	5 x 0.34	6.2	30	69
0032821	3 x 0.50	5.9	38	70
0032822	4 x 0.50	6.3	43	80
0032824	7 x 0.50	7.6	65	115
0032830	2 x 0.75	6	38	67
0032836	12 x 0.75	10.8	154	225

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® PUR CP (TP) refer to page 290
- UNITRONIC® FD CP plus refer to page 308
- UNITRONIC® FD CP (TP) plus refer to page 309

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SMART STRIP stripping tool



## UNITRONIC® PUR CP (TP)

Screened data transmission cable with PUR outer sheath and twisted pairs for harsh conditions



**Info**

- TP = twisted pair

### Benefits

- Data transmission cable with PUR sheath for increased mechanical stress, wear- and tear-resistant
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- For harsh environmental conditions where robust and screened cables with small dimensions are necessary

### Product features

- Low-adhesive surface
- PUR outer sheath is resistant to most oils and hydraulic fluids
- Special notch and tear-resistance
- Good UV-resistance
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation made of PVC
- TP structure
- Tinned-copper braiding
- Outer sheath made of PUR
- Outer sheath colour: pebble grey (RAL 7032)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**  
DIN 47100, refer to Appendix T9

**Mutual capacitance**  
C/C: approx. 120 nF/km  
C/S: approx. 160 nF/km

**Peak operating voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V

**Inductivity**  
approx. 0.65 mH/km

**Conductor stranding**  
Fine copper wire strands

**Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter

**Test voltage**  
0.14 mm<sup>2</sup>: 1200 V  
≥ 0.25 mm<sup>2</sup>: 1500 V

**Temperature range**  
Occasional flexing: -5 °C to +70 °C  
Fixed installation: -40 °C to +80 °C

Article number	Number of pairs and conductor cross section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® PUR CP (TP)</b>				
0032850	2 x 2 x 0.25	6.3	28	54
0032851	3 x 2 x 0.25	7.1	40	66
0032852	4 x 2 x 0.25	7.6	45	81
0032854	6 x 2 x 0.25	8.5	70	115
0032860	2 x 2 x 0.5	8.6	48	93
0032861	3 x 2 x 0.5	8.7	74	129
0032862	4 x 2 x 0.5	9.4	82	146
0032864	6 x 2 x 0.5	11.1	110	198

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® FD CP (TP) plus refer to page 309

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SMART STRIP stripping tool

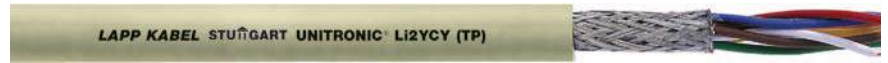


## UNITRONIC® Li2YCY (TP)

Screened data transmission cable mit PE core insulation, 7-wire strands and twisted pairs

**i Info**

- Cables for RS485/RS422

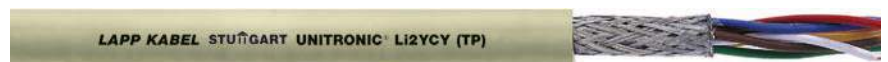


## UNITRONIC® Li2YCY (TP) fine-wire

Screened data transmission cable mit PE core insulation, fine wire strands and twisted pairs

**i Info**

- Cables for RS485/RS422



## UNITRONIC® Li2YCYv (TP)

Screened data transmission cable mit PE core insulation, reinforced outer sheath and twisted pairs

**i Info**

- Cables for RS485/RS422



### Benefits

- 7-wire stranded conductor (UNITRONIC® Li2YCY (TP) and UNITRONIC® Li2YCYv (TP) can be used for Maxi TERMI-POINT® wiring
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Particularly suitable for wiring data systems with transmission rates up to 10 Megabits per second, and is qualified for the RS422 and RS485 interfaces.
- For fixed and limited flexible installation
- Can be used in dry or damp rooms
- Signal-, control- and measuring cable, for transmission of low, sensitive signals and high bit rates
- UNITRONIC® Li2YCYv (TP) with reinforced black outer sheath (Yv) is suitable for indoors and outdoors and provides enhanced appropriateness for direct burial in the ground

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

#### UNITRONIC® Li2YCY (TP)

- 7-wire bare stranded copper conductor
- Core insulation made of polyethylene (PE)
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC
- Outer sheath colour: pebble grey (RAL 7032)

#### UNITRONIC® Li2YCY (TP) fine-wire

- Conductors: Finely stranded bare copper
- Core insulation made of polyethylene (PE)
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC
- Outer sheath colour: pebble grey (RAL 7032)

#### UNITRONIC® Li2YCYv (TP)

- 7-wire bare stranded copper conductor
- Core insulation made of polyethylene (PE)
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC
- Outer sheath colour: pebble grey (RAL 7032)
- Wall thickness of the outer sheath is increased ("Yv")
- Outer sheath colour: black (RAL 9005)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> At 800 Hz: max. 60 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> <b>UNITRONIC® Li2YCY (TP)</b> Stranded conductor, based on VDE 0881, 7-wire <b>UNITRONIC® Li2YCY (TP) fine-wire</b> Stranded conductor, fine-wire <b>UNITRONIC® Li2YCYv (TP)</b> Stranded conductor, based on VDE 0881, 7-wire
	<b>Minimum bending radius</b> Occasional flexing: 15 x outer diameter Fixed installation: 6 x outer diameter
	<b>Short-range crosstalk attenuation</b> Up to 1 MHz min. 50 dB Up to 10 MHz min. 40 dB
	<b>Test voltage</b> Core/core: 2000 V Core/screen: 1000 V
	<b>Characteristic impedance</b> 100 ± 15 Ohm (> 1 MHz)
	<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® Li2YCY (TP)</b>				
0031320	2 x 2 x 0,22	6.5	24.2	59
0031321	3 x 2 x 0,22	7.1	28.6	66
0031322	4 x 2 x 0,22	7.3	34.2	78
0031323	8 x 2 x 0,22	9.1	70	125
0031324	10 x 2 x 0,22	10.4	76	143
0031335	1 x 2 x 0,34	5.8	20	44
0031325	2 x 2 x 0,34	7.7	34.1	79
0031326	3 x 2 x 0,34	8.4	43	89
0031327	4 x 2 x 0,34	8.7	47	101
0031328	8 x 2 x 0,34	11	85.8	176
0031336	1 x 2 x 0,5	6.3	29	53
0031330	2 x 2 x 0,5	8.5	37	85
0031331	3 x 2 x 0,5	9.3	55	105
0031332	4 x 2 x 0,5	9.6	60	122
0031333	8 x 2 x 0,5	12.7	113.3	213
0031334	10 x 2 x 0,5	14.8	154	261
<b>UNITRONIC® Li2YCY (TP) fine-wire</b>				
0031370	1 x 2 x 0,25	5.7	14	38
0031371	2 x 2 x 0,25	6.9	28	56
0031372	3 x 2 x 0,25	7.5	39.6	64
0031373	5 x 2 x 0,25	8.3	50	93
<b>UNITRONIC® Li2YCYv (TP) black for outdoor installation and direct burial, 7-wire</b>				
0031350	2 x 2 x 0,22	8.1	24.2	79
0031351	3 x 2 x 0,22	8.7	28.6	93
0031352	4 x 2 x 0,22	8.9	34.2	100
0031353	8 x 2 x 0,22	10.7	70	156
0031354	10 x 2 x 0,22	12	76	185
0031365	1 x 2 x 0,34	7.4	20	69
0031355	2 x 2 x 0,34	9.3	34.1	102
0031356	3 x 2 x 0,34	10	43	117
0031357	4 x 2 x 0,34	10.3	52.8	130
0031358	8 x 2 x 0,34	12.6	85.8	206
0031366	1 x 2 x 0,5	7.9	29	79
0031360	2 x 2 x 0,5	10.1	37	120
0031361	3 x 2 x 0,5	10.9	55	142
0031362	4 x 2 x 0,5	11.2	60	160
0031363	8 x 2 x 0,5	13.9	113.3	251
0031364	10 x 2 x 0,5	16	148	303

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

TERMI-POINT® is a registered trademark of AMP

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- UNITRONIC® BUS LD refer to page 323

#### Accessories

- SKINTOP® MS-SC-M refer to page 732
- Multipurpose shears A and B refer to page 998
- STAR STRIP stripping tool refer to page 1000
- STEEL GUN HT-338 cable tie pliers refer to page 1068
- LS steel cable ties refer to page 1066





## UNITRONIC® Li2YCY PiMF

Screened data transmission cable with PE core insulation and pairs in metalfoil



**Info**

- Metal foil screened pairs

### Benefits

- Data transmission cable with low capacitance, pair screening and overall copper braiding
- Particularly suitable for wiring data systems and controls in large industrial plants
- 7-wire stranded conductor can be used for Maxi TERMI-POINT® wiring
- Individually screened pairs and the overall braid minimise electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- For enhanced requirements in near-end cross-talk attenuation and high electrical interference in the circuits
- Suitable for the transmission with varying in frequency and voltage or sensitive signals
- Can be used multifunctional in electronics of computer systems, electronic control equipment, office machines, balances, etc.
- For measurement value transmission and serial 2-wire interfaces
- Intended for limited flexible use, and for fixed installation in dry or damp interiors

### Product features

- Flame-retardant according IEC 60332-1-2

### Product Make-up

- 7-wire or fine wire (1mm<sup>2</sup>) bare stranded copper conductor
- Core insulation made of polyethylene (PE)
- Cores twisted into pairs
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire for each pair
- Bare copper screen braiding
- Outer sheath made of PVC
- Outer sheath colour: pebble grey (RAL 7032)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
0.22 mm<sup>2</sup>-0.5 mm<sup>2</sup>: according to DIN 47100, see table T9  
1.0 mm<sup>2</sup>: a-core: white, b-core: black
- Mutual capacitance**  
At 800 Hz:  
0.22 mm<sup>2</sup>: max. 70 nF/km  
0.34 mm<sup>2</sup>: max. 70 nF/km  
0.5 mm<sup>2</sup>: max. 75 nF/km  
1.0 mm<sup>2</sup>: max. 85 nF/km
- Peak operating voltage**  
(not for power applications) 250 V
- Inductivity**  
Approx. 0.4 mH/km
- Conductor stranding**  
Stranded conductor, based on VDE 0881, 7-wire
- Minimum bending radius**  
Occasional flexing: 20 x outer diameter  
Fixed installation: 10 x outer diameter
- Test voltage**  
Core/core: 2000 V  
Core/screen: 1000 V
- Characteristic impedance**  
approx. 85 Ohm (> 1 MHz)
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® Li2YCY PiMF</b>				
<b>7-wire</b>				
0034040	2 x 2 x 0,22	7.7	33	75.4
0034041	3 x 2 x 0,22	8.1	42	86
0034042	4 x 2 x 0,22	8.7	50	99
0034043	8 x 2 x 0,22	10.9	85	161.4
0034044	10 x 2 x 0,22	12.5	100	186.4
0034045	2 x 2 x 0,34	9	43	70
0034046	3 x 2 x 0,34	9.4	55	85
0034047	4 x 2 x 0,34	9.8	64	103
0034048	8 x 2 x 0,34	12.9	127	191
<b>7-wire</b>				
0034060	2 x 2 x 0,5	9.9	51	96
0034061	3 x 2 x 0,5	10.4	66	116
0034062	4 x 2 x 0,5	11.3	71	141
0034063	5 x 2 x 0,5	11.8	92	180
0034064	8 x 2 x 0,5	14.5	153	271
0034065	10 x 2 x 0,5	16.6	182	327
<b>Fine wire</b>				
0034070	2 x 2 x 1	9.9	82	126
0034071	3 x 2 x 1	11.8	109	156
0034072	4 x 2 x 1	12.7	133	193
0034073	10 x 2 x 1	19.7	326	492

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
TERMI-POINT® is a registered trademark of AMP  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® ROBUST

Halogen-free data transmission cable with colour code acc. to DIN 47100 - resistant to a wide range of chemical media



**Info**

- Excellent weather resistance
- Good chemical resistance

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- For indoor and outdoor use

### Product features

- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- Based on VDE 0812
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of special halogen-free compound
- Outer sheath made of special TPE
- Outer sheath colour: black

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9

**Mutual capacitance**  
C/C approx. 60 nF/km

**Peak operating voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V

**Specific insulation resistance**  
> 20 GOhm x cm

**Inductivity**  
approx. 0.65 mH/km

**Conductor stranding**  
Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Test voltage**  
At 0.14 mm<sup>2</sup>: 1200 V

**Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® ROBUST</b>				
1032000	2 x 0.14	3.2	2.8	15
1032001	3 x 0.14	3.4	4.2	17
1032002	4 x 0.14	3.6	5.6	21
1032003	5 x 0.14	3.9	7	25
1032004	7 x 0.14	4.2	9.8	30
1032005	8 x 0.14	4.9	11.2	40
1032006	10 x 0.14	5.2	14	41
1032007	12 x 0.14	5.6	16.8	50
1032009	16 x 0.14	6.1	22.4	63
1032011	25 x 0.14	7.7	35	95
1032012	2 x 0.25	3.8	4.8	21
1032013	3 x 0.25	4	7.2	25
1032014	4 x 0.25	4.3	9.6	31
1032015	5 x 0.25	4.7	12	38
1032016	7 x 0.25	5.1	16.8	47

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1032017	8 x 0.25	6.2	19.2	66
1032018	10 x 0.25	6.8	24	71
1032019	12 x 0.25	7	28.8	81
1032021	16 x 0.25	7.7	38.4	104
1032024	25 x 0.25	9.5	60	151
1032025	2 x 0.34	4.2	6.5	29
1032026	3 x 0.34	4.4	9.8	32
1032027	4 x 0.34	4.8	13.1	41
1032028	5 x 0.34	5.5	16.3	52
1032030	7 x 0.34	5.9	22.9	65
1032031	8 x 0.34	7.1	26.1	90
1032032	10 x 0.34	7.6	32.6	93
1032033	12 x 0.34	7.8	39.2	107
1032035	16 x 0.34	8.7	52.2	138
1032038	15 x 0.34	11.2	81.6	213

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® ST-HF-M refer to page 718
- KT 11 cable shears
- DATA STRIP stripping tool refer to page 1001



# UNITRONIC® ROBUST C

Halogen-free data transmission cable with colour code acc. to DIN 47100 - resistant to a wide range of chemical media

**Info**

- Excellent weather resistance
- Good chemical resistance



### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- For indoor and outdoor use

### Product features

- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- Based on VDE 0812
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of special halogen-free compound
- Tinned-copper braiding
- Outer sheath made of special TPE
- Outer sheath colour: black

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 60 nF/km  
C/S approx. 100 nF/km
- Peak operating voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V
- Specific insulation resistance**  
> 20 GOhm x cm
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire
- Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Test voltage**  
At 0.14 mm<sup>2</sup>: 1200 V
- Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® ROBUST C</b>				
1032050	2 x 0.14	3.9	9.3	25
1032051	3 x 0.14	4.1	10.8	28
1032052	4 x 0.14	4.3	13.5	34
1032053	5 x 0.14	4.6	15	38
1032055	7 x 0.14	4.9	19	46
1032056	8 x 0.14	5.8	22	60
1032057	10 x 0.14	6.1	25.8	63
1032058	12 x 0.14	6.3	28.9	70
1032061	25 x 0.14	8.4	56.1	128
1032062	2 x 0.25	4.5	12.7	33
1032063	3 x 0.25	4.7	16.3	40
1032064	4 x 0.25	5	18.8	46
1032065	5 x 0.25	5.6	22.5	57
1032067	7 x 0.25	6	28.6	69

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1032068	8 x 0.25	7.1	33.6	92
1032069	10 x 0.25	7.5	42.8	101
1032070	12 x 0.25	7.7	47.7	111
1032073	25 x 0.25	10.6	86.5	202
1032074	2 x 0.34	4.9	15.7	44
1032075	3 x 0.34	5.1	20.4	54
1032076	4 x 0.34	5.7	23.6	66
1032077	5 x 0.34	6.2	28.2	78
1032079	7 x 0.34	6.8	36	95
1032080	8 x 0.34	7.8	45.3	127
1032081	10 x 0.34	8.3	53.9	137
1032082	12 x 0.34	8.5	60.7	152
1032084	16 x 0.34	9.4	77.9	191
1032086	25 x 0.34	11.9	115.7	288

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® ST-HF-M refer to page 718
- KT 11 cable shears
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® ROBUST C (TP)

Halogen-free data transmission cable with colour code acc. to DIN 47100 - resistant to a wide range of chemical media



**Info**

- Excellent weather resistance
- Good chemical resistance

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- For indoor and outdoor use

### Product features

- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396 and HD 605 S2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- Based on VDE 0812
- Certified resistance to disinfection and cleaning solutions used in food and beverage industry

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of special halogen-free compound
- TP structure
- Tinned-copper braiding
- Outer sheath made of special TPE  
Outer sheath colour: black (RAL 9005)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9

**Mutual capacitance**  
C/C approx. 60 nF/km  
C/S approx. 100 nF/km

**Peak operating voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at ≥ 0.25 mm<sup>2</sup>: 500 V

**Specific insulation resistance**  
> 20 GOhm x cm

**Inductivity**  
approx. 0.65 mH/km

**Conductor stranding**  
Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire

**Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter

**Test voltage**  
At 0.14 mm<sup>2</sup>: 1200 V

**Temperature range**  
Occasional flexing: -40°C to +90°C  
Fixed installation: -50°C to +90°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® ROBUST C (TP)</b>				
1032100	2 x 2 x 0.14	5.3	16.1	31
1032101	3 x 2 x 0.14	5.8	19	38
1032102	4 x 2 x 0.14	6.2	23.1	46
1032103	5 x 2 x 0.14	6.4	27.2	54
1032104	6 x 2 x 0.14	7.1	31.3	63
1032105	8 x 2 x 0.14	8.2	43.4	90
1032106	10 x 2 x 0.14	8.7	50.9	93
1032107	12 x 2 x 0.14	8.9	56.6	102
1032108	2 x 2 x 0.25	6.3	22.7	43
1032109	3 x 2 x 0.25	7.1	28.9	56
1032110	4 x 2 x 0.25	7.6	38.3	72
1032111	5 x 2 x 0.25	7.9	45.1	85
1032112	6 x 2 x 0.25	8.5	48.7	96
1032113	8 x 2 x 0.25	10.3	64.3	135
1032114	2 x 2 x 0.34	7.1	27.6	56
1032115	3 x 2 x 0.34	7.8	38.8	74
1032116	4 x 2 x 0.34	8.4	47.5	90

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1032117	5 x 2 x 0.34	8.8	58.2	110
1032118	1 x 2 x 0.5	4.9	20.1	37
1032119	2 x 2 x 0.5	7.9	40.3	72
1032120	3 x 2 x 0.5	8.7	51.7	91
1032121	4 x 2 x 0.5	9.4	64.1	112
1032122	5 x 2 x 0.5	10.3	76.6	141
1032123	6 x 2 x 0.5	11.1	91.7	170
1032124	8 x 2 x 0.5	13.1	123.2	238
1032125	10 x 2 x 0.5	14.5	146.4	247
1032126	2 x 2 x 0.75	8.5	48.4	84
1032127	3 x 2 x 0.75	9.4	68.9	114
1032128	4 x 2 x 0.75	10.7	86.2	149
1032129	6 x 2 x 0.75	12.1	131.9	225
1032130	8 x 2 x 0.75	14.7	168.2	315
1032131	2 x 2 x 1	9	64.1	98
1032132	3 x 2 x 1	10.4	83.5	135
1032133	4 x 2 x 1	11.3	105.7	168

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® ST-HF-M refer to page 718
- KT 11 cable shears
- DATA STRIP stripping tool refer to page 1001



# UNITRONIC® LiHH

Halogen-free data transmission cable with colour code acc. to DIN 47100



**Info**

- For use within public buildings and industrial plants

### Benefits

- Halogen-free: to protect human life and valuable assets in the event of a fire, through low smoke density and low amount of corrosive gases
- Low capacitance due to polyolefin-based insulation
- Small outer diameters despite a high number of cores

### Application range

- Suitable for areas with a high density of people as well as high-value property that must be protected in the event of a fire
- For use within public buildings, transport systems and industrial plants
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- 7-wire stranded conductor can be used for Maxi TERMI-POINT® wiring (for this product the 0,34mm<sup>2</sup> version only)
- Dry or damp rooms

### Product features

- Flame-retardant according IEC 60332-1-2
- Low smoke zero halogen (LSZH)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of special halogen-free compound
- Outer sheath made of special halogen-free compound  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9
- Mutual capacitance**  
Approx. 80 nF/km
- Peak operating voltage**  
(not for power applications) 250 V
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Stranded, fine-wire  
0.34 mm<sup>2</sup>: 7-wire
- Minimum bending radius**  
Occasional flexing: 10 x outer diameter  
Fixed installation: 6 x outer diameter
- Test voltage**  
1200 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -30°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiHH</b>				
0037104	6 x 0.14	4.4	8.1	25
0037120	2 x 0.25	4	4.8	22
0037121	3 x 0.25	4.2	7.2	25
0037122	4 x 0.25	4.5	9.6	28
0037124	6 x 0.25	5.3	14.4	39
0037125	7 x 0.25	5.3	16.8	42
0037126	8 x 0.25	6.4	19.2	50
0037128	12 x 0.25	7.2	28.8	67
0037140	2 x 0.34	4.4	6.5	28
0037141	3 x 0.34	4.6	9.8	30
0037142	4 x 0.34	5	13.1	40

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0037143	5 x 0.34	5.7	16.3	44
0037147	12 x 0.34	8	39.2	97
0037150	2 x 0.5	4.9	9.6	31
0037151	3 x 0.5	5.2	14.4	37
0037152	4 x 0.5	5.8	19.2	45
0037153	5 x 0.5	6.3	24	58
0037154	7 x 0.5	7	33.6	72
0037160	2 x 0.75	5.3	14.4	41
0037162	4 x 0.75	6.3	28.8	60
0037165	12 x 0.75	10.4	86.4	165
0037171	3 x 1	6.1	28.8	57
0037172	4 x 1	6.6	38.4	67

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
TERMI-POINT® is a registered trademark of AMP  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® LiHCH refer to page 298

### Accessories

- SKINTOP® ST-HF-M refer to page 718
- KT 11 cable shears
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® LIHCH

Screened halogen-free data transmission cable with colour code acc. to DIN 47100



### Info

- For use within public buildings and industrial plants

### Benefits

- Halogen-free: to protect human life and valuable assets in the event of a fire, through low smoke density and low amount of corrosive gases
- Low capacitance due to polyolefin-based insulation
- Overall braid minimises electrical interference

### Application range

- Suitable for areas with a high density of people as well as high-value property that must be protected in the event of a fire
- For use within public buildings, transport systems and industrial plants
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- For use in computer systems, instrumentation systems, office equipment, balances - wherever screened, halogen-free, small-diameter cables are needed.
- 7-wire stranded conductor can be used for Maxi TERMI-POINT® wiring (for this product the 0,34mm<sup>2</sup> version only)

### Product features

- Flame-retardant according IEC 60332-1-2
- Low smoke zero halogen (LSZH)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

### Norm references / Approvals

- Based on VDE 0812

### Product Make-up

- Fine-wire/multi-wire (0.34 mm<sup>2</sup>) strand made of bare copper wires
- Core insulation made of special halogen-free compound
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100 without colour repetition, refer to Appendix T9
	<b>Mutual capacitance</b> C/C approx. 80 nF/km C/S approx. 120 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Stranded, fine-wire 0.34 mm <sup>2</sup> : 7-wire
	<b>Minimum bending radius</b> Occasional flexing: 10 x outer diameter Fixed installation: 6 x outer diameter
	<b>Test voltage</b> 1200 V
	<b>Temperature range</b> Occasional flexing: -5°C to +70°C Fixed installation: -30°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LIHCH</b>				
0037302	2 x 0.14	4.1	12	22
0037304	4 x 0.14	4.5	15.9	29
0037308	8 x 0.14	6	26	41
0037312	12 x 0.14	6.5	30.4	78
0037325	25 x 0.14	8.7	63	149
0037402	2 x 0.25	4.7	15	25
0037403	3 x 0.25	4.9	18	30
0037404	4 x 0.25	5.2	22	35
0037406	6 x 0.25	6.2	30	49
0037407	7 x 0.25	6.2	32	52
0037408	8 x 0.25	7.3	35	58
0037410	10 x 0.25	7.7	42	81
0037425	25 x 0.25	10.9	114	172
0037502	2 x 0.34	5.1	17	30
0037503	3 x 0.34	5.3	21	35
0037504	4 x 0.34	5.9	25	42
0037507	7 x 0.34	7	42	73
0037508	8 x 0.34	8	45	84
0037510	10 x 0.34	8.5	63	101
0037516	16 x 0.34	9.6	94	160

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0037525	25 x 0.34	12.1	144	259
0037602	2 x 0.5	5.8	29	38
0037603	3 x 0.5	6.1	35	47
0037604	4 x 0.5	6.5	45	67
0037605	5 x 0.5	7.2	50	76
0037606	6 x 0.5	7.8	59	84
0037607	7 x 0.5	7.8	68	91
0037608	8 x 0.5	8.9	75	135
0037610	10 x 0.5	9.5	93	131
0037612	12 x 0.5	9.8	99	177
0037618	18 x 0.5	11.7	134	239
0037702	2 x 0.75	6.2	35	45
0037703	3 x 0.75	6.5	46	69
0037704	4 x 0.75	7.2	56	80
0037802	2 x 1	6.5	43	72
0037803	3 x 1	7	56	90
0037804	4 x 1	7.5	68	109
0037807	7 x 1	8.8	118	171
0037902	2 x 1.5	7.7	58	90
0037903	3 x 1.5	8.1	74	115

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

TERMI-POINT® is a registered trademark of AMP

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® LIHCH (TP) refer to page 299

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- Multipurpose shears A and B refer to page 998



# UNITRONIC® LiHCH (TP)

Screened halogen-free data transmission cable with colour code acc. to DIN 47100 and twisted pairs

**Info**

- TP = twisted pair



## Benefits

- Halogen-free: to protect human life and valuable assets in the event of a fire, through low smoke density and low amount of corrosive gases
- Low capacitance due to polyolefin-based insulation
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

## Application range

- Suitable for areas with a high density of people as well as high-value property that must be protected in the event of a fire
- For use within public buildings, transport systems and industrial plants
- For data processing, measurement and control engineering, safety related systems and as electronics cable
- For use in computer systems, instrumentation systems, office equipment, balances - wherever screened, halogen-free, small-diameter cables are needed.

## Product features

- Flame-retardant according IEC 60332-1-2
- Low smoke zero halogen (LSZH)
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to EN 50267-2-3 (degree of acidity)
- Low smoke density according to IEC 61034-2

## Norm references / Approvals

- Based on VDE 0812

## Product Make-up

- Fine-wire strand made of bare copper wires
- Core insulation made of special halogen-free compound
- TP structure
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound  
Outer sheath colour: pebble grey (RAL 7032)

## Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 80 nF/km  
C/S approx. 120 nF/km
- Peak operating voltage**  
(not for power applications) 250 V
- Coupling**  
At 1 kHz: approx. 300 pF/100 m
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Fine copper wire strands
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter
- Test voltage**  
1200 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -30°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiHCH (TP)</b>				
0038302	2 x 2 x 0.14	5.9	18.5	39
0038303	3 x 2 x 0.14	6	23	48
0038304	4 x 2 x 0.14	6.4	26.6	54
0038308	8 x 2 x 0.14	8.4	53.7	97
0038312	12 x 2 x 0.14	9.1	66	142
0038316	16 x 2 x 0.14	10.4	79	154
0038325	25 x 2 x 0.14	12.7	113	238
0038402	2 x 2 x 0.25	6.5	28	54
0038403	3 x 2 x 0.25	7.3	39.6	66
0038404	4 x 2 x 0.25	7.8	44.9	81
0038406	6 x 2 x 0.25	8.7	69.5	115
0038408	8 x 2 x 0.25	10.5	76.9	130
0038412	12 x 2 x 0.25	11.5	120	190

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0038416	16 x 2 x 0.25	12.7	146.5	238
0038602	2 x 2 x 0.5	8.8	48.1	93
0038603	3 x 2 x 0.5	8.9	73.7	129
0038604	4 x 2 x 0.5	9.6	82	146
0038606	6 x 2 x 0.5	11.3	110	198
0038608	8 x 2 x 0.5	13.3	139	259
0038612	12 x 2 x 0.5	15.1	198.3	354
0038616	16 x 2 x 0.5	16.7	240	459
0038702	2 x 2 x 0.75	9.5	58	106
0038704	4 x 2 x 0.75	10.9	108	179
0038708	8 x 2 x 0.75	14.9	180	305
0038802	2 x 2 x 1	10.5	84	142
0038803	3 x 2 x 1	10.6	96	173
0038804	4 x 2 x 1	11.5	121	212

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

## Accessories

- SKINTOP® MS-SC-M refer to page 732
- Multipurpose shears A and B refer to page 998



## UNITRONIC® LiYY A

Data transmission cable with colour code acc. to DIN 47100 - UL/CSA recognized

LAPP KABEL STUTTGART UNITRONIC® LiYY A



### Info

- A for Advanced here: UL and CSA certifications

### Benefits

- For various applications

### Application range

- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.
- For the North American market

### Product features

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

### Norm references / Approvals

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

### Product Make-up

- Multi-wire strand made of tinned copper wires
- Core insulation made of PVC
- Outer sheath made of special PVC compound  
Outer sheath colour: dark grey (RAL 7005)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

DIN 47100 without colour repetition, refer to Appendix T9



#### Peak operating voltage

(not for power applications)  
300 V  
UL/CSA: 300 V



#### Conductor stranding

AWG conductor sizes, 7 or 19 wires



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

1500 V



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and AWG per conductor	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYY A</b>					
0022403	3 x AWG26/7	3 x 0.14	3.8	4.2	19.7
0022404	4 x AWG26/7	4 x 0.14	4	5.6	23
0022405	5 x AWG26/7	5 x 0.14	4.3	7	25
0022408	8 x AWG26/7	8 x 0.14	5.1	11.2	34
0022412	12 x AWG26/7	12 x 0.14	5.8	16.8	47
0022416	16 x AWG26/7	16 x 0.14	6.3	22.4	58
0022421	21 x AWG26/7	21 x 0.14	7	29.4	63
0022502	2 x AWG24/7	2 x 0.23	4	4.6	26.2
0022505	5 x AWG24/7	5 x 0.23	4.8	11.5	39.4
0022508	8 x AWG24/7	8 x 0.23	5.7	18.4	52.5
0022512	12 x AWG24/7	12 x 0.23	6.6	27.6	72.2
0022602	2 x AWG22/7	2 x 0.34	4.8	6.8	32.8
0022603	3 x AWG22/7	3 x 0.34	5	10.2	35
0022604	4 x AWG22/7	4 x 0.34	5.4	13.6	45.9
0022605	5 x AWG22/7	5 x 0.34	5.9	17	55.8
0022607	7 x AWG22/7	7 x 0.34	6.4	23.3	68.9
0022608	8 x AWG22/7	8 x 0.34	6.9	27.2	75.5
0022612	12 x AWG22/7	12 x 0.34	8.2	40.8	103
0022616	16 x AWG22/7	16 x 0.34	9.1	54.4	131.2
0022624	24 x AWG22/7	24 x 0.34	11.6	81.6	190
0022632	2 x AWG20/7	2 x 0.50	5.3	11.2	29
0022642	2 x AWG19/19	2 x 0.75	5.6	15	48

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 152 m; Drum 305 m

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® LiYCY A refer to page 301
- UNITRONIC® 300 / UNITRONIC® 300 S refer to page 303

### Accessories

- SKINTOP® CLICK refer to page 715
- KT 11 cable shears
- DATA STRIP stripping tool refer to page 1001





## UNITRONIC® LiYCY A

Screened data transmission cable with colour code acc. to DIN 47100 UL/CSA recognized

**Info**

- A for Advanced here: UL and CSA certifications



### Benefits

- Overall braid minimises electrical interference

### Application range

- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.
- For the North American market

### Product features

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

### Norm references / Approvals

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

### Product Make-up

- Multi-wire strand made of tinned copper wires
- Core insulation made of PVC
- Tinned-copper braiding
- Outer sheath made of special PVC compound  
Outer sheath colour: dark grey (RAL 7005)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100 without colour repetition, refer to Appendix T9
- Peak operating voltage**  
(not for power applications)  
300 V  
UL/CSA: 300 V
- Conductor stranding**  
AWG conductor sizes, 7 or 19 wires
- Minimum bending radius**  
Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter
- Test voltage**  
1500 V
- Temperature range**  
Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and AWG per conductor	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LiYCY A</b>					
0044602	2 x AWG26/7	2 x 0.14	4.3	15.6	29.5
0044604	4 x AWG26/7	4 x 0.14	4.7	18	33
0044652	2 x AWG24/7	2 x 0.23	4.7	17.6	36.1
0044655	5 x AWG24/7	5 x 0.23	5.5	28.5	51
0044658	8 x AWG24/7	8 x 0.23	6.4	31.1	72.2
0044662	12 x AWG24/7	12 x 0.23	7.3	51.8	96
0044702	2 x AWG22/7	2 x 0.34	5.5	17.6	32
0044703	3 x AWG22/7	3 x 0.34	5.7	21.2	36
0044704	4 x AWG22/7	4 x 0.34	6.1	27.3	44
0044705	5 x AWG22/7	5 x 0.34	6.6	30.8	53
0044707	7 x AWG22/7	7 x 0.34	7.1	46.4	71
0044712	12 x AWG22/7	12 x 0.34	8.9	66.8	120
0044716	16 x AWG22/7	16 x 0.34	9.8	83.9	145
0044721	21 x AWG22/7	21 x 0.34	11.3	109.4	170
0044732	2 x AWG20/7	2 x 0.50	6	24.4	41
0044733	3 x AWG20/7	3 x 0.50	6.3	29.9	47
0044735	5 x AWG20/7	5 x 0.50	7.3	49.2	72
0044738	8 x AWG20/7	8 x 0.50	8.5	70.8	102
0044850	7 x AWG18/19	7 x 1.00	8.9	93.2	160.8
0044851	10 x AWG18/19	10 x 1.00	11.5	130.9	200

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 152 m; Drum 305 m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® LiYCY (TP) A refer to page 302

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- KS 15 cable shears
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® LIYCY (TP) A

Screened data transmission cable with colour code acc. to DIN 47100 and twisted pairs - UL/CSA recognized



### Info

- A for Advanced here: UL and CSA certifications

### Benefits

- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- For the North American market
- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.

### Product features

- Flame-retardant acc. to IEC 60332-1-2, UL VW-1 & CSA FT 1

### Norm references / Approvals

- UL AWM Style 2464
- CSA AWM I/II A
- UL File No. E63634

### Product Make-up

- Multi-wire strand made of tinned copper wires
  - Core insulation made of PVC
  - TP structure
  - Tinned-copper braiding
  - Outer sheath made of special PVC compound
- Outer sheath colour: dark grey (RAL 7005)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

DIN 47100 without colour repetition, refer to Appendix T9



#### Peak operating voltage

(not for power applications)  
300 V  
UL/CSA: 300 V



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

1500 V



#### Temperature range

Occasional flexing: -5°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LIYCY (TP) A</b>				
0066202	2 x 2 x AWG26/7	5.5	18	45.9
0066204	4 x 2 x AWG26/7	6.4	24	58
0066205	5 x 2 x AWG26/7	6.6	30	58
0066208	8 x 2 x AWG26/7	7.9	53	85
0066210	10 x 2 x AWG26/7	8.7	55	106
0066212	12 x 2 x AWG26/7	8.9	64	113
0066216	16 x 2 x AWG26/7	10.2	87	149
0066232	2 x 2 x AWG24/7	6.1	24.5	57
0066233	3 x 2 x AWG24/7	6.7	28.9	62
0066234	4 x 2 x AWG24/7	7.2	33.5	70
0066235	5 x 2 x AWG24/7	7.5	46.3	91
0066238	2 x 2 x AWG22/7	7.4	38	45
0066239	3 x 2 x AWG22/7	8.1	45.1	64
0066240	4 x 2 x AWG22/7	8.8	54.6	75
0066242	2 x 2 x AWG20/7	8.2	49.7	93
0066243	3 x 2 x AWG20/7	9.1	60.1	102
0066244	4 x 2 x AWG20/7	10.2	78.7	120
0066262	2 x 2 x AWG19/19	8.7	65.2	140

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 152 m; Drum 305 m

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® FD CP (TP) plus refer to page 309

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® 300 / UNITRONIC® 300 S

Control and signal cables with small cross sections - UL/CSA listed

**i Info**

- Shielded Version:  
Formerly UNITRONIC® 300 CY,  
now UNITRONIC® 300 S



### Benefits

- Wide application range due to multiple certifications
- Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)

### Application range

- Control and signal cables for internal and external wiring
- Process control; electrical equipment; industrial machinery; low-voltage control interconnect
- For the North American market
- Thanks to the DIRECT BURIAL approval, direct burial of versions with the nominal conductor cross sections 18 AWG and 16 AWG is normatively permitted in the USA

### Product features

- CMG (for USA and Canada) and PLTC (for USA) for tray use in North America (24 AWG has got no PLTC certification)
- PLTC-ER & ITC-ER ("ER" = Exposed Run: According to NEC/ NFPA 70 for unprotected transitions of the cable, each not longer than 1.8 m or 6 ft., outside of trays and in the USA) for 18 AWG and 16 AWG
- UV-resistant UL SUN RES
- DIRECT BURIAL certification for 18 AWG & 16 AWG for normatively permitted, direct burial in the USA
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Norm references / Approvals

- UL: CMG per UL 444; PLTC-ER per UL 13 (18 AWG + 16 AWG); PLTC (not for 24 AWG); ITC-ER per UL 2250 (18 AWG + 16 AWG); UL AWM Style 2464
- According to NEC/ NFPA 70, 2014 HANDBOOK, ARTICLE 501, II., 501.10, (B), (1), and apart from any kind of "Flexible Connections", suitability for Class I, Division 2 in the USA, and that for all versions with ITC-ER as per NEC 2014 ARTICLE 727.4 and in conjunction with additional UL listed components as well as for all versions with PLTC or PLTC-ER in line with the provisions of NEC 2014 ARTICLE 725 and in mandatory conjunction with tray use and additional, UL listed components
- Canada: c(UL) CMG FT4, CSA AWM I/II A/B FT1
- Oil-resistant according to UL OIL RES I

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation made of PVC compound
- UNITRONIC® 300 S: with overall foil tape wrapping, drain wire, tin-plated copper braiding (75 % coverage)
- Outer jacket: Specially Formulated PVC
- Color of the outer jacket: Dark gray (similar to RAL 7005)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> refer to Appendix T9
	<b>Conductor stranding</b> Fine wire
	<b>Torsion movement in WTG</b> TW-0 & TW-1, refer to Appendix T0
	<b>Minimum bending radius</b> During installation: 4 x cable diameter Screened: 6 x outer diameter
	<b>Nominal voltage</b> according to UL: 300 V IEC: not for power transmission
	<b>Test voltage</b> 1500 V
	<b>Temperature range</b> Occasional flexing: -25°C to +105°C (AWM for USA: +80°C) Fixed installation: -40°C to +105°C (AWM for USA: +80°C)

Article number	Article designation	Number of cores and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® 300</b>					
301602	UNITRONIC® 300	2 x AWG16	6.7	25	83
301802	UNITRONIC® 300	2 x AWG18	6.1	18.3	61
302006	UNITRONIC® 300	6 x AWG20	7.5	29.5	97
302204	UNITRONIC® 300	4 x AWG22	5	13.7	33
302210	UNITRONIC® 300	10 x AWG22	7	34.896	67
<b>UNITRONIC® 300 S</b>					
301602S	UNITRONIC® 300 S	2 x AWG16	7.6	50.6	101
301606S	UNITRONIC® 300 S	6 x AWG16	9.9	105.7	210
301802S	UNITRONIC® 300 S	2 x AWG18	6.8	37.2	75
301803S	UNITRONIC® 300 S	3 x AWG18	7.3	49.1	85
301804S	UNITRONIC® 300 S	4 x AWG18	7.9	59.6	104
302002S	UNITRONIC® 300 S	2 x AWG20	6.3	28.3	60
302004S	UNITRONIC® 300 S	4 x AWG20	7.3	40.2	88
302006S	UNITRONIC® 300 S	6 x AWG20	8.4	55.1	119
302206S	UNITRONIC® 300 S	6 x AWG22	6.4	35.7	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 152 m; Drum 305 m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® 300 STP refer to page 304

### Accessories

- SKINTOP® ST-M refer to page 712



## UNITRONIC® 300 STP

Screened control and signal cables with small cross sections and twisted pairs - UL/CSA listed



### Benefits

- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Control and signal cables for internal and external wiring
- Process control; electrical equipment; industrial machinery; low-voltage control interconnect
- Wiring of devices, machines and plants intended for export to the North American market or countries where UL-/CSA certified cables are used.
- For the North American market
- Thanks to the DIRECT BURIAL approval, direct burial of versions with the nominal conductor cross section 18 AWG is normatively permitted in the USA

### Product features

- CMG (for USA and Canada) and PLTC (for USA) for tray use in North America (24 AWG has got no PLTC certification)
- PLTC-ER & ITC-ER ("ER" = Exposed Run: In the USA, unprotected transitions of the cable outside of trays, each transition with a max. length of 1.8 m or 6 ft., according to NEC/ NFPA 70) for 18 AWG
- UV-resistant UL SUN RES
- DIRECT BURIAL-Zertifizierung for 18 AWG for normatively permitted, direct burial in the USA

### Norm references / Approvals

- UL: CMG per UL 444; PLTC-ER per UL 13 (18 AWG); PLTC (not for 24 AWG); ITC-ER per UL 2250 (18 AWG); UL AWM Style 2464
- According to NEC/ NFPA 70, 2014 HANDBOOK, ARTICLE 501, II., 501.10, (B), (1), and apart from any kind of "Flexible Connections", suitability for Class I, Division 2 in the USA, and that for all versions with ITC-ER as per NEC 2014 ARTICLE 727.4 and in conjunction with additional UL listed components as well as for all versions with PLTC or PLTC-ER in line with the provisions of NEC 2014 ARTICLE 725 and in mandatory conjunction with tray use and additional, UL listed components
- Canada: c(UL) CMG FT4, CSA AWM I/II A/B FT1
- Oil-resistant according to UL OIL RES I

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Core insulation made of PVC
- TP structure
- Overall foil tape wrapping, drain wire, tin-plated copper braiding (75 % coverage)
- Outer jacket: Specially Formulated PVC, dark gray (similar to RAL 7005)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

Pair 1: black, red  
Pair 2: black, white  
Pair 3: black, green  
Pair 4: black, blue  
Pair 5: black, yellow  
Pair 6: black, brown  
Exception single-paired, 24-22 AWG: black, white



#### Peak operating voltage

(not for power applications)  
300 V  
UL/CSA: 300 V



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

1500 V



#### Temperature range

Occasional flexing: -25°C to +105°C  
(AWM for USA: +80°C)  
Fixed installation: -40°C to +105°C  
(AWM for USA: +80°C)

Article number	Number of pairs and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® 300 STP</b>				
302402STP	2 x 2 x 24 AWG	6.5	25.5	59
302403STP	3 x 2 x 24 AWG	6.8	31.1	65
302406STP	6 x 2 x 24 AWG	8.7	49.7	106
302201STP	1 x 2 x 22 AWG	5.1	19.1	39
302203STP	3 x 2 x 22 AWG	7.7	38.2	71
302206STP	6 x 2 x 22 AWG	9.6	70	125
302002STP	2 x 2 x 20 AWG	9.4	47.7	128
302003STP	3 x 2 x 20 AWG	10.5	68.2	161
302006STP	6 x 2 x 20 AWG	13.3	106.5	321
301801STP	1 x 2 x 18 AWG	6.8	37.8	106
301802STP	2 x 2 x 18 AWG	10.7	66.2	122
301806STP	6 x 2 x 18 AWG	14.6	153.1	324

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 152 m; Drum 305 m  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® FD CP (TP) plus refer to page 309

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® FD

Highly flexible data transmission cable with PVC outer sheath for power chain use



### Benefits

- Well-proven and reliable
- Optimized cable construction for power chain use
- Cost-effective solution

### Application range

- Automated production processes require data transmission cables that offer high flexibility and durability
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines

### Product features

- Low-adhesive surface
- Flame-retardant according IEC 60332-1-2
- Designed for 2 up to 8 million bending/unbending cycles in power chain applications

### Norm references / Approvals

- Based on VDE 0812
- For travel distances up to 10 m.
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation made of PVC
- Non-woven wrapping
- Outer sheath made of PVC  
Outer sheath colour: grey (RAL 7001)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> C/C: approx. 100 nF/km
	<b>Peak operating voltage</b> (not for power applications) 350 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Stranded, extra-fine wire
	<b>Minimum bending radius</b> Flexing: 5 x outer diameter Fixed installation: 3 x outer diameter
	<b>Test voltage</b> 1500 V
	<b>Temperature range</b> Flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® FD</b>				
0027841	3 x 0.14	3.9	4.2	26
0027842	4 x 0.14	4.2	5.6	31
0027843	5 x 0.14	4.5	7	35
0027844	7 x 0.14	5.1	9.8	50
0027845	10 x 0.14	6.1	14	63
0027846	14 x 0.14	6.2	19.6	77
0027847	18 x 0.14	6.8	25.2	91
0027848	25 x 0.14	8.3	35	125
0027855	2 x 0.25	4.3	5	27
0027856	3 x 0.25	4.5	7.5	33
0027857	4 x 0.25	4.9	10	40
0027858	5 x 0.25	5.3	12.5	51
0027859	7 x 0.25	6.1	17.5	51
0027860	10 x 0.25	7.4	25	84
0027861	14 x 0.25	7.5	35	108
0027863	18 x 0.25	8.5	45	130
0027865	25 x 0.25	10.4	62.5	178
0027870	2 x 0.34	4.7	6.8	30
0027871	3 x 0.34	5	10.2	43
0027872	4 x 0.34	5.4	13.6	57
0027873	5 x 0.34	5.9	17	65
0027874	7 x 0.34	6.8	23.8	85
0027875	10 x 0.34	8.5	34	117
0027876	14 x 0.34	8.6	47.6	151
0027877	18 x 0.34	9.7	61.2	182
0027878	25 x 0.34	11.9	85	250

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC FD 810 refer to page 119
- UNITRONIC® FD CY refer to page 306
- UNITRONIC® FD P plus refer to page 307

### Accessories

- SILVYN® CHAIN
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® FD CY

Screened highly flexible data transmission cable with PVC outer sheath for power chain use



### Benefits

- Well-proven and reliable
- Optimized cable construction for power chain use
- Cost-effective solution
- Overall braid minimises electrical interference

### Application range

- Automated production processes require data transmission cables that offer high flexibility and durability, as well as excellent screening
- Suitable for use in measuring, control and regulating circuits
- Assembly lines, production lines, in all kinds of machines

### Product features

- Low-adhesive surface
- Flame-retardant according IEC 60332-1-2
- Designed for 2 up to 8 million bending/unbending cycles in power chain applications

### Norm references / Approvals

- Based on VDE 0812
- For travel distances up to 10 m.
- For use in power chains: Please comply with assembly guideline Appendix T3

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation made of PVC
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath made of PVC  
Outer sheath colour: grey (RAL 7001)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> C/C approx. 110 nF/km C/S: approx. 110 nF/km
	<b>Peak operating voltage</b> (not for power applications) 350 V
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Stranded, extra-fine wire
	<b>Minimum bending radius</b> Flexing: 7.5 x outer diameter Fixed installation: 4 x Outer diameter
	<b>Test voltage</b> 1500 V
	<b>Temperature range</b> Flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® FD CY</b>				
0027411	3 x 0.14	4.5	14.1	37
0027412	4 x 0.14	4.8	15.5	42
0027413	5 x 0.14	5.1	18.3	47
0027414	7 x 0.14	5.7	27.6	70
0027416	10 x 0.14	6.7	39.3	90
0027418	14 x 0.14	6.8	45.3	106
0027420	18 x 0.14	7.4	54.1	123
0027422	25 x 0.14	8.9	68.4	163
0027425	2 x 0.25	4.9	14.9	39
0027426	3 x 0.25	5.1	18.8	46
0027427	4 x 0.25	5.5	21.3	53
0027428	5 x 0.25	5.9	31	71
0027429	7 x 0.25	6.7	39.6	75
0027431	10 x 0.25	8.2	53.9	114
0027434	14 x 0.25	8.3	64.2	141
0027436	18 x 0.25	9.1	78.4	167
0027438	25 x 0.25	11	101	221
0027440	2 x 0.34	5.3	16.1	47
0027441	3 x 0.34	5.6	28.7	63
0027442	4 x 0.34	6	35.7	81
0027443	5 x 0.34	6.5	39.1	89
0027444	7 x 0.34	7.4	52.7	117
0027446	10 x 0.34	9.1	67.4	155
0027448	14 x 0.34	9.2	85.3	194
0027450	18 x 0.34	10.3	99.7	225
0027452	25 x 0.34	12.5	155	327

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC FD 810 CY refer to page 120
- UNITRONIC® FD CP plus refer to page 308

### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SILVYN® CHAIN
- STAR STRIP stripping tool refer to page 1000



## UNITRONIC® FD P plus

Highly flexible data cable with PUR jacket and AWM certification for US & Canadian use

**Info**

- Flexible at low temperatures
- Low capacitance
- Halogen-free



### Benefits

- Well-proven and reliable
- Wide temperature range for applications in harsh climatic environments
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, 2015 Ed., 12.9.2 (condition 3 under 12.9.2: Through 1 mm<sup>2</sup> and <16 AWG), but not inside drag chains or on machines since AWM style is limited to internal wiring

### Application range

- Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions.
- Multifunctional-use, e.g. for packaging industry and storage and retrieval units
- Suitable for use in measuring, control and regulating circuits
- Drag chain use - in case of horizontal installation travel distances up to 100 m
- For use in drag chains: Please respect the assembly guidelines listed in Appendix T3

### Product features

- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains
- Flame retardance ratings: IEC 60332-1-2, FT2 (Horizontal flame test)
- Halogen-free, has low capacitance and is flexible down to -40°C
- Oil-resistant
- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant

### Norm references / Approvals

- Based on VDE 0812
- CULus AWM/ Recognized certification (by UL/ UL file no. for Stuttgart-based U.I. Lapp GmbH: E63634): UL AWM Style 21576 acc. to UL 758 and AWM A/B I/II to CSA C22.2 No. 210-11

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin
- Non-woven wrapping
- Outer sheath made of special PUR compound
- Outer sheath colour: grey (RAL 7001)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 60 nF/km
- Peak operating voltage**  
Peak: 250 V (not for power current use or continuous operating voltage to ground above 49VAC or 74VDC)
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Stranded, extra-fine wire
- Minimum bending radius**  
Flexing: 5 x outer diameter  
Fixed installation: 3 x outer diameter
- Test voltage**  
1500 V
- Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® FD P plus</b>				
0028650	3 x 0.14	3.9	4.1	25
0028651	4 x 0.14	4.2	5.6	30
0028652	5 x 0.14	4.5	7	34
0028653	7 x 0.14	5.1	9.8	48
0028654	10 x 0.14	6.1	14	60
0028656	18 x 0.14	6.8	25.2	87
0028657	25 x 0.14	8.3	35	120
0028658	2 x 0.25	4.3	5	27
0028659	3 x 0.25	4.5	7.5	32
0028660	4 x 0.25	4.9	10	39
0028662	7 x 0.25	6.1	17.5	61
0028663	10 x 0.25	7.4	25	80
0028664	14 x 0.25	7.5	35	103
0028665	18 x 0.25	8.5	45	125
0028666	25 x 0.25	10.4	62.5	171
0028667	2 x 0.34	4.7	6.8	33
0028668	3 x 0.34	5	10.2	41
0028669	4 x 0.34	5.4	13.6	55
0028670	5 x 0.34	5.9	17	62
0028671	7 x 0.34	6.8	23.8	80
0028672	10 x 0.34	8.5	34	110
0028673	14 x 0.34	8.6	47.6	144
0028674	18 x 0.34	9.7	61.2	175
0028675	25 x 0.34	11.9	85	239

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ÖLFLEX® CLASSIC FD 810 P refer to page 131
- UNITRONIC® FD CP plus refer to page 308

### Accessories

- SILVYN® CHAIN
- SMART STRIP stripping tool



## UNITRONIC® FD CP plus

Screened highly flexible data transmission cable with PUR outer sheath - UL/CSA-listed



### Benefits

- Wide temperature range for applications in harsh climatic environments
- Overall braid minimises electrical interference
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, 2015 Ed., 12.9.2 (condition 3 under 12.9.2: Through 1 mm<sup>2</sup> and <16 AWG), but not inside drag chains or on machines since AWM style is limited to internal wiring
- **ATTENTION:** 3<sup>rd</sup> condition acc. to NFPA 79, 2015 Ed., 12.9.2, not applicable for this product before May 2016

### Application range

- Multifunctional-use, e.g. for packaging industry and storage and retrieval units
- Suitable for use in measuring, control and regulating circuits
- Drag chain use - in case of horizontal installation travel distances up to 100 m
- For use in drag chains: Please respect the assembly guidelines listed in Appendix T3
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free, has low capacitance and is flexible down to -40°C
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains
- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant
- Flame retardance ratings: IEC 60332-1-2, VW-1 acc. UL 1581, FT2 (Horizontal Flame Test)
- Designed for 5 up to 10 million bending/unbending cycles (constant flex) in drag chains

### Norm references / Approvals

- CULus CMX (Communications Cable listing) acc. to UL 444 and CSA C22.2 No.214, certified by UL (UL file no. for Stuttgart-based U.I. Lapp GmbH: E236660)
- CULus AWM/ Recognized certification (by UL/ UL file no. for Stuttgart-based U.I. Lapp GmbH: E63634): UL AWM Style 21576 acc. to UL 758 and AWM A/B I/II to CSA C22.2 No. 210-11

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath made of special PUR compound  
Outer sheath colour: grey (RAL 7001)

### Info

- Flexible at low temperatures
- Low capacitance
- Halogen-free

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Core identification code**  
DIN 47100, refer to Appendix T9
- Mutual capacitance**  
C/C approx. 60 nF/km
- Peak operating voltage**  
Peak: 250 V (not for power current use or continuous operating voltage to ground above 49VAC or 74VDC)
- Inductivity**  
approx. 0.65 mH/km
- Conductor stranding**  
Stranded, extra-fine wire
- Torsion movement in WTG**  
TW-0 & TW-2, refer to Appendix T0
- Minimum bending radius**  
Flexing: 7.5 x outer diameter  
Fixed installation: 4 x outer diameter
- Test voltage**  
Core/core: 1500 V rms  
Core/screen: 500 V
- Temperature range**  
Flexing: -40°C to +80°C  
Fixed installation: -40°C to +80°C  
UL/CSA CMX: +75°C  
UL AWM: +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® FD CP plus</b>				
0028880	2 x 0.14	4.3	11.2	33
0028881	3 x 0.14	4.5	14.1	36
0028882	4 x 0.14	4.8	15.5	40
0028883	5 x 0.14	5.1	18.3	45
0028884	7 x 0.14	5.7	27.8	67
0028885	10 x 0.14	6.7	39.3	87
0028886	14 x 0.14	6.8	45.3	102
0028887	18 x 0.14	7.4	54.1	118
0028888	25 x 0.14	8.9	68.4	157
0028889	2 x 0.25	4.9	14.9	38
0028890	3 x 0.25	5.1	18.8	45
0028891	4 x 0.25	5.5	21.3	52
0028892	5 x 0.25	5.9	31	69
0028893	7 x 0.25	6.7	39.6	84
0028894	10 x 0.25	8.2	53.9	109
0028895	14 x 0.25	8.3	64.2	136
0028896	18 x 0.25	9.1	78.4	161
0028897	25 x 0.25	11	101	213
0028898	2 x 0.34	5.3	18.1	45
0028899	3 x 0.34	5.6	28.7	61
0028900	4 x 0.34	6	35.7	77
0028901	5 x 0.34	6.5	39.1	83
0028902	7 x 0.34	7.4	52.7	109
0028903	10 x 0.34	9.1	67.4	147
0028904	14 x 0.34	9.2	85.8	186
0028905	18 x 0.34	10.3	99.7	216
0028906	25 x 0.34	12.5	155	314

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.





## UNITRONIC® FD CP (TP) plus

Screened highly flexible data transmission cable with PUR outer sheath and twisted pairs - UL/CSA-listed

**Info**

- Flexible at low temperatures
- Low capacitance
- Halogen-free



### Benefits

- Wide temperature range for applications in harsh climatic environments
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- UL AWM voltage rating 1000V in case of internal wiring allows for internal laying next to power cables with applied UL rating of 1kV
- In the USA inside of industrial machines, per NFPA 79, 2015 Ed., 12.9.2 (condition 3 under 12.9.2: Through 1 mm<sup>2</sup> and <16 AWG), but not inside drag chains or on machines since AWM style is limited to internal wiring
- **ATTENTION:** 3<sup>rd</sup> condition acc. to NFPA 79, 2015 Ed., 12.9.2, not applicable for this product before May 2016

### Application range

- Suitable for use in measuring, control and regulating circuits
- Linear robots, automated handling equipment
- Drag chain use - in case of horizontal installation travel distances up to 100 m
- For use in drag chains: Please respect the assembly guidelines listed in Appendix T3
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free, has low capacitance and is flexible down to -40°C
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains
- Low-adhesive surface, resistant to hydrolysis and microbes, oil resistant
- Flame retardance ratings: IEC 60332-1-2, VW-1 acc. UL 1581, FT2 (Horizontal Flame Test)
- Designed for 10 million alternating bending cycles and horizontal travel distances up to 100 meter

### Norm references / Approvals

- CULus CMX (Communications Cable listing) acc. to UL 444 and CSA C22.2 No.214, certified by UL (UL file no. for Stuttgart-based U.I. Lapp GmbH: E236660)
- CULus AWM/ Recognized certification (by UL/ UL file no. for Stuttgart-based U.I. Lapp GmbH: E63634): UL AWM Style 21576 acc. to UL 758 and AWM A/B I/II to CSA C22.2 No. 210-11

### Product Make-up

- Extra-fine wire strand made of bare copper wires
- Core insulation: Based on Polyolefin TP structure
- Non-woven wrapping
- Tinned-copper braiding
- Outer sheath made of special PUR compound  
Outer sheath colour: grey (RAL 7001)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> DIN 47100, refer to Appendix T9
	<b>Mutual capacitance</b> Up to 0.5 mm <sup>2</sup> : 60 nF/km Up to 1.0 mm <sup>2</sup> : 70 nF/km
	<b>Peak operating voltage</b> Peak: 250 V (not for power current use or continuous operating voltage to ground above 49VAC or 74VDC)
	<b>Inductivity</b> approx. 0.65 mH/km
	<b>Conductor stranding</b> Stranded, extra-fine wire From 0.5 mm <sup>2</sup> : extra-fine wire according to IEC 60228 class 6
	<b>Torsion movement in WTG</b> TW-0 & TW-2, refer to Appendix T0
	<b>Minimum bending radius</b> Flexing: 7.5 x outer diameter Fixed installation: 4 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 500 V
	<b>Temperature range</b> Flexing: -40°C to +80°C Fixed installation: -40°C to +80°C UL/CSA CMX: +75°C UL AWM: +80 °C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® FD CP (TP) plus</b>				
0030910	2 x 2 x 0.14	5.9	19.4	42
0030911	3 x 2 x 0.14	6.2	23.4	53
0030912	4 x 2 x 0.14	6.7	27.1	59
0030913	5 x 2 x 0.14	7.3	37.4	75
0030914	6 x 2 x 0.14	7.5	49.4	91
0030915	8 x 2 x 0.14	8.8	54.8	109
0030916	10 x 2 x 0.14	10.1	60.1	120
0030962	1 x 2 x 0.25	4.9	14	27
0030919	2 x 2 x 0.25	6.5	32	60
0030920	3 x 2 x 0.25	6.8	38.4	72
0030921	4 x 2 x 0.25	7.4	43.2	85
0030922	5 x 2 x 0.25	8.3	51.5	103
0030923	6 x 2 x 0.25	8.9	71.8	131
0030924	8 x 2 x 0.25	10.4	74.4	155
0030925	10 x 2 x 0.25	12	90	186
0030926	14 x 2 x 0.25	12.2	111.2	219
0030963	1 x 2 x 0.34	5.3	20	36
0030928	2 x 2 x 0.34	7.1	41	81
0030929	3 x 2 x 0.34	7.5	52	101
0030930	4 x 2 x 0.34	8.4	59	119
0030932	6 x 2 x 0.34	10.1	86.2	165
0030934	10 x 2 x 0.34	13.8	131.1	274
0030964	1 x 2 x 0.5	5.9	22	47

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
0030937	2 x 2 x 0.5	8.3	50	99
0030938	3 x 2 x 0.5	8.8	71.8	130
0030939	4 x 2 x 0.5	9.8	74.4	148
0030940	5 x 2 x 0.5	10.7	84.5	168
0030941	6 x 2 x 0.5	11.8	99.6	194
0030942	8 x 2 x 0.5	14	144.3	284
0030943	10 x 2 x 0.5	15.9	176	343
0030944	14 x 2 x 0.5	16.2	215.4	401
0030965	1 x 2 x 0.75	6.3	34	61
0030946	2 x 2 x 0.75	8.9	60	112
0030947	3 x 2 x 0.75	9.7	85.7	157
0030948	4 x 2 x 0.75	10.6	93.6	172
0030950	6 x 2 x 0.75	12.8	130.4	231
0030951	8 x 2 x 0.75	15.2	192.2	342
0030952	10 x 2 x 0.75	17.3	258	466
0030953	14 x 2 x 0.75	18.2	316.6	545
0030955	1 x 2 x 1	6.7	42	71
0030956	2 x 2 x 1	9.7	73	129
0030957	3 x 2 x 1	10.4	93.6	169
0030958	4 x 2 x 1	11.6	117.8	204
0030959	5 x 2 x 1	12.7	139	237

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SILVYN® CHAIN
- STAR STRIP stripping tool refer to page 1000



## RE-2Y(ST)Yv

Instrumentation cable with reinforced outer sheath



### Benefits

- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- Low capacitance due to polyolefin-based insulation

### Application range

- In measurement and control engineering
- Intended for use when modern process computers have to process large volumes of data, e.g. high-capacity computer systems in waste incineration plants or sewage treatment plants
- These cables are suitable for fixed installation in dry or damp rooms and, in case of the black jacketed versions, also for outdoor operation, while they all feature enhanced suitability for direct burial in the ground

### Product features

- Outer sheath colour: black for outdoor applications or blue for intrinsically safe systems
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on EN 50288-7

### Product Make-up

- 7-wire bare stranded copper conductor, core insulation made of polyethylene (PE), cores twisted into pairs, pairs stranded in layers
- Complete stranding contains 1 core for communication (core colour orange); the communication core is omitted on single-pair versions
- Foil wrapping, static screening made of aluminium-laminated plastic film with tinned drain wire
- Reinforced outer sheath made of PVC
- Outer sheath colour: black (RAL 9005) or blue (RAL 5015)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> a-core: black; b-core: white with consecutive numbers: 1-1, 2-2, 3-3, 4-4 etc. Three-way version: black, white, red
	<b>Mutual capacitance</b> (guideline values at 800 Hz): C/C: 0.5 mm <sup>2</sup> : max. 75 nF/km (guideline values at 800 Hz): C/C: 1.3 mm <sup>2</sup> : max. 100 nF/km
	<b>Peak operating voltage</b> (not for power applications) 300 V
	<b>Conductor resistance</b> 0.5 mm <sup>2</sup> : max. 39.2 ohm/km 1.3 mm <sup>2</sup> : max. 14.3 ohm/km
	<b>Minimum bending radius</b> Occasional flexing: 15 x outer diameter Fixed installation: 7.5 x outer diameter
	<b>Short-range crosstalk attenuation</b> At 60 kHz: min. 0.88 dB/km
	<b>Test voltage</b> Core/core: 2000 V Core/screen: 1000 V
	<b>Characteristic impedance</b> approx. 100 ohms
	<b>Temperature range</b> Occasional flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>RE-2Y(ST)Yv</b>				
<b>0.5 mm<sup>2</sup> blue</b>				
0032400	1 x 2 x 0.5	7.2	15	74
0032401	2 x 2 x 0.5	9.5	30	117
<b>0.5 mm<sup>2</sup> black</b>				
0032411	1 x 2 x 0.5	7.2	15	74
0032412	2 x 2 x 0.5	9.5	30	117
0032413	4 x 2 x 0.5	11.1	50	140
0032415	10 x 2 x 0.5	14.5	110	220
0032418	20 x 2 x 0.5	17.9	210	385
0032420	36 x 2 x 0.5	22.6	370	656
0032421	48 x 2 x 0.5	27.1	490	854
<b>1.3 mm<sup>2</sup> blue</b>				
0032422	1 x 2 x 1.3	8.6	31	102
0032423	2 x 2 x 1.3	11.5	62	161
0032424	4 x 2 x 1.3	13.8	114	230
0032428	24 x 2 x 1.3	27.5	684	952
<b>1.3 mm<sup>2</sup> black</b>				
0032430	1 x 2 x 1.3	8.6	31	102
0032431	2 x 2 x 1.3	11.5	62	161
0032432	4 x 2 x 1.3	13.8	114	230
0032433	8 x 2 x 1.3	16.9	218	377
0032434	12 x 2 x 1.3	19.3	322	520
0032436	24 x 2 x 1.3	27.5	684	952

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.



## RE-2Y(ST)Yv PiMF

Instrumentation cable with reinforced outer sheath and pairs in metalfoil



### Benefits

- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- Low capacitance due to polyolefin-based insulation

### Application range

- In measurement and control engineering
- Intended for use when modern process computers have to process large volumes of data, e.g. high-capacity computer systems in waste incineration plants or sewage treatment plants
- These cables are suitable for fixed installation in dry or damp rooms and, in case of the black jacketed versions, also for outdoor operation, while they all feature enhanced suitability for direct burial in the ground

### Product features

- Computer cable with screened pairs and reinforced outer sheath
- Outer sheath colour: black for outdoor applications or blue for intrinsically safe systems
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on EN 50288-7

### Product Make-up

- 7-wire bare stranded copper conductor, core insulation made of polyethylene (PE), cores twisted into pairs, pair screening made of aluminium-laminated plastic foil with bare copper drain wire, PiMF marking using numbered foil, pairs stranded in layers
- Complete stranding contains 1 core for communication (core colour orange); the communication core is omitted on single-pair versions
- Aluminium-laminated plastic foil static screen with tinned drain wire
- Reinforced outer sheath made of PVC
- Outer sheath colour: black (RAL 9005) or blue (RAL 5015)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

a-core: black; b-core: white with consecutive numbers: 1-1, 2-2, 3-3, 4-4 etc.



#### Mutual capacitance

(at 800 Hz max):  
C/C: 0.5 mm<sup>2</sup>: 75 nF/km  
(at 800 Hz max):  
C/C: 1.3 mm<sup>2</sup>: 100 nF/km



#### Peak operating voltage

(not for power applications)  
300 V



#### Inductivity

max. 0.75 mH/km



#### Conductor resistance

0.5 mm<sup>2</sup>: max. 39.2 ohm/km  
1.3 mm<sup>2</sup>: max. 14.2 ohm/km



#### Minimum bending radius

Occasional flexing: 15 x outer diameter  
Fixed installation: 7.5 x outer diameter

#### Short-range crosstalk attenuation

At 60 kHz: min. 1.02 dB/km



#### Test voltage

Core/core: 2000 V  
Core/screen: 600 V



#### Characteristic impedance

approx. 100 ohms



#### Temperature range

Occasional flexing: -5°C to +50°C  
Fixed installation: -40°C to +80°C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>RE-2Y(ST)Yv PiMF</b>				
<b>0.5 mm<sup>2</sup> blue</b>				
0032438	2 x 2 x 0.5	10	35	128
0032442	12 x 2 x 0.5	16.7	161	325
<b>0.5 mm<sup>2</sup> black</b>				
0032448	2 x 2 x 0.5	10	35	128
0032449	4 x 2 x 0.5	11.6	60	170
0032450	8 x 2 x 0.5	14.4	121	230
0032451	10 x 2 x 0.5	15.9	136	270
0032453	16 x 2 x 0.5	19.1	212	430
<b>1.3 mm<sup>2</sup> blue</b>				
0032458	2 x 2 x 1.3	12.4	68	184
<b>1.3 mm<sup>2</sup> black</b>				
0032464	2 x 2 x 1.3	12.4	68	184
0032465	4 x 2 x 1.3	14.2	124	269
0032466	8 x 2 x 1.3	18.5	239	442
0032467	12 x 2 x 1.3	22.2	353	593

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- KT cable shears refer to page 999



## RD-Y(ST)Y

Static screened data transmission cable for control technology



### Benefits

- In order to reduce costs, the multi-wire stranded copper cable has been provided for Maxi TERMI-POINT® connecting technology. This wiring method (semi-automatic) considerably reduces the time and the costs required for installation.
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- RD-Y(ST)Y is used as a data transmission cable for applications such as monitoring systems and control units
- Measurement, control and regulation technology and also in control rooms of power plants and industrial facilities.
- Suitable for transmission of analog and digital signals up to a frequency of about 10 kHz
- Designed for fixed installations in enclosed rooms.

### Product features

- Outer sheath colour: grey or blue for intrinsically safe systems
- Variant with 2 double cores twisted as star quad
- Flame retardant acc. to IEC 60332-1-2

### Norm references / Approvals

- Based on DIN VDE 0815

### Product Make-up

- 7-wire bare stranded copper conductor, core insulation made of PVC
- Cores twisted into pairs, 4 pairs twisted into a bundle, bundles in layers, bundles labelled using numbered foil
- Aluminium-laminated plastic foil static screen with tinned drain wire
- Outer sheath made of PVC
- Outer sheath colour: grey

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Core identification code</b> Pair no. 1: a-conductor: blue b-conductor: red Pair no. 2: a-conductor: grey b-conductor: yellow Pair no. 3: a-core: green b-core brown Pair no. 4: a-core: white b-core black
	<b>Mutual capacitance</b> At 800 Hz: ≤ 100 nF/km The values may be exceeded by 20 % on cables with up to 4 double cores.
	<b>Peak operating voltage</b> (not for power applications) 225 V
	<b>Conductor resistance</b> (loop): ≤ 73.6 Ohm/km
	<b>Cable attenuation/attenuation</b> At 1 kHz: approx. 1.2 dB/km At 10 kHz: approx. 2.8 dB/km
	<b>Minimum bending radius</b> Occasional flexing: 15 x outer diameter Fixed installation: 7.5 x outer diameter
	<b>Short-range crosstalk attenuation</b> At 10 kHz and 500 m cable length: min. 60 dB
	<b>Test voltage</b> C/C: 2000 V C/S: 2000 V
	<b>Characteristic impedance</b> At 1 kHz: approx. 370 ohm At 10 kHz: approx. 130 ohm
	<b>Temperature range</b> Occasional flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Number of pairs and mm <sup>2</sup> per conductor	Number of bundles	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>RD-Y(ST)Y grey</b>					
0032470	2 x 2 x 0.5		6.5	25	65
0032471	4 x 2 x 0.5	1	9	45	110
0032472	8 x 2 x 0.5	2	11.5	85	180
0032474	16 x 2 x 0.5	4	15.5	165	310
0032475	24 x 2 x 0.5	6	19	245	450
0032477	48 x 2 x 0.5	12	25.5	485	810

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
MAXI-TERMI-POINT® is a registered trademark of AMP  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- STAR STRIP stripping tool refer to page 1000
- KS 20 cable shears refer to page 999
- KT cable shears refer to page 999



## JE-Y(ST)Y...BD

Static screened installation cable for industrial electronics



### Info

- In accordance with DIN VDE 0815

## JE-Y(ST)Y...BD EB

Static screened installation cable for industrial electronics



### Info

- Blue version:  
Hazard protection type -i- is required where there is a risk of explosion

### Benefits

- Perfect for cost-effective installation, e.g. connections with insulation displacement technology (IDC).
- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Connection cable for fixed installation in industrial control systems, as required in measurement, control, signalling and data applications
- Industrial electronics
- For fixed installation on and under plaster, in dry and damp rooms
- For outdoor use this cable should be installed under plaster only

### Product features

- The 2-pair version (2x2x0.8) is twisted into a star quad
- Flame-retardant according IEC 60332-1-2
- **JE-Y(ST)Y...BD EB:**  
For intrinsically safe circuits (type of protection i - intrinsic safety) according to IEC 60079-14:2013 / EN 60079-14:2014 / VDE 0165-1:2014, section 16.2.2

### Norm references / Approvals

- In accordance with DIN VDE 0815 type JE-Y(ST)Y...BD

### Product Make-up

#### JE-Y(ST)Y...BD

- Solid bare copper conductor
- Core insulation made of PVC
- 2 cores twisted into a pair, and 4 pairs into units (for 2 x 2 x 0.8 as star quad cable)
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

#### JE-Y(ST)Y...BD EB

- Solid bare copper conductor
- Core insulation made of PVC
- 2 cores twisted into a pair, and 4 pairs into units (for 2 x 2 x 0.8 as star quad cable)
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of PVC  
Outer sheath colour: sky blue (RAL 5015)

### Technical data



#### Classification

##### JE-Y(ST)Y...BD

ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable

##### JE-Y(ST)Y...BD EB

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



#### Core identification code

according to VDE 0815, refer to Appendix T10



#### Mutual capacitance

max. 100 nF/km



#### Peak operating voltage

(not for power applications) 225 V



#### Coupling

approx. 200 pF/100 m



#### Inductivity

approx. 0.65 mH/km



#### Conductor stranding

Single-wire (solid conductor)  
0.8 mm: 0.50 mm<sup>2</sup>



#### Minimum bending radius

Fixed installation: 6 x outer diameter



#### Test voltage

Core/core: 500 V  
Core/screen: 2000 V



#### Loop resistance

max. 73.2 Ohm/km



#### Temperature range

Occasional flexing: -5 °C to +50 °C  
Fixed installation: -30 °C to +70 °C

Article number	Number of cores and cable diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>JE-Y(ST)Y...BD</b>				
0034190	2 x 2 x 0.8	6	25	60
0034191	4 x 2 x 0.8	8.5	45	96
0034192	8 x 2 x 0.8	11	85	158
0034193	12 x 2 x 0.8	13	126	225
0034194	16 x 2 x 0.8	14.5	166	290
0034195	20 x 2 x 0.8	16	206	350
0034197	40 x 2 x 0.8	22	407	660
<b>JE-Y(ST)Y...BD EB, blue outer sheath</b>				
0034120	2 x 2 x 0.8	6	25	60
0034121	4 x 2 x 0.8	8.5	45	100
0034122	8 x 2 x 0.8	11	85	165
0034123	12 x 2 x 0.8	13	126	240
0034125	20 x 2 x 0.8	16	206	360
0034126	32 x 2 x 0.8	20	327	555

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.



**Info**

- In accordance with DIN VDE 0815

**Info**

- Blue version: Hazard protection type -i- is required where there is a risk of explosion



**JE-LiYCY...BD**

Screened data transmission cable for industrial electronics



**JE-LiYCY...BD EB**

Screened data transmission cable for industrial electronics



**Benefits**

- Can be used for Maxi TERMI-POINT® wiring
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

**Application range**

- Connection cable for use in electronics and in measurement, control and signal applications
- This cable is also used as a pulse and data transmission cable
- JE-LiYCY...BD has also proved to be an efficient connection cable for telephone systems, e.g. paging and intercom systems.
- For fixed installation on and under plaster, in dry and damp rooms
- For outdoor use this cable should be installed under plaster only

**Product features**

- The 2-pair version (2 x 2 x 0.5) is twisted into a star quad
- Flame-retardant according IEC 60332-1-2
- JE-LiYCY...BD EB:** For intrinsically safe circuits (type of protection i - intrinsic safety) according to IEC 60079-14:2013 / EN 60079-14:2014 / VDE 0165-1:2014, section 16.2.2

**Norm references / Approvals**

- In accordance with DIN VDE 0815 type JE-LiYCY...BD

**Product Make-up**

- JE-LiYCY...BD**
- 7-wire bare stranded copper conductor
  - Core insulation made of PVC
  - 2 cores twisted into a pair, and 4 pairs into units (for 2 x 2 x 0.5 as star quad cable)
  - Bundles twisted in layers, foil wrapping, screening braid made of tinned copper wires
  - Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

**JE-LiYCY...BD EB**

- 7-wire bare stranded copper conductor
- Core insulation made of PVC
- 2 cores twisted into a pair, and 4 pairs into units (for 2 x 2 x 0.5 as star quad cable)
- Bundles twisted in layers, foil wrapping, screening braid made of tinned copper wires
- Outer sheath made of PVC  
Outer sheath colour: sky blue (RAL 5015)

**Technical data**

**Classification**  
**JE-LiYCY...BD**  
 ETIM 5.0 Class-ID: EC000829  
 ETIM 5.0 Class-Description: Signal-/telecommunications cable  
**JE-LiYCY...BD EB**  
 ETIM 5.0 Class-ID: EC000830  
 ETIM 5.0 Class-Description: Data cable

**Core identification code**  
 according to VDE 0815, refer to Appendix T 10

**Mutual capacitance**  
 max. 100 nF/km

**Peak operating voltage**  
 (not for power applications) 225 V

**Coupling**  
 approx. 200 pF/100 m

**Inductivity**  
 approx. 0.65 mH/km

**Conductor stranding**  
 Multi-wire, 7 x 0.3mm

**Minimum bending radius**  
 Occasional flexing: 15 x outer diameter  
 Fixed installation: 5 x outer diameter

**Test voltage**  
 Core/core: 500 V  
 Core/screen: 2000 V

**Loop resistance**  
 max. 78.4 ohm/km

**Temperature range**  
 Occasional flexing: -5°C to +50°C  
 Fixed installation: -30°C to +70°C

Article number	Number of pairs and conductor cross section (mm <sup>2</sup> )	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>JE-LiYCY...BD</b>				
0034200	2 x 2 x 0.5	7.5	51	70
0034201	4 x 2 x 0.5	10	87	155
0034202	8 x 2 x 0.5	13	144	260
0034208	12 x 2 x 0.5	15.5	195	340
0034203	16 x 2 x 0.5	17	249	430
0034210	20 x 2 x 0.5	18.5	298	495
0034204	24 x 2 x 0.5	20.5	348	605
0034212	32 x 2 x 0.5	22.5	441	738
<b>JE-LiYCY...BD EB, blue outer sheath</b>				
0034220	2 x 2 x 0.5	7.5	51	95
0034221	4 x 2 x 0.5	10	87	155
0034222	8 x 2 x 0.5	13	144	260
0034223	12 x 2 x 0.5	15.5	193	340
0034224	16 x 2 x 0.5	17	249	430
0034225	20 x 2 x 0.5	18.5	298	495
0034226	24 x 2 x 0.5	20.5	348	605
0034227	32 x 2 x 0.5	22.5	441	738
0034228	40 x 2 x 0.5	24	531	845

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 MAXI-TERMI-POINT® is a registered trademark of AMP  
 Photographs are not to scale and do not represent detailed images of the respective products.



## J-Y(ST)Y...LG Indoor Cable

Installation cable in accordance with DIN VDE 0815



### Benefits

- Indoor telephone cables transmit analogue or digital signals
- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- Connection cable for use in electronics and in measurement, control and signal applications
- In news and communication applications, the following connections can be installed: telephone, telefax, telex, standard modems for postal services; burglar and fire alarm systems (cf. fire alarm cables); communication and paging systems; access control, time and data control systems
- Can be used in dry and wet interiors for fixed installation on and under plaster

### Product features

- The 2-paired versions = star quad cable design
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- In accordance with DIN VDE 0815 type J-Y(ST)Y...LG

### Product Make-up

- Solid bare copper conductor
- Core insulation made of PVC
- Cores twisted in pairs, pairs twisted together, foil wrapping over cable core, static screen made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable



#### Core identification code

according to VDE 0815,  
refer to Appendix T10



#### Peak operating voltage

(not for power applications)  
300 V



#### Coupling

(800 Hz): K1: 80% ≤ 300 pF/100m



#### Conductor cross-section in

0.6 mm: 0.28 mm<sup>2</sup>  
0.8 mm: 0.50 mm<sup>2</sup>

#### Cable attenuation/attenuation

0.6 mm: 1.7 dB/km  
0.8 mm: 1.1 dB/km



#### Minimum bending radius

Fixed installation: 10 x outer diameter



#### Test voltage

Core/core: 800 V  
Core/screen: 800 V



#### Loop resistance

0.6 mm: max. 130 ohm/km  
0.8 mm: max. 73.2 ohm/km



#### Temperature range

Occasional flexing: -5 °C to +50 °C  
Fixed installation: -30 °C to +70 °C

Article number	Number of double cores	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>J-Y(ST)Y...LG copper conductor 0.6 mm</b>				
1591301	2	5.5	13	40
1591302	3	6.3	18	50
1591303	4	6.7	24	60
1591304	5	7.2	30	70
1591305	6	7.5	35	80
1591306	8	8	46	90
1591307	10	9	58	110
1591308	12	9.5	71	130
1591310	16	10.5	93	160
1591311	20	11	116	190
1591312	24	11.5	139	220
1591313	30	13	172	280

Article number	Number of double cores	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
1591315	50	17	286	430
1591318	100	23	568	850
<b>J-Y(ST)Y...LG copper conductor 0.8 mm</b>				
1591500	1	6	11	40
1591501	2	7	21	60
1591502	3	8.5	31	80
1591503	4	9	41	100
1591505	6	10.5	62	140
1591506	8	11.5	82	170
1591507	10	13	102	220
1591508	12	14	123	250
1591511	20	16.5	204	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- J-2Y(ST)Y...ST III BD refer to page 318

### Accessories

- UNIVERSAL STRIP stripping tool refer to page 1006
- STAR STRIP stripping tool refer to page 1000





## J-Y(ST)Y...LG Fire Alarm Cable

Installation cable in accordance with DIN VDE 0815 with red outer sheath



### Benefits

- The cable is marked with the phrase “Fire alarm cable” at regular intervals on the sheath. It is therefore used especially for installation in fire alarm systems.
- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

### Application range

- This installation cable is used to transmit signals.
- For fixed installation on and under plaster, in dry and damp rooms
- For outdoor use this cable should be installed under plaster only

### Product features

- The 2-pair version (2x2x0.8) is twisted into a star quad
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on DIN VDE 0815 type J-Y(ST)Y...LG

### Product Make-up

- Solid bare copper conductor
- Core insulation made of PVC
- Cores twisted in pairs, pairs twisted together, foil wrapping over cable core, static screen made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of PVC  
Outer sheath colour: flame red (RAL 3000)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Core identification code</b> according to VDE 0815, refer to Appendix T10
	<b>Peak operating voltage</b> (not for power applications) 300 V
	<b>Coupling</b> (800 Hz): K1: 80% ≤ 300 pF/100m
	<b>Conductor cross-section in</b> 0.8 mm: 0.50 mm <sup>2</sup>
	<b>Cable attenuation/attenuation</b> 0.8 mm: 1.1 dB/km
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Test voltage</b> Core/core: 800 V Core/screen: 800 V
	<b>Loop resistance</b> max. 73.2 Ohm/km
	<b>Temperature range</b> Occasional flexing: -5°C to +50°C Fixed installation: -30°C to +70°C

Article number	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>J-Y(ST)Y...LG Fire Alarm Cable</b>				
1708001	1 x 2 x 0.8	6	11	40
1708002	2 x 2 x 0.8	7	21	60
1708004	4 x 2 x 0.8	9	41	100
1708010	10 x 2 x 0.8	13.5	102	220

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- STAR STRIP stripping tool refer to page 1000
- KS 20 cable shears refer to page 999



## J-2Y(ST)Y...ST III BD

Installation cable in accordance with DIN VDE 0815 with PE core insulation

J-2Y(ST)Y...STIII BD



### Benefits

- Suitable for data transmission rates of up to 16 Mbits/s
- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields

### Application range

- Connection cable for use in electronics and in measurement, control and signal applications
- Examples of use: for connecting EDP system units or for circuits for airfield lighting, ISDN private branch exchanges, operating data acquisition, operating data entry, access control and time recording systems, industrial electronics, all designed for maximum security and speed
- Can be used in dry and wet interiors for fixed installation on and under plaster

### Product features

- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- Based on DIN VDE 0815

### Product Make-up

- Solid bare copper conductor
- Core insulation made of polyethylene (PE)
- Cores twisted into star quads, 5 star quads are twisted into a bundle, bundles stranded in layers
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of PVC  
Outer sheath colour: pebble grey (RAL 7032)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable



#### Core identification code

according to VDE 0815,  
refer to Appendix T 10



#### Mutual capacitance

(800 Hz) max. 52 nF/km



#### Peak operating voltage

(not for power applications)  
300 V



#### Coupling

K1: 98 % < 400 pF/300 m  
K9-12: 98 % < 100 pF/300 m



#### Conductor cross-section in

0.6 mm: 0.28 mm<sup>2</sup>

#### Cable attenuation/attenuation

At 16 MHz: < 8 dB/100 m



#### Minimum bending radius

Fixed installation: 10 x outer diameter

#### Short-range crosstalk attenuation

4-16 MHz: 2-pair ≥ 45 dB  
4-16 MHz: >2-pair ≥ 20 dB



#### Test voltage

Core/core: 500 V  
Core/screen: 2000 V



#### Loop resistance

max. 130 ohm/km



#### Characteristic impedance

100 Ohm ± 15 %



#### Temperature range

Occasional flexing: -5 °C to +50 °C  
Fixed installation: -30 °C to +70 °C

Article number	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>J-2Y(ST)Y...ST III BD</b>				
0034171	2 x 2 x 0.6	5.5	13	40
0034173	4 x 2 x 0.6	7.5	24	60
0034176	10 x 2 x 0.6	9.5	58	110
0034178	20 x 2 x 0.6	13.5	116	190

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- UNITRONIC® Li2YCY (TP) refer to page 291

### Accessories

- STAR STRIP stripping tool refer to page 1000



## J-H(ST)H...BD

Halogen-free installation cable in accordance with DIN VDE 0815



### Info

- In accordance with DIN VDE 0815



## J-H(ST)H...BD Fire Alarm Cable

Halogen-free installation cable in accordance with DIN VDE 0815 with red outer sheath



### Benefits

- Used to meet enhanced fire protection requirements concerning protection of people and high-value property
- Does not emit any toxic or corrosive gases in the event of fire and resists the spread of fire
- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electromagnetic fields
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)
- **J-H(ST)H...BD Fire Alarm Cable** is marked with the phrase "Fire alarm cable" at regular intervals on the sheath. It is therefore used especially for installation in fire alarm systems.

### Application range

- This halogen-free, flame-retardant installation cable with static screen is used for telephone, data and signal transmission in subscriber stations and private branch exchange construction for telephone systems
- For fixed installation on and under plaster, in dry and damp rooms

### Product features

- Flame-retardant according IEC 60332-1-2
- No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 (Flame spread on vertical cable or wire bundle)
- Halogen-free according to EN 50267-2-1/-2

### Norm references / Approvals

#### J-H(ST)H...BD

- In accordance with DIN VDE 0815 type J-H(ST)H...BD

#### J-H(ST)H...BD Fire Alarm Cable

- Based on DIN VDE 0815

### Product Make-up

#### J-H(ST)H...BD

- Solid bare copper conductor
- Core insulation made of special halogen-free compound
- Cores twisted into star quads, 5 star quads are twisted into a bundle, bundles stranded in layers
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of special halogen-free compound  
Outer sheath colour: grey (RAL 7001)

#### J-H(ST)H...BD Fire Alarm Cable

- Solid bare copper conductor
- Core insulation made of special halogen-free compound
- Cores twisted into star quads, 5 star quads are twisted into a bundle, bundles stranded in layers
- Foil wrapping, static screening made of aluminium-laminated plastic film with copper drain wire
- Outer sheath made of special halogen-free compound  
Outer sheath colour: flame red (RAL 3000)

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Core identification code</b> according to VDE 0815, refer to Appendix T 10
	<b>Mutual capacitance</b> max. 120 nF/km
	<b>Peak operating voltage</b> (not for power applications) 300 V
	<b>Coupling</b> K1: approx. 300 pF/100 m K9-12: approx. 100 pF/100 m
	<b>Minimum bending radius</b> Fixed installation: 6 x outer diameter
	<b>Test voltage</b> Core/core: 800 V Core/screen: 800 V
	<b>Loop resistance</b> 0.6 mm: max. 130 ohm/km 0.8 mm: max. 73.2 ohm/km
	<b>Conductor cross-section</b> 0.6 mm: 0.28 mm <sup>2</sup> 0.8 mm: 0.50 mm <sup>2</sup>
	<b>Temperature range</b> Occasional flexing: -5°C to +50°C Fixed installation: -30°C to +70°C

Article number	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>J-H(ST)H...BD</b>				
30017787	2 x 2 x 0,8	7	25	77
30017788	4 x 2 x 0,8	9.2	45	135
<b>J-H(ST)H...BD Fire Alarm Cable</b>				
30017798	2 x 2 x 0,8	7	25	77
30017801	10 x 2 x 0,8	11.3	106	250

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Photographs are not to scale and do not represent detailed images of the respective products.



## A-2Y(L)2Y...ST III BD Telephone Outdoor Cable



## A-2YF(L)2Y...ST III BD Outdoor Cable



### Application range

- External cables for telecommunication and data processing systems
- Do not install cables that are meant to be placed in ducts or for direct burial in areas exposed to fire hazards

### Product features

- Outer sheath colour: black (RAL 9005)
- UV-resistant and laterally watertight
- Filled version (A-2YF(L)2Y...ST III BD) is additionally longitudinal watertight

### Norm references / Approvals

- In accordance with DIN VDE 0816

### Product Make-up

#### A-2Y(L)2Y...ST III BD Telephone Outdoor Cable

- Solid bare copper conductor
- Core insulation made of polyethylene (PE)
- 5 star-quads are twisted into each basic unit, which is then twisted together with the main unit to form the cable core
- Paper tape wrapping
- Laminated sheath with aluminium-coated plastic tape, PE outer sheath

#### A-2YF(L)2Y...ST III BD Outdoor Cable

- Similar to A-2Y(L)2Y, but with petroleum-jelly filling, laminated sheath made of aluminium-coated plastic tape, and black PE outer sheath

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable



#### Core identification code

According to VDE 0816,  
refer to Appendix T10



#### Mutual capacitance

At 800 Hz: max. 52 nF/km



#### Peak operating voltage

(not for power applications) 225 V



#### Impedance

At 800 Hz 0.6 mm: approx. 720 Ohm  
At 800 Hz 0.8 mm: approx. 520 Ohm



#### Coupling

K1: 98 % < 400 pF/300 m  
K9-12: 98 % < 100 pF/300 m



#### Conductor cross-section in

0.6 mm: 0.28 mm<sup>2</sup>  
0.8 mm: 0.50 mm<sup>2</sup>

#### Cable attenuation/attenuation

##### A-2Y(L)2Y...ST III BD Telephone Outdoor Cable

At 800 Hz 0.6 mm: approx. 1.04 dB/km  
At 800 Hz 0.8 mm: approx. 0.78 dB/km

##### A-2YF(L)2Y...ST III BD Outdoor Cable

At 800 Hz 0.6 mm: approx. 1.0 dB/km  
At 800 Hz 0.8 mm: approx. 0.8 dB/km



#### Minimum bending radius

10 x outer diameter



#### Test voltage

Core/core: 500 V  
Core/screen: 2000 V



#### Loop resistance

0.6 mm: 130 ohm/km  
0.8 mm: 73.2 ohm/km



#### Temperature range

During installation: -20 °C to +50 °C  
After installation: ≤ +70 °C

Article number	Number of double cores	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>A-2Y(L)2Y...STIII BD copper conductor 0.6 mm</b>				
1591050	2	8.1	11	65
1591052	6	10.3	34	110
1591053	10	11.5	57	140
<b>A-2Y(L)2Y...ST III BD copper conductor 0.8 mm</b>				
1591150	2	8.6	20	75
1591151	4	10.9	40	120
1591152	6	11.5	60	145
1591153	10	13.5	101	200
1591154	20	17.3	201	340
<b>A-2YF(L)2Y...ST III BD copper conductor 0.6 mm</b>				
1591028	2	8.3	11	67
1591029	4	10.4	23	104
1591030	6	11	34	130
1591031	10	12.5	57	180
1591032	20	16	113	300
1591033	30	19	170	420
1591035	50	22.3	283	620
1591037	100	30.5	565	1225
<b>A-2YF(L)2Y...ST III BD copper conductor 0.8 mm</b>				
1591217	2	8.8	20	83
1591218	4	11.2	40	134
1591221	6	12	60	180
1591222	10	14	101	250
1591223	20	19.1	201	460
1591224	30	22	302	630
1591225	40	24	402	800
1591226	50	26	503	975
1591228	100	36	1005	1900

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Photographs are not to scale and do not represent detailed images of the respective products.



Coaxial - RG



Benefits

- Coaxial cables allow distortion-free and low-attenuation transmission of signals with a high bandwidth.
- High frequencies

Application range

- For applications with limited movements and for fixed installation in dry or damp interiors and outdoors
- For radio and computer systems, as well as all applications related to commercial radio-frequency technology and electronics

Product features

- Flame-retardant according IEC 60332-1-2

Product Make-up

- Coaxial cables are significantly less sensitive to external interference due to their structure.

Technical data

ETIM 5.0 Class-ID: EC000019  
 ETIM 5.0 Class-Description: Coaxial cable

**Dielectric constant**  
 - Polyethylene (PE) 2.3-  
 Polyethylene, hollow (PE-ho) 1.5-  
 Polytetrafluoroethylene (PTFE) 2.1

**Minimum bending radius**  
 Fixed installation: 6 x outer diameter

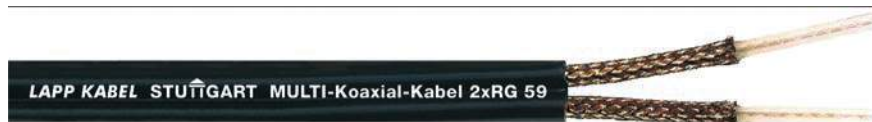
**Specifications and approvals**  
 Similar to MIL-DTL 17 H

**Temperature range**  
 Fixed installation: PE outer sheath: -40°C to +80°C  
 Fixed installation: PVC outer sheath: -40°C to +80°C  
 Fixed installation: fluoroplastic -55°C to +250°C

Article number	Article designation	Characteristic impedance in ohm	Capacity pF/m	Attenuation approx. dB/100 m at 200 MHz/400 MHz	Propagation rate (%)	Operating voltage 50 Hz eff. kV	Test voltage (kV)	Inner conductor material	Internal Ø	Di-electric material	Di-electric Ø	Outer conductor material	Outer cable sheath	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Characteristic impedance: 50 ohm</b>																
2170000	RG-58 C/U	50 +/- 2 Ω	101	24 / 33	66	2	5	CuLivz	0.9	PE	2.95	Cvz	PVC	4.95	19.1	38
2170001	RG-174 A/U	50 +/- 2 Ω	101	40 / 59	66	1.5	2	StCuLibl	0.48	PE	1.52	Cvz	PVC	2.80	5.4	12
2170002	RG-178 B/U	50 +/- 2 Ω	95	63 / 93	70	0.7	2	StCuLivs	0.3	PTFE	0.86	Cvs	FEP	1.91	4.4	9
2170003	RG-188 A/U	50 +/- 2 Ω	95	47 / 56	70	1.5	2	StCuLivs	0.51	PTFE	1.52	Cvs	PTFE	2.76	8.3	17.5
2170005	RG-213 /U	50 +/- 2 Ω	101	10 / 15	66	5	10	CuLibl	2.25	PE	7.25	Cbl	PVC	10.30	75.8	157
2170006	RG-214 /U	50 +/- 2 Ω	101	9 / 14	66	5	10	CuLivs	2.25	PE	7.25	CvsCvs	PVC	10.80	117.8	207
2170007	RG-223 /U	50 +/- 2 Ω	101	23 / 34	66	2	3	CuMvs	0.89	PE	2.95	CvsCvs	PVC	5.50	38.5	60
<b>Characteristic impedance: 75 ohm</b>																
2170016	RG-6 A/U	75 +/- 3 Ω	67	14 / 20	66	2	5	StCuMbl	0.72	PE	4.7	Cbl	PVC	8.40	72	120
2170009	RG-11 A/U	75 +/- 3 Ω	67	11 / 16	66	5	10	CuLivz	1.2	PE	7.3	Cbl	PVC	10.30	55.5	140
2170011	RG-11 A/U outdoor	75 +/- 3 Ω	67	11 / 16	66	5	10	CuLivz	1.2	PE	7.3	Cbl	PVC	12.10	55.5	170
2170012	RG-59 B/U	75 +/- 3 Ω	67	16.5/23	66	1.7	7	StCuMbl	0.6	PE	3.7	Cbl	PVC	6.15	25	57
2170010	RG-187 A/U	75 +/- 3 Ω	65	47 / 56	70	1.5	2	StCuLivs	0.31	PTFE	1.52	Cvs	PTFE	2.80	7.3	17
<b>Characteristic impedance: 100 Ohm</b>																
2170008	RG-62 A/U	93 +/- 5 Ω	43	15 / 19	75	0.8	2	StCuMbl	0.65	PE hollow	3.7	Cbl	PVC	6.15	26	52

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Photographs are not to scale and do not represent detailed images of the respective products.

## Multi coaxial cables RG 59 B/U



### Benefits

- In extended systems, the use of the RG 59 B/U multi-coaxial cable as a screened supply cable prevents an accumulation of individual cables running in parallel over long distances.
- This saves installation costs and provides greater mechanical protection for the each sensitive cable.

### Product features

- Multi-coaxial cables provide an easier installation than individual installation

### Product Make-up

- 2 x single coaxial cables type RG 59 B/U
- Twin cable
- PVC sheath
- Colour: black

### Technical data

- ETIM 5.0 Class-ID: EC000019  
ETIM 5.0 Class-Description: Coaxial cable
- Based on**  
Similar to MIL specification MIL-DTL17 H
- Minimum bending radius**  
Fixed installation: 15 x outer diameter
- Temperature range**  
Fixed installation: -40 °C to +80 °C

Article number	Number of single cables x RG type	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Characteristic impedance: 75 ohm</b>				
2170056	2 x RG 59 B/U	6.5 x 13.0	50	116

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

## Coaxial cables RGB



**Info**

- Connecting Cable for Colour Monitors

### Benefits

- Low attenuation ensures a longer transmission distance
- Transmission of the red (R), green (G) and blue (B) colour signals

### Product Make-up

- Conductor: tinned-copper wire
- Dielectric: cellular polyolefin
- Outer conductor: copper braiding or tinned-copper wire wrapping
- Red (R), green (G), blue (B) elements - for RGB 5 x Kx 0.4/1.8 red, green, blue, white, black
- PVC outer sheath  
FD Version with PUR outer sheath

### Technical data

- ETIM 5.0 Class-ID: EC000019  
ETIM 5.0 Class-Description: Coaxial cable
- Mutual capacitance**  
60 nF/km
- Minimum bending radius**  
15 x outer diameter
- Characteristic impedance**  
75 Ohm
- Temperature range**  
-10 °C to +80 °C  
Occasional flexing: -5 °C to +70 °C

### Application range

- Colour monitor cable for PCs and CAD workstations, process visualisation
- For fixed installation in rooms (RGB CY..x Kx 0.4/1.8)
- For highly flexible applications in power chains (energy supply chains) and continuously moving machine components (RGB-FD..x Kx 0.6L/2.4)

Article number	Article designation	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Fixed installation</b>				
0034245	RGB CY 3 x Kx 0,4/1,8 + 3 x 0,25	8.0	51	97
0034246	RGB DY 5 x Kx 0,4/1,8	9.7	60	132
<b>Flexible and highly flexible applications</b>				
0034247	RGB-FD 3 x Kx 0,6L/2,4	10.8	29	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- STAR STRIP stripping tool refer to page 1000
- DATA STRIP stripping tool refer to page 1001



**UNITRONIC® BUS LD**



**i Info**

- LD is a LAPP abbreviation for long distance

- Benefits**
- Suitable for multiple Bus systems based on RS485 / RS422

- Application range**
- For fixed installation  
Maximum electromagnetic screening
  - Bus cables for bus systems such as e.g. Modbus, SUCOnet P, Modulink P, VariNet-P)
  - Dry or damp rooms

- Product features**
- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
  - 9.6-93.75 kbit/s = 1200m
  - 187.5 kbit/s = max. 1,000 m
  - 500 kBit/s = max. 400 m
  - Flame-retardant according IEC 60332-1-2

- Norm references / Approvals**
- UL versions with certification: UL/CSA type CMX acc. to UL 444 and CSA C22.2 no. 214-02

- Product Make-up**
- Stranded bare 7-wire conductor, colour-coded according to DIN 47100
  - Copper braid
  - PVC sheath
  - Colour: violet (RAL 4001)
  - UNITRONIC® BUS LD A as UNITRONIC® BUS LD, but with UL/CSA certification

**Technical data**

- ETIM 5.0 Class-ID:** EC001855  
**ETIM 5.0 Class-Description:** Sensor-actuator patch cord
- Mutual capacitance** (800 Hz): max. 60 nF/km
- Peak operating voltage** (not for power applications) 250 V
- Conductor resistance** (loop): max. 186 ohm/km
- Minimum bending radius**  
Fixed installation: 8 x outer diameter
- Test voltage**  
Core/core: 1500 V rms
- Characteristic impedance**  
100 - 120 Ohm
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -5°C to +70°C

Article number	Article designation	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>for fixed installation</b>					
2170203	UNITRONIC® BUS LD	1 x 2 x 0,22	5.7	18	37
2170204	UNITRONIC® BUS LD	2 x 2 x 0,22	7.1	28	45
2170205	UNITRONIC® BUS LD	3 x 2 x 0,22	7.2	37	72
<b>For fixed installation - UL/CSA CMX certification</b>					
2170803	UNITRONIC® BUS LD A	1 x 2 x 0,22	5.7	18	39

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Modbus is owned by the Modbus-IDA Organisation. SUCOnet P is a registered trademark of the Moeller Group. Modulink P is a registered trademark of Weidmüller GmbH & Co. VariNet is a registered trademark of Pepperl+Fuchs GmbH.  
 Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

## UNITRONIC® BUS LD FD P

LAPP KABEL STUTTGART UNITRONIC® BUS LD FD P



### Info

- LD is a LAPP abbreviation for long distance

### Benefits

- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains
- UL versions with certification: UL/CSA type CMX acc. to UL 444 and CSA C22.2 no. 214-02
- Suitable for multiple Bus systems based on RS485 / RS422

### Application range

- For highly flexible applications (power chains, moving machine parts)
- Bus cables for bus systems such as e.g. Modbus, SUCONet P, Modulink P, VariNet-P)

### Product features

- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
  - 9.6-93.75 kbit/s = 1200m
  - 187.5 kbit/s = max. 1,000 m
  - 500 kBit/s = max. 400 m
- Flame-retardant according IEC 60332-1-2

### Product Make-up

- Stranded conductor, bare, core identification code in accordance with DIN 47100
- Copper braid
- PUR outer sheath
- Colour: violet (RAL 4001)
- UV-resistant (but colour may change after some time)

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000830 <b>ETIM 5.0 Class-Description:</b> Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 60 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 159.8 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 6 x core diameter One bend at end of core: 3 x cable diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 100 - 120 Ohm
	<b>Temperature range</b> Fixed installation: -40°C to +80°C Flexing: -30°C to +70°C

Article number	Article designation	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>For highly flexible applications (power chains, moving machine parts)</b>					
2170213	UNITRONIC® BUS LD FD P	1 x 2 x 0,25	6	18	39
2170214	UNITRONIC® BUS LD FD P	2 x 2 x 0,25	7,9	33	65
2170215	UNITRONIC® BUS LD FD P	3 x 2 x 0,25	8	39	77
<b>For highly flexible applications (e.g. power chains) - with UL/CSA (CMX) certification</b>					
2170813	UNITRONIC® BUS LD FD P A	1 x 2 x 0,25	6,2	18	39
2170814	UNITRONIC® BUS LD FD P A	2 x 2 x 0,25	8,3	33	65
2170815	UNITRONIC® BUS LD FD P A	3 x 2 x 0,25	8,4	39	77

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Modbus is owned by the Modbus-IDA Organisation. SUCONet P is a registered trademark of the Moeller Group. Modulink P is a registered trademark of Weidmüller GmbH & Co. VariNet is a registered trademark of Pepperl+Fuchs GmbH.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® CHAIN
- SMART STRIP stripping tool





**UNITRONIC® BUS ASI**

**i Info**

- “LD” = Long Distance



**Benefits**

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- The rubber versions are halogen-free

**Application range**

- Communication at sensor/actuator level
- UNITRONIC® Fieldbus sensor-/actuator wiring
- For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- The TPE version has an oil-resistant outer sheath. It is suitable for wet areas, in particular in conjunction with water-soluble cooling lubricants.

**Product features**

- Data and power are transmitted via an unshielded, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by “piercing technology” within the ASI modules.
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables).

**Norm references / Approvals**

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- PVC version with UL/CSA (CMG) certification
- UL/CSA version: CMG c(UL)us or (UL)CL2 or AWM 300V FT4 certified

**Product Make-up**

- Extra-fine wire, tinned copper strands
- Core insulation: blue and brown
- Profiled outer sheath made of rubber (G), thermoplastic elastomers (TPE) or PVC
- Colour: yellow (RAL 1023) or black (RAL 9005)
- Colour: red (RAL 3000)

**Technical data**

- ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Peak operating voltage**  
Yellow: 300 V (not for power applications)  
Black: 300 V (not for power applications)  
Red: 300 V
- Conductor resistance**  
1.5 mm<sup>2</sup>: max. 13.7 Ohm/km  
2.5 mm<sup>2</sup>: max. 8.21 Ohm/km
- Minimum bending radius**  
Fixed installation: 12 mm  
Flexible use 24 mm
- Test voltage**  
Core/core: 2000 V
- Temperature range**  
Dependent on outer sheath material:  
PVC: -30°C to +90°C  
Other materials: -40°C to +85°C  
During installation:  
PVC -20 °C to +90 °C  
Other materials:  
-30 °C to +85 °C

Article number	Article designation	Outer sheath material	Outer sheath colour	Application	Number of cores and mm <sup>2</sup> per conductor	Copper index (kg/km)	Weight (kg/km)
<b>For fixed and flexible applications (19-wire stranded conductor)</b>							
2170228	UNITRONIC® BUS ASI (G)	EPDM (rubber)	yellow	Data and power transmission	2 x 1,5	29	85
2170229	UNITRONIC® BUS ASI (G)	EPDM (rubber)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	85
2170371	UNITRONIC® BUS ASI LD (G)	EPDM (rubber)	yellow	Data and power transmission	2 x 2,5	48	85
2170372	UNITRONIC® BUS ASI LD (G)	EPDM (rubber)	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	85
2170230	UNITRONIC® BUS ASI (TPE)	TPE	yellow	Data and power transmission	2 x 1,5	29	64
2170231	UNITRONIC® BUS ASI (TPE)	TPE	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170232	UNITRONIC® BUS ASI (TPE)	TPE	red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	64
2170842	UNITRONIC® BUS ASI (PVC) A	PVC UL/CSA (CMG)	yellow	Data and power transmission	2 x 1,5	29	70
2170843	UNITRONIC® BUS ASI (PVC) A	PVC UL/CSA (CMG)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	70
2170844	UNITRONIC® BUS ASI (PVC) A	PVC UL/CSA (CMG)	red	Transmission of 230 V AC auxiliary power	2 x 1,5	29	70

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Lapp Kabel is a member of the AS-International Association  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® DIX-M AUTOMATION refer to page 741
- UNIVERSAL STRIP stripping tool refer to page 1006
- AS-I clip clamp / AS-I end sealing refer to page 1072
- AS-I STRIP special stripping tool refer to page 1002
- AS-I STRIP special
- SKINTOP® DIX ASI



## UNITRONIC® BUS ASI FD

Highly flexible application



**Info**

- “FD” = suitable for power chains
- “LD” = Long Distance

### Benefits

- The new BUS ASI LD 2 x 2.5 (Long Distance) allows even modules located further away to be connected. AS-I power supplies can be reduced. The BUS ASI LD is downwards-compatible with version 1.5.
- For highly flexible applications (power chains, moving machine parts)
- High oil-resistance

### Application range

- Communication at sensor/actuator level
- UNITRONIC® Fieldbus sensor-/actuator wiring

### Product features

- PUR versions are halogen-free according to IEC 60754-1
- Flame-retardant according to IEC 60332-1-2, UL FT-2 flame test
- Data and power are transmitted via an unscreened, geometrically coded two-core flat cable (protection against polarity reversal).
- The conductor is contacted by “piercing technology” within the ASI modules.
- The sensors are connected to the ASI modules (coupling modules) using round cables (connection cables).

### Norm references / Approvals

- ASI is standardised Europe-wide in EN 50295 and internationally in IEC 62026-2.
- TPE variant: UL AWM Style 2103 CSA AWM II A/B
- PUR versions: UL AWM Style 20549

### Product Make-up

- Extra-fine wire, tinned copper strands
- Core insulation: blue and brown
- Profiled outer sheath: TPE or PUR
- Colour: yellow (RAL 1023) or black (RAL 9005)

### Technical data

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Peak operating voltage**  
300 V (not for power applications)

**Conductor resistance**  
1.5 mm<sup>2</sup>: max. 13.7 Ohm/km  
2.5 mm<sup>2</sup>: max. 8.21 Ohm/km

**Minimum bending radius**  
Fixed installation: 12 mm  
Flexing without fixing: 24 mm  
Flexing with fixing: 60 mm (15 x D)

**Test voltage**  
Core/core: 2000 V

**Temperature range**  
Fixed installation:  
-40 °C to +80 °C (TPE +105 °C)  
Flexing without fixing:  
-30 °C to +70 °C (TPE +105 °C)

Article number	Article designation	Outer sheath material	Outer sheath colour	Application	Number of cores and mm <sup>2</sup> per conductor	Copper index (kg/km)	Weight (kg/km)
<b>For highly flexible applications (power chains, moving machine parts)</b>							
2170357	UNITRONIC® BUS ASI FD P FRNC	PUR UL/CSA (AWM)	yellow	Data and power transmission	2 x 1,5	29	64
2170358	UNITRONIC® BUS ASI FD P FRNC	PUR UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64
2170317	UNITRONIC® BUS ASI LD FD P	PUR UL/CSA (AWM)	yellow	Data and power transmission	2 x 2,5	48	74
2170318	UNITRONIC® BUS ASI LD FD P	PUR UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 2,5	48	74
2170830	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	yellow	Data and power transmission	2 x 1,5	29	64
2170831	UNITRONIC® BUS ASI FD (TPE) A	TPE UL/CSA (AWM)	black	Transmission of 30 V DC auxiliary power	2 x 1,5	29	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Lapp Kabel is a member of the AS-International Association  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® DIX-M AUTOMATION refer to page 741
- UNIVERSAL STRIP stripping tool refer to page 1006
- AS-I clip clamp / AS-I end sealing refer to page 1072
- AS-I STRIP special stripping tool refer to page 1002
- AS-I STRIP special
- SKINTOP® DIX ASI

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



## ASI Distributor

AS-Interface Distributor



### Benefits

- Cost-efficient and rational wiring for AS-Interface installations
- Space-saving due to compact dimensions
- Easy to install

### Product features

- Field mountable distributor with flat cable clamp
- On 2 flat cables or straight M 12 socket (A-coded)
- Suitable for drag chains
- Panel mounting
- Rated current  $\leq 4$  A (H-distributor:  $I \leq 8$  A)

### Product Make-up

- Wire cross-section: 0,34 mm<sup>2</sup>
- Colour-code: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PUR halogen-free, black

### Suitable cables

- UNITRONIC® BUS ASI Page 325
- UNITRONIC® BUS ASI FD Page 326

### Technical data

	ETIM 5.0 Class-ID: EC001604 ETIM 5.0 Class-Description: Fieldbus, decentr. periphery - communication module
	<b>Connection type</b> Penetration technique for flat cable
	<b>Protection rating</b> IP 67 (H-distributor: IP69)
	<b>Ambient temperature (operation)</b> -25°C to +75°C

Article number	Article designation	Length (m)	PU
<b>Distribution of 1 flat cable on 2 flat cables (H distributor)</b>			
22260802	AB-ASI-J-Y-Y-N		1
<b>on M 12 socket (2-pos.)</b>			
22260800	AB-ASI-J-Y-N-M12FS		1
22260803	AB-ASI-J-Y-N-PUR-1,0-M12FS	1	1
22260804	AB-ASI-J-Y-N-PUR-2,0-M12FS	2	1
<b>Distribution of 2 flat cables on M 12 socket (4-pos.)</b>			
22260801	AB-ASI-J-Y-B-M12FS		1
22260805	AB-ASI-J-Y-B-PUR-1,0-M12FS	1	1
22260806	AB-ASI-J-Y-B-PUR-2,0-M12FS	2	1

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Kraftform® adjustable torque screwdriver/Kraftform Kompakt® Set refer to page 1078



## UNITRONIC® BUS PB TRAY

Fixed installation

LAPP KABEL STUTTGART UNITRONIC® BUS PB TRAY



### Info

- PLTC-ER (power limited tray cable exposed run) for unprotected use on cable trays

### Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

### Application range

- For fixed installation or applications with occasional movements
- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame retardant acc. UL 1685 - FT4 (vertical tray)
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

### Norm references / Approvals

- C(UL)us Typ CMG (75°C) acc. to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

### Product Make-up

- Bare copper wire, 0,64 mm diameter
- Core colours: red, green
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC inner sheath and outer sheath
- Colour: violet (RAL 4001)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (1 kHz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Impedance</b> 150 +/- 15 Ohm
	<b>Conductor resistance</b> (loop): max. 110 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -10°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS PB TRAY</b>					
2170856	UNITRONIC® BUS PB TRAY	1x2x0,64	8.4	26	82

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



**UNITRONIC® BUS PB**

Fixed installation

**Info**

- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)
- A for Advanced here: UL and CSA certifications



**Application range**

- For fixed installation  
Maximum electromagnetic screening
- Dry or damp rooms
- Item nos. 2170233, 2170333, 2170820, 2170824, 2170826 are all UV-resistant

**Product features**

- These bus cables can be used for PROFIBUS-DP as well as for PROFIBUS-FMS and FIP
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

**Norm references / Approvals**

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)
- See below for UL certification type

**Product Make-up**

- FC: "Fast Connect" cable design
- P: Polyurethane
- H: Halogen-free
- PE: polyethylene, black Outer sheath, e.g. for the food and beverage industry
- 7-W: 7-wire, e.g. for applications where vibrations occur
- COMBI: Data transmission and power supply in one cable

**Technical data**

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 186 Ohm/km. see also datasheet
	<b>Minimum bending radius</b> Fixed installation: see data sheet
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 150 ± 15 Ohm

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>For fixed installation - conventional cable assembly</b>					
2170220	UNITRONIC® BUS PB	1 x 2 x 0.64	8	30.1	74
2170233	UNITRONIC® PB PE	1 x 2 x 0.64	8	30.1	57
2170226	UNITRONIC® BUS PB H 7-W	1 x 2 x 0.64	8	30.1	55
2170225	UNITRONIC® BUS PB COMBI 7-W	1 x 2 x 0,64 Ø + 3 x 1,0 mm <sup>2</sup>	9.8	59	92
<b>For fixed installation - UL/CSA CMX certification</b>					
2170219	UNITRONIC® BUS PB A	1 x 2 x 0.64	8	30.1	57
<b>For fixed installation - UL/CSA CMG certification</b>					
2170824	UNITRONIC® BUS PB 7-W A	1 x 2 x 0.64	8	30.1	55
<b>For fixed installation - "Fast Connect" cable assembly</b>					
2170333	UNITRONIC® BUS PB PE FC	1 x 2 x 0.64	8	26	67
<b>For fixed installation - UL/CSA CMX certification</b>					
2170330	UNITRONIC® BUS PB P FC	1 x 2 x 0.64	8	26	71
<b>For fixed installation - "Fast Connect" cable assembly - UL/CSA CMG certification</b>					
2170820	UNITRONIC® BUS PB FC	1 x 2 x 0.64	8	26	84
2170826	UNITRONIC® BUS PB 7-W FC	1 x 2 x 0.64	8	26	67
2170326	UNITRONIC® BUS PB-H FC	1 x 2 x 0.64	8	26	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC NET® is a registered trademark of Siemens AG  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- UNITRONIC® BUS PB ROBUST refer to page 330
- UNITRONIC® BUS PB 105 refer to page 331

**Accessories**

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002
- SENSOR STRIP stripping tool refer to page 1003



## UNITRONIC® BUS PB ROBUST

Fixed installation



### Benefits

- Robust PROFIBUS cable for use under harsh environmental conditions

### Application range

- For use for PROFIBUS-DP or FIP in harsh industrial environments
- Fixed installation

### Product features

- Significantly extended use and application areas, water and chemical resistance for use in industrial conditions.
- High resistance to tensides, soaps etc.
- UV-resistant
- Flame-retardant according IEC 60332-1-2
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- With conventional cable design, but with an outer sheath made of special TPE

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (1 kHz): approx. 28.5 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 75 mm
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 ± 15 Ohm
	<b>Temperature range</b> -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>for fixed installation</b>					
2170620	UNITRONIC® BUS PB ROBUST	1 x 2 x 0.64	8	26	55

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



## UNITRONIC® BUS PB 105

Fixed installation

LAPP KABEL STUÏTGART UNITRONIC® BUS PB 105



### Benefits

- A standard PROFIBUS cable can only be used up to a max. temperature of 80°C
- This enables an extended area of application

### Application range

- Cable has been designed for use in factory halls where temperatures up to max. 105°C may occur.

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant

### Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: PP
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath for use up to 105°C

### Suitable connectors

- Sub-D Bus-Connectors

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> Approx. 28.5 nF/km
	<b>Peak operating voltage</b> max. 100 V (not for power applications)
	<b>Minimum bending radius</b> Fixed installation: 45 mm once Flexing: 65 mm
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 ± 15 Ohm
	<b>Temperature range</b> -30°C to +105°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS PB 105</b>					
2170630	UNITRONIC® BUS PB 105	1 x 2 x 0.64	8	30.1	72

### Accessories

- Multipurpose shears A and B refer to page 998



### Info

- Bus system PROFIBUS-DP/FMS/FIP
- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)

### Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance

### Application range

- For installation in hollow shaft between gear units and pitch system
- Suitable for fixed installation and occasionally flexible use in high temperature areas

### Product features

- Permanent load up to +105°C, temporary load +120°C

### Norm references / Approvals

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)

### Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: polypropylene (PP)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE-based

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 45 mm once Flexing: 65 mm
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V eff.
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 ± 15 Ohm
	<b>Temperature range</b> Fixed installation: -40°C to +105°C Short-term: up to +120 °C

LAPP KABEL STUÏTGART UNITRONIC® BUS PB 105 plus



## UNITRONIC® BUS PB 105 plus

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)
<b>UNITRONIC® BUS PB 105 plus</b>				
2170635	UNITRONIC® BUS PB 105 plus	1x2x0,64	8	30.1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB HEAT 180

LAPP KABEL STUÏGART UNITRONIC® BUS PB HEAT 180

### Benefits

- No need for additional cable protection against high temperatures
- High temperature resistance

### Application range

- Fixed installation
- For use in high temperature areas with up to 180 °C

### Product features

- High oil-resistance

### Product Make-up

- Solid and bare copper conductor
- Wire insulation Fluorethylen
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer Sheath: Perfluorethylenpropylen, FEP, violet

### Suitable connectors

- Sub-D Bus-Connectors

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> approx. 28 nF / km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Repeated: 7 x Outer Diameter Single: 5 x Outer Diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 ± 15 Ohm
	<b>Temperature range</b> -50 to +180 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS PB HEAT 180</b>				
3031981	UNITRONIC® BUS PB HEAT 180 1X(2X0,64)	1 x 2 x 0,64	21.7	0.064

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB ARM

Fixed installation

LAPP KABEL STUÏGART UNITRONIC® BUS PB ARM

### Benefits

- EMC-optimised design

### Application range

- For use for PROFIBUS-DP or FIP in harsh industrial environments
- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Flame-retardant according IEC 60332-1-2
- UV-resistant

### Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Overlapping plastic tape
- Copper tape, welded longitudinally
- Outer sheath: PVC

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 100 V
	<b>Minimum bending radius</b> Fixed installation: 7.5 x outer diameter Fixed installation: 3.5 x cable diameter once
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> -40 °C to +70 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS PB ARM</b>					
2170247	UNITRONIC® BUS PB ARM	1 x 2 x 0.65	11.1	86.9	131

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.





**UNITRONIC® BUS PB FRNC FC**

Fixed installation

**i Info**

- FRNC = Flame Retardant Non Corrosive
  - Reduction of flame-propagation and density and toxicity of smoke gases in the event of fire
  - Minimisation of damage to buildings and production facilities
  - Safety for staff and in areas with high density of people



**Benefits**

- Halogen-free and highly flame-retardant
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Fast Connect (FC) cable design

**Application range**

- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

**Product features**

- The cable is UL/CSA-certified (CMG)
- Halogen-free
- High flame retardancy in accordance with IEC 60332-3 and FT4
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
  - 93.75 kbit/s = 1200 m
  - 187.5 kbit/s = 1000 m
  - 500 kbit/s = 400 m
  - 1.5 Mbit/s = 200 m
  - 12.0 Mbit/s = 100 m

**Product Make-up**

- Solid, bare, single-wire copper conductor
- PE core insulation
- Inner sheath, screening foil and braiding
- Thermoplastic outer sheath
- Colour: violet (RAL 4001)

**Technical data**

- ETIM 5.0 Class-ID:** EC000830  
**ETIM 5.0 Class-Description:** Data cable
- Certifications**  
UL/CSA (CMG)
- Mutual capacitance**  
Approx. 28.5 nF/km
- Peak operating voltage**  
(not for power applications) 250 V
- Minimum bending radius**  
80mm
- Test voltage**  
Core/core: 1500 V rms  
Core/screen: 1500 V
- Characteristic impedance**  
(3 - 20 MHz): 150 ± 15 Ohm
- Temperature range**  
-30°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Fixed installation</b> 2170853	UNITRONIC® BUS PB FRNC FC	1 x 2 x 0.64	8	30.1	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## UNITRONIC® BUS PB Yv

Suitable for outdoor use and direct burial, UV-resistant



### Benefits

- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Reinforced outer sheath made of PVC

### Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- Outer sheath: reinforced PVC, black

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 75 mm once Fixed installation: 150 mm
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for outdoor use and direct burial</b>					
2170223	UNITRONIC® BUS PB Yv	1 x 2 x 0.64	9.4	30.1	106

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB YY

Suitable for outdoor use and direct burial, UV-resistant



### Benefits

- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Dual PVC outer sheath

### Product Make-up

- Solid and bare copper conductor
- PE core insulation
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, violet, OD 7.5 mm
- PVC outer sheath, black, OD 9.5 mm

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 75 mm once Fixed installation: 150 mm
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -5°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for outdoor use and direct burial</b>					
2170236	UNITRONIC® BUS PB YY	1 x 2 x 0.64	9.5	30.1	87

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors
- Multipurpose shears A and B refer to page 998



## UNITRONIC® BUS PB BURIAL FC

Suitable for outdoor use and direct burial, UV-resistant

LAPP KABEL STUTTGART UNITRONIC® BUS PB BURIAL FC

### Benefits

- Fast Connect (FC) cable design
- Rugged, UV-resistant and weatherproof
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Second PE outer sheath

### Product Make-up

- Solid and bare copper conductor
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, violet, OD 8 mm
- PE outer sheath, black, OD 10.8 mm

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 100 V
	<b>Minimum bending radius</b> Fixed installation: 3.5 x cable diameter once Fixed installation: 7.5 x outer diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> -40 °C to +60 °C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for outdoor use and direct burial</b>					
2170323	UNITRONIC® BUS PB BURIAL FC	1 x 2 x 0.64	10.8	26	115

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002



# UNITRONIC® BUS PB Y 7-W FC BK

Suitable for outdoor use, UV-resistant



### Benefits

- UV and weather-resistant in black
- 7-W: 7-wire, e.g. for applications where vibrations occur
- Fast Connect (FC) cable design
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- PVC compound TM2 acc. to EN 50363-4-1
- Resistant to acids, alkalis and certain oils at room temperature

### Product Make-up

- Stranded conductor, 7-wire, bare
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- PVC outer sheath, black

### Suitable tools

- FC STRIP stripping tool refer to page 1002

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000830 <b>ETIM 5.0 Class-Description:</b> Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms Core/screen: 1500 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -10°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® BUS PB Y 7-W FC BK 2170310	UNITRONIC® BUS PB Y 7-W FC BK	1 x 2 x 0.64	7.8	30.1	80

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002



## UNITRONIC® BUS PB FD P

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P

### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
93.75 kbit/s = 1200 m  
187.5 kbit/s = 1000 m  
500 kbit/s = 400 m  
1.5 Mbit/s = 200 m  
12.0 Mbit/s = 100 m

### Product Make-up

- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Tin-plated copper wire braiding
- Outer sheath: PUR compound

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Torsion movement in WTG (wind turbine generator)</b> TW-0 & TW-2, refer to Appendix TO
	<b>Minimum bending radius</b> 65 mm
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>For highly flexible applications (e.g. power chains) - conventional cable assembly</b>					
2170222	UNITRONIC® BUS PB FD P 1x2x0,64	1 x 2 x 0.64	8	30.1	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



# UNITRONIC® BUS PB FD P A

Highly flexible application

**Info**

- A for Advanced here: UL and CSA certifications



### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For highly flexible applications (power chains, moving machine parts)

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)

### Product features

- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

### Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Torsion movement in WTG (wind turbine generator)</b> TW-0 & TW-2, refer to Appendix T0
	<b>Minimum bending radius</b> 65 mm
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170822	UNITRONIC® BUS PB FD P A	1 x 2 x 0.64	8	30.1	58

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



## UNITRONIC® BUS PB FD P FC

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P FC

### Benefits

- Fast Connect (FC) cable design
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- For highly flexible applications (power chains, moving machine parts)

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Flame-retardant according IEC 60332-1-2
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Norm references / Approvals

- Certification: UL/CSA type CMX in accordance with UL 444 and CSA C22.2 no. 214

### Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/kg)	Weight (kg/km)
<b>Highly flexible application</b>					
2170322	UNITRONIC® BUS PB FD P FC	1 x 2 x 0.64	8	26	79

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX





## UNITRONIC® BUS PB FD FRNC FC

Highly flexible application

LAPP KABEL STUÏGART UNITRONIC® BUS PB FD FRNC FC

### Benefits

- Fast Connect (FC) system
- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- For highly flexible use in energy supply chains or permanently moving machines and linear robots
- This cable provides special advantages for use in sensitive areas where fire propagation must be avoided and the presence of toxic fumes would cause personal injury and damage to equipment.

### Product features

- The cable is UL/CSA-certified (CMG)
- Halogen-free
- High flame retardancy in accordance with IEC 60332-3 and FT4
- Oil-resistant
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Product Make-up

- Stranded bare copper wire
- Foam Skin - core isolation (O2YS)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR compound

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> nom. 28 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> (3 - 20 MHz): 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS PB FD FRNC FC</b>					
2170854	UNITRONIC® BUS PB FD FRNC FC	1x2x0,64	8	26	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors
- FC STRIP stripping tool refer to page 1002



## UNITRONIC® BUS PB FD P COMBI

Highly flexible application

LAPP KABEL STUTTGART UNITRONIC® BUS PB FD P COMBI

### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- HYBRID: cable for data transmission + power supply
- Flame-retardant according to IEC 60332.1.2

### Product Make-up

- Cores for Power Supply  
3 x 1.0 mm<sup>2</sup> (AWG 18)
- Core insulation: Based on Polyolefin
- PUR-based outer sheath

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 100 V
	<b>Minimum bending radius</b> Flexing: 145 mm
	<b>Test voltage</b> Core/core: 600 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -5 °C to +50 °C Fixed installation: -40 °C to +80 °C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Highly flexible application</b>					
2170227	UNITRONIC® BUS PB FD P COMBI	1 x 2 x 0.64 Ø + 3 x 1.0 mm <sup>2</sup>	10.1	59	125

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB FD P HYBRID

Highly flexible application



### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- HYBRID: cable for data transmission + power supply
- Flame-retardant according IEC 60332-1-2
- Oil-resistant

### Product Make-up

- Cores for Power Supply  
4 x 1.5 mm<sup>2</sup> (AWG 16)

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000830 <b>ETIM 5.0 Class-Description:</b> Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 100 V
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 600 V Core/screen: 600 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -30 °C to +60 °C Fixed installation: -40 °C to +70 °C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Highly flexible application</b>					
2170495	UNITRONIC® BUS PB FD P HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm <sup>2</sup>	11.3	89	148

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PB FD Y HYBRID

Highly flexible application



### Benefits

- For highly flexible applications (power chains, moving machine parts)
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- CL3 for installation on trays

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- HYBRID: cable for data transmission + power supply

### Norm references / Approvals

- With UL/CSA certification (CMG, CL3, SUN RES, Oil Res I)
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

### Product Make-up

- Outer sheath: special PVC compound
- Cores for Power Supply  
4 x 1.5 mm<sup>2</sup> (AWG 16)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> 600 V (not for power applications)
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 2000 V Core/screen: 2000 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> -5°C to +80°C

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Highly flexible application</b>					
2170875	UNITRONIC® BUS PB FD Y HYBRID	1 x 2 x 0.64 Ø + 4 x 1.5 mm <sup>2</sup>	11.3	89	155

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.



# UNITRONIC® BUS PB TORSION

Highly flexible application



### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required
- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- TORSION: for torsional stress, e.g. robot application; ± 180° per 1 m
- Halogen-free
- Flame-retardant according IEC 60332-1-2
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Norm references / Approvals

- Certification: UL type CMX in accordance with UL 444

### Product Make-up

- PE core insulation

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000830 <b>ETIM 5.0 Class-Description:</b> Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> (not for power applications) 300 V
	<b>Torsion movement in WTG (wind turbine generator)</b> Max. torsion load ± 180°/m
	<b>Minimum bending radius</b> Fixed installation: 4 x outer diameter Flexing: 7.5 x outer diameter
	<b>Test voltage</b> 3600 V DC (3 sec.)
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Operating temperature: -25°C to 75°C Storage temp.: -40°C to 80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
2170332	UNITRONIC® BUS PB TORSION	1 x 2 x 0.80	8	31	66

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



## UNITRONIC® BUS PB FESTOON

Highly flexible application

LAPP KABEL STUÏGART UNITRONIC® BUS PB FESTOON

### Benefits

- Cables can be used for PROFIBUS-DP as well as PROFIBUS-FMS and FIP
- CL3 for installation on trays

### Application range

- PROFIBUS DP (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- FESTOON: for cable trolley (festoon)
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):  
 93.75 kbit/s = 1200 m  
 187.5 kbit/s = 1000 m  
 500 kbit/s = 400 m  
 1.5 Mbit/s = 200 m  
 12.0 Mbit/s = 100 m

### Norm references / Approvals

- With UL/CSA certification (CMG, CL3, SUN RES, Oil Res I)
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

### Product Make-up

- Outer sheath: special PVC compound

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak operating voltage</b> 600 V (not for power applications)
	<b>Minimum bending radius</b> Flexing: 70 mm Fixed installation: 30 mm once
	<b>Test voltage</b> Core/core: 2000 V
	<b>Characteristic impedance</b> 150 ± 15 Ohm
	<b>Temperature range</b> Flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Highly flexible application</b>					
2170331	UNITRONIC® BUS PB Festoon	1 x 2 x 0.64	8	26	64

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SIMATIC® is a registered trademark of SIEMENS AG. FIP is a registered trademark of World FIP  
 Lapp Kabel is a member of the PROFIBUS user organisation (PNO)  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



## EPIC® DATA PB Sub-D

PROFIBUS connectors with screw terminals | REPEATER function | ATEX

**Info**

- Optional with LED diagnostic
- ATEX and REPEATER Version
- Versions with 2th Sub-D ports



### Benefits

- Easy connection with proven screw clamp connection
- Compact design: small space requirements
- Terminating resistor (integrated) can be switched
- REPEATER version: Regeneration of data signal (slope, power and mark-to-space ratio)
- ATEX version: For use within intrinsically-safe circuits in zone 2 areas with an explosion hazard (explosive gas atmosphere occurs only rarely and briefly)

### Product features

- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA (with LED 35 mA / REPEATER 100 mA)
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Terminating resistor "ON" - the outbound bus cable is disconnected
- REPEATER version: Easy extension of the PROFIBUS network:
  - up to 3 repeaters
  - 1 additional PROFIBUS segment
  - galvanic isolation

### Norm references / Approvals

- IEC 61158, IEC 61784
- UL File: E331560
- ATEX version: DIN EN 60079-0:2006, DIN 60079-15:2005 (category 3G zone 2)

### Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Versions with additional Sub-D interface for programming/diagnostic ('PG')
- For cable outer diameter: 5 - 8 mm
- LED Version indicate:
  - bus operation - (green)
  - station transmission - (blue)
  - terminating resistor "on" - (orange)

### Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP

### Suitable tools

- Kraftform® adjustable torque screwdriver / Kraftform Kompakt® Set refer to page 1078

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001132  
ETIM 5.0 Class-Description: D-Sub connector

**Dimensions**  
54 mm x 40 mm x 17 mm - 35°  
64 mm x 40 mm x 17 mm - 90°  
68 mm x 40 mm x 17 mm - 180° (LxWxH)

**Connection type**  
Screwing

**IP** **Protection rating**  
IP20

**Terminating resistor**  
150 Ω

**Interfaces**  
PROFIBUS station:  
D-Sub socket, 9-pin  
PROFIBUS cable:  
4 terminal blocks for wires up to 1.0 mm<sup>2</sup> (solid/flexible 7/19 wire)

**Permissible ambient conditions**  
Operating temperature:  
-25°C to +85°C  
\*The max. temperature for UL is 60 °C.

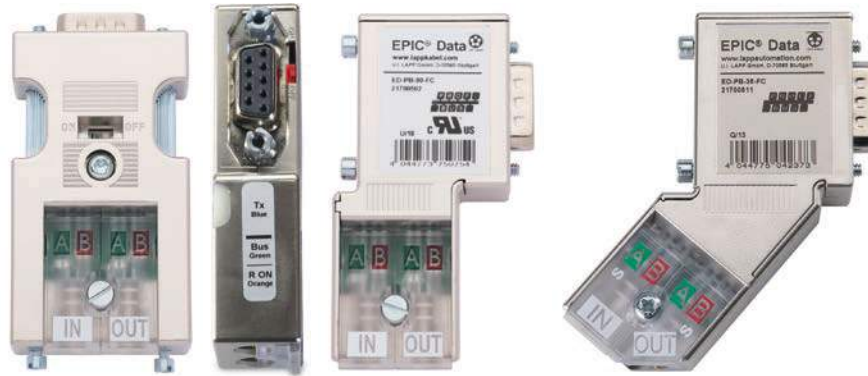
Article number	Article designation	Version	PG-Interface	Diagnostic LEDs	PU
<b>35° cable outlet</b>					
21700507	ED-PB-35		no	no	1
21700506	ED-PB-35-PG		yes	no	1
<b>90° cable outlet</b>					
21700504	ED-PB-90		no	no	1
21700503	ED-PB-90-PG		yes	no	1
21700530	ED-PB-90-LED		no	yes	1
21700529	ED-PB-90-PG-LED		yes	yes	1
21700541	ED-PB-90-RP-PG	REPEATER	yes	yes	1
21700543	ED-PB-90-ATEX	ATEX	no	no	1
21700542	ED-PB-90-PG-ATEX	ATEX	yes	no	1
<b>180° (AX) cable outlet</b>					
21700505	ED-PB-AX		no	no	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA PB Sub-D FC

PROFIBUS Connectors Fast Connect



**Info**

- New innovative insulation displacement terminals suitable for solid and flexible conductors (90° and 180° versions)
- Versions with 2th Sub-D ports
- Optional with LED diagnostic

### Benefits

- Quick installation with Fast Connect ('FC') technology
- Compact design: small space requirements
- No loose parts
- Visual bus connection control
- Terminating resistor (integrated) can be switched

### Product features

- Fully compatible with market standard
- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA (with LED 35 mA)
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Terminating resistor "ON" - the outbound bus cable is disconnected

### Norm references / Approvals

- IEC 61158, IEC 61784
- UL File: E331560

### Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Max. cable outer diameter: 8 mm
- Versions with additional Sub-D interface for programming/diagnostic ('PG')
- LED Version indicate: bus operation - (green) station transmission - (blue) terminating resistor "on" - (orange)

### Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP

### Suitable tools

- FC STRIP stripping tool refer to page 1002
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

### Technical data

ETIM 5.0 Class-ID: EC001132  
ETIM 5.0 Class-Description: D-Sub connector

**Dimensions**  
95 mm x 70 mm x 17 mm - 35°  
72 mm x 40 mm x 17 mm - 90°  
70 mm x 35 mm x 17 mm - 180° (LxWxH)

**Connection type**  
Fast Connect

**Protection rating**  
IP20

**Terminating resistor**  
150 Ω

**Interfaces**  
PROFIBUS station:  
SUB-D socket, 9-pin  
PROFIBUS cable:  
FC standard cable, Ø 0.64 mm

**Permissible ambient conditions**  
Operating temperature:  
-25°C to +85°C  
\*The max. temperature for UL is 60 °C.

Article number	Article designation	PG-Interface	Diagnostic LEDs	PU
<b>35° cable outlet for solid / 7-wire stranded conductor</b>				
21700511	ED-PB-35-FC	no	no	1
21700513	ED-PB-35-PG-FC	yes	no	1
<b>35° cable outlet for 7-/19-wire stranded conductor</b>				
21700514	ED-PB-35-FC-FLEX	no	no	1
21700515	ED-PB-35-PG-FC-FLEX	yes	no	1
<b>90° cable outlet for solid / 7-/ 19-wire stranded conductor</b>				
21700502	ED-PB-90-FC	no	no	1
21700501	ED-PB-90-PG-FC	yes	no	1
21700547	ED-PB-90-LED-FC	no	yes	1
21700546	ED-PB-90-PG-LED-FC	yes	yes	1
<b>180° (AX) cable outlet for solid / 7-/ 19-wire stranded conductor</b>				
21700544	ED-PB-AX-FC	no	no	1

Photographs are not to scale and do not represent detailed images of the respective products.





**EPIC® DATA PB Sub-D M12**  
PROFIBUS Connectors M12



**Info**

- Plug & Play together with ready-to-use PROFIBUS M12 cordsets

**Benefits**

- Cost-efficient due to quick installation (Plug & Play)
- Compact design: small space requirements
- No loose parts
- Terminating resistor (integrated) can be switched
- Suitable for assembled M12 PB cables

**Product features**

- Max. transmission rate 12 Mbit/s possible
- Current consumption max. 12,5 mA
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)
- Switch can also be operated when the connector is plugged and setting is clearly visible
- Terminating resistor "ON" - the outbound bus cable is disconnected

**Norm references / Approvals**

- IEC 61158, IEC 61784
- UL File: E331560

**Product Make-up**

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Connector M12, B-coded
- Improved electromagnetic compatibility (EMC) by metallized housing
- Version with additional Sub-D port for programming/diagnostic ('PG')

**Suitable cables**

- UNITRONIC® BUS PB M12 Page 352
- UNITRONIC® BUS PB M12-M12

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001132  
ETIM 5.0 Class-Description: D-Sub connector

**Dimensions**  
70 mm x 40 mm x 17 mm (L x W x H)

**Connection type**  
M12

**IP** **Protection rating**  
IP20

**Terminating resistor**  
150 Ω

**Interfaces**  
PROFIBUS station:  
D-Sub socket, 9-pin  
PROFIBUS cable:  
M12 PB system cabling

**Permissible ambient conditions**  
Operating temperature:  
-25°C to +85°C  
\*The max. temperature for UL is 60 °C.

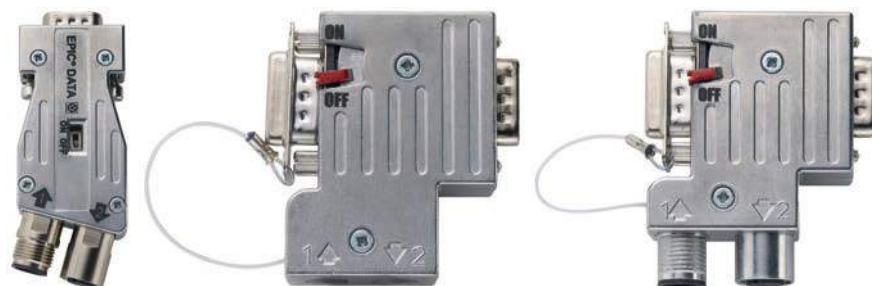
Article number	Article designation	PG-Interface	PU
<b>90° cable outlet</b>			
21700520	ED-PB-PG-90-M12	yes	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA PB Sub-D PRO

PROFIBUS Connectors full-metall M12 connection /spring type connection



**Info**

- For high mechanical stress
- High EMC protection

### Benefits

- Optimum EMC protection
- Robust housing material for harsh environments
- No loose parts
- Cost-efficient due to quick installation (Plug & Play)
- Terminating resistor (integrated) can be switched

### Product features

- Extended temperature range
- High mechanical strength (200 contact durability)
- Less transmission loss
- Max. transmission rate 12 Mbit/s possible
- Supply voltage 4.75 - 5.25 V DC (supplied from the terminal)

### Norm references / Approvals

- IEC 61158, IEC 61784

### Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- 360° shielding due full-metall housing (ZnAl)
- With additional Sub-D port for programming/diagnostic 'PG' (35° and 90° version)
- With EMC connector protection (PG port)
- M12 version: 5-pin connector, M12 B-coded

### Suitable cables

- UNITRONIC® BUS PB M12 Page 352
- UNITRONIC® BUS PB M12-M12

### Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001132  
ETIM 5.0 Class-Description: D-Sub connector

**Dimensions**  
see technical data sheet

**Connection type**  
M12 or  
Internal spring type terminal

**IP** **Protection rating**  
IP 30

**Terminating resistor**  
150 Ω

**Interfaces**  
PROFIBUS station:  
D-Sub socket, 9-pin  
PROFIBUS cable:  
M12 PROFIBUS cordsets  
Spring type for solid conductor  
0,08 - 0,5 mm<sup>2</sup> (AWG28 - AWG14)  
Cable diameter: 8 - 9 mm

**Permissible ambient conditions**  
Operating temperature: -20°C to +70°C

Article number	Article designation	Connection type	PG-Interface	PU
<b>35° cable outlet</b>				
21700564	ED-PB-35-PG-ST-PRO	Internal spring type	yes	1
21700561	ED-PB-35-PG-M12-PRO	M12	yes	1
<b>90° cable outlet</b>				
21700565	ED-PB-90-PG-ST-PRO	Internal spring type	yes	1
21700562	ED-PB-90-PG-M12-PRO	M12	yes	1
<b>180° (AX) cable outlet</b>				
21700566	ED-PB-AX-M12-PRO	Internal spring type	no	1
21700563	ED-PB-AX-M12-PRO	M12	no	1

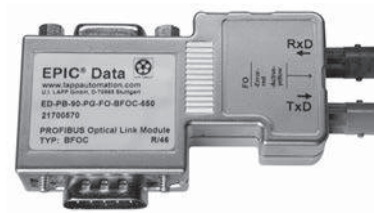
Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® DATA PB Sub-D FO**  
PROFIBUS Connectors Optical Link Modul

**Info**

- PROFIBUS repeater with integrated optical interface



**Benefits**

- Easy covering of large distances (PCF 250 m / POF 65 m)
- Cost-efficient due to quick installation (Plug & Play)
- Galvanic isolation in case of potential differences within PROFIBUS network
- For EMC critical environments
- Integrated repeater functionality: Regeneration of data signal (slope, power and mark-to-space ratio)

**Product features**

- Max. distance: POF fiber: 65 m, PCF fiber: 250 m
- Diagnostic LEDs (blue, green, red, yellow)
- Bus termination is integrated
- Current consumption typ. 100 mA
- Supply voltage 5.0 V DC (supplied from the terminal)

**Norm references / Approvals**

- IEC 61158, IEC 61784

**Product Make-up**

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Improved electromagnetic compatibility (EMC) by metallized housing
- Versions with additional Sub-D interface for programming/diagnostic ('PG')
- An external 24 V supply is not necessary
- Connection for optical cable (POF or PCF)

**Suitable cables**

- HITRONIC® POF DUPLEX BUFFERED FIBRES Page 490
- HITRONIC® POF DUPLEX CABLE Page 491
- HITRONIC® POF cables for PROFINET Applications Page 492

**Suitable connectors**

- HBFR, SMA and BFOC(ST)

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001132  
ETIM 5.0 Class-Description: D-Sub connector

**Dimensions** 64 mm x 40 mm x 17 mm (LxWxH)

**IP** **Protection rating** IP 20

**Interfaces**  
Connection: Sub-D socket, 9-pin  
FO-cable:  
- Polymeric-optical-fiber (POF), 650 nm  
- Polymer-cladded-fiber (PCF), 650 nm

**Permissible ambient conditions**  
Operating temperature: 0°C to +60°C

Article number	Article designation	PG-Interface	Diagnostic LEDs	PU
<b>90° cable outlet</b>				
<b>For HFBR connector</b>				
21700568	ED-PB-90-PG-FO-HFBR-650	yes	yes	1
<b>For SMA connector</b>				
21700569	ED-PB-90-PG-FO-SMA-650	yes	yes	1
<b>For BFOC(ST) connector</b>				
21700570	ED-PB-90-PG-FO-BFOC-650	yes	yes	1

Applicable optical connectors (POF) included  
Photographs are not to scale and do not represent detailed images of the respective products.  
Note: For one optical link 2 modules are required

**Accessories**

- PCF Assembly Sets refer to page 504
- PCF Connector HFBR refer to page 503
- PCF Connector F-SMA and ST(BFOC) refer to page 503
- POF Assembly Sets refer to page 496
- POF Connector F-SMA and ST(BFOC) refer to page 494
- POF Connector SC-RJ refer to page 495



## UNITRONIC® BUS PB M12 / UNITRONIC® BUS PB M12-M12

PROFIBUS cable: M12 plug/socket on free conductor end

PROFIBUS Cable: M12 connector on M12 socket



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost efficient and rational wiring for PROFIBUS installations
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Application range

- Mechanical and plant engineering

### Product features

- 2-core PROFIBUS cable, shielded
- Connector M12, B-coded with quick locking system
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- UL-AWM-Style 21198

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Core colours: red, green
- Outer sheath: PUR halogen-free, violett
- Outer diameter: 7.8 mm
- Shielded version
- Shielding is conducted over the knurl

### Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA PB M12 Page 353
- EPIC® DATA PB M12/M12 Page 354
- EPIC® DATA PB M12T Page 355

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord



**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



**Protection rating**  
IP65/IP67



**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -30°C to +80°C  
Drag chain application ≤ 70 °C

### Coding

B - inverse

### Rated current (A)

4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
<b>plug</b>						
22260767	AB-PB-M12MS-2,0PUR	2	2	straight	250	1
22260768	AB-PB-M12MS-5,0PUR	5	2	straight	250	1
22260769	AB-PB-M12MS-10,0PUR	10	2	straight	250	1
22260956	AB-PB-M12MA-2,0PUR	2	2	angled	250	1
<b>Socket</b>						
22260770	AB-PB-2,0PUR-M12FS	2	2	straight	250	1
22260771	AB-PB-5,0PUR-M12FS	5	2	straight	250	1
22260772	AB-PB-10,0PUR-M12FS	10	2	straight	250	1
<b>Connector to socket</b>						
22260955	AB-PB-M12MS-0,2PUR-M12FS	0.2	2	straight-straight	250	1
22260773	AB-PB-M12MS-0,3PUR-M12FS	0.3	2	straight-straight	250	1
22260774	AB-PB-M12MS-1,0PUR-M12FS	1	2	straight-straight	250	1
22260775	AB-PB-M12MS-2,0PUR-M12FS	2	2	straight-straight	250	1
22260869	AB-PB-M12MS-3,0PUR-M12FS	3	2	straight-straight	250	1
22260776	AB-PB-M12MS-5,0PUR-M12FS	5	2	straight-straight	250	1
22260777	AB-PB-M12MS-10,0PUR-M12FS	10	2	straight-straight	250	1
22260907	AB-PB-M12MS-15,0PUR-M12FS	15	2	straight-straight	250	1
22260908	AB-PB-M12MS-20,0PUR-M12FS	20	2	straight-straight	250	1
22260079	AB-PB-M12MA-5,0PUR-M12FA	5	2	straight-angled	250	1
22260904	AB-PB-M12MA-10,0PUR-M12FA	10	2	straight-angled	250	1
22260905	AB-PB-M12MA-15,0PUR-M12FA	15	2	straight-angled	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Customised cable lengths are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- FLEXIMARK® Label LMB refer to page 951



## EPIC® DATA PB M12

Field mountable M12 BUS-connectors, shielded for PROFIBUS



### Benefits

- Quick and easy on-site assembly
- For creating of individual cable lengths
- Cost efficient and rational wiring for BUS installations
- Space-saving due to compact dimensions

### Product features

- Screened version
- Connector M12, B-coded
- PG9- / PG11-thread
- Screw connection

### Suitable cables

- Bus system PROFIBUS-DP/FMS/FIP
- UNITRONIC® BUS PB M12 Page 352

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



**Material**  
Contact: CuSn  
Contact surface: Au  
Contact carrier: PA66  
Sealing: NBR  
Knurl: Nickel-plated brass  
Gripping body: Zinc die-cast, nickel-plated



**Protection rating**  
IP67



**Ambient temperature (operation)**  
Plug/socket -40°C to +85°C

**Coding**  
B - inverse (PROFIBUS)

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Plug, straight</b>						
22260653	AB-C5-M12MSB-PG9-SH-AU	5	0.25 - 0.75	6 - 8.5	60	1
22262078	AB-C5-M12MSB-PG11-SH-AU	5	0.25 - 0.75	8 - 10	60	1
<b>Socket, straight</b>						
22260646	AB-C5-M12FSB-PG9-SH-AU	5	0.25 - 0.75	6 - 8.5	60	1
22260889	AB-C5-M12FSB-PG11-SH-AU	5	0.25 - 0.75	8 - 10	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA PB M12/M12

PROFIBUS M12 control cabinet feed-through, shielded



### Benefits

- M12 connector on both sides
- Plug & Play for flexible connection solutions

### Application range

- Mechanical and plant engineering

### Product features

- For PROFIBUS applications
- Bipolar/screw mounting

### Product Make-up

- 5-pin control cabinet feed-through, M12 B-coded
- M12 plug on M12 socket
- Screened version

### Suitable cables

- UNITRONIC® BUS PB M12 Page 352
- UNITRONIC® BUS PB M12-M12

### Technical data

ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: Au (gold)  
Contact carrier: PA 66  
Knurl: Nickel-plated brass  
Sealing: FKM

**Protection rating**  
IP67

**Ambient temperature (operation)**  
Plug/socket  
-25°C to +85°C

**Coding**  
B - inverse (PROFIBUS)

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Control cabinet feed through</b>				
22262021	AB-C5-DSI-M12MSB-M12FSB-M16-SH	5	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA PB TR M12

M12 Terminating resistor for PROFIBUS



### Benefits

- Cost efficient termination of a bus systems
- Space-saving due to compact dimensions
- Robust design

### Application range

- Mechanical and plant engineering

### Product features

- 150 Ω terminating resistor for PROFIBUS

### Product Make-up

- Straight connector M12 with integrated termination resistor
- Straight connector M12, with integrated termination resistor, shielded

### Info

- Fully suitable for industrial use

### Technical data

ETIM 5.0 Class-ID: EC001604  
ETIM 5.0 Class-Description: Fieldbus, decentr. periphery - communication module

**Protection rating**  
IP65/IP67 (plug)  
IP 67 (socket)

**Ambient temperature (operation)**  
-25°C to +90°C (plug)  
-40°C to +85°C (socket)

**Contact material**  
CuSn

**Coding**  
B - inverse (PROFIBUS)

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Plug, unshielded (terminating resistor)</b>				
22260722	AB-C4-M12MS-PB-TR	4	60	5
<b>Socket, shielded (terminating resistor)</b>				
22261001	AB-C5-M12FS-PB-TR-SH	4	32	1

Photographs are not to scale and do not represent detailed images of the respective products.

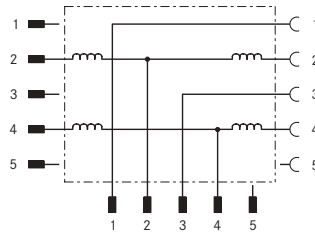
### Accessories

- EPIC® DATA PB M12T refer to page 355



**Info**

- Fully suitable for industrial use



**EPIC® DATA PB M12T**

M12 T distributor, shielded for PROFIBUS



**Benefits**

- Cost efficient and rational wiring for PROFIBUS installations
- Space-saving due to compact dimensions
- Robust design

**Application range**

- Mechanical and plant engineering

**Product features**

- For PROFIBUS stubs
- Screened version

**Product Make-up**

- 4-pin PROFIBUS T-connector
- M12 plug to M12 plug and M12 socket

**Technical data**



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord



**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Contact carrier: PUR  
Knurl: Nickel-plated brass  
Gripping body: PUR  
Sealing: VITON®



**Protection rating**  
IP 67



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +80°C

**Coding**  
B - inverse

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>T distributor</b>				
22260761	AB-C2-M12T-2XM12FS PB	4	60	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PB TR M12 refer to page 354



**EPIC® DATA PB CCR**

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables



**Benefits**

- Time-saving assembly with IDC connection technology
- Optimum EMC protection with 360 ° shielding

**Application range**

- To extend existing cable systems
- Repairkit for damaged cables

**Product features**

- For core outer diameter 0.75 - 2.0 mm
- 5-pin cable coupler round
- Screened version

**Technical data**



**Material**  
Contact: CuZn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: Zinc die-cast, nickel-plated



**Protection rating**  
IP65/IP67



**Ambient temperature (operation)**  
-5°C to +50°C

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Cable coupler round</b>						
21700641	AB-C5-CCR-SH	5	0.14 - 0.5	5 - 9.7	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS PA



### Info

- PA = Process Automation
- Variant with UL/CSA CMG

### Benefits

- FC (Fast Connect) version is oil and UV-resistant

### Application range

- Process-automation application for connecting sensors and actuators - including areas with risks of explosion.
- Fixed installation

### Product features

- Bit rate = 31.25 kbit/s. Transmission technology RS485 also possible but bit rate is limited to 1.5 Mbit/s
- Maximum cable length is dependent on several factors (e.g. supply voltage, current demand).
- Technical Data: refer to the overview on "UNITRONIC® Bus Cables"
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- PROFIBUS® PA is standardised in EN 50170 as PROFIBUS® DP and PROFIBUS® FMS
- Transmission technology for PROFIBUS-PA in accordance with international standard IEC 61158-2
- FC variant with UL/CSA certification (CMG / PLTC)

### Product Make-up

- UNITRONIC® BUS PA (BU/BK)  
Stranded conductor, core colours: red and green, copper braiding, PVC sheath, colour: blue (intrinsically safe area), colour: black (non-intrinsically safe area)
- UNITRONIC® BUS PA FC (BU/BK)  
Solid core, UL/CSA CMG certification and "Fast Connect" cable design, which enables rapid connection of the IDC connector (Insulation Displacement Connection).

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 44 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 100 ± 20 Ohm
	<b>Temperature range</b> Fixed installation: -30°C to +80°C During installation: -5°C to +50°C

Article number	Article designation	Number of pairs and cable diameter per conductor in mm	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>For fixed installation - conventional cable assembly</b>					
2170234	UNITRONIC® BUS PA (BU)	1 x 2 x 1,3	8	45	84
2170235	UNITRONIC® BUS PA (BK)	1 x 2 x 1,3	8	45	84
<b>For fixed installation - "Fast Connect" cable assembly - UL/CSA CMG certification</b>					
2170334	UNITRONIC® BUS PA FC (BU)	1 x 2 x 1.00	8	45.5	103
2170335	UNITRONIC® BUS PA FC (BK)	1 x 2 x 1.00	8	45.5	103

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

SIMATIC® is a registered trademark of Siemens AG

Armoured

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Multipurpose shears A and B refer to page 998
- STAR STRIP stripping tool refer to page 1000
- FC STRIP stripping tool refer to page 1002





## UNITRONIC® DeviceNet THICK + THIN



### Application range

- Fixed installation
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

### Product features

- Resistant to oils
- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- FRNC Version: Halogene free and flame retardant
- Refer to data sheet for more details

### Norm references / Approvals

- CMG UL/CSA certification 75 °C or PLTC, Sun Res
- FRNC variant additionally with Germanischer Lloyd certification

### Product Make-up

- Core insulation made of foam skin
- Outer sheath: Halogene free (FRNC) or Polyvinylchlorid (PVC)

### Technical data

	<b>ETIM</b> ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> Data pair: light blue + white Power supply: red + black
	<b>Mutual capacitance</b> (800 Hz): max. 39.8 nF/km
	<b>Peak operating voltage</b> 300 V (not for power applications)
	<b>Conductor resistance</b> Thick (loop): max. 45 ohm/km Thin (loop): max. 180 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 15 x outer diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Characteristic impedance</b> 120 ohm
	<b>Temperature range</b> Fixed installation: -25 °C to +80 °C

Article number	Article designation	Number of pairs and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Halogen-free</b>					
2170340	UNITRONIC® BUS DN THICK FRNC	1x2xAWG18 + 1x2xAWG15	12.2	82.8	195
2170341	UNITRONIC® BUS DN THIN FRNC	1x2xAWG24 + 1x2xAWG22	6.9	33.4	69.5
<b>With PVC outer sheath</b>					
2170342	UNITRONIC® BUS DN THICK Y	1x2xAWG18 + 1x2xAWG15	12.2	88.4	192
2170343	UNITRONIC® BUS DN THIN Y	1x2xAWG24 + 1x2xAWG22	6.9	33.4	66.9

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

FRNC means Flame-Retardant, Non-Corrosive; and DeviceNet is a registered trademark of ODVA.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

ECO is the cost-efficient version of article no. 2170342 and 2170343, with a slight modification to the outer sheath and UL/CSA-approved (CMG).

Photographs are not to scale and do not represent detailed images of the respective products.



### UNITRONIC® DeviceNet FD THICK+THIN

Highly flexible and UL/CSA-certified

LAPP KABEL STUÏTGART UNITRONIC® BUS DN THICK FD P

LAPP KABEL STUÏTGART UNITRONIC® BUS DN THIN FD P

#### Application range

- For highly flexible applications
- DeviceNet™ connects industrial devices e.g. limit switches, photoelectric switches, valve islands, motor starters, drives, PLCs, etc.

#### Product features

- Based on proven CAN (Controller Area Network) technology.
- Permissible cable lengths vary with the data rate and the cable thickness
- Refer to data sheet for more details
- PUR (P) Version: Halogene free
- PVC (Y) Version: Flame retardant (UL FT4)
- UV-resistant (but colour may change after some time)

#### Norm references / Approvals

- PUR: UL/CSA-certified (CMX)
- PVC: UL/CSA CMG 75°C FT4 Sun Res Oil Res, at 2170346 also PLTC

#### Product Make-up

- Core insulation: PE
- Outer sheath of Polyurethan (PUR) or Polyvinylchlorid (PVC)

#### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Core identification code</b> Data pair: light blue + white Power supply: red + black
	<b>Mutual capacitance</b> (800 Hz): max. 39.8 nF/km
	<b>Peak operating voltage</b> 300 V (not for power applications)
	<b>Conductor resistance</b> Thick (loop): max. 45 ohm/km Thin (loop): max. 180 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 7.5 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Characteristic impedance</b> 120 ohm
	<b>Temperature range</b> PUR: -40°C to +80°C PVC: -10°C to +80°C

Article number	Article designation	Number of pairs and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Version P (PUR)</b>					
2170344	UNITRONIC® BUS DN THICK FD P	1x2xAWG18 + 1x2xAWG15	12.2	94	184
2170345	UNITRONIC® BUS DN THIN FD P	1x2xAWG24 + 1x2xAWG22	6.9	33.4	67.7
<b>Version Y (PVC)</b>					
2170346	UNITRONIC® BUS DN THICK FD Y	1x2xAWG18 + 1x2xAWG15	12.2	94	195
2170347	UNITRONIC® BUS DN THIN FD Y	1x2xAWG24 + 1x 2xAWG22	6.9	33.4	69.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SILVYN® CHAIN
- SMART STRIP stripping tool



**Info**

- CAN = Controller Area Network

**Application range**

**UNITRONIC® BUS CAN**

- Fixed installation

**UNITRONIC® BUS CAN FD P**

- For highly flexible applications

**Product features**

**UNITRONIC® BUS CAN**

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

**UNITRONIC® BUS CAN FD P**

- Halogen-free outer sheath
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according IEC 60332-1-2

LAPP KABEL STUÏGART UNITRONIC® BUS CAN

LAPP KABEL STUÏGART UNITRONIC® BUS CAN FD P

**Norm references / Approvals**

- Standardised internationally in ISO 11898
- UL/CSA type CMX (UL 444)

**Product Make-up**

**UNITRONIC® BUS CAN**

- 0.22 + 0.34 + 0.5: bare stranded conductor, 7-wire
- 0.75: bare stranded conductor, fine-wire
- Colour-coded in accordance with DIN 47100
- Copper braid
- PVC sheath
- Colour: violet (RAL 4001)

**UNITRONIC® BUS CAN FD P**

- Stranded bare conductor
- Screening: wrapped with braided copper wires
- PUR outer sheath
- Colour: violet (RAL 4001)
- UV-resistant (but colour may change after some time)

**Suitable connectors**

**UNITRONIC® BUS CAN**

- EPIC® DATA CAN Sub-D Page 362
- EPIC® DATA CAN Sub-D PRO Page 363

**UNITRONIC® BUS CAN**

**UNITRONIC® BUS CAN FD P**

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Mutual capacitance**  
**UNITRONIC® BUS CAN** (800 Hz): max. 40 nF/km  
**UNITRONIC® BUS CAN FD P** (800 Hz): max. 60 nF/km
- Peak operating voltage**  
**UNITRONIC® BUS CAN** (not for power applications) 250 V  
**UNITRONIC® BUS CAN FD P** 250 V (not for power transmission)
- Conductor resistance**  
**UNITRONIC® BUS CAN** (loop): max. 186 ohm/km  
**UNITRONIC® BUS CAN FD P** (loop): max. 159.8 ohm/km
- Minimum bending radius**  
**UNITRONIC® BUS CAN** Fixed installation: 8 x outer diameter  
**UNITRONIC® BUS CAN FD P** Flexing: 15 x outer diameter
- Test voltage** Core/core: 1500 V rms
- Characteristic impedance** 120 ohm
- Temperature range**  
**UNITRONIC® BUS CAN** Fixed installation: -30°C to +80°C  
Flexing: -5°C to +70°C  
**UNITRONIC® BUS CAN FD P** Fixed installation: -40°C to +80°C  
Flexing: -30°C to +70°C

Article number	Article designation	Number of pairs/ conductor cross section (mm <sup>2</sup> )	Outer diameter (mm)	Conductor resistance	Copper index (kg/km)	Weight (kg/km)
<b>for fixed installation</b>						
2170260	UNITRONIC® BUS CAN	1 x 2 x 0,22	5.7	186	16.7	42
2170261	UNITRONIC® BUS CAN	2 x 2 x 0,22	7.6	186	34.8	68
2170263	UNITRONIC® BUS CAN	1 x 2 x 0,34	6.8	115	25	55
2170264	UNITRONIC® BUS CAN	2 x 2 x 0,34	8.5	115	46.4	88
2170266	UNITRONIC® BUS CAN	1 x 2 x 0,5	7.5	78	41.6	90
2170267	UNITRONIC® BUS CAN	2 x 2 x 0,5	9.6	78	59.4	106
2170269	UNITRONIC® BUS CAN	1 x 2 x 0,75	8.7	52	52.7	108
2170270	UNITRONIC® BUS CAN	2 x 2 x 0,75	11.5	52	80.6	142
<b>For highly flexible applications (power chains, moving machine parts)</b>						
2170272	UNITRONIC® BUS CAN FD P	1 x 2 x 0,25	6.4	159.8	24	40
2170273	UNITRONIC® BUS CAN FD P	2 x 2 x 0,25	8.4	159.8	33	65
2170275	UNITRONIC® BUS CAN FD P	1 x 2 x 0,34	6.8	122	32.8	60
2170276	UNITRONIC® BUS CAN FD P	2 x 2 x 0,34	9.6	122	52.4	88
2170278	UNITRONIC® BUS CAN FD P	1 x 2 x 0,5	8	72.8	41.9	74
2170279	UNITRONIC® BUS CAN FD P	2 x 2 x 0,5	10.8	72.8	59.4	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**UNITRONIC® BUS CAN**

- Multipurpose shears A and B refer to page 998
- SMART STRIP stripping tool
- SENSOR STRIP stripping tool refer to page 1003



## UNITRONIC® BUS CAN TRAY

LAPP KABEL STUÏGART UNITRONIC® BUS CAN TRAY



### Info

- CAN = Controller Area Network

### Benefits

- PLTC-ER approval for open wiring between cable tray and industrial machines/plants acc. to NEC 725.154 (D)
- No additional protection of the cable needed

### Application range

- Fixed installation

### Product features

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- UV-resistant UL SUN RES
- Oil-resistant according to UL OIL RES I
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

### Norm references / Approvals

- Standardised internationally in ISO 11898
- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- UL Type PLTC-ER acc. to UL 13

### Product Make-up

- 7-wire bare stranded copper conductor
- Colour-coded in accordance with DIN 47100
- Copper braid
- PVC inner sheath and outer sheath
- Colour: violet (RAL 4001)

### Suitable connectors

- EPIC® DATA CAN Sub-D Page 362
- EPIC® DATA CAN Sub-D PRO Page 363

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 40 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V Rated voltage: 600 V (UL)
	<b>Conductor resistance</b> (loop): max. 110,8 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 2000 V
	<b>Characteristic impedance</b> 120 ohm
	<b>Temperature range</b> Fixed installation: -40°C to +80°C Flexing: -10°C to +70°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS CAN TRAY</b>					
2170857	UNITRONIC® BUS CAN TRAY	2 x 2 x 0,34	7.5	35	81

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Multipurpose shears A and B refer to page 998
- SMART STRIP stripping tool



## UNITRONIC® BUS CAN BURIAL

LAPP KABEL STUTTGART UNITRONIC® BUS CAN BURIAL



### Info

- Suitable for direct burial

### Benefits

- Suitable for CAN communication according to ISO 11898
- Double-sheathed version, extremely tough, for installation without corrugated tubing
- Rugged, UV-resistant and weatherproof
- Diameter of inner sheath suitable for common connectors

### Application range

- Useable for CAN based communication systems like CANopen
- Suitable for direct burial
- For outdoor applications
- For fixed installation or applications with occasional movements

### Product Make-up

- Copper stranded 7x0,32
- Core insulation made of polyethylene (PE)
- Colour-coded in accordance with DIN 47100
- Overall screening of braided tinned-copper strands
- Sheath 1: PVC violet, Outer diameter 7,1 mm  
Sheath 2: PE black, Outer diameter ca. 9 mm

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (1 kHz): max. 40 nF/km
	<b>Peak operating voltage</b> 300 V (not for power applications)
	<b>Conductor resistance</b> (Loop): max. 74 Ohm /km
	<b>Minimum bending radius</b> Flexible use: 8 x Outer Diameter Fixed Installation: 4 x Outer Diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 120 ohm
	<b>Temperature range</b> Fixed installation: -40°C to +80°C

Article number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS CAN BURIAL</b>				
2170500	4 x 1 x 0,5	9	41.8	91

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Sub-D Bus-Connectors



## EPIC® DATA CAN Sub-D

CAN Bus-Connectors with screw connection



### Benefits

- Terminating resistor (integrated) can be switched
- Compact design: small space requirements
- No loose parts
- With additional 24 V DC output to supply external devices (90° version only)

### Product features

- Max. transmission rate 1 Mbit/s possible
- Terminating resistor "ON" - the outbound bus cable is disconnected
- The integrated, connectable terminating resistor enable the CAN-Bus to be terminated or connected through
- Sub-D pin assignment:  
CAN Low = Pin 2  
CAN High = Pin 7  
CAN Gnd = Pin 3  
GND = Pin 6 (90° version only)  
CAN V+ = Pin 9 (90° version only)  
(shield = housing)

### Norm references / Approvals

- UL File: E331560

### Product Make-up

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- Screw connection
- Improved electromagnetic compatibility (EMC) by metallized housing
- For cable outer diameter: 5 - 8 mm


### Suitable cables


- Bus system CAN / DeviceNet
- Bus system DeviceNet

### Suitable tools

- Kraftform® adjustable torque screwdriver/  
Kraftform Kompakt® Set refer to page 1078

### Technical data

 ETIM 5.0 Class-ID: EC002640  
ETIM 5.0 Class-Description:  
I/O connector

 **Dimensions**  
60 mm x 40 mm x 17 mm - 90°  
67,5 mm x 35 mm x 17 mm - 180°  
(LxWxH)

**Connection type**  
Screwing

 **Protection rating**  
IP20

**Terminating resistor**  
120 Ω

**Interfaces**  
CAN bus station:  
D-Sub socket, 9-pin  
CAN bus cable:  
6 terminal blocks for wires up to  
0.8 mm<sup>2</sup>

 **Permissible ambient conditions**  
Operating temperature:  
-25°C to +85°C

\*The max. temperature for UL is 60 °C.

Article number	Article designation	Cable outlet	PG-Interface	PU
<b>Sub-D connector</b>				
21700537	ED-CAN-90	90°	no	1
21700536	ED-CAN-90-PG	90°	yes	1
21700538	ED-CAN-AX	180° axial	no	1

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® DATA CAN Sub-D PRO**  
CAN Bus-Connectors full-metall

**Info**

- High EMC protection
- For cable diameters up to 10 mm



**Benefits**

- High flexibility by extended cable clamping range
- Cost-saving due to quick and easy installation
- Robust housing material for harsh environments
- For EMC critical environments

**Product features**

- Extended temperature range
- High mechanical strength (200 contact durability)
- Less transmission loss
- Bus termination is integrated
- Sub-D pin assignment:  
CAN Low = Pin 2  
CAN High = Pin 7  
CAN Gnd = Pin 3  
GND = Pin 6 (90° version only)  
CAN V+ = Pin 9 (90° version only)  
(shield = housing)

**Product Make-up**

- D-Sub plug, 9-pin, fixing screws 4-40 UNC
- 360° shielding due full-metall housing (ZnAl)
- External cable clamp connection (7 - 10 mm)
- 90° version: With additional Sub-D port for programming/diagnostic ('PG')
- 90° version: PG port with undetachable EMC Sub-D protection

**Suitable cables**

- UNITRONIC® DeviceNet THICK + THIN Page 357
- UNITRONIC® BUS CAN Page 359
- UNITRONIC® DeviceNet FD THICK+THIN Page 358
- UNITRONIC® BUS CAN FD P Page 359
- UNITRONIC® BUS CAN TRAY Page 360
- UNITRONIC® BUS CAN BURIAL Page 361

**Suitable tools**

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002640  
ETIM 5.0 Class-Description: I/O connector

**Dimensions**  
63 x 45 x 18 - 90°  
81 x 36 x 15 - 180° (LxWxH)

**Connection type**  
Screwing

**IP** **Protection rating**  
IP 30

**Terminating resistor**  
120 Ω

**Interfaces**  
CAN-Bus station:  
D-SUB socket, 9-pin  
CAN-Bus cable:  
- srew terminals for wires  
0.14 - 0.5 mm<sup>2</sup>

**Permissible ambient conditions**  
Operating temperature: -20°C to +70°C

Article number	Article designation	Cable outlet	PG-Interface	PU
<b>Sub-D connector</b>				
21700590	ED-CAN-90-PG-PRO	90°	yes	1
21700591	ED-CAN-AX-PRO	180° axial	no	1

DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS CAN M12 / UNITRONIC® BUS CAN M12-M12

DeviceNet/CANopen Cable: M12 plug/socket on free conductor end

DeviceNet/CANopen Cable: M12 connector on M12 socket



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Robust design

### Application range

- Mechanical and plant engineering

### Product features

- 5-pin DeviceNet/CANopen cable, shielded
- M12 connector, A-coded with quick-locking system
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- UL-AWM-Style 21198

### Product Make-up

- Signal line: 2 x 0.25 mm<sup>2</sup>
- Power supply: 2 x 0.34 mm<sup>2</sup>
- Drain wire: 1 x 0.34 mm<sup>2</sup>
- Core colours: red-black, blue-white
- Outer sheath: PUR halogen-free, violett
- Outer diameter: 6.7 mm
- Shielded version

### Suitable connectors

- Sub-D Bus-Connectors
- EPIC® DATA CAN M12 Page 365
- EPIC® DATA CAN M12/M12 Page 365
- EPIC® DATA CAN TR M12 Page 366
- EPIC® DATA CAN M12T Page 367
- EPIC® DATA CAN CCR Page 367

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing

**IP** Protection rating  
IP65/IP67

**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -20°C to +80°C  
Drag chain application ≤ 70 °C

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Length (m)	Number of pins	Design	Rated voltage (V)	PU
<b>plug</b>						
22260789	AB-DN-M12MS-2,0PUR	2	5	straight	60	1
22260790	AB-DN-M12MS-5,0PUR	5	5	straight	60	1
22260791	AB-DN-M12MS-10,0PUR	10	5	straight	60	1
22262004	AB-DN-M12MA-2,0PUR	2	5	angled	60	1
<b>Socket</b>						
22260792	AB-DN-2,0PUR-M12FS	2	5	straight	60	1
22260793	AB-DN-5,0PUR-M12FS	5	5	straight	60	1
22260794	AB-DN-10,0PUR-M12FS	10	5	straight	60	1
<b>Connector to socket</b>						
22260795	AB-DN-M12MS-0,3PUR-M12FS	0.3	5	straight-straight	60	1
22260796	AB-DN-M12MS-1,0PUR-M12FS	1	5	straight-straight	60	1
22260797	AB-DN-M12MS-2,0PUR-M12FS	2	5	straight-straight	60	1
22260798	AB-DN-M12MS-5,0PUR-M12FS	5	5	straight-straight	60	1
22260799	AB-DN-M12MS-10,0PUR-M12FS	10	5	straight-straight	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- FLEXIMARK® Label LMB refer to page 951





## EPIC® DATA CAN M12

Field mountable M12 BUS-connectors shielded for DeviceNet/CANopen

### Benefits

- Quick and easy on-site assembly
- For creating of individual cable lengths
- Cost efficient and rational wiring for BUS installations
- Space-saving due to compact dimensions

### Product Make-up

- M12 plug, 5-pins, A-coded
- Screw connection
- PG9 thread
- Screened version

### Technical data

#### Connection type

Screwing



#### Material

Contact: CuSn  
Contact surface: Au  
Contact carrier: PA66  
Sealing: NBR  
Knurl: Nickel-plated brass  
Gripping body: Zinc die-cast, nickel-plated



#### Protection rating

IP67



#### Ambient temperature (operation)

Plug/socket -40°C to +85°C

#### Coding

A - Standard  
(CANopen/DeviceNet/CC-Link)

#### Rated current (A)

4 A



Article number	Article designation	Connection type	Number of pins	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Plug, straight</b>							
22260135	AB-C5-M12MS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1
<b>Socket, straight</b>							
22260136	AB-C5-M12FS-PG9-SH	screw	5	0.25 - 0.75	6.0 - 8.0	60	1

DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA CAN M12/M12

M12 control cabinet feed-through, shielded for CAN/DeviceNet/ S/A cabling

### Benefits

- M12 connector on both sides
- Plug & Play for flexible connection solutions

### Product features

- For CANopen/DeviceNet applications
- For sensor/actuator cabling
- Bipolar/screw mounting

### Product Make-up

- 5-pin control cabinet feed-through, M12 A-coded
- M12 plug on M12 socket
- Screened version

### Technical data



#### Material

Contact: CuZn  
Contact surface: Au (gold)  
Contact carrier: PA 66  
Knurl: Nickel-plated brass  
Sealing: FKM



#### Protection rating

IP67



#### Ambient temperature (operation)

Plug/socket  
-25°C to +85°C

#### Coding

A - Standard  
(CANopen/DeviceNet/CC-Link)

#### Rated current (A)

4 A



Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Control cabinet feed through</b>				
22262020	AB-C5-DSI-M12MS-M12FS-M16-SH	5	24	1

DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA CAN TR M12

M12 Terminating resistor for DeviceNet/CANopen



### Info

- Fully suitable for industrial use

#### Benefits

- Cost efficient termination of a bus systems
- Space-saving due to compact dimensions
- Robust design

#### Application range

- Mechanical and plant engineering

#### Product features

- 120 Ω terminating resistor for DeviceNet/ CANopen

#### Product Make-up

- Straight connector M12 with integrated termination resistor

#### Technical data



ETIM 5.0 Class-ID: EC001604  
ETIM 5.0 Class-Description: Fieldbus, decentr. periphery - communication module



**Protection rating**  
IP65/IP67



**Ambient temperature (operation)**  
-25°C to +90°C

**Contact material**  
CuSn

**Coding**  
A - Standard (CANopen/DeviceNet)

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Plug, unshielded (terminating resistor)</b>				
22260766	AB-C5-M12MS-DN-TR	5	60	5

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- EPIC® DATA CAN M12T refer to page 367



## EPIC® DATA CAN M12T

M12 T parallel distributor for CAN/ DeviceNet/ S/A cabling

### Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Robust design

### Product features

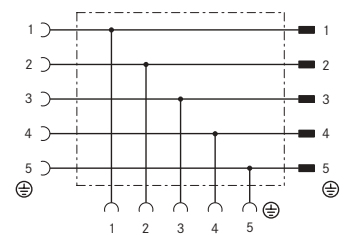
- For CANopen/DeviceNet applications
- PWIS-free

### Product Make-up

- 5-pin parallel distributor
- M12 socket on M12 plug and M12 socket

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Material</b> Contact: CuZn Contact surface: Ni/Au Contact carrier: TPU GF Knurl: Zinc die-cast, nickel-plated Gripping body: TPU, flame-retardant, self-extinguishing Sealing: NBR
	<b>Protection rating</b> IP65/IP67
	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +90°C
	<b>Coding</b> A - Standard (CANopen/DeviceNet/CC-Link)
	<b>Rated current (A)</b> 4 A



Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>T distributor</b>				
22260765	AB-C5-M12T-2XM12FS DN	5	60	5

DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA CAN CCR

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables

### Benefits

- Time-saving assembly with IDC connection technology
- Optimum EMC protection with 360 ° shielding

### Application range

- To extend existing cable systems
- Repairkit for damaged cables

### Product features

- For core outer diameter 0.75 - 2.0 mm
- 5-pin cable coupler round
- Screened version

### Technical data

	ETIM 5.0 Class-ID: EC002062 ETIM 5.0 Class-Description: Sensor-actuator connector
	<b>Material</b> Contact: CuZn Contact surface: Ni/Au Knurl: Zinc die-cast, nickel-plated Gripping body: Zinc die-cast, nickel-plated
	<b>Protection rating</b> IP65/IP67
	<b>Ambient temperature (operation)</b> -5°C to +50°C
	<b>Rated current (A)</b> 4 A



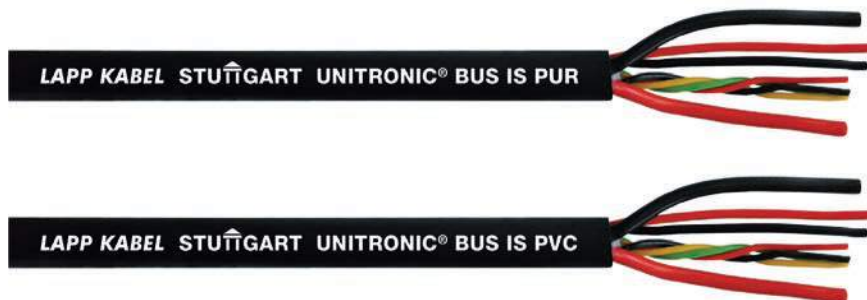
Article number	Article designation	Number of pins	Cross-section in mm²	Cable diameter in mm	Rated voltage (V)	PU
<b>Cable coupler round</b>						
21700641	AB-C5-CCR-SH	5	0.14 - 0.50	5.0 - 9.7	60	1

DeviceNet is a registered trademark of ODVA  
Photographs are not to scale and do not represent detailed images of the respective products.

Bus system ISOBUS • Flexible application



## UNITRONIC® BUS IS



### Info

- ISOBUS is a bus system for agricultural vehicles, which is standardized in the international standard ISO 11783-2
- Lapp cable is member of the AEF - Agricultural Industry Electronics Foundation

### Benefits

- Cable according ISOBUS standard (ISO 11783-2) for use in agricultural vehicles.
- HYBRID: cable for data transmission + power supply

### Application range

- For outdoor applications
- Connection cable between tractor and pulled machinery

### Product features

- Flame-retardant according to IEC standard 60332-1
- Resistant against oil, benzine and diesel
- UV-resistant
- PUR (Polyurethane) Version with increased robustness, UV- resistance and halogen free

### Norm references / Approvals

- ISO 11783-2:2012

### Product Make-up

- 4x 0,5 mm<sup>2</sup> (red, yellow, black, green)  
2x 2,5 mm<sup>2</sup> (red, black)  
2x 6 mm<sup>2</sup> (red, black)
- Fine-wired copper conductor of bare copper strands in line with conductor class 5 acc. IEC 60228
- Outer Sheath: Black PVC or PUR special compound

### Technical data



ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



**Peak operating voltage**  
60 V



**Test voltage**  
0,5 mm - 2,5 mm<sup>2</sup> core / core = 1,5 kV;  
6 - 10 mm<sup>2</sup> core / core = 2,5 kV



**Characteristic impedance**  
Characteristic impedance: 75 ohm



**Temperature range**  
PUR: -40°C to +85°C  
PVC: -30°C to +85°C

Article number	Article designation	Number of cores/pairs and mm <sup>2</sup> per conductor	Copper index (kg/km)
<b>UNITRONIC® BUS IS</b>			
2170561	UNITRONIC® BUS IS PUR 2x6+2x2,5+1x4x0,5	2x6+2x2,5+1x4x0,5	182.4
2170560	UNITRONIC® BUS IS PVC 2x6+2x2,5+1x4x0,5	2x6+2x2,5+1x4x0,5	182.4

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

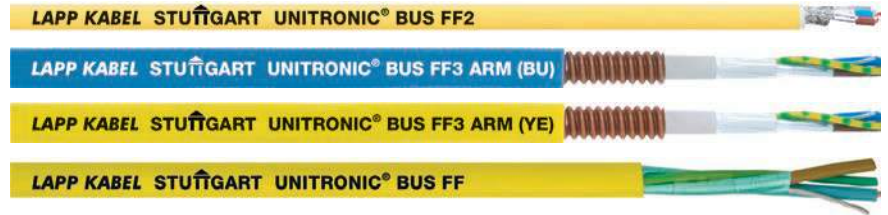
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Photographs are not to scale and do not represent detailed images of the respective products.



**UNITRONIC® BUS FF**



**Benefits**

- Cables meet the requirements of ISA/SP50 and the FOUNDATION™ field bus for the cable type A.

**Application range**

- FOUNDATION™ Fieldbus is used in intrinsically safe areas, especially in the field of Process Automation
- Fixed installation

**Product features**

- All cables are designed for 105 °C and resistant to sunlight

**Norm references / Approvals**

- With UL/CSA certification (CMG/PLTC)

**Product Make-up**

- Lapp bus cables for FOUNDATION™ field bus are available in 4 versions:
- 3-core, unarmoured, with device ground
- 3-core, armoured (longitudinally welded, spiral corrugated copper sheath) with device ground  
Yellow and blue version
- 2-core, not armoured, with device ground

**Technical data**

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> 300 V
	<b>Conductor resistance</b> ≤ 24 Ohm/km
	<b>Minimum bending radius</b> 15 x outer diameter
	<b>Test voltage</b> 1500 V
	<b>Characteristic impedance</b> 100 ± 20 Ohm at 31.25 kHz
	<b>Temperature range</b> -40 °C or -25 °C to +105 °C, see data sheet

Article number	Article designation	Number of pairs and cable diameter	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS FF</b>					
2170350	UNITRONIC® BUS FF 3	1x2x1.1 + 1x1.1 Ø	7.9	62	93
2170351	UNITRONIC® BUS FF 3 ARM (YE)	1x2x1.1 + 1x1.1 Ø	12.3	125	182
2170353	UNITRONIC® BUS FF 3 ARM (BU)	1x2x1.1 + 1x1.1 Ø	12.3	125	182
2170352	UNITRONIC® BUS FF 2	1 x 2 x 1.1	7.9	53.3	82

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Foundation™ is a trademark of the Fieldbus Foundation  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS CC

LAPP KABEL STUÏGART UNITRONIC® BUS CC



### Benefits

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.
- This CC-Link® bus cable has successfully passed the CC-Link® Conformance Test in Japan.

### Application range

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- Fixed installation of the CC-Link® network

### Product features

- UV-resistant
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Transmission rate in relation to the distance
  - 156 kbit/s 1.200 m
  - 625 kbit/s 600 m
  - 2,5 Mbit/s 200 m
  - 5,0 Mbit/s 110-150 m
  - 10 Mbit/s 50-100 m

### Norm references / Approvals

- CM UL/CSA certification 75°C or PLTC Sun Res

### Info

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> 300 V
	<b>Conductor resistance</b> 11 ohm/1,000 ft. (305 m) at 20°C
	<b>Minimum bending radius</b> 15 x outer diameter
	<b>Test voltage</b> 2000 V
	<b>Characteristic impedance</b> 110 ohm at 1 MHz
	<b>Temperature range</b> -40°C to +70°C

Article number	Article designation	Number of cores and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS CC</b>					
2170360	UNITRONIC® BUS CC	3 x 1 x AWG20	7.7	38.8	76.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths) CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA) Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS CC FD P FRNC

LAPP KABEL STUÏGART UNITRONIC® BUS CC FD P



### Benefits

- The CC-Link® system was developed by Mitsubishi Electric Automation, Japan.

### Application range

- CC-Link® (Control & Communication Link) = field bus network, for both control as well as information data to provide efficient, integrated factory and process automation.
- For highly flexible applications (power chains, moving machine parts)

### Product features

- Transmission rate in relation to the distance
  - 156 kbit/s 1.200 m
  - 625 kbit/s 600 m
  - 2,5 Mbit/s 200 m
  - 5,0 Mbit/s 110-150 m
  - 10 Mbit/s 50-100 m
- Halogen-free and flame-retardant (IEC 60332-1-2)

### Norm references / Approvals

- AWM 20233 80 °C 300V

### Info

- Lapp Kabel is a regular member of the user organisation CC-Link Partner Association (CLPA), Japan.

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Certifications</b> UL AWM Style 20233
	<b>Peak operating voltage</b> 300 V
	<b>Conductor resistance</b> 11 ohm/1,000 ft. (305 m) at 20°C
	<b>Minimum bending radius</b> Fixed installation: 4 x outer diameter Flexing: 8 x outer diameter
	<b>Test voltage</b> 2000 V
	<b>Characteristic impedance</b> 110 ohm at 1 MHz
	<b>Temperature range</b> -40°C to +80°C

Article number	Article designation	Number of cores and AWG size	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® BUS CC FD P FRNC</b>					
2170370	UNITRONIC® BUS CC FD P FRNC	3 x 1 x AWG20	8.5	39.9	84

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths) CC-Link® is a registered trademark of CC-Link Partner Association, Japan (CLPA) Photographs are not to scale and do not represent detailed images of the respective products.



**UNITRONIC® BUS SAFETY**



**Benefits**

- For serial transmission of safety-oriented data

**Application range**

- For fixed installation and highly flexible applications
- For systems such as SafetyBUS p®, based on the well-known CAN bus system

**Product features**

- The stated bit rates result in the following cable lengths (maximum) for a bus segment:
- 500 kbit/s = max. 100 m
- 250 kbit/s = max. 250 m
- 125 kbit/s = max. 500 m
- 50 kbit/s = max. 1,000 m

**Product Make-up**

- Stranded conductor, 3 cores twisted, colour-coded in accordance with DIN 47100 (white, brown, green), copper braiding, halogen-free outer sheath
- UNITRONIC® BUS SAFETY FD P is as per UNITRONIC® BUS SAFETY, but also suitable for highly flexible applications
- Flame-retardant according IEC 60332-1-2

**Technical data**

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Certifications</b> Version UNITRONIC® BUS SAFETY FC: AWM Style 2464 (80°C 300 V)
	<b>Mutual capacitance</b> (800 Hz): max. 45 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 52 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Test voltage</b> Core/core: 3000 V Core/core: 1500 V (FD- version)
	<b>Characteristic impedance</b> 120 ohm
	<b>Temperature range</b> <b>UNITRONIC BUS SAFETY:</b> Fixed installation: -30°C to +80°C <b>UNITRONIC BUS SAFETY FD P:</b> Fixed installation -40°C to +80°C Moved: -30 to +80°C

Article number	Article designation	Number of cores and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>for fixed installation</b>					
2170295	UNITRONIC® BUS SAFETY	3 x 0.75	7.6	49	68
<b>For highly flexible applications (e.g. power chains)</b>					
2170885	UNITRONIC® BUS SAFETY FD P	3 x 0.75	7.8	49	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 SafetyBUS p® is a registered trademark of Pilz GmbH & Co.  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- FC STRIP stripping tool refer to page 1002



## UNITRONIC® BUS IBS



**Info**

- IBS - INTERBUS

### Benefits

- Certified by INTERBUS CLUB

### Application range

- Fixed installation

### Product features

- IBS cable - for fixed installation
- Remote bus cable + installation remote bus cable
- The stated bit rates result in the following cable lengths (maximum) of one bus segment:  
500 kbit/s = max. 400 m
- Flame-retardant according IEC 60332-1-2

### Norm references / Approvals

- In accordance with DIN 19258 and EN 50254

### Product Make-up

- UNITRONIC® BUS IBS
- Stranded conductor, bare, core identification code in accordance with DIN 47100, braided copper, PVC outer sheath, violet (RAL 4001)
- UNITRONIC® BUS IBS P COMBI
- Stranded conductor, bare, core identification code in accordance with DIN 47100 (data), stranded, bare (power supply), copper braid, PUR outer sheath, violet (RAL 4001), halogen-free
- UNITRONIC® BUS IBS A is as per UNITRONIC BUS IBS, but with UL/CSA certification

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 60 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 186 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 100 Ohm
	<b>Temperature range</b> Fixed installation: -30°C to +80°C Flexing: -5°C to +70°C

Article number	Cable type	Article designation	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>for fixed installation</b>						
2170206	Remote bus cable (RBC)	UNITRONIC® BUS IBS	3 x 2 x 0.22	7.2	37	72
2170208	Installation remote bus cable (INBC)	UNITRONIC® BUS IBS P COMBI	3 x 2 x 0,22 + 3 x 1,0	7.9	60	85
<b>For fixed installation - UL/CSA CMX certification</b>						
2170209	Remote bus cable (RBC)	UNITRONIC® BUS IBS A	3 x 2 x 0.22	7.2	37	72

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
INTERBUS is a registered trademark of Phoenix Contact GmbH & Co.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SENSOR STRIP stripping tool refer to page 1003

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX





**UNITRONIC® BUS IBS Yv**



**Benefits**

- Certified by INTERBUS CLUB

**Application range**

- Suitable for outdoor use and direct burial

**Product features**

- IBS cable - for outdoor use or direct burial, UV-resistant (remote bus cable + installation remote bus cable)
- The stated bit rates result in the following cable lengths (maximum) of one bus segment:
- 500 kBit/s = max. 400 m
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**

- In accordance with DIN 19258 and EN 50254

**Product Make-up**

- Data: stranded bare conductor, core colours: white-brown/green-yellow/grey-pink
- Power supply: stranded bare conductor, colours: red, blue, green/yellow
- Overall copper wire braiding
- Reinforced PVC outer sheath
- Colour: black (RAL 9005)

**Technical data**

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 60 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 186 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter
	<b>Test voltage</b> Core/core: 1500 V rms
	<b>Characteristic impedance</b> 100 Ohm
	<b>Temperature range</b> Fixed installation: -40°C to +70°C

Article number	Cable type	Article designation	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for outdoor use and direct burial, UV-resistant</b>						
2170207	Remote bus cable (RBC)	UNITRONIC® BUS IBS Yv	3 x 2 x 0.22	9.3	37	94
2170217	Installation remote bus cable (INBC)	UNITRONIC® BUS IBS Yv COMBI	3 x 2 x 0,22 + 3 x 1,0	9.4	60	128

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
INTERBUS is a registered trademark of Phoenix Contact GmbH & Co.  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® BUS IBS FD P



### Info

- IBS - INTERBUS

### Benefits

- Certified by INTERBUS CLUB

### Application range

- For highly flexible use in energy supply chains or permanently moving machines and linear robots
- Dry or damp rooms
- Harsh industrial environment

### Product features

- IBS cable - for highly flexible application
- Remote bus cable + installation remote bus cable
- 500 kbit/s = max. 400 m (remote bus cable)
- Max. 50 m (installation remote bus cable)
- PUR outer sheath, tear and notch-resistant, resistant to mineral oils and abrasion when used in power chains

### Norm references / Approvals

- In accordance with DIN 19258 and EN 50254

### Product Make-up

- UNITRONIC® BUS IBS FD P
- Stranded conductor, bare, core identification code in accordance with DIN 47100, braided copper wire for overall screening, PUR outer sheath, violet (RAL 4001), halogen-free, flame-retardant in accordance with IEC 60332-1-2.
- UNITRONIC® BUS IBS FD P COMBI
- Bare stranded copper wire conductor, cores twisted to pairs, core colours: white/brown / green/yellow / grey/pink (data). Bare copper wire stranded conductor, core colours: red, blue, green/yellow (power supply).
- Overall screening of braided copper, PUR outer sheath (violet, RAL 4001), halogen-free, flame-retardant according to IEC 60332-1-2.

### Technical data



ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



**Mutual capacitance**  
(800 Hz): max. 60 nF/km



**Peak operating voltage**  
(not for power applications) 250 V



**Conductor resistance**  
(loop): max. 159.8 ohm/km



**Minimum bending radius**  
Flexing: 15 x outer diameter



**Test voltage**  
Core/core: 1500 V rms



**Characteristic impedance**  
100 Ohm



**Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +70°C

Article number	Cable type	Article designation	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>For highly flexible applications (power chains, moving machine parts)</b>						
2170216	Remote bus cable (RBC)	UNITRONIC® BUS IBS FD P	3 x 2 x 0.25	7.9	39	64
2170218	Installation remote bus cable (INBC)	UNITRONIC® BUS IBS FD P COMBI	3 x 2 x 0,25 + 3 x 1,0	7.9	62	92
<b>For highly flexible applications (e.g. power chains) - with UL/CSA (CMX) certification</b>						
2170818	Installation remote bus cable (INBC)	UNITRONIC® BUS IBS FD P COMBI A	3 x 2 x 0,25 + 3 x 1,0	7.9	62	92

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

INTERBUS is a registered trademark of Phoenix Contact GmbH & Co.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® CHAIN
- Multipurpose shears A and B refer to page 998
- SMART STRIP stripping tool



## UNITRONIC® BUS EIB / KNX

**Info**

- EIB / European Installation Bus
- KNX/communication in building management



### Application range

- The product is designed for use in building management, e.g. for decentralised control of lighting, heating, air-conditioning, ventilation, energy management, blinds, time management, locking systems etc.
- The cable can be laid on or under plaster; in pipes, cable ducts; in dry, damp or wet environments.
- EIB installation mainly consists of sensors/command-transmitters (e.g. light barriers, switches, thermostats, infrared, wind meters, timers), and actuators (e.g. engines, heaters, ventilators, lights, blinds).
- KNX technology was formed from the merging of three established European bus standards: EIP, EHS (household appliances and consumer electronics) and Batibus (heating/ventilation/air conditioning)

### Product features

- Serial data transmission
- EIB cable has been tested at 4 kV (1 min.) in a water bath

### Product Make-up

- Screened installation cable based on type J-Y(ST)Y according to DIN VDE 0815, solid bare copper conductor,  $\varnothing$  0.8 mm, measurements 2 x 2 x 0.8  $\varnothing$ . 4 solid cores twisted to a star quad; colours of cores: 1st pair red + black, 2nd pair white + yellow.
- Screening: wrapped with aluminium-laminated plastic foil
- Outer sheath: Based on PVC
- Colour: green
- COMBI version with additional power supply cables 3 x 1.5 mm<sup>2</sup>; core colours: blue, black, green-yellow

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Mutual capacitance</b> (800 Hz): max. 100 nF/km
	<b>Peak operating voltage</b> (not for power applications) 250 V
	<b>Conductor resistance</b> (loop): max. 73.2 ohm/km
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Test voltage</b> Core/core: 4000 V
	<b>Temperature range</b> Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and mm or mm <sup>2</sup> per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/m)
<b>PVC versions</b>					
2170240	UNITRONIC® BUS EIB	2 x 2 x 0.8	6.6	21	54
2170242	UNITRONIC® BUS EIB COMBI	2 x 2 x 0.8 mm + 3 x 1.5 mm <sup>2</sup>	12.7	64	128
<b>Halogen-free versions</b>					
2170241	UNITRONIC® BUS EIB H	2 x 2 x 0.8	6.6	21	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 100/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil  $\leq$  30 kg or  $\leq$  250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

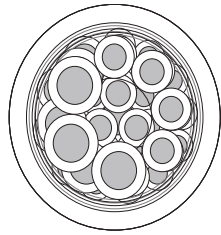
### Accessories

- SENSOR STRIP stripping tool refer to page 1003



## UNITRONIC® SENSOR master cable

LAPP KABEL STÜTTGART UNITRONIC® SENSOR Li9Y11Y



### Info

- Customised construction can be supported

### Benefits

- Cost efficient and rational wiring for S/A boxes with detachable master cable connection
- Can be used universally for S/A installations

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- Cores for Power Supply:  
3 x 0.75 mm<sup>2</sup> and 3 x 1.0 mm<sup>2</sup>
- Cores for Signalling cable:  
4 x 0.34 mm<sup>2</sup>, 8 x 0.5 mm<sup>2</sup>, 16 x 0.5 mm<sup>2</sup>
- Suitable for drag chains
- Halogen-free

### Product Make-up

- UNITRONIC® SENSOR Li9Y11 COMBI  
Conductor: bare copper strand, single wire diameter: 0.1 mm for 0.34 mm<sup>2</sup>, 0.18 mm for 0.5 mm<sup>2</sup>, 0.205 mm for 0.75 mm<sup>2</sup>, 0.15 mm for 1.0 mm<sup>2</sup>. Core insulation: halogen-free PP, outer sheath: halogen-free PUR acc. to DIN VDE 0250 part 818.
- Outer sheath colour: black (similar to RAL 9005)  
Core colors: see data sheet
- UL-AWM-Style 21198

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description:  
Sensor-actuator patch cord

Article number	Article designation	Dimensions (mm <sup>2</sup> )	Outer diameter (mm)	Core/outer sheath material	Copper index (kg/km)
<b>UNITRONIC® SENSOR COMBI</b>					
7038880	Li9Y11Y	3 x 0.75 + 4 x 0.34	6.6	PP/PUR	34.5
7038881	Li9Y11Y	3 x 1.0 + 8 x 0.5	8.4	PP/PUR	67.2
7038882	Li9Y11Y	3 x 1.0 + 16 x 0.5	9.8	PP/PUR	105.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Packaging size: Coil 100m  
Cables are printed  
Other variations are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.  
For detailed technical information please refer to the data sheet

### Accessories

- S/A box with M12 slots and master cable connection



## UNITRONIC® SENSOR



### Application range

- Cables for UNITRONIC® SENSOR sensor/actuator cabling
- Unshielded and shielded data transmission cables to connect to M8, M12 connectors
- Automation technology
- Mechanical engineering
- Plant engineering

### Product features

- Core colour code in accordance with DIN EN 50044
- 3 x 0.25 mm<sup>2</sup> or 0.34mm<sup>2</sup>  
1= brown, 2= blue, 3= black
- 4x 0.25 mm<sup>2</sup> or 0.34 mm<sup>2</sup>  
1= brown, 2= white, 3= blue, 4= black
- 5 x 0.25 mm<sup>2</sup> or 0.34 mm<sup>2</sup>  
1= brown, 2= white, 3= blue, 4= black, 5= grey
- 8x 0.25mm<sup>2</sup>  
1= white, 2=brown, 3= green, 4= yellow, 5= grey, 6= pink, 7=blue, 8= red

### Product Make-up

- UNITRONIC® SENSOR LiFY  
Conductor: extra-fine bare copper strand in accordance with DIN VDE 0295 Class 6; core insulation: PVC, outer sheath: PVC
- UNITRONIC® SENSOR DESINA® LiFY11Y  
Stranded bare copper conductor, super-fine. In accordance with VDE 0295 Class 6, special PVC insulation, cores twisted in layers, core identification in accordance with DESINA® (brown, white, blue, black). Outer sheath is made of special polyurethane-based compound; yellow colour in acc. to RAL 1021; flame retardant acc. to IEC 60332-1-2. Operating voltage= 48 V, Peak working voltage= 300 V.
- UNITRONIC® SENSOR FD Li9Y11Y and SENSOR FD Li9YC11Y AWM UL Style 20549, 80 °C/300 V. Conductor: Cu strand, bare, extra-fine wire according to DIN VDE 0295 Class 6, core insulation: modified polypropylene (PP), outer sheath: halogen-free polyurethane (PUR), matt, adhesion-free
- UNITRONIC® SENSOR FD series cables are specially designed for use in power chains

### Technical data

	ETIM 5.0 Class-ID: EC001855
	ETIM 5.0 Class-Description: Sensor-actuator patch cord

Article number	Article designation	Dimensions (mm <sup>2</sup> )	Outer diameter (mm)	Core/outer sheath material	Colour	Copper index (kg/km)
<b>UNITRONIC® SENSOR</b>						
7038859	S-LiFY	3 x 0.34	4.8	PVC/PVC	black	9.8
7038860	S-LiFY	4 x 0.34	4.8	PVC/PVC	black	13.1
0040434	DESINA	4 x 0.34	5.2	PVC/PUR	yellow (RAL 1021)	13.5
7038861	S-LiFY11Y	4 x 0.34	4.8	PVC/PUR	black	13.1
7038862	S-LiFY11Y	5 x 0.25	4.9	PVC/PUR	black	12
<b>UNITRONIC SENSOR FD</b>						
7038883	Li9Y11Y	3x0.25	4.4	PP/PUR	black	7.5
7038864	Li9Y11Y	3 x 0.34	4.6	PP/PUR	black	9.8
7038884	Li9Y11Y	4x0.25	4.7	PP/PUR	black	10.2
7038865	Li9Y11Y	4 x 0.34	4.7	PP/PUR	black	13
7038867	Li9Y11Y	5 x 0.25	4.7	PP/PUR	black	12
7038866	Li9Y11Y	5 x 0.34	5.1	PP/PUR	black	16
7038868	Li9Y11Y	8 x 0.25	5.9	PP/PUR	black	19
<b>UNITRONIC® SENSOR FD screened</b>						
7038885	Li9YC11Y	3 x 0.34	4.6	PP/PUR	black	19.1
7038886	Li9YC11Y	4 x 0.34	4.7	PP/PUR	black	23.5
7038887	Li9YC11Y	5 x 0.34	5.1	PP/PUR	black	27.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Cables are printed

Other types of composition are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® SENSOR M12 refer to page 391
- EPIC® SENSOR M8 refer to page 382
- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool



## UNITRONIC® SENSOR M8

M8 plug/socket on free conductor end



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-efficient due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- PWIS and PVC free
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)  
4-pin: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PUR, black

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Minimum bending radius

Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
<b>3-pin</b>							
<b>plug</b>							
22260204	AB-C3-M8MS-2,0PUR	3	2	straight	no	60	1
22260205	AB-C3-M8MS-5,0PUR	3	5	straight	no	60	1
22260218	AB-C3-M8MS-10,0PUR	3	10	straight	no	60	1
22260053	AB-C3-M8MA-2,0PUR	3	2	angled	no	60	1
22260987	AB-C3-M8MA-5,0PUR	3	5	angled	no	60	1
22260055	AB-C3-M8MA-10,0PUR	3	10	angled	no	60	1
<b>Socket</b>							
22260202	AB-C3-2,0PUR-M8FS	3	2	straight	no	60	1
22260200	AB-C3-5,0PUR-M8FS	3	5	straight	no	60	1
22260219	AB-C3-10,0PUR-M8FS	3	10	straight	no	60	1
22260203	AB-C3-2,0PUR-M8FA	3	2	angled	no	60	1
22260201	AB-C3-5,0PUR-M8FA	3	5	angled	no	60	1
22260220	AB-C3-10,0PUR-M8FA	3	10	angled	no	60	1
22260275	AB-C3-2,0PUR-M8FA-2L	3	2	angled	2 LEDs	24	1
22260276	AB-C3-5,0PUR-M8FA-2L	3	5	angled	2 LEDs	24	1
22260277	AB-C3-10,0PUR-M8FA-2L	3	10	angled	2 LEDs	24	1
<b>4-pin</b>							
<b>plug</b>							
22260300	AB-C4-M8MS-2,0PUR	4	2	straight	no	30	1
22260308	AB-C4-M8MS-5,0PUR	4	5	straight	no	30	1
22260318	AB-C4-M8MS-10,0PUR	4	10	straight	no	30	1
22260056	AB-C4-M8MA-2,0PUR	4	2	angled	no	30	1
22260057	AB-C4-M8MA-5,0PUR	4	5	angled	no	30	1
22260058	AB-C4-M8MA-10,0PUR	4	10	angled	no	30	1
<b>Socket</b>							
22260309	AB-C4- 2,0PUR-M8FS	4	2	straight	no	30	1
22260310	AB-C4- 5,0PUR-M8FS	4	5	straight	no	30	1
22260317	AB-C4-10,0PUR-M8FS	4	10	straight	no	30	1
22260311	AB-C4- 2,0PUR-M8FA	4	2	angled	no	30	1
22260312	AB-C4- 5,0PUR-M8FA	4	5	angled	no	30	1
22260319	AB-C4-10,0PUR-M8FA	4	10	angled	no	30	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. UL certifications can be found in the data sheet



## UNITRONIC® SENSOR M8-M8

M8 plug on M8 socket



**Info**

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-efficient due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- PWIS and PVC free
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Colour-code:
  - 3-pin: bn (1), bu (3), bk (4)
  - 4-pin: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PUR, black

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector
- Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing
- Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter
- IP** Protection rating  
IP65/IP67/IP68
- Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C
- Coding**  
A-standard
- Rated current (A)**  
4 A

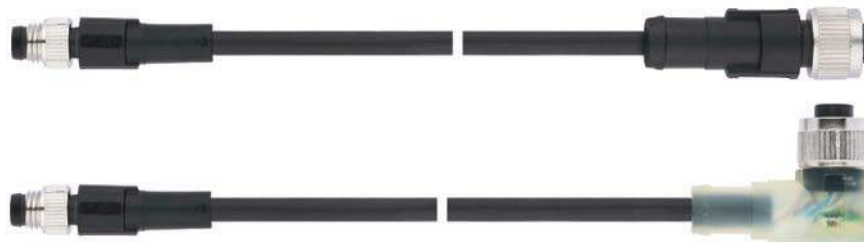
Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
<b>Connector to socket</b>							
<b>3-pin</b>							
22260206	AB-C3-M8MS-0,3PUR-M8FS	3	0.3	straight-straight	no	60	1
22260207	AB-C3-M8MS-0,6PUR-M8FS	3	0.6	straight-straight	no	60	1
22260208	AB-C3-M8MS-1,0PUR-M8FS	3	1	straight-straight	no	60	1
22260209	AB-C3-M8MS-2,0PUR-M8FS	3	2	straight-straight	no	60	1
22260210	AB-C3-M8MS-0,3PUR-M8FA	3	0.3	straight-angled	no	60	1
22260211	AB-C3-M8MS-0,6PUR-M8FA	3	0.6	straight-angled	no	60	1
22260212	AB-C3-M8MS-1,0PUR-M8FA	3	1	straight-angled	no	60	1
22260213	AB-C3-M8MS-2,0PUR-M8FA	3	2	straight-angled	no	60	1
22260214	AB-C3-M8MS-0,3PUR-M8FA-2L	3	0.3	straight-angled	2 LEDs	24	1
22260215	AB-C3-M8MS-0,6PUR-M8FA-2L	3	0.6	straight-angled	2 LEDs	24	1
22260216	AB-C3-M8MS-1,0PUR-M8FA-2L	3	1	straight-angled	2 LEDs	24	1
22260217	AB-C3-M8MS-2,0PUR-M8FA-2L	3	2	straight-angled	2 LEDs	24	1
<b>4-pin</b>							
22260313	AB-C4-M8MS-0,3PUR-M8FS	4	0.3	straight-straight	no	30	1
22260314	AB-C4-M8MS-0,6PUR-M8FS	4	0.6	straight-straight	no	30	1
22260315	AB-C4-M8MS-1,0PUR-M8FS	4	1	straight-straight	no	30	1
22260316	AB-C4-M8MS-2,0PUR-M8FS	4	2	straight-straight	no	30	1
22260059	AB-C4-M8MS-0,3PUR-M8FA	4	0.3	straight-angled	no	30	1
22260060	AB-C4-M8MS-0,6PUR-M8FA	4	0.6	straight-angled	no	30	1
22260061	AB-C4-M8MS-1,0PUR-M8FA	4	1	straight-angled	no	30	1
22260062	AB-C4-M8MS-2,0PUR-M8FA	4	2	straight-angled	no	30	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. UL certifications can be found in the data sheet



## UNITRONIC® SENSOR M8-M12

M8 plug on M12 socket



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-efficient due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- PWIS and PVC free
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)
- Outer sheath: PUR, black

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Minimum bending radius

Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
<b>3-pin</b>							
22260241	AB-C3-M8MS-0,3PUR-M12FS	3	0.3	straight-straight	no	60	1
22260242	AB-C3-M8MS-0,6PUR-M12FS	3	0.6	straight-straight	no	60	1
22260243	AB-C3-M8MS-1,0PUR-M12FS	3	1	straight-straight	no	60	1
22260244	AB-C3-M8MS-2,0PUR-M12FS	3	2	straight-straight	no	60	1
22260245	AB-C3-M8MS-0,3PUR-M12FA	3	0.3	straight-angled	no	60	1
22260246	AB-C3-M8MS-0,6PUR-M12FA	3	0.6	straight-angled	no	60	1
22260247	AB-C3-M8MS-1,0PUR-M12FA	3	1	straight-angled	no	60	1
22260248	AB-C3-M8MS-2,0PUR-M12FA	3	2	straight-angled	no	60	1
22260271	AB-C3-M8MS-0,3PUR-M12FA-2L	3	0.3	straight-angled	2 LEDs	24	1
22260272	AB-C3-M8MS-0,6PUR-M12FA-2L	3	0.6	straight-angled	2 LEDs	24	1
22260273	AB-C3-M8MS-1,0PUR-M12FA-2L	3	1	straight-angled	2 LEDs	24	1
22260274	AB-C3-M8MS-2,0PUR-M12FA-2L	3	2	straight-angled	2 LEDs	24	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

UL certifications can be found in the data sheet





# UNITRONIC® SENSOR PVC M8

M8 plug/socket on free conductor end



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Application range

- For medium mechanical stress in dry conditions

### Product features

- Partly oil and chemical resistant
- PWIS-free
- Including tag carrier

### Norm references / Approvals

- Flame-retardant according to style 2464
- UL File Number: E249137

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)  
4-pin: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PVC, black

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



**Protection rating**  
IP65/IP67/IP68



**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -25°C to +80°C  
Flexing -5°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
<b>3-pin</b>						
<b>plug</b>						
22260847	AB-C3-M8MS-2,0PVC	3	2	straight	60	1
22260665	AB-C3-M8MS-5,0PVC	3	5	straight	60	1
22260848	AB-C3-M8MS-10,0PVC	3	10	straight	60	1
<b>Socket</b>						
22262093	AB-C3-2,0PVC-M8FA	3	2	angled	60	1
22262081	AB-C3-5,0PVC-M8FA	3	5	angled	60	1
22260370	AB-C3-10,0PVC-M8FA	3	10	angled	60	1
<b>4-pin</b>						
<b>plug</b>						
22262105	AB-C4-M8MS-2,0PVC	4	2	straight	60	1
22262106	AB-C4-M8MS-5,0PVC	4	5	straight	60	1
22262107	AB-C4-M8MS-10,0PVC	4	10	straight	60	1
<b>Socket</b>						
22260846	AB-C4-2,0PVC-M8FA	4	2	angled	60	1
22260845	AB-C4-5,0PVC-M8FA	4	5	angled	60	1
22260844	AB-C4-10,0PVC-M8FA	4	10	angled	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. UL certifications can be found in the data sheet



## EPIC® SENSOR M8

Field mountable connectors M8



### Benefits

- Easy connection with proven screw clamp connection
- For creating of individual cable lengths
- Quick and easy on-site assembly
- No special tools required for connecting the cables
- Time-saving assembly with IDC connection technology


### Product features


- 3 and 4-pin version
- Version with piercing, insulation displacement contacts (IDC) or screw connection
- PWIS-free


### Suitable cables


- UNITRONIC® SENSOR Page 377

### Technical data

 ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector

 **Material**  
Contact: CuZn  
Contact surface: Au (gold)

 **Protection rating**  
IP 65/IP 67 (IDC)  
IP 68 (piercing)  
IP 67 (screw)

 **Ambient temperature (operation)**  
Plug/socket  
-25°C to +80°C (IDC)  
-25°C to +85°C (piercing)  
-40°C to +85°C (screw)

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Connection type	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Plug, straight</b>							
22260993	AB-C3-M8MS-F0,25	3	IDC	0.08 - 0.25	2.5 - 5	60	1
22260985	AB-C3-M8MS-F0,5	3	IDC	0.25 - 0.5	2.5 - 5	60	1
22260043	AB-C4-M8MS-F0,25	4	IDC	0.08 - 0.25	2.5 - 5	30	1
22260044	AB-C4-M8MS-F0,5	4	IDC	0.25 - 0.5	2.5 - 5	30	1
22260122	AB-C3-M8MS-P	3	Piercing	0.14 - 0.38	3 - 5	60	1
22260123	AB-C4-M8MS-P	4	Piercing	0.14 - 0.38	3 - 5	30	1
22260120	AB-C3-M8MS	3	screw	0.14 - 0.5	3.5 - 5	60	1
22260121	AB-C4-M8MS	4	screw	0.14 - 0.5	3.5 - 5	30	1
<b>Plug, straight shielded</b>							
22262025	AB-C3-M8MS-M-0,34-SH	3	screw	0.14 - 0.5	3.5 - 5.5	60	1
22262027	AB-C4-M8MS-M-0,34-SH	4	screw	0.14 - 0.5	3.5 - 5	30	1
<b>Plug, angled</b>							
22262110	AB-C3-M8MA	3	screw	0.14 - 0.5	3.5 - 5	60	1
22262111	AB-C4-M8MA	4	screw	0.14 - 0.5	3.5 - 5	30	1
<b>Socket, straight</b>							
22260994	AB-C3-M8FS-F0,25	3	IDC	0.08 - 0.25	2.5 - 5	60	1
22260986	AB-C3-M8FS-F0,5	3	IDC	0.25 - 0.5	2.5 - 5	60	1
22260045	AB-C4-M8FS-F0,25	4	IDC	0.08 - 0.25	2.5 - 5	30	1
22260046	AB-C4-M8FS-F0,5	4	IDC	0.25 - 0.5	2.5 - 5	30	1
22260124	AB-C3-M8FS-P	3	Piercing	0.14 - 0.38	3 - 5	60	1
22260119	AB-C4-M8FS-P	4	Piercing	0.14 - 0.38	3 - 5	30	1
22260125	AB-C3-M8FS	3	screw	0.14 - 0.5	3.5 - 5	60	1
22260126	AB-C4-M8FS	4	screw	0.14 - 0.5	3.5 - 5	30	1
<b>Socket, straight shielded</b>							
22262026	AB-C3-M8FS-M-0,34-SH	3	screw	0.14 - 0.5	3.5 - 5.5	60	1
22262028	AB-C4-M8FS-M-0,34-SH	4	screw	0.14 - 0.5	3.5 - 5.5	30	1
<b>Socket, angled</b>							
22262112	AB-C3-M8FA	3	screw	0.14 - 0.5	3.5 - 5	60	1
22262113	AB-C4-M8FA	4	screw	0.14 - 0.5	3.5 - 5	30	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SENSOR Flush-type M8



### Benefits

- Flexible connection solutions for individual device concepts
- Simple installation in devices (e.g. cabinet)

### Application range

- Connection of enclosures and cabinets

### Product features

- M8 fastening thread
- Designs for front mounting
- PWIS-free

### Product Make-up

- TPE single strands, l = 0.5 m
- Core cross section: 0.25 mm<sup>2</sup>

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC002062 <b>ETIM 5.0 Class-Description:</b> Sensor-actuator connector
	<b>Material</b> Contact: CuSn Contact surface: Ag
	<b>Protection rating</b> IP67
	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +85°C
	<b>Coding</b> A-standard
	<b>Rated current (A)</b> 4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Panel-mount connector male</b>				
22260100	AB-C3-M8MS-0,5	3	60	1
22260101	AB-C4-M8MS-0,5	4	30	1
<b>Panel-mount connector female</b>				
22260102	AB-C3-M8FS-0,5	3	60	1
22260103	AB-C4-M8FS-0,5	4	30	1

Copper price basis: inclusive of copper. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Matching fitting nut: 22260104



## UNITRONIC® SENSOR M12

M12 plug/socket on free conductor end



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Integrated vibration protection (mechanical lock-in)
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- PWIS and PVC free
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Wire cross-section: 0,34 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)  
4-pin: bn (1), wh (2), bu (3), bk (4)  
5-pin: bn (1), wh (2), bu (3), bk (4), gn/ye (5)  
8-pin: wh (1), bn (2), gn (3), ye (4), gy (5), pk (6), bu (7), rd (8)
- Outer sheath: PUR, black

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Minimum bending radius

Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
<b>3-pin plug</b>							
22260221	AB-C3-M12MS-2,0PUR	3	2	straight	no	250	1
22260222	AB-C3-M12MS-5,0PUR	3	5	straight	no	250	1
22260249	AB-C3-M12MS-10,0PUR	3	10	straight	no	250	1
22260223	AB-C3-M12MA-2,0PUR	3	2	angled	no	250	1
22260224	AB-C3-M12MA-5,0PUR	3	5	angled	no	250	1
22260256	AB-C3-M12MA-10,0PUR	3	10	angled	no	250	1
<b>Socket</b>							
22260257	AB-C3-2,0PUR-M12FS	3	2	straight	no	250	1
22260250	AB-C3-5,0PUR-M12FS	3	5	straight	no	250	1
22260251	AB-C3-10,0PUR-M12FS	3	10	straight	no	250	1
22260252	AB-C3-2,0PUR-M12FS-2L	3	2	straight	2 LEDs	24	1
22260265	AB-C3-5,0PUR-M12FS-2L	3	5	straight	2 LEDs	24	1
22260266	AB-C3-10,0PUR-M12FS-2L	3	10	straight	2 LEDs	24	1
22260258	AB-C3-2,0PUR-M12FA	3	2	angled	no	250	1
22260259	AB-C3-5,0PUR-M12FA	3	5	angled	no	250	1
22260260	AB-C3-10,0PUR-M12FA	3	10	angled	no	250	1
22260253	AB-C3-2,0PUR-M12FA-2L	3	2	angled	2 LEDs	24	1
22260254	AB-C3-5,0PUR-M12FA-2L	3	5	angled	2 LEDs	24	1
22260255	AB-C3-10,0PUR-M12FA-2L	3	10	angled	2 LEDs	24	1
<b>4-pin plug</b>							
22260320	AB-C4-M12MS- 2,0PUR	4	2	straight	no	250	1
22260321	AB-C4-M12MS- 5,0PUR	4	5	straight	no	250	1
22260342	AB-C4-M12MS-10,0PUR	4	10	straight	no	250	1
22260301	AB-C4-M12MA-2,0PUR	4	2	angled	no	250	1
22260302	AB-C4-M12MA-5,0PUR	4	5	angled	no	250	1
22260303	AB-C4-M12MA-10,0PUR	4	10	angled	no	250	1
<b>Socket</b>							
22260322	AB-C4- 2,0PUR-M12FS	4	2	straight	no	250	1
22260323	AB-C4- 5,0PUR-M12FS	4	5	straight	no	250	1
22260343	AB-C4-10,0PUR-M12FS	4	10	straight	no	250	1
22260344	AB-C4- 2,0PUR-M12FS-2L	4	2	straight	2 LEDs	24	1
22260345	AB-C4- 5,0PUR-M12FS-2L	4	5	straight	2 LEDs	24	1
22260346	AB-C4-10,0PUR-M12FS-2L	4	10	straight	2 LEDs	24	1
22260324	AB-C4- 2,0PUR-M12FA	4	2	angled	no	250	1
22260325	AB-C4- 5,0PUR-M12FA	4	5	angled	no	250	1
22260341	AB-C4-10,0PUR-M12FA	4	10	angled	no	250	1
22260326	AB-C4- 2,0PUR-M12FA-3L	4	2	angled	3 LEDs	24	1
22260327	AB-C4- 5,0PUR-M12FA-3L	4	5	angled	3 LEDs	24	1
22260340	AB-C4-10,0PUR-M12FA-3L	4	10	angled	3 LEDs	24	1

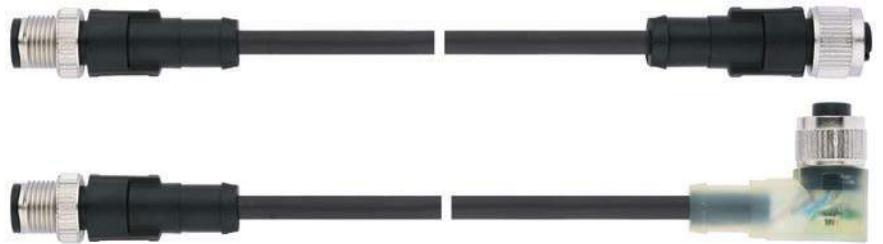
Article number	Article designation	Number of pins	Length (m)	Design	LED	Rated voltage (V)	PU
<b>5-pin plug</b>							
22260400	AB-C5-M12MS-2,0PUR	5	2	straight	no	60	1
22260401	AB-C5-M12MS-5,0PUR	5	5	straight	no	60	1
22260414	AB-C5-M12MS-10,0PUR	5	10	straight	no	60	1
22260402	AB-C5-M12MA-2,0PUR	5	2	angled	no	60	1
22260403	AB-C5-M12MA-5,0PUR	5	5	angled	no	60	1
22260417	AB-C5-M12MA-10,0PUR	5	10	angled	no	60	1
<b>Socket</b>							
22260404	AB-C5-2,0PUR-M12FS	5	2	straight	no	60	1
22260405	AB-C5-5,0PUR-M12FS	5	5	straight	no	60	1
22260415	AB-C5-10,0PUR-M12FS	5	10	straight	no	60	1
22260406	AB-C5-2,0PUR-M12FA	5	2	angled	no	60	1
22260407	AB-C5-5,0PUR-M12FA	5	5	angled	no	60	1
22260418	AB-C5-10,0PUR-M12FA	5	10	angled	no	60	1
22260408	AB-C5-2,0PUR-M12FA-3L	5	2	angled	3 LEDs	24	1
22260409	AB-C5-5,0PUR-M12FA-3L	5	5	angled	3 LEDs	24	1
22260416	AB-C5-10,0PUR-M12FA-3L	5	10	angled	3 LEDs	24	1
<b>8-pin plug</b>							
22260091	AB-C8-M12MS-2,0PUR	8	2	straight	no	30	1
22260092	AB-C8-M12MS-5,0PUR	8	5	straight	no	30	1
22260093	AB-C8-M12MS-10,0PUR	8	10	straight	no	30	1
22260094	AB-C8-M12MA-2,0PUR	8	2	angled	no	30	1
22260095	AB-C8-M12MA-5,0PUR	8	5	angled	no	30	1
22260096	AB-C8-M12MA-10,0PUR	8	10	angled	no	30	1
<b>Socket</b>							
22260726	AB-C8-2,0PUR-M12FS	8	2	straight	no	30	1
22260728	AB-C8-5,0PUR-M12FS	8	5	straight	no	30	1
22260729	AB-C8-10,0PUR-M12FS	8	10	straight	no	30	1
22260141	AB-C8-2,0PUR-M12FA	8	2	angled	no	30	1
22260615	AB-C8-5,0PUR-M12FA	8	5	angled	no	30	1
22260616	AB-C8-10,0PUR-M12FA	8	10	angled	no	30	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 UL certifications can be found in the data sheet



## UNITRONIC® SENSOR M12-M12

M12 plug on M12 socket



**i Info**

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

- Benefits**
- Cost-saving due to quick and easy installation
  - Space-saving due to compact dimensions
  - Fast and easy error tracking
  - Integrated vibration protection (mechanical lock-in)
  - Gold-plated contacts for low transfer resistance

- Application range**
- For increased mechanical stress and harsh operating conditions

- Product features**
- UV-resistant
  - Good resistance to oils and chemicals
  - PWIS and PVC free
  - Suitable for drag chains
  - Including tag carrier

- Norm references / Approvals**
- Halogenfree according to DIN VDE 0472
  - UL File Number: E249137
  - Flame-retardant according to UL 1581 FT-2

- Product Make-up**
- Wire cross-section: 0,34 mm<sup>2</sup>
  - Colour-code:
    - 3-pin: bn (1), bu (3), bk (4)
    - 4-pin: bn (1), wh (2), bu (3), bk (4)
    - 5-pin: bn (1), wh (2), bu (3), bk (4), gn/ye (5)
    - 8-pin: wh (1), bn (2), gn (3), ye (4), gy (5), pk (6), bu (7), rd (8)
  - Outer sheath: PUR, black

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector
- Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing
- Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter
- IP** Protection rating  
IP65/IP67/IP68
- Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C
- Coding**  
A-standard
- Rated current (A)**  
4 A

Article number	Article designation	Length (m)	Design	LED	Rated voltage (V)	PU
<b>Connector to socket</b>						
<b>3-pin</b>						
22260233	AB-C3-M 12MS-0,3PUR-M 12FS	0.3	straight-straight	no	250	1
22260234	AB-C3-M 12MS-0,6PUR-M 12FS	0.6	straight-straight	no	250	1
22260235	AB-C3-M 12MS-1,0PUR-M 12FS	1	straight-straight	no	250	1
22260236	AB-C3-M 12MS-2,0PUR-M 12FS	2	straight-straight	no	250	1
22260237	AB-C3-M 12MS-0,3PUR-M 12FA	0.3	straight-angled	no	250	1
22260238	AB-C3-M 12MS-0,6PUR-M 12FA	0.6	straight-angled	no	250	1
22260239	AB-C3-M 12MS-1,0PUR-M 12FA	1	straight-angled	no	250	1
22260240	AB-C3-M 12MS-2,0PUR-M 12FA	2	straight-angled	no	250	1
22260261	AB-C3-M 12MS-0,3PUR-M 12FA-2L	0.3	straight-angled	2 LEDs	24	1
22260262	AB-C3-M 12MS-0,6PUR-M 12FA-2L	0.6	straight-angled	2 LEDs	24	1
22260263	AB-C3-M 12MS-1,0PUR-M 12FA-2L	1	straight-angled	2 LEDs	24	1
22260264	AB-C3-M 12MS-2,0PUR-M 12FA-2L	2	straight-angled	2 LEDs	24	1
<b>4-pin</b>						
22260328	AB-C4-M 12MS- 0,3PUR-M 12FS	0.3	straight-straight	no	250	1
22260329	AB-C4-M 12MS- 0,6PUR-M 12FS	0.6	straight-straight	no	250	1
22260330	AB-C4-M 12MS- 1,0PUR-M 12FS	1	straight-straight	no	250	1
22260331	AB-C4-M 12MS- 2,0PUR-M 12FS	2	straight-straight	no	250	1
22260332	AB-C4-M 12MS- 0,3PUR-M 12FA	0.3	straight-angled	no	250	1
22260333	AB-C4-M 12MS- 0,6PUR-M 12FA	0.6	straight-angled	no	250	1
22260334	AB-C4-M 12MS-1,0PUR-M 12FA	1	straight-angled	no	250	1
22260335	AB-C4-M 12MS-2,0PUR-M 12FA	2	straight-angled	no	250	1
22260304	AB-C4-M 12MA-0,3PUR-M 12FS	0.3	angled-straight	no	250	1
22260305	AB-C4-M 12MA-0,6PUR-M 12FS	0.6	angled-straight	no	250	1
22260306	AB-C4-M 12MA-1,0PUR-M 12FS	1	angled-straight	no	250	1
22260307	AB-C4-M 12MA-2,0PUR-M 12FS	2	angled-straight	no	250	1
22260336	AB-C4-M 12MS-0,3PUR-M 12FA-3L	0.3	straight-angled	3 LEDs	24	1
22260337	AB-C4-M 12MS-0,6PUR-M 12FA-3L	0.6	straight-angled	3 LEDs	24	1
22260338	AB-C4-M 12MS-1,0PUR-M 12FA-3L	1	straight-angled	3 LEDs	24	1
22260339	AB-C4-M 12MS-2,0PUR-M 12FA-3L	2	straight-angled	3 LEDs	24	1
<b>5-pin</b>						
22260410	AB-C5-M 12MS-0,3PUR-M 12FS	0.3	straight-straight	no	60	1
22260411	AB-C5-M 12MS-0,6PUR-M 12FS	0.6	straight-straight	no	60	1
22260412	AB-C5-M 12MS-1,0PUR-M 12FS	1	straight-straight	no	60	1
22260413	AB-C5-M 12MS-2,0PUR-M 12FS	2	straight-straight	no	60	1
22260063	AB-C5-M 12MS-0,3PUR-M 12FA	0.3	straight-angled	no	60	1
22260064	AB-C5-M 12MS-0,6PUR-M 12FA	0.6	straight-angled	no	60	1
22260065	AB-C5-M 12MS-1,0PUR-M 12FA	1	straight-angled	no	60	1
22260066	AB-C5-M 12MS-2,0PUR-M 12FA	2	straight-angled	no	60	1
22260067	AB-C5-M 12MS-0,3PUR-M 12FA-3L	0.3	straight-angled	3 LEDs	24	1
22260068	AB-C5-M 12MS-0,6PUR-M 12FA-3L	0.6	straight-angled	3 LEDs	24	1
22260069	AB-C5-M 12MS-1,0PUR-M 12FA-3L	1	straight-angled	3 LEDs	24	1
22260070	AB-C5-M 12MS-2,0PUR-M 12FA-3L	2	straight-angled	3 LEDs	24	1
<b>8-pin</b>						
22260097	AB-C8-M 12MS-0,3PUR-M 12FS	0.3	straight-straight	no	30	1
22260098	AB-C8-M 12MS- 0,6PUR-M 12FS	0.6	straight-straight	no	30	1
22260099	AB-C8-M 12MS-1,0PUR-M 12FS	1	straight-straight	no	30	1
22260042	AB-C8-M 12MS- 2,0PUR-M 12FS	2	straight-straight	no	30	1
22260137	AB-C8-M 12MS-0,3PUR-M 12FA	0.3	straight-angled	no	30	1
22260138	AB-C8-M 12MS-0,6PUR-M 12FA	0.6	straight-angled	no	30	1
22260139	AB-C8-M 12MS 1,0PUR-M 12FA	1	straight-angled	no	30	1
22260140	AB-C8-M 12MS-2,0PUR-M 12FA	2	straight-angled	no	30	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T 17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

UL certifications can be found in the data sheet

#### Accessories

- FLEXIMARK® Label LMB refer to page 951



# UNITRONIC® SENSOR M12-M8

M12 plug on M8 socket

**Info**

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Integrated vibration protection (mechanical lock-in)
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- PWIS and PVC free
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Core cross section: 0.25 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)  
4-pin: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: PUR, black

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing

**Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter

**IP** Protection rating  
IP65/IP67/IP68

**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

**Coding**  
A-standard

**Rated current (A)**  
3 A

Article number	Article designation	Length (m)	Design	LED	Rated voltage (V)	PU
<b>Connector to socket</b>						
<b>3-pin</b>						
22260225	AB-C3-M12MS-0,3PUR-M8FS	0.3	straight-straight	no	60	1
22260226	AB-C3-M12MS-0,6PUR-M8FS	0.6	straight-straight	no	60	1
22260227	AB-C3-M12MS-1,0PUR-M8FS	1	straight-straight	no	60	1
22260228	AB-C3-M12MS-2,0PUR-M8FS	2	straight-straight	no	60	1
22260229	AB-C3-M12MS-0,3PUR-M8FA	0.3	straight-angled	no	60	1
22260230	AB-C3-M12MS-0,6PUR-M8FA	0.6	straight-angled	no	60	1
22260231	AB-C3-M12MS-1,0PUR-M8FA	1	straight-angled	no	60	1
22260232	AB-C3-M12MS-2,0PUR-M8FA	2	straight-angled	no	60	1
22260267	AB-C3-M12MS-0,3PUR-M8FA-2L	0.3	straight-angled	2 LEDs	24	1
22260268	AB-C3-M12MS-0,6PUR-M8FA-2L	0.6	straight-angled	2 LEDs	24	1
22260269	AB-C3-M12MS-1,0PUR-M8FA-2L	1	straight-angled	2 LEDs	24	1
22260270	AB-C3-M12MS-2,0PUR-M8FA-2L	2	straight-angled	2 LEDs	24	1
<b>4-pin</b>						
22260347	AB-C4-M12MS-0,3PUR-M8FS	0.3	straight-straight	no	30	1
22260349	AB-C4-M12MS-0,6PUR-M8FS	0.6	straight-straight	no	30	1
22260350	AB-C4-M12MS-1,0PUR-M8FS	1	straight-straight	no	30	1
22260348	AB-C4-M12MS-2,0PUR-M8FS	2	straight-straight	no	30	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet

### Accessories

- FLEXIMARK® Label LMB refer to page 951



## UNITRONIC® SENSOR SH M12

M12 plug/socket on free conductor end, shielded



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Integrated vibration protection (mechanical lock-in)
- Gold-plated contacts for low transfer resistance

### Application range

- For increased mechanical stress and harsh operating conditions

### Product features

- UV-resistant
- Good resistance to oils and chemicals
- Shielding is conducted over the knurl
- Suitable for drag chains
- Including tag carrier

### Norm references / Approvals

- Halogenfree according to DIN VDE 0472
- UL File Number: E249137
- Flame-retardant according to UL 1581 FT-2

### Product Make-up

- Wire cross-section: 0,34 mm<sup>2</sup>
- Colour-code:  
3-pin: bn (1), bu (3), bk (4)  
4-pin: bn (1), wh (2), bu (3), bk (4)  
5-pin: bn (1), wh (2), bu (3), bk (4), gn/ye (5)
- Outer sheath: PUR, black
- Shielded version

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description:  
Sensor-actuator patch cord



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Minimum bending radius

Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter



#### Protection rating

IP65/IP67



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -25°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
<b>3-pin</b>						
<b>plug</b>						
22260453	AB-C3-M12MS- 2,0PUR-SH	3	2	straight	250	1
22260454	AB-C3-M12MS- 5,0PUR-SH	3	5	straight	250	1
22260455	AB-C3-M12MS-10,0PUR-SH	3	10	straight	250	1
<b>Socket</b>						
22260450	AB-C3- 2,0PUR-M12FS-SH	3	2	straight	250	1
22260451	AB-C3- 5,0PUR-M12FS-SH	3	5	straight	250	1
22260452	AB-C3-10,0PUR-M12FS-SH	3	10	straight	250	1
22260071	AB-C3- 2,0PUR-M12FA-SH	3	2	angled	250	1
22260072	AB-C3- 5,0PUR-M12FA-SH	3	5	angled	250	1
22260073	AB-C3-10,0PUR-M12FA-SH	3	10	angled	250	1
<b>4-pin</b>						
<b>plug</b>						
22260459	AB-C4-M12MS- 2,0PUR-SH	4	2	straight	250	1
22260460	AB-C4-M12MS- 5,0PUR-SH	4	5	straight	250	1
22260461	AB-C4-M12MS-10,0PUR-SH	4	10	straight	250	1
<b>Socket</b>						
22260456	AB-C4- 2,0PUR-M12FS-SH	4	2	straight	250	1
22260457	AB-C4- 5,0PUR-M12FS-SH	4	5	straight	250	1
22260458	AB-C4-10,0PUR-M12FS-SH	4	10	straight	250	1
22260074	AB-C4- 2,0PUR-M12FA-SH	4	2	angled	250	1
22260675	AB-C4- 5,0PUR-M12FA-SH	4	5	angled	250	1
22260680	AB-C4-10,0PUR-M12FA-SH	4	10	angled	250	1
<b>5-pin</b>						
<b>plug</b>						
22260465	AB-C5-M12MS- 2,0PUR-SH	5	2	straight	60	1
22260466	AB-C5-M12MS- 5,0PUR-SH	5	5	straight	60	1
22260467	AB-C5-M12MS-10,0PUR-SH	5	10	straight	60	1
<b>Socket</b>						
22260462	AB-C5- 2,0PUR-M12FS-SH	5	2	straight	60	1
22260463	AB-C5- 5,0PUR-M12FS-SH	5	5	straight	60	1
22260464	AB-C5-10,0PUR-M12FS-SH	5	10	straight	60	1
22260946	AB-C5- 2,0PUR-M12FA-SH	5	2	angled	60	1
22260714	AB-C5- 5,0PUR-M12FA-SH	5	5	angled	60	1
22260991	AB-C5-10,0PUR-M12FA-SH	5	10	angled	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

UL certifications can be found in the data sheet

### Accessories

- FLEXIMARK® Label LMB refer to page 951





## UNITRONIC® SENSOR PVC M12 | M12-M12

M12 plug/socket on M12 plug/socket/free conductor end



**Info**

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Gold-plated contacts for low transfer resistance
- Integrated vibration protection (mechanical lock-in)

### Application range

- For medium mechanical stress in dry conditions

### Product features

- Partly oil and chemical resistant
- Including tag carrier
- PWIS-free

### Norm references / Approvals

- Flame-retardant according to style 2464
- UL File Number: E249137

### Product Make-up

- Wire cross-section: 0,34 mm<sup>2</sup>
- Colour-code:
  - 3-pin: bn (1), bu (3), bk (4)
  - 4-pin: bn (1), wh (2), bu (3), bk (4)
  - 5-pin: bn (1), wh (2), bu (3), bk (4), gn/ye (5)
- Outer sheath: PVC, black

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing

**Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter

**IP** **Protection rating**  
IP65/IP67/IP68

**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
<b>3-pin</b>						
<b>Socket</b>						
22260080	AB-C3-2,0PVC-M12FS	3	2	straight	250	1
22260663	AB-C3-5,0PVC-M12FS	3	5	straight	250	1
22260081	AB-C3-10,0PVC-M12FS	3	10	straight	250	1
22262095	AB-C3-2,0PVC-M12FA		2	angled	250	1
22260661	AB-C3-5,0PVC-M12FA		5	angled	250	1
22262083	AB-C3-10,0PVC-M12FA		10	angled	250	1
<b>Connector to socket</b>						
22262096	AB-C3-M12MS-2,0PVC-M12FA		2	straight-angled	250	1
22262097	AB-C3-M12MS-5,0PVC-M12FA		5	straight-angled	250	1
22262098	AB-C3-M12MS-10,0PVC-M12FA		10	straight-angled	250	1
<b>4-pin</b>						
<b>Socket</b>						
22260688	AB-C4-2,0PVC-M12FS	4	2	straight	250	1
22260689	AB-C4-5,0PVC-M12FS	4	5	straight	250	1
22260685	AB-C4-10,0PVC-M12FS	4	10	straight	250	1
22260841	AB-C4-2,0PVC-M12FA	4	2	angled	250	1
22260678	AB-C4-5,0PVC-M12FA	4	5	angled	250	1
22260683	AB-C4-10,0PVC-M12FA	4	10	angled	250	1
<b>Connector to socket</b>						
22260832	AB-C4-M12MS-2,0PVC-M12FA	4	2	straight-angled	250	1
22260705	AB-C4-M12MS-5,0PVC-M12FA	4	5	straight-angled	250	1
22260833	AB-C4-M12MS-10,0PVC-M12FA	4	10	straight-angled	250	1
<b>5-pin</b>						
<b>Socket</b>						
22262099	AB-C5-2,0PVC-M12FS		2	straight	250	1
22262100	AB-C5-5,0PVC-M12FS		5	straight	250	1
22262101	AB-C5-10,0PVC-M12FS		10	straight	250	1
<b>Connector to socket</b>						
22262102	AB-C5-M12MS-2,0PVC-M12FA		2	straight-angled	250	1
22262103	AB-C5-M12MS-5,0PVC-M12FA		5	straight-angled	250	1
22262104	AB-C5-M12MS-10,0PVC-M12FA		10	straight-angled	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products. UL certifications can be found in the data sheet



## UNITRONIC® SENSOR HD M 12

S/A cable: Hygienic Design for Food&Beverage



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Hygienic Design for ideal cleaning results
- Guaranteed density by meeting the highest protection class
- Stainless steel knurl to ensure protection against corrosion
- Bright colors to detect contamination quickly

### Application range

- Food production and packaging machinery
- Freezing plants, cold storage
- Washdown area with frequent contact with cleaning agents

### Product features

- Suitable for drag chains
- 4-pin plug/socket M 12 on free conductor end

### Norm references / Approvals

- **ECOLAB®**  
Industry standard in the field of professional cleaning and disinfection
- **FDA 21 CFR 177.2600**  
Special sealing element for food and beverage industry in North America

### Product Make-up

- Wire cross-section: 0,34 mm<sup>2</sup>
- Colour-code:  
4-pin: bn (1), wh (2), bu (3), bk (4)
- Outer sheath: TPE halogen-free, grey (similar to RAL 7035)

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord

**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Stainless steel (V4A)  
Gripping body: PP

**Minimum bending radius**  
Fixed installation: 5 x outer diameter  
Flexing: 10 x outer diameter

**IP** Protection rating  
IP65/IP67/IP68/IP69

**Ambient temperature (operation)**  
Fixed installation: -40°C to +105°C  
Flexing: -25°C to +105°C

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
<b>4-pin plug</b>						
22262040	AB-C4-M12MS-2,0TPE-HD	4	2	straight	250	1
22262041	AB-C4-M12MS-5,0TPE-HD	4	5	straight	250	1
22262060	AB-C4-M12MS-7,5TPE-HD	4	7.5	straight	250	1
22262042	AB-C4-M12MS-10,0TPE-HD	4	10	straight	250	1
22262061	AB-C4-M12MS-15,0TPE-HD	4	15	straight	250	1
<b>Socket</b>						
22262043	AB-C4-2,0TPE-M12FS-HD	4	2	straight	250	1
22262044	AB-C4-5,0TPE-M12FS-HD	4	5	straight	250	1
22262062	AB-C4-7,5TPE-M12FS-HD	4	7.5	straight	250	1
22262045	AB-C4-10,0TPE-M12FS-HD	4	10	straight	250	1
22262063	AB-C4-15,0TPE-M12FS-HD	4	15	straight	250	1
22262046	AB-C4-2,0TPE-M12FA-HD	4	2	angled	250	1
22262047	AB-C4-5,0TPE-M12FA-HD	4	5	angled	250	1
22262064	AB-C4-7,5TPE-M12FA-HD	4	7.5	angled	250	1
22262048	AB-C4-10,0TPE-M12FA-HD	4	10	angled	250	1
22262065	AB-C4-15,0TPE-M12FA-HD	4	15	angled	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® SENSOR M12**

Field mountable connectors M12



**Benefits**

- For creating of individual cable lengths
- Quick and easy on-site assembly
- No special tools required for connecting the cables
- Time-saving assembly with IDC connection technology
- Easy connection with proven screw clamp connection

**Product features**

- 4, 5 and 8-pin version
- Screened and non-screened version
- Screw connection or insulation displacement contacts (IDC)
- PWIS-free

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: CuSnZn

**IP** **Protection rating**  
IP 65/IP 67 (IDC)  
IP 67 (screw)

**Ambient temperature (operation)**  
Plug/socket  
-25°C to +80°C (IDC)  
-40°C to +85°C (screw)

**Coding**  
A-standard

**Rated current (A)**  
4 A  
2 A (8-polig)

Article number	Article designation	Number of pins	Connection type	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Plug, straight</b>							
22260132	AB-C4-M12MS-F0,34	4	IDC	0.14 - 0.34	3.5 - 6	125	1
22260134	AB-C4-M12MS-F0,75	4	IDC	0.34 - 0.75	4 - 8	250	1
22260649	AB-C4-M12MS-PG7	4	screw	0.25 - 0.75	4 - 6	250	1
22260995	AB-C4-M12MS-PG9	4	screw	0.25 - 0.75	6 - 8	250	1
22260129	AB-C5-M12MS-PG7	5	screw	0.25 - 0.75	4 - 6	60	1
22260651	AB-C5-M12MS-PG9	5	screw	0.25 - 0.75	6 - 8	60	1
22260996	AB-C5-M12MS-PG9-SKINTOP®	5	screw	0.25 - 0.75	6 - 8	125	1
<b>Plug, straight shielded</b>							
22260135	AB-C5-M12MS-PG9-SH	5	screw	0.25 - 0.75	6 - 8	60	1
22260825	AB-C8-M12MS-PG9-SH	8	screw	0.25 - 0.75	6 - 8	30	1
<b>Plug, angled</b>							
22260647	AB-C4-M12MA-PG7	4	screw	0.25 - 0.75	4 - 6	250	1
22260130	AB-C5-M12MA-PG7	5	screw	0.25 - 0.75	4 - 6	60	1
22260648	AB-C5-M12MA-PG9	5	screw	0.25 - 0.75	6 - 8	60	1
22262023	AB-C5-M12MA-PG9-SKINTOP®	5	screw	0.25 - 0.75	6 - 8	60	1
<b>Plug angled, shielded</b>							
22262108	AB-C5-M12MA-PG7-SH	5	screw	0.25 - 0.75	4 - 6	60	1
<b>Socket, straight</b>							
22260131	AB-C4-M12FS-F0,34	4	IDC	0.14 - 0.34	3.5 - 6	125	1
22260133	AB-C4-M12FS-F0,75	4	IDC	0.34 - 0.75	4 - 8	250	1
22260640	AB-C4-M12FS-PG7	4	screw	0.25 - 0.75	4 - 6	250	1
22260641	AB-C4-M12FS-PG9	4	screw	0.25 - 0.75	6 - 8	250	1
22260127	AB-C5-M12FS-PG7	5	screw	0.25 - 0.75	4 - 6	60	1
22260644	AB-C5-M12FS-PG9	5	screw	0.25 - 0.75	6 - 8	60	1
22260997	AB-C5-M12FS-PG9-SKINTOP®	5	screw	0.25 - 0.75	6 - 8	125	1
<b>Socket, straight shielded</b>							
22260136	AB-C5-M12FS-PG9-SH	5	screw	0.25 - 0.75	6 - 8	60	1
22260826	AB-C8-M12FS-PG9-SH	8	screw	0.25 - 0.75	6 - 8	30	1
<b>Socket, angled</b>							
22260636	AB-C4-M12FA-PG7	4	screw	0.25 - 0.75	4 - 6	250	1
22260128	AB-C5-M12FA-PG7	5	screw	0.25 - 0.75	4 - 6	60	1
22260638	AB-C5-M12FA-PG9	5	screw	0.25 - 0.75	6 - 8	60	1
22262024	AB-C5-M12FA-PG9-SKINTOP®	5	screw	0.25 - 0.75	6 - 8	60	1
<b>Socket angled, shielded</b>							
22262109	AB-C5-M12FA-PG7-SH	5	screw	0.25 - 0.75	4 - 6	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SENSOR M12 V4A

Field mountable connectors M12 for Food & Beverage



### Benefits

- Stainless steel knurl to ensure protection against corrosion
- Quick and easy on-site assembly
- For creating of individual cable lengths
- Space-saving due to compact dimensions
- Easy connection with proven screw clamp connection

### Application range

- Automation systems
- Conveyor and transport systems
- Food production and packaging machinery

### Product features

- 4-pin connector
- Screw connection
- PWIS-free

### Technical data

ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: Au (gold)  
Knurl: Stainless steel (V4A)

**Protection rating**  
IP67

**Ambient temperature (operation)**  
Plug/socket -40°C to +85°C

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)	PU
<b>Plug, straight</b>						
22262049	AB-C4-M12MS-PG7-VA	4	0.25 - 0.75	4 - 6	250	1
<b>Socket, straight</b>						
22262050	AB-C4-M12FS-PG7-VA	4	0.25 - 0.75	4 - 6	250	1
<b>Socket angled</b>						
22262051	AB-C4-M12FA-PG7-VA	4	0.25 - 0.75	4 - 6	250	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SENSOR M12/M12

M12 control cabinet feed-through, shielded for CAN/DeviceNet/ S/A cabling



### Benefits

- Plug & Play for flexible connection solutions
- M12 connector on both sides

### Product features

- For CANopen/DeviceNet applications
- For sensor/actuator cabling
- Bipolar/screw mounting

### Product Make-up

- 5-pin control cabinet feed-through, M12 A-coded
- M12 plug on M12 socket
- Screened version

### Technical data

ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: Au (gold)  
Contact carrier: PA 66  
Knurl: Nickel-plated brass  
Sealing: FKM

**Protection rating**  
IP67

**Ambient temperature (operation)**  
Plug/socket -25°C to +85°C

**Coding**  
A - Standard  
(CANopen/DeviceNet/CC-Link)

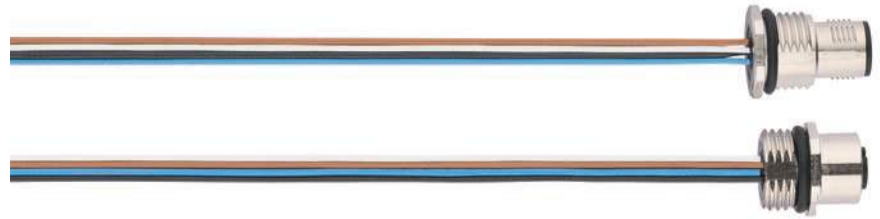
**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Control cabinet feed through</b>				
22262020	AB-C5-DSI-M12MS-M12FS-M16-SH	5	24	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SENSOR Flush-type M12



### Benefits

- Flexible connection solutions for individual device concepts
- Simple installation in devices (e.g. cabinet)
- Outside pluggable with M12 connection, inside housing connected with fixed wires

### Application range

- Connection of enclosures and cabinets

### Product features

- With M12, M16 or PG9 fastening thread
- Designs for front and rear wall-mounting
- M12 connector, A-coded with quick-locking system
- PWIS-free
- Rear wall-mounting versions inclusive fitting nut

### Product Make-up

- TPE single strands, l = 0.5 m
- Wire cross-section: 0,34 mm<sup>2</sup>

### Technical data

	ETIM 5.0 Class-ID: EC002062 ETIM 5.0 Class-Description: Sensor-actuator connector
	<b>Material</b> Contact: CuZn Contact surface: Au (gold)
	<b>Protection rating</b> IP 67
	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +85°C
	<b>Coding</b> A-standard
	<b>Rated current (A)</b> 4 A

Article number	Article designation	Number of pins	Fastening thread	Rated voltage (V)	PU
<b>Plug for front-mounting</b>					
22260108	AB-C4-M12MS-M16-0,5	4	M16	250	1
22260106	AB-C5-M12MS-M16-0,5	5	M16	60	1
22260083	AB-C4-M12MS-M16-PO-0,5	4	M16 positionable	250	1
22260084	AB-C5-M12MS-M16-PO-0,5	5	M16 positionable	60	1
22260113	AB-C4-M12MS-PG9-0,5	4	PG9	250	1
22260112	AB-C5-M12MS-PG9-0,5	5	PG9	60	1
22260087	AB-C4-M12MS-PG9-PO-0,5	4	PG9 positionable	250	1
22260088	AB-C5-M12MS-PG9-PO-0,5	5	PG9 positionable	60	1
<b>Plug for rear-mounting</b>					
22260999	AB-C4-DSI-M12MS-M12-0,5	4	M12	250	1
22260117	AB-C4-DSI-M12MS-PG9-0,5	4	PG9	250	1
22260115	AB-C5-DSI-M12MS-PG9-0,5	5	PG9	60	1
<b>Socket for front-mounting</b>					
22260107	AB-C4-M12FS-M16-0,5	4	M16	250	1
22260105	AB-C5-M12FS-M16-0,5	5	M16	60	1
22260085	AB-C4-M12FS-M16-PO-0,5	4	M16 positionable	250	1
22260086	AB-C5-M12FS-M16-PO-0,5	5	M16 positionable	60	1
22260114	AB-C4-M12FS-PG9-0,5	4	PG9	250	1
22260111	AB-C5-M12FS-PG9-0,5	5	PG9	60	1
22260089	AB-C4-M12FS-PG9-PO-0,5	4	PG9 positionable	250	1
22260090	AB-C5-M12FS-PG9-PO-0,5	5	PG9 positionable	60	1
<b>Socket for rear-mounting</b>					
22260118	AB-C4-DSI-M12FS-PG9-0,5	4	PG9	250	1
22260116	AB-C5-DSI-M12FS-PG9-0,5	5	PG9	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Matching fitting nut: 22261062 (M12), 52003500 (PG9), 22260110 (M16)



## EPIC® SENSOR M12T

M12 T parallel distributor for CAN/ DeviceNet/ S/A cabling



### Benefits

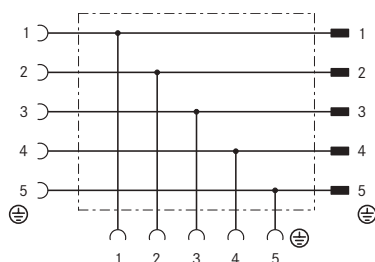
- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Robust design

### Product features

- PWIS-free

### Product Make-up

- 5-pin parallel distributor
- M12 socket on M12 plug and M12 socket



### Technical data



#### Material

Contact: CuZn  
Contact surface: Ni/Au  
Contact carrier: TPU GF  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing  
Sealing: NBR



#### Protection rating

IP65/IP67



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C

#### Coding

A - Standard  
(CANopen/DeviceNet/CC-Link)

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>T distributor</b>				
22260765	AB-C5-M12T-2XM12FS DN	5	60	5

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SENSOR CCR

Cable coupler round, shielded for e.g. sensor /PROFIBUS /CAN cables



### Benefits

- Optimum EMC protection with 360 ° shielding
- Time-saving assembly with IDC connection technology

### Application range

- To extend existing cable systems
- Repairkit for damaged cables

### Product features

- For core outer diameter 0.75 - 2.0 mm
- 5-pin cable coupler round
- Screened version

### Technical data



#### Material

Contact: CuZn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: Zinc die-cast, nickel-plated



#### Protection rating

IP65/IP67



#### Ambient temperature (operation)

-5°C to +50°C

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Cross-section in mm <sup>2</sup>	Cable diameter in mm	Rated voltage (V)
<b>Cable coupler round</b>					
21700641	AB-C5-CCR-SH	5	0.14 - 0.50	5.0 - 9.7	60

DeviceNet is a registered trademark of ODVA

Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® SENSOR Valve

valve connector on free conductor end



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Product features

- Suitable for drag chains
- With protective circuit (Z diode) PE-bridged
- Valve connector for pressure switches
- With LED status indicator (yellow) With display switch state (2 LEDs, red/green)
- Including tag carrier
- PWIS-free

### Product Make-up

- 3 or 5 x 0.5 mm<sup>2</sup>
- Core identification code: Black cores with white numbers +green/yellow
- Outer sheath: PUR halogen-free, black
- Outer diameter: 4.5 mm (3 pins) 5.3 mm (5 pins)

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector



**Material**  
Contact: CuSn  
Contact surface: Ag



**Protection rating**  
IP65/IP67



**Ambient temperature (operation)**  
Valve connector -20°C to +85°C  
Fixed installation -40°C to +80°C  
Flexing -15°C to +80°C

#### Coding

A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Number of pins	Length (m)	LED	Rated voltage (V)	PU
<b>Valve connector type A (18 mm)</b>						
22260584	AB-C3- 2,0PUR-A-1L-S	3	2	1 LED	24	1
22260576	AB-C3- 5,0PUR-A-1L-S	3	5	1 LED	24	1
22260577	AB-C3-10,0PUR-A-1L-S	3	10	1 LED	24	1
<b>Valve connector type A (18mm) for pressure switch</b>						
22260589	AB-C5-2,0PUR-AD-2L	5	2	2 LEDs	24	1
22260590	AB-C5-5,0PUR-AD-2L	5	5	2 LEDs	24	1
22260591	AB-C5-10,0PUR-AD-2L	5	10	2 LEDs	24	1
<b>Valve connector type B (10 mm)</b>						
22260585	AB-C3- 2,0PUR-B-1L-S	3	2	1 LED	24	1
22260578	AB-C3- 5,0PUR-B-1L-S	3	5	1 LED	24	1
22260579	AB-C3-10,0PUR-B-1L-S	3	10	1 LED	24	1
<b>Valve connector type Bi (11 mm)</b>						
22260586	AB-C3- 2,0PUR-Bi-1L-S	3	2	1 LED	24	1
22260580	AB-C3- 5,0PUR-Bi-1L-S	3	5	1 LED	24	1
22260581	AB-C3-10,0PUR-Bi-1L-S	3	10	1 LED	24	1
<b>Valve connector type C (8 mm)</b>						
22260587	AB-C3- 2,0PUR-C-1L-S	3	2	1 LED	24	1
22260582	AB-C3- 5,0PUR-C-1L-S	3	5	1 LED	24	1
22260583	AB-C3-10,0PUR-C-1L-S	3	10	1 LED	24	1
<b>Valve connector type Ci (9.4 mm)</b>						
22260588	AB-C3- 2,0PUR-Ci-1L-S	3	2	1 LED	24	1
22260574	AB-C3- 5,0PUR-Ci-1L-S	3	5	1 LED	24	1
22260575	AB-C3-10,0PUR-Ci-1L-S	3	10	1 LED	24	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SENSOR STRIP stripping tool refer to page 1003
- FLEXIMARK® Label LMB refer to page 951



## UNITRONIC® SENSOR Valve-M 12

valve connector on straight M12 plug



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Product features

- Suitable for drag chains
- With protective circuit (Z diode) PE-bridged  
Valve connector for pressure switches
- With LED status indicator (yellow)  
With display switch state (2 LEDs, red/green)
- Including tag carrier
- PWIS-free

### Product Make-up

- 3 or 5 x 0.5 mm<sup>2</sup>
- Core identification code:  
Black cores with white numbers + green/yellow
- Outer sheath: PUR halogen-free, black
- Outer diameter:  
4.5 mm (3 pins)  
5.3 mm (5 pins)

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description:  
Sensor-actuator connector



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Protection rating

IP65/IP67



#### Ambient temperature (operation)

Valve connector -20°C to +85°C  
Connector/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -15°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	LED	Rated voltage (V)	PU
<b>Straight connector to valve connector type A (18 mm)</b>						
22260550	AB-C3-M12MS-0,3PUR-A-1L-S	3	0.3	1 LED	24	1
22260551	AB-C3-M12MS-0,6PUR-A-1L-S	3	0.6	1 LED	24	1
22260552	AB-C3-M12MS-1,0PUR-A-1L-S	3	1	1 LED	24	1
22260553	AB-C3-M12MS-2,0PUR-A-1L-S	3	2	1 LED	24	1
<b>Straight connector to valve connector type A (18mm) for pressure switch</b>						
22260573	AB-C5-M12MS-0,3PUR-AD-2L	5	0.3	2 LEDs	24	1
22260572	AB-C5-M12MS-0,6PUR-AD-2L	5	0.6	2 LEDs	24	1
22260571	AB-C5-M12MS-1,0PUR-AD-2L	5	1	2 LEDs	24	1
22260570	AB-C5-M12MS-2,0PUR-AD-2L	5	2	2 LEDs	24	1
<b>Straight connector to valve connector type B (10 mm)</b>						
22260558	AB-C3-M12MS-0,3PUR-B-1L-S	3	0.3	1 LED	24	1
22260559	AB-C3-M12MS-0,6PUR-B-1L-S	3	0.6	1 LED	24	1
22260560	AB-C3-M12MS-1,0PUR-B-1L-S	3	1	1 LED	24	1
22260561	AB-C3-M12MS-2,0PUR-B-1L-S	3	2	1 LED	24	1
<b>Straight connector to valve connector type BI (11 mm)</b>						
22260554	AB-C3-M12MS-0,3PUR-BI-1L-S	3	0.3	1 LED	24	1
22260555	AB-C3-M12MS-0,6PUR-BI-1L-S	3	0.6	1 LED	24	1
22260556	AB-C3-M12MS-1,0PUR-BI-1L-S	3	1	1 LED	24	1
22260557	AB-C3-M12MS-2,0PUR-BI-1L-S	3	2	1 LED	24	1
<b>Straight connector to valve connector type C (8 mm)</b>						
22260566	AB-C3-M12MS-0,3PUR-C-1L-S	3	0.3	1 LED	24	1
22260567	AB-C3-M12MS-0,6PUR-C-1L-S	3	0.6	1 LED	24	1
22260568	AB-C3-M12MS-1,0PUR-C-1L-S	3	1	1 LED	24	1
22260569	AB-C3-M12MS-2,0PUR-C-1L-S	3	2	1 LED	24	1
<b>Straight connector to valve connector type CI (9.4 mm)</b>						
22260562	AB-C3-M12MS-0,3PUR-CI-1L-S	3	0.3	1 LED	24	1
22260563	AB-C3-M12MS-0,6PUR-CI-1L-S	3	0.6	1 LED	24	1
22260564	AB-C3-M12MS-1,0PUR-CI-1L-S	3	1	1 LED	24	1
22260565	AB-C3-M12MS-2,0PUR-CI-1L-S	3	2	1 LED	24	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

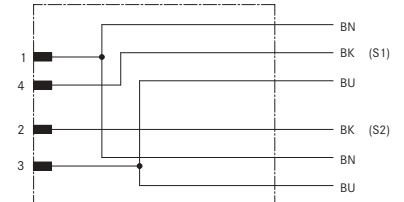
- FLEXIMARK® Label LMB refer to page 951





## UNITRONIC® SENSOR M12Y

M12 Y plug straight on 2x free conductor end



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions

### Product features

- 4-pin M12Y plug on free conductor end
- Including tag carrier
- PWIS-free
- Suitable for drag chains

### Product Make-up

- 3 x 0.34 mm<sup>2</sup>
- Core colours: bn, bu, bk
- Outer sheath: PUR halogen-free, black

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Length (m)	LED	Rated voltage (V)	PU
<b>Y plug to 2 x free conductor end</b>					
22260500	AB-C3-M12Y-2,0PUR	2	no	250	1
22260513	AB-C3-M12Y-5,0PUR	5	no	250	1
22260526	AB-C3-M12Y-10,0PUR	10	no	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet

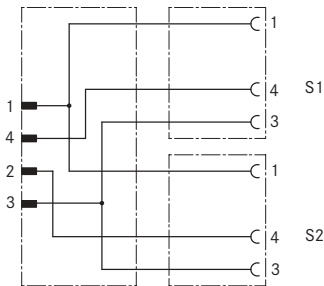
### Accessories

- FLEXIMARK® Label LMB refer to page 951



## UNITRONIC® SENSOR M 12Y-M8

M12 Y plug straight on 2x M8 socket



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Product features

- 4-pin M12Y plug on 2 x M8 socket (3-pin)
- Including tag carrier
- PWIS-free
- Suitable for drag chains

### Product Make-up

- 3 x 0.25 mm<sup>2</sup>
- Core colours: bn, bu, bk
- Outer sheath: PUR halogen-free, black

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description:  
Sensor-actuator patch cord



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Rated voltage (V)	LED	PU
<b>Y plug to straight socket</b>						
22260514	AB-C3-M12Y-0,3PUR-M8FS	3	0.3	60	no	1
22260515	AB-C3-M12Y-0,6PUR-M8FS	3	0.6	60	no	1
22260516	AB-C3-M12Y-1,0PUR-M8FS	3	1	60	no	1
22260517	AB-C3-M12Y-2,0PUR-M8FS	3	2	60	no	1
<b>Y plug to angled socket</b>						
22260518	AB-C3-M12Y-0,3PUR-M8FA	3	0.3	60	no	1
22260519	AB-C3-M12Y-0,6PUR-M8FA	3	0.6	60	no	1
22260520	AB-C3-M12Y-1,0PUR-M8FA	3	1	60	no	1
22260521	AB-C3-M12Y-2,0PUR-M8FA	3	2	60	no	1
<b>Y plug to angled socket with LEDs</b>						
22260522	AB-C3-M12Y-0,3PUR-M8FA-2L	3	0.3	24	2 LEDs	1
22260523	AB-C3-M12Y-0,6PUR-M8FA-2L	3	0.6	24	2 LEDs	1
22260524	AB-C3-M12Y-1,0PUR-M8FA-2L	3	1	24	2 LEDs	1
22260525	AB-C3-M12Y-2,0PUR-M8FA-2L	3	2	24	2 LEDs	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet

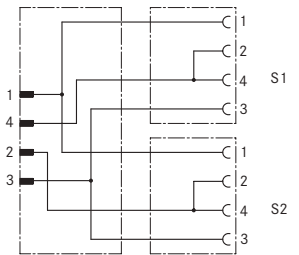
### Accessories

- FLEXIMARK® Label LMB refer to page 951



## UNITRONIC® SENSOR M12Y-M12

M12 Y plug straight on 2x M12 socket



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Product features

- 4-pin M12Y plug on 2 x M12 socket (4-pin)
- Socket M12 PIN 2+4 bridged
- Including tag carrier
- PWIS-free
- Suitable for drag chains

### Product Make-up

- 3 x 0.34 mm<sup>2</sup>
- Core colours: bn, bu, bk
- Outer sheath: PUR halogen-free, black

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord



**Material**  
Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



**Protection rating**  
IP65/IP67/IP68



**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +80°C  
Flexing -25°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Rated voltage (V)	LED	PU
<b>Y plug to straight socket</b>						
22260501	AB-C3-M12Y-0,3PUR-M12FS-B	3	0.3	250	no	1
22260502	AB-C3-M12Y-0,6PUR-M12FS-B	3	0.6	250	no	1
22260503	AB-C3-M12Y-1,0PUR-M12FS-B	3	1	250	no	1
22260504	AB-C3-M12Y-2,0PUR-M12FS-B	3	2	250	no	1
<b>Y plug to angled socket</b>						
22260505	AB-C3-M12Y-0,3PUR-M12FA-B	3	0.3	250	no	1
22260506	AB-C3-M12Y-0,6PUR-M12FA-B	3	0.6	250	no	1
22260507	AB-C3-M12Y-1,0PUR-M12FA-B	3	1	250	no	1
22260508	AB-C3-M12Y-2,0PUR-M12FA-B	3	2	250	no	1
<b>Y plug to angled socket with LEDs</b>						
22260509	AB-C3-M12Y-0,3PUR-M12FA-2L-B	3	0.3	24	2 LEDs	1
22260510	AB-C3-M12Y-0,6PUR-M12FA-2L-B	3	0.6	24	2 LEDs	1
22260511	AB-C3-M12Y-1,0PUR-M12FA-2L-B	3	1	24	2 LEDs	1
22260512	AB-C3-M12Y-2,0PUR-M12FA-2L-B	3	2	24	2 LEDs	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.  
UL certifications can be found in the data sheet

### Accessories

- FLEXIMARK® Label LMB refer to page 951



## EPIC® SENSOR M8Y | M12Y

Y distributor M8 | M12



### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking

### Product features

- Design: Plug on 2x socket
- M12 design with screw hole
- PWIS-free

### Product Make-up

- 22260600: M12, 3-pin+ PE, straight M12 plug on 2x straight M12 socket, pin 2+4 bridged
- 22260601: M12, 3-pin+ PE, straight M12 plug on 2x straight M12 socket
- 22260602: M12, 5-pin straight M12 plug on 2x 3-pin straight M8 socket, parallel distributor
- 22260603: M8, 4-pin M8 plug on 2x 3pin M8 socket
- 22260604: M8 plug on M8 socket, 3-pin parallel distributor

### Technical data



ETIM 5.0 Class-ID: EC001855  
ETIM 5.0 Class-Description: Sensor-actuator patch cord



#### Material

Contact: CuZn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant, self-extinguishing



#### Protection rating

IP65/IP67



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C

#### Coding

A-standard

#### Rated current (A)

4 A  
3 A (M8)

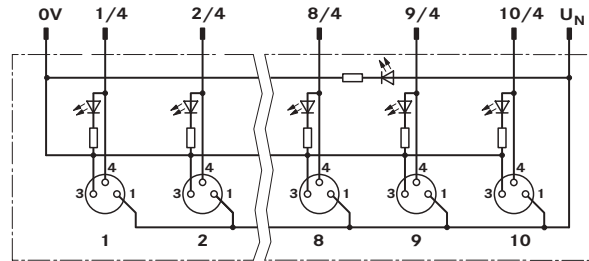
Article number	Article designation	Rated voltage (V)	PU
<b>M12 Y distributor</b>			
22260600	AB-C3-M12Y-2XM12FS B E	60	5
22260601	AB-C3-M12Y-2XM12FS E	60	5
22260602	AB-C5-M12Y-2XM12FS V	60	5
<b>M8 Y distributor</b>			
22260603	AB-C3-M8Y-2XM8FS	30	5
22260604	AB-C3-M8Y-2XM8FS V	60	5

Photographs are not to scale and do not represent detailed images of the respective products.



## Distribution Box M8

Distribution box with M8 slots and master cable/connection M12/M16



### Benefits

- Cost efficient and rational wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- Hybrid cable for signal and power transmission
- There are no assembly costs as the master cable is already pre-assembled
- Suitable for drag chains

### Norm references / Approvals

- E-File number: E75770

### Product Make-up

- Core insulation: PVC
- Outer sheath: PUR, black

### Suitable tools

- Suitable tools are available upon request (e.g. M8 torque screwdriver)

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002585  
ETIM 5.0 Class-Description: Passive sensor-actuator interface

**IP** Protection rating  
IP65/IP67

**Temperature** Ambient temperature (operation)  
-30°C to +80°C  
Fixed installation -40°C to +90°C  
Flexing -5°C to 80°C

**Amp.** Current rating per slot  
2 A

### Product features

- Single-occupied boxes
- With fixed master cable or M12/M16 socket
- LEDs indicate the operating mode of the distributor and the status of the sensors
- PWIS-free

Article number	Article designation	Length (m)	Number of slots	Status display
<b>Fixed master cable</b>				
22260026	AB-B4-M8L-4-5,0PUR	5	4	With LEDs
22260027	AB-B4-M8L-4-10,0PUR	10	4	With LEDs
22260028	AB-B6-M8L-6-5,0PUR	5	6	With LEDs
22260029	AB-B6-M8L-6-10,0PUR	10	6	With LEDs
22260030	AB-B8-M8L-8-5,0PUR	5	8	With LEDs
22260031	AB-B8-M8L-8-10,0PUR	10	8	With LEDs
22260032	AB-B10-M8L-10-5,0PUR	5	10	With LEDs
22260033	AB-B10-M8L-10-10,0PUR	10	10	With LEDs
<b>M12 connection</b>				
22260038	AB-B4-M8L-4-M12		4	With LEDs
22260039	AB-B6-M8L-6-M12		6	With LEDs
<b>M16 connection</b>				
22260034	AB-B4-M8L-4-M16		4	With LEDs
22260035	AB-B6-M8L-6-M16		6	With LEDs
22260036	AB-B8-M8L-8-M16		8	With LEDs
22260037	AB-B10-M8L-10-M16		10	With LEDs

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

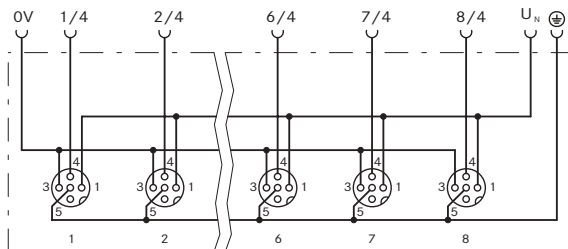
Photographs are not to scale and do not represent detailed images of the respective products.

Unoccupied slots must be covered with protective caps (see accessories) - ArtNo. 22260606 for M8; 22260605 for M12.



## Distribution Box M12

Distribution box with M12 slots and master cable/mountable/M23 connection



### Benefits

- Cost efficient and rational wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- Hybrid cable for signal and power transmission

### Product features

- With fixed master cable, mountable or M23 socket
- Single or double-occupied sensor/actuator box
- M12 quick-locking system, optional LED diagnostic
- Suitable for drag chains
- PWIS-free

### Norm references / Approvals

- E-File number: E75770

### Product Make-up

- Core insulation: PVC
- Outer sheath: PUR, black

### Suitable cables

- UNITRONIC® SENSOR master cable Page 376
- M23 connection cable: 10 m: 22260852; 15 m: 22260853; 30 m: 22260959

### Suitable tools

- Suitable tools are available upon request (e.g. M12 torque screwdriver)

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002585  
ETIM 5.0 Class-Description: Passive sensor-actuator interface

**IP** **Protection rating**  
IP65/IP67 (M23 connection)  
IP65/IP67/IP69

**Ambient temperature (operation)**  
-25°C to +75°C (M23 connection)  
-30°C to +90°C  
Fixed installation -40°C to +90°C  
Flexing -5°C to +80°C

**Amp.** **Max. current rating per path**  
2 A

**Amp.** **Current rating per slot**  
4 A

Article number	Article designation	Length (m)	Number of slots	Status display
<b>Single-occupied boxes</b>				
<b>Fixed master cable</b>				
22260010	AB-B4-M12-4-5,0PUR	5	4	no
22260011	AB-B4-M12-4-10,0PUR	10	4	no
22260014	AB-B8-M12-8-5,0PUR	5	8	no
22260015	AB-B8-M12-8-10,0PUR	10	8	no
22260018	AB-B4-M12L-4-5,0PUR	5	4	With LEDs
22260019	AB-B4-M12L-4-10,0PUR	10	4	With LEDs
22260970	AB-B6-M12L-6-5,0PUR	5	6	With LEDs
22260022	AB-B8-M12L-8-5,0PUR	5	8	With LEDs
22260023	AB-B8-M12L-8-10,0PUR	10	8	With LEDs
<b>Field mountable</b>				
22260005	AB-B4-M12-4-C		4	no
22260007	AB-B8-M12-8-C		8	no
22260001	AB-B4-M12L-4-C		4	With LEDs
22260003	AB-B8-M12L-8-C		8	With LEDs
<b>M23 connection</b>				
22260618	AB-B6-6-L-M23		6	With LEDs
22260619	AB-B8-8-L-M23		8	With LEDs
<b>Double-occupied boxes</b>				
<b>Fixed master cable</b>				
22260012	AB-B4-M12-8-5,0PUR	5	4	no
22260013	AB-B4-M12-8-10,0PUR	10	4	no
22260016	AB-B8-M12-16-5,0PUR	5	8	no
22260017	AB-B8-M12-16-10,0PUR	10	8	no
22260020	AB-B4-M12L-8-5,0PUR	5	4	With LEDs
22260021	AB-B4-M12L-8-10,0PUR	10	4	With LEDs
22260024	AB-B8-M12L-16-5,0PUR	5	8	With LEDs
22260025	AB-B8-M12L-16-10,0PUR	10	8	With LEDs
<b>Field mountable</b>				
22260006	AB-B4-M12-8-C		4	no
22260008	AB-B8-M12-16-C		8	no
22260002	AB-B4-M12L-8-C		4	With LEDs
22260004	AB-B8-M12L-16-C		8	With LEDs
<b>M23 connection</b>				
22260621	AB-B8-16-M23		8	no
22260620	AB-B8-16-L-M23		8	With LEDs

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Photographs are not to scale and do not represent detailed images of the respective products.

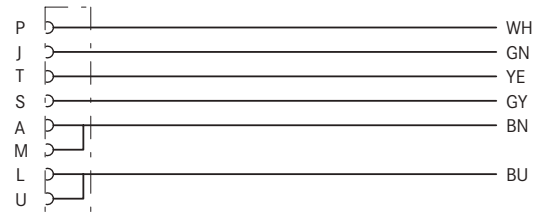
Unoccupied slots must be covered with protective caps (see accessories) - ArtNo. 22260606 for M8; 22260605 for M12.

UL certifications can be found in the data sheet



## UNITRONIC® SENSOR M16

M16 socket with connected master cable



### Benefits

- Connecting cable for M8 boxes with 4 to 10 slots
- Instead of numerous individual conductors, one master cable is laid to the control unit
- Hybrid cable for signal and power transmission

### Product features

- Angled socket M16 on free conductor end
- Suitable for drag chains
- PWIS-free

### Product Make-up

- Core cross-section (power): 0.75 mm<sup>2</sup>
- Core cross-section (signal): 0.34 mm<sup>2</sup>
- Core insulation: PVC
- Outer sheath: PUR, black

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001604  
ETIM 5.0 Class-Description: Fieldbus, decentr. periphery - communication module

**Material**  
Contact: CuZn  
Contact surface: Ni/Au  
Knurl: Nickel-plated brass  
Gripping body: TPU, flame-retardant, self-extinguishing

**IP** **Protection rating**  
IP 67

**Ambient temperature (operation)**  
Plug/socket -25°C to +90°C  
Fixed installation -40°C to +90°C  
Flexing -5°C to 80°C

**Coding**  
A-standard

**Rated current (A)**  
4 A

Article number	Article designation	Length (m)	Rated voltage (V)	PU
<b>Socket, angled</b>				
<b>8 pole (6x signal - 2 bridged, 2x power)</b>				
22260607	AB-C8- 5,0PUR-M16FA	5	125	1
22260608	AB-C8-10,0PUR-M16FA	10	125	1
<b>10-pin (8x signal - 2 bridged, 2x power)</b>				
22260609	AB-C10- 5,0PUR-M16FA	5	125	1
22260610	AB-C10-10,0PUR-M16FA	10	125	1
<b>12-pin (10x signal - 2 bridged, 2x power)</b>				
22260611	AB-C12- 5,0PUR-M16FA	5	125	1
22260612	AB-C12-10,0PUR-M16FA	10	125	1
<b>14-pin (12x signal - 2 bridged, 2x power)</b>				
22260613	AB-C14- 5,0PUR-M16FA	5	125	1
22260614	AB-C14-10,0PUR-M16FA	10	125	1

Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Distribution Box M8 refer to page 401



## UNITRONIC® SENSOR M12 Power / UNITRONIC® SENSOR M12-M12 Power

Power cable: M12 plug/socket on free conductor

Power cable: M12 straight plug on M12 straight socket



### Info

- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Cost-effective, efficient wiring of fieldbus and sensor/ actuator installations
- Space-saving due to compact dimensions
- Customise assembly of the free conductor end

### Product features

- 4-pin power cable
- M12 connector, A-coded with quick-locking system
- Including tag carrier
- PWIS-free
- Suitable for drag chains

### Product Make-up

- 4 x 0.75 mm<sup>2</sup>
- 4-pin: bn (1), wh (2), bu (3), bk (4)
- Core insulation: PVC
- Outer sheath: PUR, black
- Outer diameter: 5.9 mm

### Suitable tools

- DATA STRIP stripping tool refer to page 1001

### Suitable connectors

- EPIC® SENSOR M12 Page 391

### Technical data



ETIM 5.0 Class-ID: EC001604  
ETIM 5.0 Class-Description:  
Fieldbus, decentr. periphery -  
communication module



#### Material

Contact: CuSn  
Contact surface: Ni/Au  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: TPU, flame-retardant,  
self-extinguishing



#### Minimum bending radius

Flexing: 10 x outer diameter



#### Protection rating

IP65/IP67/IP68



#### Ambient temperature (operation)

Plug/socket -25°C to +90°C  
Fixed installation -25°C to +80°C  
Flexing -5°C to +80°C

#### Coding

A-standard

#### Rated current (A)

4 A

Article number	Article designation	Number of pins	Length (m)	Design	Rated voltage (V)	PU
<b>Straight connector</b>						
22260778	AB-PC4-M12MS-2,0PUR	4	2	straight	250	1
22260779	AB-PC4-M12MS-5,0PUR	4	5	straight	250	1
22260780	AB-PC4-M12MS-10,0PUR	4	10	straight	250	1
<b>Straight socket</b>						
22260781	AB-PC4-2,0PUR-M12FS	4	2	straight	250	1
22260782	AB-PC4-5,0PUR-M12FS	4	5	straight	250	1
22260783	AB-PC4-10,0PUR-M12FS	4	10	straight	250	1
<b>Plug on socket</b>						
22260784	AB-PC4-M12MS-0,3PUR-M12FS	4	0.3	straight-straight	250	1
22260785	AB-PC4-M12MS-1,0PUR-M12FS	4	1	straight-straight	250	1
22260786	AB-PC4-M12MS-2,0PUR-M12FS	4	2	straight-straight	250	1
22260787	AB-PC4-M12MS-5,0PUR-M12FS	4	5	straight-straight	250	1
22260788	AB-PC4-M12MS-10,0PUR-M12FS	4	10	straight-straight	250	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: inclusive of copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- FLEXIMARK® Label LMB refer to page 951





**EPIC® POWER M12 60V**

Field mountable M12 POWER connectors

**i Info**

- DC high-power connector  
- 60 VDC / 12 A



**Benefits**

- Compact and standardized M12 design saves space and costs
- Fault proof connection through M12 T coding of the connector face
- Low voltage drop
- High flexibility through on-site assembly
- Safety use in field environment by high protection class

**Application range**

- Automation technology
- Plant engineering, machinery manufacturing
- Tool shop
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for use in measuring, control and regulating circuits

**Norm references / Approvals**

- E249137

**Product features**

- Robust M12 circular connector with screw connection and knurled screw
- Screw-locking connection, to be connected to different conductor
- For conductor cross-section 0.75 - 1.5 mm<sup>2</sup> (AWG 18 - AWG 16)

**Suitable cables**

- ÖLFLEX® FD 855 P Page 135
- (ÖLFLEX® FD 855 P: Example for harsh conditions)

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: Au (gold)  
Knurl: Zinc die-cast, nickel-plated  
Gripping body: PA

**IP** **Protection rating**  
IP67

**Ambient temperature (operation)**  
Plug/socket -40°C to +85°C

**Coding**  
T - Power

**Rated current (A)**  
12 A

Article number	Article designation	Design	Number of pins	Cable diameter in mm	Rated voltage (V)	PU
<b>plug</b>						
22262010	AB-C4-M12MST-PG11	straight	4	8.0 - 10.0	60	1
22262012	AB-C4-M12MAT-PG11	angled	4	8.0 - 10.0	60	1
<b>Socket</b>						
22262011	AB-C4-M12FST-PG11	straight	4	8.0 - 10.0	60	1
22262013	AB-C4-M12FAT-PG11	angled	4	8.0 - 10.0	60	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWER M 12 60V flush-type connectors

M12 POWER panel mount connectors for front mounting



### Info

- DC high-power connector  
- 60 VDC / 12 A



### Benefits

- Compact and standardized M12 design saves space and costs
- Fault proof connection through M12 T coding of the connector face
- Low voltage drop
- Individual solutions in the field of M12 power supply
- Safety use in field environment by high protection class

### Application range

- Power Supply for small devices
- Tool shop
- Industrial machinery and plant engineering

### Norm references / Approvals

- E249137

### Product features

- Designs for front mounting
- Flush type connector with M16 thread and preharnessed wires
- Flush-type connector with M20 thread with screw contacts
- Contact durability: > 100

### Product Make-up

- PVC single stranded wires, l = 0.2 m (4x AWG 16)
- 4-pin: bn (1), wh (2), bu (3), bk (4)
- High quality gold-plated contacts
- For screw contacts: 0,75 mm<sup>2</sup> - 1,5 mm<sup>2</sup> (AWG 18 - AWG 16)

### Suitable cables

- MULTI-STANDARD SC 2.1 Page 212
- (MULTI-STANDARD SC 2.1.: Example for panel mount connectors with screw terminals)

### Suitable connectors

- EPIC® POWER M12 60V Page 405

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector

**Material**  
Contact: CuZn  
Contact surface: Au (gold)

**IP** Protection rating  
IP67

**0+1** Ambient temperature (operation)  
-40°C to +85°C

**Coding**  
T - Power

**Rated current (A)**  
12 A

Article number	Article designation	Number of pins	Rated voltage (V)	PU
<b>Panel mount connector (male) with screw connection, M20 thread</b>				
22262014	AB-C4-M12MST-M20-PO	4	60	1
<b>Panel mount connector (female) with screw connection, M20 thread</b>				
22262015	AB-C4-M12FST-M20-PO	4	60	1
<b>Panel mount connector (male) with PVC single cores, M16 thread</b>				
22262016	AB-C4-M12MST-M16-0,2	4	60	1
<b>Panel mount connector (socket) with PVC single cores, M16 thread</b>				
22262017	AB-C4-M12FST-M16-0,2	4	60	1

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

M16 or M20 locknuts not included in delivery

### Accessories

- SKINDICHT® SM-M refer to page 763

# ETHERLINE®

Data communication systems  
for ETHERNET technology



Our ETHERLINE® branded products open up a secure, fast and reliable path to the future of Ethernet applications. The systems are made up of durable and robust cables and connection components for passive network technology, and deliver an effective solution for almost any application, particularly in an industrial environment.

#### **Application range**

- Industry and building networks
- Industrial machinery and plant engineering
- Automation technology
- Control engineering

**Industrial Ethernet cable Cat.5/ Cat.5e****Industrial Ethernet**

ETHERLINE® Cat.5e	412
ETHERLINE® Cat.5e FLEX	413
ETHERLINE® Cat.5e FD	414
ETHERLINE® Cat.5 FD BK	415

**Industrial Ethernet EC**

ETHERLINE® EC FLEX Cat.5e	416
ETHERLINE® EC FD Cat.5e	417

**PROFINET Type A - fixed installation**

ETHERLINE® PN Cat.5	418
---------------------	-----

**PROFINET Type B - flexible application**

ETHERLINE® PN FLEX	419
--------------------	-----

**PROFINET Type C - continuous flexing application**

ETHERLINE® PN Cat.5 FD	420
ETHERLINE® TORSION Cat. 5	421

**PROFINET Type C - special application**

ETHERLINE® Y Cat.5e BK 2x2AWG22/7	422
ETHERLINE® Cat.5e 105 plus	423
ETHERLINE® MARINE FRNC FC CAT.5	424
ETHERLINE® Cat.5 ARM	425

**PROFINET HYBRID Type B - flexible application**

ETHERLINE® Cat.5 FRNC HYBRID	426
------------------------------	-----

**Industrial Ethernet cable Cat.6****Industrial Ethernet - high flexible application**

ETHERLINE® CAT.6 FD	427
---------------------	-----

**Industrial Ethernet cable Cat.6<sub>A</sub>****Industrial Ethernet / PROFINET Type A - fixed installation**

ETHERLINE® Cat.6 <sub>A</sub>	428
-------------------------------	-----

**Industrial Ethernet / PROFINET Type B - flexible application**

ETHERLINE® PN Cat.6 <sub>A</sub> FLEX	429
---------------------------------------	-----

**Industrial Ethernet / PROFINET Type C - continuous flexing application**

ETHERLINE® FD CAT.6 <sub>A</sub>	430
ETHERLINE® TORSION Cat.6 <sub>A</sub>	431

**Industrial Ethernet cable Cat.7****Industrial Ethernet / PROFINET Type A - fixed installation**

ETHERLINE® Cat.7	432
------------------	-----

**Industrial Ethernet****Industrial Ethernet for special applications**

ETHERLINE® HEAT 6722	New	433
ETHERLINE® TRAY	New	434
ETHERLINE® FIRE Cat.5e PH120	New	434
ETHERLINE® ROBUST	New	435
ETHERLINE® ROBUST FR	New	436

**Industrial Ethernet Patchcord Cat.5/Cat.5e****Industrial Ethernet - flexible application**

ETHERLINE® P Flex Cat.5e M12	437
ETHERLINE® P Flex Cat.5e M12-RJ45	438
ETHERLINE® P Flex Cat.5e RJ45	439
ETHERLINE® H Flex Cat.5e M12	440
ETHERLINE® H Flex Cat.5e M12-RJ45	441
ETHERLINE® H Flex Cat.5e RJ45	442

**Industrial Ethernet EC Flex - flexible application**

ETHERLINE® EC Flex Cat.5e M8	443
------------------------------	-----

**Industrial Ethernet EC FD - continuous flexing application**

ETHERLINE® EC FD Cat.5e M8	New	444
ETHERLINE® EC FD Cat.5e M8-RJ45	New	445
ETHERLINE® EC FD Cat.5e M12	New	446
ETHERLINE® EC FD Cat.5e M12-RJ45	New	447
ETHERLINE® EC FD Cat.5e RJ45	New	448
ETHERLINE® EC FD Cat.5e M12F	New	449

**PROFINET Type A - fixed installation**

ETHERLINE® PN Cat.5 M12	450	
ETHERLINE® PN Cat.5 M12-RJ45	New	451
ETHERLINE® PN Cat.5 RJ45	New	452

**PROFINET Type B - flexible application**

ETHERLINE® PN Flex Cat.5 M12	453	
ETHERLINE® PN Flex Cat.5 M12-RJ45	New	454
ETHERLINE® PN Flex Cat.5 RJ45	New	455

**PROFINET Type C - continuous flexing application**

ETHERLINE® PN FD Cat.5 M12	456	
ETHERLINE® PN FD Cat.5 M12-RJ45	New	457
ETHERLINE® PN FD Cat.5 RJ45	New	458

**Industrial Ethernet Patchcord Cat.6<sub>A</sub>****Industrial Ethernet / PROFINET Type C - continuous flexing application**

ETHERLINE® FD CAT.6 <sub>A</sub> M12	New	459
ETHERLINE® TORSION Cat.6 <sub>A</sub> M12	New	460

**Connectors for industrial cabling****Industrial Ethernet connectors RJ45**

EPIC® DATA PN AX RJ45	461	
EPIC® DATA PN 90 RJ45	New	461
EPIC® DATA AX RJ45 Cat.6A	462	
EPIC® DATA RJ45F Cat.6A	462	
EPIC® DATA 90 RJ45 Cat.6A	New	463
EPIC® DATA AX RJ45 Cat.6A IP68	463	
EPIC® DATA HS RJ45F Cat.6A	464	
EPIC® DATA M12D	464	

**M12 Field mountable connectors and wall ducts**

EPIC® DATA M12X	New	465
EPIC® DATA FT IE	465	
EPIC® DATA CCR FA	New	466
UNITRONIC® LAN 200 - Cat.5e	466	

**Ethernet cable for structured building cabling****Cables for fixed installation**

UNITRONIC® LAN 250 - Cat.6	467
UNITRONIC® LAN 500 - Cat.6 <sub>A</sub>	468
UNITRONIC® LAN 1000 S/FTP Cat.7	469
UNITRONIC® LAN 1200 S/FTP Cat.7 <sub>A</sub>	470
UNITRONIC® LAN 1500 S/FTP Cat.7 <sub>A</sub>	471
UNITRONIC® LAN OUTDOOR	472

**Cables for flexible applications**

UNITRONIC® LAN FLEX	473
---------------------	-----

**Patchcords for office applications****Patchcord RJ45**

Patchcable RJ45 CAT.5e	474
Patchcable RJ45 CAT.6 S/FTP	474
LANmark-6 RJ45 Patchcord	475
S-FTP Patchcable Crossover RJ45 CAT.5e	475

**Connectors for office applications****Industrial Ethernet connectors RJ45**

Connector RJ45 CAT.5 Hirose TM11	476
Connector RJ45 CAT.5 Stewart SS37	476
Field-Terminable Connector RJ45 CAT.5e FM45	476
Connector RJ45 CAT.6 Hirose TM21	477
LANmark-6 EVO SnapIn Connector	477
LANmark-6 EVO SnapIn Connector AWG26	477
LANmark-6 EVO SnapIn Connector 10G	478
LANmark-7A GG45 SnapIn Connector	478
Crimping tool RJ45 Hirose	478

**Accessories**

Crimping tool RJ45 Stewart	479
Comfort Tool	479
Easy Termination Tool	479

**Modular connection systems**

Patchpanel Modular extendable	480
Frontplate 19" 1HE Cat.6A	480
Keystone Clips for EVO SnapIn Connectors	480
Keystone Clips for SnapIn Connectors	481
SnapIn rail mount Adapter	481
Flush-Mounted Outlet LSA+	481

**LSA+ connection systems**

Data Binder LSA+	482
Punch down tool LSA+	482



## With ETHERLINE® products you are fit for future

If you want to avoid failures, down times and quality problems, you can trust on our complete and high quality product system. Lapp takes care to offer products of individuality and customer requirement as well as long time usability. Our big product range of ETHERLINE® cables are suitable for nearly any application and is tested in our test laboratory, for example in drag chains. If there are special requirements as flexibility for applications in drag chains, with torsion stress, industrial environments

with high mechanical or temperature specifications, you can find some real all-rounders in the Lapp product program. If you are at the point where you will connect your cable to a device, you can also find suitable connectors, for example RJ45 or M12 connectors. Nearly for every cable and application you can choose the right connector, mostly with you need no special assembly tool. For some applications and for saving time and money, Lapp offers also a big range of patch cords. There the Indus-

trial Ethernet ETHERLINE® cables are used and are assembled with connectors who are especially produced for industrial requirements. The patch cords are completely tested in our plant and you can trust on Industrial Protection classes and transmission rates.



### ETHERLINE® copper cables

- Copper data network cables for transmission in PROFINET® applications
- The right cable for almost every application area. There are optimized copper cables for Ethernet either for use in industrial applications (ETHERLINE®) or for use as structured building cabling (UNITRONIC® LAN)
- All current types are available with UL certification

### ETHERLINE® connectors

- Configurable connectors for field assembly – fast and without the use of special tools
- Straight or angled RJ45 connectors with colour-coded wire manager for easy connection to 2-pair or 4-pair cables
- M12 D-coded connector for transmission rate up to 100 Mbit/s
- M12 X-coded connector for transmission rate up to 10 Gbit/s

### ETHERLINE® assemblies

- Proven cable quality combined with highquality connectors
- A huge range with overmoulded RJ45 or M12 connectors as angled or straight versions are available from stock
- Factory-tested patch cords save time, prevent differences in connection quality and enable to attain a higher level of sealing tightness

## Type specification according to the PROFINET® guideline

The PROFINET® system is specified internationally in IEC 61918 ‘Industrial communication networks – Installation of communication networks in industrial premises’ for cabling within and between automation islands and/or production islands. The specific infrastructure for PROFINET® cabling and connection solutions is standardised in turn in IEC 61784-5-3. This applies for copper-based and fibre optic transmission media and wireless trans-

mission. The ‘PROFINET® Cabling and Interconnection Technology Guideline’ is created by a working group within the PNO. This guideline reflects IEC 61784-5-3. It always specifies three cable types for copper conductors – for 2-pair and 4-pair cables. This specification therefore defines the exact structure and the mechanical and electrical requirements.

- Type A: for fixed installation, no flexing after installation (solid conductor)
- Type B: for flexible installation, occasional flexing of the cable following installation (7-wire stranded conductor)
- Type C: for special requirements such as use in power chains, torsion applications, etc. (solid wire or flexible stranded conductors with up to 19-wire structure)

Following table shows all three cable types with their design acc. to PROFINET®-Guideline

Number of pairs/cable type	Typ A	Typ B	Typ C
2-pair (2x2)	AWG22/1	AWG22/7	AWG22/1...19
4-pair (4x2)	Min. AWG23/1	Min. AWG23/7	Min. AWG24/1...19

Photographs are not to scale and do not represent detailed images of the respective products.

**PROFINET® finder**



**PROFINET® 2-pair up to 100 MBit/s**

Cables			Suitable connectors			
Application	Article number	Description	Application	Article number	Description	
4-pin type A for fixed installation	2170891	ETHERLINE® PN Cat.5e Y 2X2XAWG22	M12 plug, D-coded	22260820	AB-C4-M12MSD-SH	
	2170893	ETHERLINE® Y FC Cat.5				
	2170494	ETHERLINE® PN Cat.5e YY				
4-pin type B for flexible application	2170886	ETHERLINE® PN Cat.5 Y FLEX FC	M12 socket, D-coded	22261016	AB-C4-M12FSD-SH	
	2170890	ETHERLINE® PN Cat.5e FRNC FLEX FC				
	2170889	ETHERLINE® MARINE FRNC FC Cat.5				
4-pin type C for special application	Drag chain	2170894	ETHERLINE® FD P FC Cat.5	RJ45 connector, straight	21700605	ED-IE-AX-5-PN-20-FC
	Torsion	2170888	ETHERLINE® TORSION P Cat.5 AWM			
	Routing underground	2170496	ETHERLINE® Cat.5 ARM	RJ45 connector, angled	21700638	ED-IE-90-6A-PN-20-FC
	Outdoor installation	2170901	ETHERLINE® Y Cat.5e BK			
	Increased temperature range	2170636	ETHERLINE® Cat.5e 105 plus			
	Food & Beverage	2170451 2170454	ETHERLINE® ROBUST PN Cat.5 ETHERLINE® ROBUST PN FR Cat.5			



**PROFINET® 4-pair up to 10 GBit/s**

Cables			Suitable connectors			
Application	Article number	Description	Application	Article number	Description	
8-pin type A for fixed installation	Cat.6 <sub>A</sub>	2170466	ETHERLINE® Cat.6 <sub>A</sub> H	M12 plug, X-coded	21700602	ED-IE-AX-M12X-6A-67-FC
		2170465	ETHERLINE® Cat.6 <sub>A</sub> P			
		2170464	ETHERLINE® Cat.6 <sub>A</sub> Y			
	Cat.7	2170476	ETHERLINE® H Cat.7 H	M12 socket, X-coded	21700621	ED-IE-AX-M12XF-6A-67-FC
		2170475	ETHERLINE® Cat.7 P			
		2170474	ETHERLINE® Cat.7 Y			
8-pin type B for flexible application	Cat.6 <sub>A</sub>	2170930	ETHERLINE® PN Cat.6 <sub>A</sub> Y FLEX 4x2x23/7	M12 socket, X coded, with flange	21700622	ED-IE-AX-M12XF-RM-6A-67-FC
		2170931	ETHERLINE® PN Cat.6 <sub>A</sub> FRNC FLEX 4x2x23/7			
8-pin type C for special application	Drag chain, Cat.6 <sub>A</sub>	2170485	ETHERLINE® FD Cat.6 <sub>A</sub> 4X2X24/7AWG	RJ45 connector, straight, TIA568-A	21700600	ED-IE-AX-6A-A-20-FC
		2170484	ETHERLINE® FD P Cat.6 <sub>A</sub> 4X2X24/7AWG	RJ45 connector, straight, TIA568-B	21700601	ED-IE-AX-6A-B-20-FC
	Torsion, Cat.6 <sub>A</sub>	2170483	ETHERLINE® TORSION P Cat.6 <sub>A</sub> 4X2XAWG24/7	RJ45 connector, angled, TIA568-A	21700636	ED-IE-90-6A-A-20-FC
		2170482	ETHERLINE® TORSION Y Cat.6 <sub>A</sub> 4X2XAWG24/7	RJ45 connector, angled, TIA568-B	21700637	ED-IE-90-6A-B-20-FC

Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® Cat.5e

Fixed installation



### Info

- Industrial Ethernet cable
- Cat.5e

### Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

### Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- Industrial use
- Fixed installation

### Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath

### Norm references / Approvals

- PUR versions: UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

### Product Make-up

- Solid conductor
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)

### Technical data



ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



**Peak operating voltage**  
(not for power applications) 125 V



**Minimum bending radius**  
Fixed installation: 7.5 x outer diameter (2 pair cable)  
Fixed installation: 8 x outer diameter (4 pair cable)



**Test voltage**  
Core/core: 1000 V  
Core/screen: 500 V



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
cable with PUR jacket  
Fixed installation: VDE -30°C to +80°C;  
UL/CSA -30°C to +80°C  
flexing: VDE -5°C to +50°C;  
UL/CSA -5°C to +80°C  
cable halogenfree compound  
fixed installation: -30°C to +80°C  
moved: -5°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>2-pair version</b>					
<b>Halogen-free jacket</b>					
2170280	ETHERLINE® H CAT.5e	2 x 2 x AWG24/1	6.1	22	45
<b>PUR outer sheath, halogen-free</b>					
2170281	ETHERLINE® P CAT.5e	2 x 2 x AWG24/1	6.1	22	53
<b>4-pair version</b>					
<b>Halogen-free jacket</b>					
2170296	ETHERLINE® H CAT.5e	4 x 2 x AWG24/1	6.3	32	54
2170298	ETHERLINE® H-H CAT.5e	4 x 2 x AWG24/1	6.3 / 8.3	32	80
<b>PUR outer sheath, halogen-free</b>					
2170297	ETHERLINE® P CAT.5e	4 x 2 x AWG24/1	6.3	32	62

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 476
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA HS RJ45F Cat.6<sub>A</sub> refer to page 464
- EPIC® DATA M12D refer to page 464
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466
- SMART STRIP stripping tool
- DATA STRIP stripping tool refer to page 1001





**ETHERLINE® Cat.5e FLEX**

Flexible use

**Info**

- Industrial Ethernet cable
- Cat.5e
- Only for patch cable applications (max. 60 m)



**Benefits**

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Can be used for Industrial Ethernet in harsh industrial environments
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

**Application range**

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Only for patch cable applications (max. 60 m)

**Product features**

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Halogen-free outer sheath
- PUR outer sheath is highly resistant to mineral oils and abrasion

**Norm references / Approvals**

- PVC version with UL/CSA (CMG) certification
- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Cable with PUR or halogenfree compound: Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

**Product Make-up**

- Stranded conductor, bare, 7-wire
- Core insulation made of foam skin
- 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)
- PVC jacket colour: green (based on RAL 6018)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description: Signal-/telecommunications cable
- Peak operating voltage** (not for power applications) 125 V
- Minimum bending radius**  
Fixed installation: 8 x outer diameter  
Flexing: 15 x outer diameter
- Test voltage**  
Core/core: 1000 V  
Core/screen: 500 V
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
cable with PUR jacket  
Fixed installation: VDE -30°C to +80°C;  
UL/CSA -30°C to +80°C  
flexing: VDE -5°C to +50°C;  
UL/CSA -5°C to +80°C  
cable halogenfree compound  
Fixed installation: -30°C to +80°C  
flexing: -5°C to +60°C  
cable with PVC jacket  
Fixed installation: -40°C to +80°C  
flexing: -10°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>2-pair version</b>					
<b>Halogen-free jacket</b>					
2170283	ETHERLINE® H Flex CAT.5e	2 x 2 x AWG26/7	5.9	19	43
<b>PUR outer sheath, halogen-free</b>					
2170284	ETHERLINE® P Flex CAT.5e	2 x 2 x AWG26/7	5.9	19	45
<b>4-pair version</b>					
<b>Halogen-free jacket</b>					
2170299	ETHERLINE® H Flex CAT.5e	4 x 2 x AWG26/7	6.3	25	48
<b>PUR outer sheath, halogen-free</b>					
2170300	ETHERLINE® P Flex CAT.5e	4 x 2 x AWG26/7	6.3	25	54
<b>PVC outer sheath</b>					
2170486	ETHERLINE® Y Flex CAT.5e	4 x 2 x AWG26/7	6.4	30	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 476
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA HS RJ45F Cat.6<sub>A</sub> refer to page 464
- EPIC® DATA M12D refer to page 464
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466
- DATA STRIP stripping tool refer to page 1001



## ETHERLINE® Cat.5e FD

Highly flexible application

LAPP KABEL STUTTGART ETHERLINE® FD P Cat.5e 2x2xAWG26/19



### Info

- Industrial Ethernet cable
- For highly flexible applications
- Only for patch cable applications (max. 60 m)

### Benefits

- Seamless communication from the sensor/actuator level to the Internet
- Screened against interference
- Can be used in dry or damp rooms
- Industrial use
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

### Application range

- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Power chain applications

### Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free outer sheath
- Cables with PUR jacket: 1000 V UL- rating for installation next to power cables

### Norm references / Approvals

- PUR versions: UL AWM Style 21576
- Flame-retardant according IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas) Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

### Product Make-up

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm<sup>2</sup>)
- Inner sheath: thermoplastic elastomer, halogen-free
- 2 or 4-pair version
- Screening: wrapped with braided tinned-copper wires
- PUR outer sheath
- Colour: water blue (RAL 5021)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Fixed installation: 8 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1000 V Core/screen: 500 V
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> cable with PUR jacket Fixed installation: VDE -30°C to +80°C; UL/CSA -30°C to +80°C flexing: VDE -5°C to +50°C; UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>2-pair version</b>					
2170289	ETHERLINE® FD P CAT.5e	2 x 2 x AWG26/19	6.2	20	48
<b>4-pair version</b>					
2170489	ETHERLINE® FD P CAT.5e	4 x 2 x AWG26/19	6.6	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to page 477
- SMART STRIP stripping tool
- DATA STRIP stripping tool refer to page 1001



**ETHERLINE® Cat.5 FD BK**

The Ethernet cable for installation in events



**i Info**

- For highly flexible industrial applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)

**Benefits**

- Additional application options thanks to suitability for outdoor use, UV-resistant
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to coil for mobile use
- Usable on the roads

**Application range**

- IEEE 802.3: 10/100/1000Base-T
- IEEE 802.5: ISDN; FDDI; ATM
- Suitable for the transfer of audio signals (ETHERSOUND), light control signals (DMX over Ethernet), or for computer networking
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

**Product features**

- CAT.5-Performance
- Specifically developed for road environments
- Suitable for outdoor use, UV-resistant
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Premium screening against electromagnetic interference

**Norm references / Approvals**

- UL AWM Style 21576
- Flame retardant acc. to IEC 60332-1-2
- Halogen-free according to IEC 60754-1 (amount of halogen acid gas)  
Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)

**Product Make-up**

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm<sup>2</sup>)
- Insulation: foam skin, max. core diameter 1.0 mm
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- Inner sheath: thermoplastic elastomer, halogen-free
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: halogen-free PUR, black

**Technical data**

- ETIM 5.0 Class-ID:** EC000830  
**ETIM 5.0 Class-Description:** Data cable
- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter
- Test voltage**  
Core/core: 1000 V  
Core/screen: 500 V
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
cable with PUR jacket  
Fixed installation: VDE -30°C to +80°C;  
UL/CSA -30°C to +80°C  
flexing: VDE -5°C to +50°C;  
UL/CSA -5°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® Cat.5 FD BK</b>					
CE217489	ETHERLINE® FD P BK Cat.5	4x2xAWG26/19	6.6	27	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Standard lengths: (100; 500; 1000) m  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- Connector RJ45 CAT.6 Hirose TM21 refer to page 477
- SMART STRIP stripping tool



## ETHERLINE® EC FLEX Cat.5e

Flexible use



### Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)
- Many applications with Industrial Ethernet, i.e. fixed installation and flexible use.
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

### Product features

- PUR (Polyurethane) Version with increased robustness, UV- resistance and halogen free
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- PVC version with UL/CSA (CMX) certification
- Flame-retardant according to UL VW1/CSA FT1

### Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PVC or PUR jacket material
- Colour: green (based on RAL 6018)

### Info

- For EtherCAT applications
- Cat.5e-Performance
- Only for patch cable applications (max. 60 m)

### Technical data

	ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Peak operating voltage</b> max. 100 V (not for power applications)
	<b>Minimum bending radius</b> Fixed installation: 4 x outer diameter Flexing: 8 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> fixed installation PVC: -30°C to +80°C PUR: -40°C to +80°C flexing PVC: -5°C to +50°C PUR: -30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC outer sheath</b>					
2170430	ETHERLINE® Y EC FLEX Cat.5e	1 x 4 x AWG26/7	5.1	20	37
<b>PUR outer sheath, halogen-free</b>					
2170431	ETHERLINE® P EC FLEX Cat.5e	1 x 4 x AWG26/7	5.1	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® SENSOR M8 refer to page 382
- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 476
- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461



## ETHERLINE® EC FD Cat.5e

Highly flexible application



**i Info**

- For EtherCAT applications
- For highly flexible industrial applications
- Cat.5e-Performance

### Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms
- Lower space requirement

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- For highly flexible applications (power chains, moving machine parts)
- Many applications with Industrial Ethernet, e.g. EtherCat, i.e. fixed installation, flexible and highly flexible use
- For internal wiring of electric and electronic equipment in switch cabinets
- Only for patch cable applications (max. 60 m)

### Product features

- PUR outer sheath, halogen-free
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Norm references / Approvals

- Halogen-free according to VDE 0472-815

### Product Make-up

- Tinned stranded copper wire, 26AWG (19 x 0.10), (0.14 mm<sup>2</sup>)
- Core insulation: PE
- Insulation colour-codes: orange/white-orange; green/white-green
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath: PUR compound, halogen-free
- Colour: green (based on RAL 6018)

### Technical data

- ETIM 5.0 Class-ID:** EC000829  
**ETIM 5.0 Class-Description:** Signal-/telecommunications cable
- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Fixed installation: 4 x Outer diameter  
Flexing: 8 x outer diameter
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® EC FD Cat.5e</b>					
2170434	ETHERLINE® EC FD Cat.5e	1 x 4 x AWG26/19	5	20	35

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® SENSOR M8 refer to page 382



### ETHERLINE® PN Cat.5

Fixed installation



#### Info

- For PROFINET applications type A
- CAT.5/5e

#### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

#### Norm references / Approvals

- ETHERLINE® Y FC with PLTC approbation and AWM Style 21694
- ETHERLINE® PN Cat.5e YY with UL CMG
- ETHERLINE® PN Cat.5e Y with UL CMX
- ETHERLINE® TRAY ER PN Y FC with PLTC ER approval

#### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> See data sheet
	<b>Test voltage</b> See data sheet
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> See data sheet

#### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications
- ETHERLINE® TRAY ER PN Y FC: installation in open cable trays without any conduit

#### Product Make-up

- Solid bare copper wire AWG22
- Core insulation: PE
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: PVC
- Colour: green (based on RAL 6018)

#### Product features

- Fixed installation
- CAT.5-Performance
- FC: "Fast Connect" cable design
- Flame-retardant according IEC 60332-1-2
- ETHERLINE® Y FC, ETHERLINE® YY, ETHERLINE® TRAY ER PN Y FC : flame-retardant according to CSA FT-4

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>conventional cable assembly</b>					
2170891	ETHERLINE® PN Cat.5e Y	2 x 2 x AWG22/1	6.5	30.4	56
<b>FC: "Fast Connect" cable design</b>					
2170893	ETHERLINE® Y FC Cat.5	2 x 2 x AWG22/1	6.8	30.4	70
2170879	ETHERLINE® TRAY ER PN Y FC	2 x 2 x AWG22/1	6.8	30.4	70
<b>Suitable for outdoor use and direct burial</b>					
2170494	ETHERLINE® PN Cat.5e YY	2 x 2 x AWG22/1	7.8	30.4	62

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA RJ45F Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA M12D refer to page 464



**ETHERLINE® PN FLEX**  
Flexible use

**i Info**

- For Profinet applications
- CAT.5-Performance
- Flexible use



**Benefits**

- For PROFINET applications type B
- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Application range**

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

**Product features**

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- CAT.5-Performance
- FRNC Version: Halogene free and flame retardant
- Fast Connect (FC) cable design

**Norm references / Approvals**

- The cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.5 Y FLEX FC: **ECOLAB®** Industry standard for innovation and efficiency in the field of professional cleaning and disinfection

**Product Make-up**

- Stranded 7-wire bare conductor
- Core insulation: PE
- Star quad
- Inner sheath made of PVC or FRNC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

**Technical data**

- ETIM 5.0 Class-ID:** EC000830  
**ETIM 5.0 Class-Description:** Data cable
- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
FRNC cable:  
during installation: 8 x outer diameter  
fixed: 4 x outer diameter  
PVC cable:  
during installation: 15 x outer diameter  
fixed: 10 x outer diameter
- Test voltage**  
Core/core: 2000 V  
Core/screen: 2000 V
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
cable halogenfree compound  
Fixed installation: -25°C to +80°C  
Moved: -25°C to +80°C  
cable with PVC jacket  
Fixed installation: -40°C to +80°C  
Moved: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC jacket</b>					
2170886	ETHERLINE® PN Cat.5 Y FLEX FC	2 x 2 x AWG22/7	6.8	31.3	67
<b>FRNC outer sheath</b>					
2170890	ETHERLINE® PN Cat.5 FRNC FLEX FC	2 x 2 x AWG22/7	6.8	31.2	65

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA RJ45F Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA M12D refer to page 464
- FC STRIP stripping tool refer to page 1002



## ETHERLINE® PN Cat.5 FD

Highly flexible application



### Info

- Highly flexible application
- For PROFINET applications

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- Power chain applications
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- CAT.5-Performance
- PUR outer sheath is highly resistant to mineral oils and abrasion
- Flame-retardant according IEC 60332-1-2
- Optimized cable construction for power chain use
- Broad usages due to halogen-free materials

### Norm references / Approvals

- UL/CSA type CMX (UL 444)

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Star quad
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Inner sheath: thermoplastic copolymer (FRNC)
- Overall screening with copper braid and plastic-laminated aluminium foil
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000829 <b>ETIM 5.0 Class-Description:</b> Signal-/telecommunications cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Flexing: 8 x outer diameter Fixed installation: 5 x outer diameter
	<b>Test voltage</b> Core/core: 700 V Core/screen: 700 V
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Fixed installation: -30°C to +70°C Flexing: -20°C to +60°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® PN Cat.5 FD</b>					
2170894	ETHERLINE® FD P FC CAT.5	2 x 2 x AWG22/7	6.8	31.3	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA M12D refer to page 464





**ETHERLINE® TORSION Cat. 5**  
Highly flexible application

**Info**

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- For PROFINET applications



**Benefits**

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- Industrial Ethernet Cable, 2-pair, suitable for torsion stress
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Application range**

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length für 100 Mbit/s is 55 m
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
- Outer sheath with high abrasion-resistance
- Broad usages due to halogen-free materials
- PUR outer sheath is highly resistant to mineral oils and abrasion

**Norm references / Approvals**

- UL AWM (Style 21161)
- Halogen-free according to VDE 0472-815
- Flame retardant acc. to IEC 60332-1-2

**Product Make-up**

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- Screening: wrapped with braided tinned-copper wires
- Non-woven wrapping
- PUR outer sheath, green (RAL 6018)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Installation: 5 x outer diameter
- Test voltage**  
700 V
- Characteristic impedance**  
100 ± 15 Ohm (> 1 MHz)
- Temperature range**  
-40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ETHERLINE® TORSION Cat. 5 2170888	ETHERLINE® TORSION CAT.5	2 x 2 x AWG22/19	6.8	31.3	52

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA HS RJ45F Cat.6<sub>A</sub> refer to page 464
- Multipurpose shears A and B refer to page 998
- SMART STRIP stripping tool



## ETHERLINE® Y Cat.5e BK 2x2AWG22/7

Flexible application



### Info

- For PROFINET applications
- CAT.5-Performance

### Benefits

- UV and weather-resistant in black
- Can be used in dry or damp rooms
- Screened against interference
- Suitable for outdoor use, UV-resistant
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length für 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PVC compound TM2 acc. to EN 50363-4-1
- Resistant to acids, alkalis and certain oils at room temperature
- Flame retardant acc. to IEC 60332-1-2
- CAT.5-Performance

### Product Make-up

- Stranded conductor, 7-wire, bare
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC outer sheath, black

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter Flexing: 15 x outer diameter
	<b>Test voltage</b> Core/core: 1000 V Core/screen: 500 V
	<b>Characteristic impedance</b> 100 ± 15 Ohm (> 1 MHz)
	<b>Temperature range</b> Flexing: -10°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® Y Cat.5e BK 2x2AWG22/7</b>					
2170901	ETHERLINE® Y CAT.5e BK 2x2xAWG22/7	2 x 2 x AWG22/7	6.5	30.4	59

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- ETHERLINE® PN FLEX refer to page 419

### Accessories

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA HS RJ45F Cat.6<sub>A</sub> refer to page 464
- EPIC® DATA M12D refer to page 464
- DATA STRIP stripping tool refer to page 1001



**ETHERLINE® Cat.5e 105 plus**  
Flexible application



**i Info**

- For PROFINET applications
- Extended temperature range

**Benefits**

- No need for additional cable protection against high temperatures
- High temperature resistance
- Industrial use
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Application range**

- For installation in hollow shaft between gear units and pitch system
- Suitable for fixed installation and occasionally flexible use in high temperature areas
- Max. cable length für 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications
- Wiring of machines, tools, devices, appliances and control cabinets

**Product features**

- Optimum EMC protection
- Permanent load up to +105°C, temporary load +120°C

**Norm references / Approvals**

- Electrical requirements acc. to IEC 61156-5

**Product Make-up**

- Stranded conductor, 7-wire, bare
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: TPE-based
- Colour: green (based on RAL 6018)

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description: Signal-/telecommunications cable

**Minimum bending radius**  
Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter

**Characteristic impedance**  
100 Ohm +- 15%

**Temperature range**  
Fixed installation: -40°C to +105°C  
occasionally flexing: -30°C to +105°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)
<b>ETHERLINE® Cat.5e 105 plus</b>				
2170636	ETHERLINE Cat.5e 105 plus	2x2xAWG22/7	6.5	30.4

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA RJ45F Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA M12D refer to page 464



## ETHERLINE® MARINE FRNC FC CAT.5

Flexible application



### Info

- Certified for maritime applications
- Flexible use in conjunction with light mechanical stress

### Benefits

- Can be used for Industrial Ethernet in harsh industrial environments
- For use in dry, damp and wet rooms
- Premium screening against electromagnetic interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Application range

- Shipbuilding
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- Onshore and offshore applications
- Max. cable length für 100 Mbit/s is 85 m

### Product features

- High flame retardancy in accordance with IEC 60332-3 and FT4
- CAT.5-Performance
- Fast Connect (FC) cable design

### Norm references / Approvals

- CMG UL/CSA certification 75°C or PLTC, Sun Res
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

### Product Make-up

- Fine-wire strand made of tinned-copper wires
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Halogen-free and flame-retardant FRNC outer sheath
- Colour: green (based on RAL 6018)

### Technical data



ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable



**Peak operating voltage**  
(not for power applications) 125 V



**Minimum bending radius**  
Fixed installation: 3 x outer diameter  
Flexing: 7.5 x outer diameter



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
Operating temperature: -25°C to +70°C  
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® MARINE FRNC FC CAT.5</b>					
2170889	ETHERLINE® MARINE FRNC FC CAT.5	2 x 2 x AWG22/7	6.5	32	68

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA M12D refer to page 464
- FC STRIP stripping tool refer to page 1002



**ETHERLINE® Cat.5 ARM**  
Fixed installation



**Info**

- Industrial Ethernet cable
- CAT.5-Performance
- Suitable for outdoor use and direct burial

**Benefits**

- Can be used for Industrial Ethernet in harsh industrial environments
- EMC-optimised design
- With armoring for improved rodent protection
- Screened against interference
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Application range**

- Suitable for outdoor use, UV-resistant
- Suitable for direct burial
- Max. cable length für 100 Mbit/s is 100 m
- PROFINET application Type C but for fixed installation
- Suitable for EtherCAT and EtherNet/IP applications

**Product features**

- Fast Connect (FC) cable design

**Product Make-up**

- Solid and bare copper conductor
- Core insulation: PE
- Colour-coded in accordance with PROFINET for Cat.5 applications
- Star quad
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Inner sheath made of PVC (green RAL6018)  
2 layer galvanzid steel tape
- Outer sheath made of black polyethylene (PE)

**Technical data**

- ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter
- Test voltage**  
Core/core: 2000 V  
Core/screen: 2000 V
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
Operation: -40 °C to +70 °C  
During installation: -20 °C to +60 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Fixed installation</b>					
2170496	ETHERLINE® Cat.5 ARM	2 x 2 x AWG22/1	6.7 / 9.8	30.4	124

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6, IP68 refer to page 463
- EPIC® DATA M12D refer to page 464



## ETHERLINE® Cat.5 FRNC HYBRID

Flexible use



### Info

- HYBRID: cable for data transmission + power supply

### Benefits

- Industrial use
- Screened against interference

### Application range

- Industrial Ethernet cable
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Max. cable length for 100 Mbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- Flame-retardant according IEC 60332-1-2
- HYBRID: cable for data transmission + power supply
- Robust, halogen-free outer sheath
- CAT.5-Performance

### Norm references / Approvals

- UL AWM Style 21282

### Product Make-up

- Cores for Power Supply  
4 x 1.5 mm<sup>2</sup> (AWG 16)
- Data transfer: braided conductor, 7-wire, bare
- Pair screening: wrapped with foil and braided copper wires
- Twisting: data pairs and power supply pairs twisted together
- Overlapping plastic tape
- FRNC outer sheath
- Colour: green (based on RAL 6018)

### Technical data



ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description:  
Signal-/telecommunications cable



#### Minimum bending radius

Occasional flexing: 10 x outer diameter  
Fixed installation: 5 x outer diameter



#### Test voltage

See data sheet



#### Characteristic impedance

100 Ohm +/- 15%



#### Temperature range

Operation: -20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Flexible use</b>					
2170887	ETHERLINE® Cat.5 FRNC HYBRID	2x2xAWG22/7 + 4x1.5	10.6	94.2	153

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® CAT.6 FD**

Highly flexible application

**Info**

- CAT.6 for drag chain!



**Benefits**

- Highly flexible data cable with PUR outer sheath, meets the highest service life requirements, even under harsh climatic conditions.
- Premium screening against electromagnetic interference

**Application range**

- For use in drag chains and moving machinery parts in dry or damp rooms
- Only for patch cable applications (max. 60 m)
- Suitable for EtherCAT and EtherNet/IP applications
- Plant engineering, machinery manufacturing
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

**Product features**

- Flame-retardant according IEC 60332-1-2
- PUR outer sheath is resistant to most oils and hydraulic fluids
- CAT.6 for drag chain!
- LAN Cat.6 cables are specified up to 350 MHz
- Designed for 1...2 million bending/unbending cycles in the drag chain

**Norm references / Approvals**

- UL/CSA type CMX (UL 444)

**Product Make-up**

- Stranded conductor, tinned
- AWG 26 (19-wire)
- PP core insulation
- Inner sheath: thermoplastic copolymer (FRNC)
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Fixed installation: 4 x outer diameter  
Flexing: 7.5 x outer diameter
- Test voltage**  
700 V
- Characteristic impedance**  
At 1 - 100 MHz: 100 ± 15 Ohm
- Temperature range**  
Fixed installation: -40°C to +80°C  
Flexing: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® CAT.6 FD</b>					
2170488	ETHERLINER CAT.6 FD	4 x 2 x AWG26/19	7.8	31.7	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
 Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- DATA STRIP stripping tool refer to page 1001



## ETHERLINE® Cat.6<sub>A</sub>

Fixed installation



### Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- CAT.6<sub>A</sub> qualified for 10Gbit/s

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m  
max. cable length for 10 Gbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Product Make-up

- Solid bare copper wire AWG22
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Characteristic impedance</b> 100 ohm at 1 - 100 MHz
	<b>Temperature range</b> cable with PUR jacket Fixed installation: VDE -30°C to +80°C; UL/CSA -30°C to +80°C flexing: VDE -5°C to +50°C; UL/CSA -5°C to +80°C cable halogenfree compound Fixed installation: -25°C to +80°C cable with PVC jacket Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Halogen-free jacket</b>					
2170466	ETHERLINE® Cat.6 <sub>A</sub> H	4 x 2 x AWG22/1	9.0	53	99
<b>PUR outer sheath, halogen-free</b>					
2170465	ETHERLINE® CAT.6 <sub>A</sub> P	4 x 2 x AWG22/1	9.0	53	91
<b>PVC outer sheath</b>					
2170464	ETHERLINE® Cat.6 <sub>A</sub> Y	4 x 2 x AWG22/1	9.0	53	98

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum

Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA RJ45F Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466
- DATA STRIP stripping tool refer to page 1001

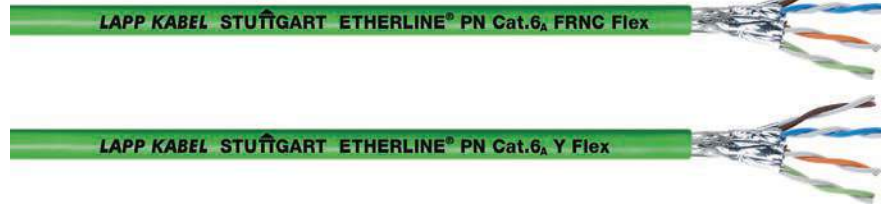




**ETHERLINE® PN Cat.6<sub>A</sub> FLEX**  
Flexible use

**i Info**

- For PROFINET applications with 4 pairs
- CAT.6<sub>A</sub> qualified for 10Gbit/s



**Benefits**

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

**Application range**

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- At 100 Mbit/s: max 90 m cable length
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for EtherCAT and EtherNet/IP applications
- For flexible applications (7-wire stranded conductor)

**Product features**

- CAT.6<sub>A</sub> for flexible application, qualified for 10Gbit/s
- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- The oil-resistant PVC sheath enables usage in industrial environments

**Norm references / Approvals**

- PVC cable is UL/CSA-certified (CMG)
- ETHERLINE® PN Cat.6<sub>A</sub> Y FLEX: **ECOLAB®** Industry standard for innovation and efficiency in the field of professional cleaning and disinfection
- FRNC cable is UL/CSA-certified (CM)

**Product Make-up**

- 7-wire tinned stranded copper conductor
- Core insulation: PE
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- PVC or FRNC jacket material
- Colour: green (based on RAL 6018)

**Technical data**

- ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description: Signal-/telecommunications cable
- Peak operating voltage** (not for power applications) 125 V
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter
- Characteristic impedance**  
100 ± 15 Ohm (> 1 MHz)
- Temperature range**  
cable halogenfree compound  
Fixed installation: -25°C to +80°C  
cable with PVC jacket  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC outer sheath</b>					
2170930	ETHERLINE PN Cat.6 <sub>A</sub> Y FLEX	4 x 2 x AWG23/7	9.0	48	92
<b>FRNC outer sheath</b>					
2170931	ETHERLINE PN Cat.6 <sub>A</sub> FRNC FLEX	4 x 2 x AWG23/7	9.0	48	87

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
 Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA RJ45F Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466
- DATA STRIP stripping tool refer to page 1001



## ETHERLINE® FD CAT.6<sub>A</sub>

For highly flexible applications



### Info

- CAT.6<sub>A</sub> for drag chain, qualified for 10Gbit/s
- For PROFINET applications with 4 pairs

### Benefits

- For use in power chains and moving machinery parts in dry or damp rooms
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Premium screening against electromagnetic interference
- Can be used for Industrial Ethernet in harsh industrial environments

### Application range

- For highly flexible applications (e.g. power chains)
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length für 100 Mbit/s is 85 m
- Max. cable length für 10 Gbit/s is 85 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PUR version is halogen-free according to IEC 60754
- Oil-resistant acc. IEC 60811-2-1
- CAT.6<sub>A</sub> for drag chain, qualified for 10Gbit/s
- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173
- Min. 2.5 million bending cycles in the power chain

### Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6
- PUR: UL/CSA-certified (CMX)
- PUR versions: UL AWM Style 21576
- PVC cable is UL/CSA-certified (CM)
- Flame retardant acc. to IEC 60332-1-2

### Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation: Based on Polyolefin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR, halogen-free/PVC
- Colour: green (based on RAL 6018)

### Technical data

	ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter Fixed installation: 8 x cable diameter
	<b>Characteristic impedance</b> 100 Ohm
	<b>Temperature range</b> Fixed installation PVC: -40°C bis +80°C PUR: -40°C bis +80°C Flexing PVC: -10°C to +70°C PUR: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC sheath</b>					
2170485	ETHERLINE® FD CAT.6 <sub>A</sub>	4x2xAWG24/7	9.0	44	88
<b>PUR outer sheath, halogen-free</b>					
2170484	ETHERLINE® FD P CAT.6 <sub>A</sub>	4x2xAWG24/7	9.0	44	90

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466



**ETHERLINE® TORSION Cat.6<sub>A</sub>**  
Highly flexible application

**Info**

- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- CAT.6<sub>A</sub> qualified for 10Gbit/s
- For PROFINET applications



- Benefits**
- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible use as well as TORSION.
  - 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
  - Premium screening against electromagnetic interference
  - Can be used for Industrial Ethernet in harsh industrial environments

- Application range**
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
  - Can be used for Industrial Ethernet in harsh industrial environments
  - Max. cable length für 100 Mbit/s is 85 m
  - Max. cable length für 100 Mbit/s is 85 m
  - Suitable for EtherCAT and EtherNet/IP applications

- Product features**
- PUR version is halogen-free according to IEC 60754
  - Oil-resistant acc. IEC 60811-2-1
  - Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.
  - Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173

- Norm references / Approvals**
- Electrical requirements acc. to IEC 61156-6
  - PUR: UL/CSA-certified (CMX)
  - PUR versions: UL AWM Style 21576
  - PVC cable is UL/CSA-certified (CM)
  - Flame retardant acc. to IEC 60332-1-2

- Product Make-up**
- 7-wire tinned stranded copper conductor
  - Core insulation made of polyethylene (PE)
  - S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
  - Outer sheath: PUR, halogen-free/PVC
  - Colour: green (based on RAL 6018)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description: Signal-/telecommunications cable
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x cable diameter
- Characteristic impedance**  
100 Ohm
- Temperature range**  
Fixed installation  
PVC: -40°C bis +80°C  
PUR: -40°C bis +80°C  
Flexing  
PVC: -10°C to +70°C  
PUR: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)
<b>PVC jacket</b>				
2170482	ETHERLINE® TORSION Y CAT6 <sub>A</sub>	4 x 2 x AWG24/7	9.0	44
<b>PUR outer sheath, halogen-free</b>				
2170483	ETHERLINE® TORSION P CAT6 <sub>A</sub>	4 x 2 x AWG24/7	9.0	44

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
 Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
 Photographs are not to scale and do not represent detailed images of the respective products.

- Accessories**
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
  - EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
  - EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
  - EPIC® DATA M12X refer to page 465
  - EPIC® DATA CCR FA refer to page 466



## ETHERLINE® Cat.7

Fixed installation



### Info

- Industrial Ethernet cable
- For PROFINET applications with 4 pairs
- Cat.7 qualified for 10Gbit/s

### Benefits

- Can be used in dry or damp rooms
- Screened against interference
- Can be used for Industrial Ethernet in harsh industrial environments
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

### Application range

- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Wiring of machines, tools, devices, appliances and control cabinets
- Max. cable length for 100 Mbit/s is 100 m  
max. cable length for 10 Gbit/s is 100 m
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Robust, halogen-free outer sheath
- The oil-resistant PVC sheath enables usage in industrial environments
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Product Make-up

- Solid bare copper wire AWG22
- Core insulation made of polyethylene (PE)
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Colour: green (based on RAL 6018)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Fixed installation: 10 x outer diameter
	<b>Characteristic impedance</b> 100 ohm at 1 - 100 MHz
	<b>Temperature range</b> fixed installation PVC: -30°C to +80°C PUR: -40°C to +80°C cable halogenfree compound Fixed installation: -25°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Halogen-free jacket</b>					
2170476	ETHERLINE® CAT.7 H	4 x 2 x AWG22/1	9.0	53	99
<b>PUR outer sheath, halogen-free</b>					
2170475	ETHERLINE® Cat.7 P	4 x 2 x AWG22/1	9.0	53	91
<b>PVC outer sheath</b>					
2170474	ETHERLINE® Cat.7 Y	4 x 2 x AWG22/1	9.0	53	98

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

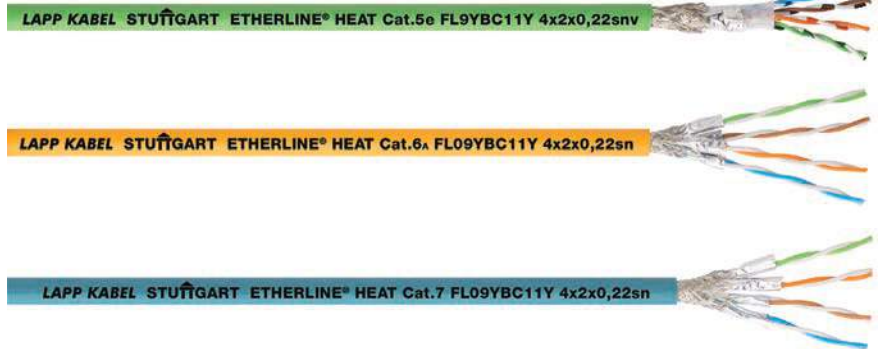
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466



**ETHERLINE® HEAT 6722**

**Info**

- Designed according to ISO 6722
- Tested acc.to ECE-R 118.01



**Benefits**

- Easy to strip and dismantle
- Extended temperature range
- Good resistance to oil, petrol, acids and alkalis
- Abrasion and cut-resistant, halogen-free, oil-resistant
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire

**Application range**

- For flexible applications (7-wire stranded conductor)
- For fixed, flexible and protected installations inside buses
- Suitable for connecting to of e.g. camera systems, enter-/ infotainment for passengers, ticketing systems
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet

**Product features**

- Halogen-free according to VDE 0472-815
- Good chemical resistance
- Flame retardant acc. to ISO 6722-1
- Temperature class B on the basis of ISO 6722-1

**Norm references / Approvals**

- DIN/ISO 6722
- Electrical requirements acc. to IEC 61156-6
- Tested acc.to ECE-R 118.01
- ISO 14572, 5.21
- LV 112-1, LV 212-2, LV 213-2

**Product Make-up**

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with EIA/TIA 568A and B
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- Cat.6 /Cat.7: S/FTP - copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: PUR compound, halogen-free
- Outer sheath colour:
  - Cat.5e green (RAL 6018)
  - Cat.6 yellow (RAL 1003)
  - Cat.7 blue (RAL 5021)

**Technical data**

- ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 10 x outer diameter
- Characteristic impedance**  
nom. 100 Ohm acc. to IEC 61156-6
- Temperature range**  
Flexing: -30 °C to +105 °C  
Fixed installation: -40 °C to +105 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® HEAT 6722</b>					
2170850	ETHERLINE® Cat. 5e FL9YBC11Y 4x2x0,22sn	4x2xAWG24/7	7.7	38	72
2170581	ETHERLINE® Cat. 6 FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	8.1	38	77
2170582	ETHERLINE® Cat. 7 FL09YBC11Y 4x2x0,22sn	4x2xAWG24/7	8.1	38	77

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

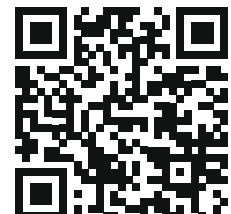
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA M12X refer to page 465

**Whitepaper - „More stringent fire protection regulation for cabling in buses“**  
Read the whitepaper to learn what is new and important about the new EU norm ECE-R 110.01 for cabling in buses.





## ETHERLINE® TRAY

LAPP KABEL STUÏGART ETHERLINE® TRAY Cat.5e Y 4x2xAWG22



### Benefits

- Wide application range due to multiple certifications
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

### Application range

- Suitable for EtherNet/IP applications
- Fixed installation
- Industrial machinery; plant engineering
- Can be used for Industrial Ethernet in harsh industrial environments
- Methods of Deployment: laying in trunking, ducts, trays, building riser

### Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test
- Oil-resistant according to UL OIL RES I

### Norm references / Approvals

- C(UL)us Typ CMG (75°C) acc.to UL 444 / CSA 22.2
- C(UL)us Typ CMR acc.to UL 444
- C(UL)us Typ PLTC acc. to UL 13
- UL-AWM-Style 2570
- Electrical requirements acc. to IEC 61156-5 Type III

### Product Make-up

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Colour-coded in accordance with EIA/TIA 568A and B
- TP structure
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- PVC outer sheath

### Info

- PLTC (power limited tray cable) for protected use on cable trays

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter Fixed installation: 10 x outer diameter
	<b>Characteristic impedance</b> 100 ohm at 1 - 100 MHz
	<b>Temperature range</b> Occasional flexing: -25°C to +80°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® TRAY</b>					
2170450	ETHERLINE® TRAY Cat.5e Y 4x2x22AWG	4x2xAWG22/7	9.6	59.368	119

Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® FIRE Cat.5e PH120

LAPP KABEL STUÏGART ETHERLINE® FIRE Cat.5e PH120 4x2xAWG24/1



### Benefits

- Ensures that the cable can still transmit data during and after a fire for 120 min (according to EN50200)
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Application range

- In industrial areas that use fire as a tool
- Highly combustible or fire-prone areas
- For fixed installation
- For indoor use

### Product features

- Fire behaviour:
  - Halogen-free (IEC 60754-1 & EN50267-2-1)
  - Flame-retardant (IEC 60332-1)
  - Fire retardant (IEC 60332-3-24)
  - Low smoke density (IEC 61034-2)
  - Circuit integrity (EN50200); 120 min
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D

### Product Make-up

- Solid bare copper conductor
- Core insulation: Based on Polyolefin
- Each insulation will be wrapped with a special tape (anti-fire barrier)
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- F/UTP: foil screening as overall screening
- Halogen-free and flame-retardant FRNC outer sheath, colour: red (similar to RAL3000)

### Info

- Isolation integrity for at least 120 minutes in the event of fire

### Technical data

	ETIM 5.0 Class-ID: EC000829 ETIM 5.0 Class-Description: Signal-/telecommunications cable
	<b>Peak operating voltage</b> (not for power applications) 125 V
	<b>Minimum bending radius</b> Fixed installation: 15 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Operation: -20 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>ETHERLINE® FIRE Cat.5e PH120</b>					
2170905	ETHERLINE® FIRE Cat.5e PH120	4 x 2 x AWG23/1	8.3	24	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable. Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**ETHERLINE® ROBUST**

Flexible use



**Info**

- For PROFINET applications
- Good chemical resistance



**Benefits**

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Resistant to contact with plant, animal or synthetic-based organic substances, oils, greases, waxes and the related emulsions
- Good resistance to ammonia compounds and bio-gases
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

**Application range**

- For flexible applications (7-wire stranded conductor)
- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702





**Product features**

- Halogen-free materials
- Good chemical resistance to ester-based hydraulic fluids
- Ozone, UV and weather-resistant according to EN 50396
- Low smoke density according to IEC 61034-2

**Product Make-up**

- Stranded 7-wire bare conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

**Technical data**

-  ETIM 5.0 Class-ID: EC000829  
ETIM 5.0 Class-Description: Signal-/telecommunications cable
-  **Minimum bending radius**  
Flexing: 10 x outer diameter  
Fixed installation: 4 x outer diameter
-  **Characteristic impedance**  
100 Ohm +- 15%
-  **Temperature range**  
Occasional flexing: -40°C to +80°C  
Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PROFINET Cat.5e</b>					
2170451	ETHERLINE ROBUST PN Cat.5	2x2xAWG22/7	6.8	30.4	50
<b>PROFINET Cat.7</b>					
2170452	ETHERLINE® ROBUST PN Cat.7	4x2xAWG23/7	9.0	48	75
<b>Industrial Ethernet Cat.7</b>					
2170453	ETHERLINE® ROBUST Cat.7 FLEX	4x2xAWG26/7	6,5	27	36

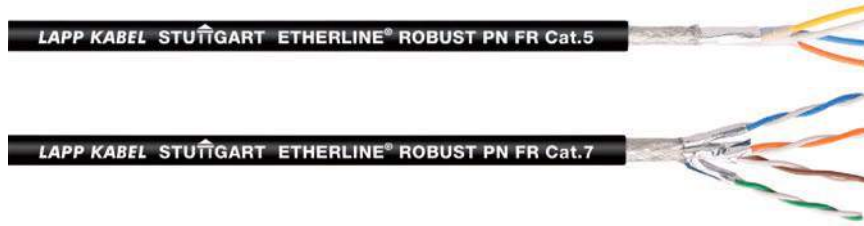
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA M12D refer to page 464
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466



## ETHERLINE® ROBUST FR



**Info**

- For PROFINET applications
- Flame-retardant

### Benefits

- Outstanding weather, ozone and UV resistance together with the wide temperature range enable versatile use for indoor and outdoor applications
- Good resistance to cold and hot water as well as water-soluble cleaning agents
- Well-suited to frequent steam cleaning

### Application range

- For flexible applications (7-wire stranded conductor)
- Machine tool building, medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- For industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702
- Suitable for EtherCAT and EtherNet/IP applications

### Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- Flame retardance makes it suitable for indoor and outdoor installations
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 100Mbit/s up to 10 Gbit/s for Industrial Ethernet
- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.

### Norm references / Approvals

- UV-resistant according to ISO 4892-2 and ozone-resistant according to EN 50396
- Flame-retardant according IEC 60332-1-2

### Product Make-up

- Stranded 7-wire bare conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath made of special TPE
- Colour: black

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000829 <b>ETIM 5.0 Class-Description:</b> Signal-/telecommunications cable
	<b>Minimum bending radius</b> Flexing: 10 x outer diameter Fixed installation: 4 x Outer diameter
	<b>Characteristic impedance</b> 100 ohm at 1 - 100 MHz
	<b>Temperature range</b> Occasional flexing: -40°C to +80°C Fixed installation: -50°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PROFINET Cat.5e</b>					
2170454	ETHERLINE® ROBUST PN FR Cat.5	2x2xAWG22/7	6.8	30.4	55
<b>PROFINET Cat.7</b>					
2170455	ETHERLINE® ROBUST PN FR Cat.7	4x2xAWG23/7	9.0	48	80
<b>Industrial Ethernet Cat.7</b>					
2170456	ETHERLINE® ROBUST FR Cat.7 FLEX	4x2xAWG26/7	6,5	27	40

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA PN AX RJ45 refer to page 461
- EPIC® DATA PN 90 RJ45 refer to page 461
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> IP68 refer to page 463
- EPIC® DATA M12D refer to page 464
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466





**ETHERLINE® P Flex Cat.5e M12**  
Industrial Ethernet Patchcord M12



**i Info**

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/ 100 Mbit/s for Industrial Ethernet

**Product Make-up**

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter

**IP** **Protection rating**  
IP 67 / IP 69

**Z-∞** **Characteristic impedance**  
100 Ohm +- 15%

**Temperature range**  
Flexing: -5°C to +50°C (UL: +80°C)  
Fixed installation: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171097	IE-5-M12D-S-1-P-2-26-7-M12D-S	2x2xAWG26	1	19
2171098	IE-5-M12D-S-2-P-2-26-7-M12D-S	2x2xAWG26	2	38
2171099	IE-5-M12D-S-3-P-2-26-7-M12D-S	2x2xAWG26	3	57
2171100	IE-5-M12D-S-5-P-2-26-7-M12D-S	2x2xAWG26	5	95
2171101	IE-5-M12D-S-10-P-2-26-7-M12D-S	2x2xAWG26	10	190
2171102	IE-5-M12D-S-20-P-2-26-7-M12D-S	2x2xAWG26	20	380
<b>straight plug M12 on free conductor end</b>				
2171103	IE-5-M12D-S-1-P-2-26-7-OE	2x2xAWG26	1	19
2171104	IE-5-M12D-S-2-P-2-26-7-OE	2x2xAWG26	2	38
2171105	IE-5-M12D-S-3-P-2-26-7-OE	2x2xAWG26	3	57
2171106	IE-5-M12D-S-5-P-2-26-7-OE	2x2xAWG26	5	95
2171107	IE-5-M12D-S-10-P-2-26-7-OE	2x2xAWG26	10	190
2171108	IE-5-M12D-S-20-P-2-26-7-OE	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® P Flex Cat.5e M12-RJ45

Industrial Ethernet Patchcord M12/RJ45



### Info

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



#### Minimum bending radius

Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter



#### Protection rating

M12 - IP 67 / IP 69  
RJ45 - IP 20



#### Characteristic impedance

100 Ohm +/- 15%



#### Temperature range

Flexing: -5°C to +50°C (UL: +80°C)  
Fixed installation: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug RJ45</b>				
2171109	IE-5-M12D-S-1-P-2-26-7-RJ45	2x2XAWG26	1	19
2171110	IE-5-M12D-S-2-P-2-26-7-RJ45	2x2XAWG26	2	38
2171111	IE-5-M12D-S-3-P-2-26-7-RJ45	2x2XAWG26	3	57
2171112	IE-5-M12D-S-5-P-2-26-7-RJ45	2x2XAWG26	5	95
2171113	IE-5-M12D-S-10-P-2-26-7-RJ45	2x2XAWG26	10	190
2171114	IE-5-M12D-S-20-P-2-26-7-RJ45	2x2XAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® P Flex Cat.5e RJ45**  
Industrial Ethernet Patchcord RJ45



**Info**

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/ 100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

**Product Make-up**

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: water blue (RAL 5021)
- Pre-assembled patchcord with RJ45 connectors

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 8 x outer diameter
- Protection rating**  
IP 20
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
Flexing: -5°C to +50°C (UL: +80°C)  
Fixed installation: -30°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>2-pair: straight plug RJ45 on straight plug RJ45</b>				
2171115	IE-5-RJ45-1-P-2-26-7-RJ45	2x2xAWG26	1	19
2171116	IE-5-RJ45-2-P-2-26-7-RJ45	2x2xAWG26	2	38
2171117	IE-5-RJ45-3-P-2-26-7-RJ45	2x2xAWG26	3	57
2171118	IE-5-RJ45-5-P-2-26-7-RJ45	2x2xAWG26	5	95
2171119	IE-5-RJ45-10-P-2-26-7-RJ45	2x2xAWG26	10	190
2171120	IE-5-RJ45-20-P-2-26-7-RJ45	2x2xAWG26	20	380
<b>4-pair: straight plug RJ45 on straight plug RJ45</b>				
2171501	IE-5-RJ45-1-P-4-26-7-RJ45	4x2xAWG26	1	25
2171502	IE-5-RJ45-2-P-4-26-7-RJ45	4x2xAWG26	2	50
2171503	IE-5-RJ45-3-P-4-26-7-RJ45	4x2xAWG26	3	75
2171504	IE-5-RJ45-5-P-4-26-7-RJ45	4x2xAWG26	5	125
2171505	IE-5-RJ45-10-P-4-26-7-RJ45	4x2xAWG26	10	250
2171506	IE-5-RJ45-20-P-4-26-7-RJ45	4x2xAWG26	20	500
<b>4-pair: straight plug RJ45 on free conductor end</b>				
2171507	IE-5-RJ45-1-P-4-26-7-OE	4x2xAWG26	1	25
2171508	IE-5-RJ45-2-P-4-26-7-OE	4x2xAWG26	2	50
2171509	IE-5-RJ45-3-P-4-26-7-OE	4x2xAWG26	3	75
2171510	IE-5-RJ45-5-P-4-26-7-OE	4x2xAWG26	5	125
2171511	IE-5-RJ45-10-P-4-26-7-OE	4x2xAWG26	10	250
2171512	IE-5-RJ45-20-P-4-26-7-OE	4x2xAWG26	20	500

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® H Flex Cat.5e M12

Industrial Ethernet Patchcord M12



### Info

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 6 x cable diameter



**Protection rating**  
IP 67 / IP 69



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
During installation: -5 °C to +60 °C  
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171073	IE-5-M12D-S-1-H-2-26-7-M12D-S	2x2xAWG26	1	19
2171074	IE-5-M12D-S-2-H-2-26-7-M12D-S	2x2xAWG26	2	38
2171075	IE-5-M12D-S-3-H-2-26-7-M12D-S	2x2xAWG26	3	57
2171076	IE-5-M12D-S-5-H-2-26-7-M12D-S	2x2xAWG26	5	95
2171077	IE-5-M12D-S-10-H-2-26-7-M12D-S	2x2xAWG26	10	190
2171078	IE-5-M12D-S-20-H-2-26-7-M12D-S	2x2xAWG26	20	380
<b>straight plug M12 on free conductor end</b>				
2171079	IE-5-M12D-S-1-H-2-26-7-OE	2x2xAWG26	1	19
2171080	IE-5-M12D-S-2-H-2-26-7-OE	2x2xAWG26	2	38
2171081	IE-5-M12D-S-3-H-2-26-7-OE	2x2xAWG26	3	57
2171082	IE-5-M12D-S-5-H-2-26-7-OE	2x2xAWG26	5	95
2171083	IE-5-M12D-S-10-H-2-26-7-OE	2x2xAWG26	10	190
2171084	IE-5-M12D-S-20-H-2-26-7-OE	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® H Flex Cat.5e M12-RJ45**  
Industrial Ethernet Patchcord M12/RJ45



**i Info**

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/ 100 Mbit/s for Industrial Ethernet

**Product Make-up**

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter
- IP** **Protection rating**  
M12 - IP 67 / IP 69  
RJ45 - IP 20
- Z<sub>∞</sub>** **Characteristic impedance**  
100 Ohm ± 15%
- Temperature range**  
During installation: -5 °C to +60 °C  
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug RJ45</b>				
2171085	IE-5-M12D-S-1-H-2-26-7-RJ45	2x2xAWG26	1	19
2171086	IE-5-M12D-S-2-H-2-26-7-RJ45	2x2xAWG26	2	38
2171087	IE-5-M12D-S-3-H-2-26-7-RJ45	2x2xAWG26	3	57
2171088	IE-5-M12D-S-5-H-2-26-7-RJ45	2x2xAWG26	5	95
2171089	IE-5-M12D-S-10-H-2-26-7-RJ45	2x2xAWG26	10	190
2171090	IE-5-M12D-S-20-H-2-26-7-RJ45	2x2xAWG26	20	380

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® H Flex Cat.5e RJ45

Industrial Ethernet Patchcord RJ45



### Info

- Industrial Ethernet cable
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Automation technology
- For indoor use
- For flexible applications (7-wire stranded conductor)
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet
- 4pair: 10/100/1000 Mbit/s for Industrial Ethernet

### Product Make-up

- Flexible fine-wire copper conductor
- Twisted pair construction permits largely interference-free operation (decoupling).
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: water blue (RAL 5021)
- Pre-assembled patchcord with RJ45 connectors

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 6 x outer diameter



**Protection rating**  
IP 20



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
During installation: -5 °C to +60 °C  
Fixed installation: -30 °C to +80 °C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/ 1.000 pieces)
<b>2-pair: straight plug RJ45 on straight plug RJ45</b>				
2171091	IE-5-RJ45-1-H-2-26-7-RJ45	2x2xAWG26	1	19
2171092	IE-5-RJ45-2-H-2-26-7-RJ45	2x2xAWG26	2	38
2171093	IE-5-RJ45-3-H-2-26-7-RJ45	2x2xAWG26	3	57
2171094	IE-5-RJ45-5-H-2-26-7-RJ45	2x2xAWG26	5	95
2171095	IE-5-RJ45-10-H-2-26-7-RJ45	2x2xAWG26	10	190
2171096	IE-5-RJ45-20-H-2-26-7-RJ45	2x2xAWG26	20	380
<b>4-pair: straight plug RJ45 on straight plug RJ45</b>				
2171513	IE-5-RJ45-1-H-4-26-7-RJ45	4x2xAWG26	1	25
2171514	IE-5-RJ45-2-H-4-26-7-RJ45	4x2xAWG26	2	50
2171515	IE-5-RJ45-3-H-4-26-7-RJ45	4x2xAWG26	3	75
2171516	IE-5-RJ45-5-H-4-26-7-RJ45	4x2xAWG26	5	125
2171517	IE-5-RJ45-10-H-4-26-7-RJ45	4x2xAWG26	10	250
2171518	IE-5-RJ45-20-H-4-26-7-RJ45	4x2xAWG26	20	500
<b>4-pair: straight plug RJ45 on free conductor end</b>				
2171519	IE-5-RJ45-1-H-4-26-7-OE	4x2xAWG26	1	25
2171520	IE-5-RJ45-2-H-4-26-7-OE	4x2xAWG26	2	50
2171521	IE-5-RJ45-3-H-4-26-7-OE	4x2xAWG26	3	75
2171522	IE-5-RJ45-5-H-4-26-7-OE	4x2xAWG26	5	125
2171523	IE-5-RJ45-10-H-4-26-7-OE	4x2xAWG26	10	250
2171524	IE-5-RJ45-20-H-4-26-7-OE	4x2xAWG26	20	500

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® EC Flex Cat.5e M8

Industrial Ethernet EC Patchcord M8



### Info

- For EtherCAT applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request



### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- Flexible use

### Application range

- Suitable for use in industrial applications
- Especially for EtherCat applications
- For indoor use
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/ 100 Mbit/s for Industrial Ethernet

### Product Make-up

- Stranded conductor, 7-wire, 2x2xAWG26/7
- Overall screening with copper braid and plastic-laminated aluminium foil
- Pre-assembled patchcords with M8 connectors
- Colour: green (based on RAL 6018)

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC002599 <b>ETIM 5.0 Class-Description:</b> Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Fixed installation: 4 x outer diameter Flexing: 8 x outer diameter
	<b>Protection rating</b> IP 67
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Fixed installation: -30°C to +80°C Flexing: -5°C to +50°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/ 1.000 pieces)
<b>straight plug M8 on straight plug M8</b>				
2171300	IE-EC-5-M8-S-0,5-Y-2-26-7-M8-S	2x2xAWG26	0,5	10
2171301	IE-EC-5-M8-S-1-Y-2-26-7-M8-S	2x2xAWG26	1	20
2171302	IE-EC-5-M8-S-2-Y-2-26-7-M8-S	2x2xAWG26	2	40
2171303	IE-EC-5-M8-S-3-Y-2-26-7-M8-S	2x2xAWG26	3	60
2171304	IE-EC-5-M8-S-5-Y-2-26-7-M8-S	2x2xAWG26	5	100
2171305	IE-EC-5-M8-S-7-Y-2-26-7-M8-S	2x2xAWG26	7	140
2171306	IE-EC-5-M8-S-10-Y-2-26-7-M8-S	2x2xAWG26	10	200
2171307	IE-EC-5-M8-S-15-Y-2-26-7-M8-S	2x2xAWG26	15	300
2171308	IE-EC-5-M8-S-20-Y-2-26-7-M8-S	2x2xAWG26	20	400
<b>angled plug M8 on straight plug M8</b>				
2171350	IE-EC-5-M8-A-0,5-Y-2-26-7-M8-S	2x2xAWG26	0,5	10
2171351	IE-EC-5-M8-A-1-Y-2-26-7-M8-S	2x2xAWG26	1	20
2171352	IE-EC-5-M8-A-2-Y-2-26-7-M8-S	2x2xAWG26	2	40
2171353	IE-EC-5-M8-A-3-Y-2-26-7-M8-S	2x2xAWG26	3	60
2171354	IE-EC-5-M8-A-5-Y-2-26-7-M8-S	2x2xAWG26	5	100
2171355	IE-EC-5-M8-A-7-Y-2-26-7-M8-S	2x2xAWG26	7	140
2171356	IE-EC-5-M8-A-10-Y-2-26-7-M8-S	2x2xAWG26	10	200
2171357	IE-EC-5-M8-A-15-Y-2-26-7-M8-S	2x2xAWG26	15	300
2171358	IE-EC-5-M8-A-20-Y-2-26-7-M8-S	2x2xAWG26	20	400
<b>straight plug M8 on free conductor end</b>				
2171320	IE-EC-5-M8-S-0,5-Y-2-26-7-OE	2x2xAWG26	0,5	10
2171321	IE-EC-5-M8-S-1-Y-2-26-7-OE	2x2xAWG26	1	20
2171322	IE-EC-5-M8-S-2-Y-2-26-7-OE	2x2xAWG26	2	40
2171323	IE-EC-5-M8-S-3-Y-2-26-7-OE	2x2xAWG26	3	60
2171324	IE-EC-5-M8-S-5-Y-2-26-7-OE	2x2xAWG26	5	100
2171325	IE-EC-5-M8-S-7-Y-2-26-7-OE	2x2xAWG26	7	140
2171326	IE-EC-5-M8-S-10-Y-2-26-7-OE	2x2xAWG26	10	200
2171327	IE-EC-5-M8-S-15-Y-2-26-7-OE	2x2xAWG26	15	300
2171328	IE-EC-5-M8-S-20-Y-2-26-7-OE	2x2xAWG26	20	400
<b>angled plug M8 on free conductor end</b>				
2171370	IE-EC-5-M8-A-0,5-Y-2-26-7-OE	2x2xAWG26	0,5	10
2171371	IE-EC-5-M8-A-1-Y-2-26-7-OE	2x2xAWG26	1	20
2171372	IE-EC-5-M8-A-2-Y-2-26-7-OE	2x2xAWG26	2	40
2171373	IE-EC-5-M8D-A-3-Y-2-26-7-OE	2x2xAWG26	3	60
2171374	IE-EC-5-M8-A-5-Y-2-26-7-OE	2x2xAWG26	5	100
2171375	IE-EC-5-M8-A-7-Y-2-26-7-OE	2x2xAWG26	7	140
2171376	IE-EC-5-M8-A-10-Y-2-26-7-OE	2x2xAWG26	10	200
2171377	IE-EC-5-M8-A-15-Y-2-26-7-OE	2x2xAWG26	15	300
2171378	IE-EC-5-M8-A-20-Y-2-26-7-OE	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® EC FD Cat.5e M8

Industrial Ethernet EC Patchcord M8



### Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M8 connectors

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC002599 <b>ETIM 5.0 Class-Description:</b> Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Flexing: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Protection rating</b> IP 67
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> During installation: -30°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M8 on straight plug M8</b>				
2171700	IE-EC-5-M8-S-0,5-P-2-26-FD-M8-S	2x2xAWG26	0,5	10
2171701	IE-EC-5-M8-S-1-P-2-26-FD-M8-S	2x2xAWG26	1	20
2171702	IE-EC-5-M8-S-2-P-2-26-FD-M8-S	2x2xAWG26	2	40
2171703	IE-EC-5-M8-S-3-P-2-26-FD-M8-S	2x2xAWG26	3	60
2171704	IE-EC-5-M8-S-5-P-2-26-FD-M8-S	2x2xAWG26	5	100
2171705	IE-EC-5-M8-S-7-P-2-26-FD-M8-S	2x2xAWG26	7	140
2171706	IE-EC-5-M8-S-10-P-2-26-FD-M8-S	2x2xAWG26	10	200
2171707	IE-EC-5-M8-S-15-P-2-26-FD-M8-S	2x2xAWG26	15	300
2171708	IE-EC-5-M8-S-20-P-2-26-FD-M8-S	2x2xAWG26	20	400
<b>angled plug M8 on straight plug M8</b>				
2171718	IE-EC-5-M8-A-0,5-P-2-26-FD-M8-S	2x2xAWG26	0,5	10
2171719	IE-EC-5-M8-A-1-P-2-26-FD-M8-S	2x2xAWG26	1	20
2171720	IE-EC-5-M8-A-2-P-2-26-FD-M8-S	2x2xAWG26	2	40
2171721	IE-EC-5-M8-A-3-P-2-26-FD-M8-S	2x2xAWG26	3	60
2171722	IE-EC-5-M8-A-5-P-2-26-FD-M8-S	2x2xAWG26	5	100
2171723	IE-EC-5-M8-A-7-P-2-26-FD-M8-S	2x2xAWG26	7	140
2171724	IE-EC-5-M8-A-10-P-2-26-FD-M8-S	2x2xAWG26	10	200
2171725	IE-EC-5-M8-A-15-P-2-26-FD-M8-S	2x2xAWG26	15	300
2171726	IE-EC-5-M8-A-20-P-2-26-FD-M8-S	2x2xAWG26	20	400
<b>straight connector on free conductor end</b>				
2171709	IE-EC-5-M8-S-0,5-P-2-26-FD-OE	2x2xAWG26	0,5	10
2171710	IE-EC-5-M8-S-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171711	IE-EC-5-M8-S-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171712	IE-EC-5-M8-S-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171713	IE-EC-5-M8-S-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171714	IE-EC-5-M8-S-7-P-2-26-FD-OE	2x2xAWG26	7	140
2171715	IE-EC-5-M8-S-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171716	IE-EC-5-M8-S-15-P-2-26-FD-OE	2x2xAWG26	15	300
2171717	IE-EC-5-M8-S-20-P-2-26-FD-OE	2x2xAWG26	20	400
<b>Angled connector on free conductor end</b>				
2171727	IE-EC-5-M8-A-0,5-P-2-26-FD-OE	2x2xAWG26	0,5	10
2171728	IE-EC-5-M8-A-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171729	IE-EC-5-M8-A-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171730	IE-EC-5-M8-A-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171731	IE-EC-5-M8-A-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171732	IE-EC-5-M8-A-7-P-2-26-FD-OE	2x2xAWG26	7	140
2171733	IE-EC-5-M8-A-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171734	IE-EC-5-M8-A-15-P-2-26-FD-OE	2x2xAWG26	15	300
2171735	IE-EC-5-M8-A-20-P-2-26-FD-OE	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.





## ETHERLINE® EC FD Cat.5e M8-RJ45

Industrial Ethernet Patchcord M8/RJ45



### Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology





### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M8 connector and RJ45 connector

### Technical data

-  **Minimum bending radius**  
Flexing: 8 x outer diameter  
Fixed installation: 4 x outer diameter
-  **Protection rating**  
IP 67
-  **Characteristic impedance**  
100 Ohm +- 15%
-  **Temperature range**  
During installation: -30°C to +50°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg / 1.000 pieces)
<b>ETHERLINE® EC FD Cat.5e M8-RJ45</b>				
2171757	IE-EC-5-M8-S-0,5-P-2-26-FD-RJ45	2x2xAWG26	0,5	10
2171758	IE-EC-5-M8-S-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171759	IE-EC-5-M8-S-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171760	IE-EC-5-M8-S-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171761	IE-EC-5-M8-S-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171762	IE-EC-5-M8-S-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171763	IE-EC-5-M8-S-20-P-2-26-FD-RJ45	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® EC FD Cat.5e M12



**Info**

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
Flexing: 8 x outer diameter  
Fixed installation: 4 x outer diameter
- IP** Protection rating  
M12 - IP 67 / IP 69
- Z<sub>∞</sub>** Characteristic impedance  
100 Ohm +/- 15%
- Temperature range**  
During installation: -30°C to +50°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171778	IE-EC-5-M12D-S-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0.5	10
2171779	IE-EC-5-M12D-S-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171780	IE-EC-5-M12D-S-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171781	IE-EC-5-M12D-S-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171782	IE-EC-5-M12D-S-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171783	IE-EC-5-M12D-S-10-P-2-26-FD-M12D-S	2x2xAWG26	10	200
2171784	IE-EC-5-M12D-S-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
<b>angled plug M12 on straight plug M12</b>				
2171785	IE-EC-5-M12D-A-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0.5	10
2171786	IE-EC-5-M12D-A-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171787	IE-EC-5-M12D-A-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171788	IE-EC-5-M12D-A-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171789	IE-EC-5-M12D-A-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171790	IE-EC-5-M12D-A-10-P-2-26-FD-M12D-S	2x2xAWG26	2	200
2171791	IE-EC-5-M12D-A-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
<b>straight plug M12 on free conductor end</b>				
2171792	IE-EC-5-M12D-S-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171793	IE-EC-5-M12D-S-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171794	IE-EC-5-M12D-S-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171795	IE-EC-5-M12D-S-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171796	IE-EC-5-M12D-S-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171797	IE-EC-5-M12D-S-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171798	IE-EC-5-M12D-S-20-P-2-26-FD-OE	2x2xAWG26	20	400
<b>angled plug M12 on free conductor end</b>				
2171870	IE-EC-5-M12D-A-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171871	IE-EC-5-M12D-A-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171872	IE-EC-5-M12D-A-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171873	IE-EC-5-M12D-A-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171874	IE-EC-5-M12D-A-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171875	IE-EC-5-M12D-A-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171876	IE-EC-5-M12D-A-20-P-2-26-FD-OE	2x2xAWG26	20	400
<b>angled plug M12 on angled plug M12</b>				
2171906	IE-EC-5-M12D-A-0,5-P-2-26-FD-M12D-A	2x2xAWG26	0.5	10
2171907	IE-EC-5-M12D-A-1-P-2-26-FD-M12D-A	2x2xAWG26	1	20
2171908	IE-EC-5-M12D-A-2-P-2-26-FD-M12D-A	2x2xAWG26	2	40
2171909	IE-EC-5-M12D-A-3-P-2-26-FD-M12D-A	2x2xAWG26	3	60
2171910	IE-EC-5-M12D-A-5-P-2-26-FD-M12D-A	2x2xAWG26	5	100
2171911	IE-EC-5-M12D-A-10-P-2-26-FD-M12D-A	2x2xAWG26	10	200
2171913	IE-EC-5-M12D-A-20-P-2-26-FD-M12D-A	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® EC FD Cat.5e M12-RJ45

Industrial Ethernet EC Patchcord M12/RJ45



### Info

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Product Make-up

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC002599 <b>ETIM 5.0 Class-Description:</b> Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Flexing: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Protection rating</b> M12 - IP 67 / IP 69 RJ45 - IP 20
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> During installation: -30°C to +50°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/ 1.000 pieces)
<b>straight plug M12 on straight plug RJ45</b>				
2171750	IE-EC-5-M12D-S-0,5-P-2-26-FD-RJ45	2x2xAWG26	0,5	10
2171751	IE-EC-5-M12D-S-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171752	IE-EC-5-M12D-S-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171753	IE-EC-5-M12D-S-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171754	IE-EC-5-M12D-S-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171755	IE-EC-5-M12D-S-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171756	IE-EC-5-M12D-S-20-P-2-26-FD-RJ45	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

**ETHERLINE® EC FD Cat.5e RJ45**

Industrial Ethernet EC Patchcord RJ45

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use
- For highly flexible applications
- Automation technology

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Product Make-up**

- AWG 26 (19-wire)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

**Info**

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Technical data**

ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



**Minimum bending radius**  
Flexing: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Protection rating**  
RJ45 - IP 20



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
During installation: -30°C to +50°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug RJ45 on straight plug RJ45</b>				
2171764	IE-EC-5-RJ45-0,5-P-2-26-FD-RJ45	2x2xAWG26	0.5	10
2171765	IE-EC-5-RJ45-1-P-2-26-FD-RJ45	2x2xAWG26	1	20
2171766	IE-EC-5-RJ45-2-P-2-26-FD-RJ45	2x2xAWG26	2	40
2171767	IE-EC-5-RJ45-3-P-2-26-FD-RJ45	2x2xAWG26	3	60
2171768	IE-EC-5-RJ45-5-P-2-26-FD-RJ45	2x2xAWG26	5	100
2171769	IE-EC-5-RJ45-10-P-2-26-FD-RJ45	2x2xAWG26	10	200
2171770	IE-EC-5-RJ45-20-P-2-26-FD-RJ45	2x2xAWG26	20	400
<b>straight plug RJ45 on free conductor end</b>				
2171771	IE-EC-5-RJ45-0,5-P-2-26-FD-OE	2x2xAWG26	0.5	10
2171772	IE-EC-5-RJ45-1-P-2-26-FD-OE	2x2xAWG26	1	20
2171773	IE-EC-5-RJ45-2-P-2-26-FD-OE	2x2xAWG26	2	40
2171774	IE-EC-5-RJ45-3-P-2-26-FD-OE	2x2xAWG26	3	60
2171775	IE-EC-5-RJ45-5-P-2-26-FD-OE	2x2xAWG26	5	100
2171776	IE-EC-5-RJ45-10-P-2-26-FD-OE	2x2xAWG26	10	200
2171777	IE-EC-5-RJ45-20-P-2-26-FD-OE	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® EC FD Cat.5e M12F**



**i Info**

- Industrial Ethernet cable
- Suitable for drag chains
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

- Benefits**
- Non-permanent connections allow for easy change of equipment
  - For directly connecting two electric components
  - CAT.5-Performance

- Application range**
- Suitable for EtherCAT and EtherNet/IP applications
  - Suitable for use in industrial applications
  - For indoor use
  - For highly flexible applications
  - Automation technology

- Product features**
- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
  - 2pair: 10/ 100 Mbit/s for Industrial Ethernet

- Product Make-up**
- AWG 26 (19-wire)
  - Overall screening with copper braid and plastic-laminated aluminium foil
  - Outer sheath made of PUR
  - Colour: green (based on RAL 6018)
  - Pre-assembled patchcords with M12 socket, D-coded
  - 4 pole M12 connector with vibration protection

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
Flexing: 8 x outer diameter  
Fixed installation: 4 x outer diameter
- Protection rating**  
M12 - IP 67 / IP 69
- Characteristic impedance**  
100 Ohm +- 15%
- Temperature range**  
During installation: -30°C to +50°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/ 1.000 pieces)
<b>straight socket M12 on straight plug M12</b>				
2171736	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12D-S	2x2xAWG26	0,5	10
2171737	IE-EC-5-M12DF-S-1-P-2-26-FD-M12D-S	2x2xAWG26	1	20
2171738	IE-EC-5-M12DF-S-2-P-2-26-FD-M12D-S	2x2xAWG26	2	40
2171739	IE-EC-5-M12DF-S-3-P-2-26-FD-M12D-S	2x2xAWG26	3	60
2171740	IE-EC-5-M12DF-S-5-P-2-26-FD-M12D-S	2x2xAWG26	5	100
2171741	IE-EC-5-M12DF-S-10-P-2-26-FD-M12D-S	2x2xAWG26	10	200
2171742	IE-EC-5-M12DF-S-20-P-2-26-FD-M12D-S	2x2xAWG26	20	400
<b>straight socket M12 on angled plug M12</b>				
2171743	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12D-A	2x2xAWG26	0,5	10
2171744	IE-EC-5-M12DF-S-1-P-2-26-FD-M12D-A	2x2xAWG26	1	20
2171745	IE-EC-5-M12DF-S-2-P-2-26-FD-M12D-A	2x2xAWG26	2	40
2171746	IE-EC-5-M12DF-S-3-P-2-26-FD-M12D-A	2x2xAWG26	3	60
2171747	IE-EC-5-M12DF-S-5-P-2-26-FD-M12D-A	2x2xAWG26	5	100
2171748	IE-EC-5-M12DF-S-10-P-2-26-FD-M12D-A	2x2xAWG26	10	200
2171749	IE-EC-5-M12DF-S-20-P-2-26-FD-M12D-A	2x2xAWG26	20	400
<b>straight socket M12 on straight socket M12</b>				
2171915	IE-EC-5-M12DF-S-0,5-P-2-26-FD-M12DF-S	2x2xAWG26	0,5	10
2171916	IE-EC-5-M12DF-S-1-P-2-26-FD-M12DF-S	2x2xAWG26	1	20
2171917	IE-EC-5-M12DF-S-2-P-2-26-FD-M12DF-S	2x2xAWG26	2	40
2171918	IE-EC-5-M12DF-S-3-P-2-26-FD-M12DF-S	2x2xAWG26	3	60
2171919	IE-EC-5-M12DF-S-5-P-2-26-FD-M12DF-S	2x2xAWG26	5	100
2171920	IE-EC-5-M12DF-S-10-P-2-26-FD-M12DF-S	2x2xAWG26	10	200
2171921	IE-EC-5-M12DF-S-20-P-2-26-FD-M12DF-S	2x2xAWG26	20	400

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/ 100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Cat.5 M12

PROFINET Patchcord M12



### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Norm references / Approvals

- The cable is UL/CSA-certified (CMG)
- UL File Number: E249137

### Product Make-up

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

### Info

- For PROFINET applications (D-coded)
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Technical data

	ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> During installation: 15 x outer diameter Fixed installation: 10 x outer diameter
	<b>Protection rating</b> IP 67 / IP 69
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> During installation: -20°C to +60°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171001	IE-PNA-5-M12D-S-1-Y-2-22-1-M12D-S	2x2xAWG22	1	30,4
2171002	IE-PNA-5-M12D-S-2-Y-2-22-1-M12D-S	2x2xAWG22	2	60,8
2171003	IE-PNA-5-M12D-S-3-Y-2-22-1-M12D-S	2x2xAWG22	3	91,2
2171004	IE-PNA-5-M12D-S-5-Y-2-22-1-M12D-S	2x2xAWG22	5	152
2171005	IE-PNA-5-M12D-S-10-Y-2-22-1-M12D-S	2x2xAWG22	10	304
2171006	IE-PNA-5-M12D-S-20-Y-2-22-1-M12D-S	2x2xAWG22	20	608
<b>angled plug M12 on straight plug M12</b>				
2171013	IE-PNA-5-M12D-A-1-Y-2-22-1-M12D-S	2x2xAWG22	1	30,4
2171014	IE-PNA-5-M12D-A-2-Y-2-22-1-M12D-S	2x2xAWG22	2	60,8
2171015	IE-PNA-5-M12D-A-3-Y-2-22-1-M12D-S	2x2xAWG22	3	91,2
2171016	IE-PNA-5-M12D-A-5-Y-2-22-1-M12D-S	2x2xAWG22	5	152
2171017	IE-PNA-5-M12D-A-10-Y-2-22-1-M12D-S	2x2xAWG22	10	304
2171018	IE-PNA-5-M12D-A-20-Y-2-22-1-M12D-S	2x2xAWG22	20	608
<b>straight plug M12 on free conductor end</b>				
2171007	IE-PNA-5-M12D-S-1-Y-2-22-1-OE	2x2xAWG22	1	30,4
2171008	IE-PNA-5-M12D-S-2-Y-2-22-1-OE	2x2xAWG22	2	60,8
2171009	IE-PNA-5-M12D-S-3-Y-2-22-1-OE	2x2xAWG22	3	91,2
2171010	IE-PNA-5-M12D-S-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171011	IE-PNA-5-M12D-S-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171012	IE-PNA-5-M12D-S-20-Y-2-22-1-OE	2x2xAWG22	20	608
<b>angled plug M12 on free conductor end</b>				
2171019	IE-PNA-5-M12D-A-1-Y-2-22-1-OE	2x2xAWG22	1	30,4
2171020	IE-PNA-5-M12D-A-2-Y-2-22-1-OE	2x2xAWG22	2	60,8
2171021	IE-PNA-5-M12D-A-3-Y-2-22-1-OE	2x2xAWG22	3	91,2
2171022	IE-PNA-5-M12D-A-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171023	IE-PNA-5-M12D-A-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171024	IE-PNA-5-M12D-A-20-Y-2-22-1-OE	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet



**ETHERLINE® PN Cat.5 M12-RJ45**  
PROFINET Patchcord M12/RJ45



**Info**

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Norm references / Approvals**

- The cable is UL/CSA-certified (CMG)

**Product Make-up**

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
During installation: 15 x outer diameter  
Fixed installation: 10 x outer diameter
- IP** **Protection rating**  
M12 - IP 67 / IP 69  
RJ45 - IP 20
- Z<sub>∞</sub>** **Characteristic impedance**  
100 Ohm +- 15%
- Temperature range**  
During installation: -20°C to +60°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/ 1.000 pieces)
<b>straight plug M12 on straight plug RJ45</b>				
2171164	IE-PNA-5-M12D-S-0,5-Y-2-22-1-RJ45	2x2xAWG22	0,5	15,2
2171165	IE-PNA-5-M12D-S-1-Y-2-22-1-RJ45	2x2xAWG22	1	30,4
2171166	IE-PNA-5-M12D-S-2-Y-2-22-1-RJ45	2x2xAWG22	2	60,8
2171167	IE-PNA-5-M12D-S-3-Y-2-22-1-RJ45	2x2xAWG22	3	91,2
2171168	IE-PNA-5-M12D-S-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171169	IE-PNA-5-M12D-S-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171170	IE-PNA-5-M12D-S-20-Y-2-22-1-RJ45	2x2xAWG22	20	608
<b>angled plug M12 on straight plug RJ45</b>				
2171171	IE-PNA-5-M12D-A-0,5-Y-2-22-1-RJ45	2x2xAWG22	0,5	15,2
2171172	IE-PNA-5-M12D-A-1-Y-2-22-1-RJ45	2x2xAWG22	1	30,4
2171173	IE-PNA-5-M12D-A-2-Y-2-22-1-RJ45	2x2xAWG22	2	60,8
2171174	IE-PNA-5-M12D-A-3-Y-2-22-1-RJ45	2x2xAWG22	3	91,2
2171175	IE-PNA-5-M12D-A-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171176	IE-PNA-5-M12D-A-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171177	IE-PNA-5-M12D-A-20-Y-2-22-1-RJ45	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.  
For detailed technical information please refer to the data sheet



## ETHERLINE® PN Cat.5 RJ45

PROFINET Patchcord RJ45



### Info

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- For PROFINET applications type A
- Fixed installation
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

### Product Make-up

- Solid and bare copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



#### Minimum bending radius

During installation: 15 x outer diameter  
Fixed installation: 10 x outer diameter



#### Protection rating

M12 - IP 67 / IP 69  
RJ45 - IP 20



#### Characteristic impedance

100 Ohm +/- 15%



#### Temperature range

During installation: -20°C to +60°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug RJ45 on straight plug RJ45</b>				
2171178	IE-PNA-5-RJ45-0,5-Y-2-22-1-RJ45	2x2xAWG22	0,5	15,2
2171179	IE-PNA-5-RJ45-1-Y-2-22-1-RJ45	2x2xAWG22	1	30,4
2171180	IE-PNA-5-RJ45-2-Y-2-22-1-RJ45	2x2xAWG22	2	60,8
2171181	IE-PNA-5-RJ45-3-Y-2-22-1-RJ45	2x2xAWG22	3	91,2
2171182	IE-PNA-5-RJ45-5-Y-2-22-1-RJ45	2x2xAWG22	5	152
2171183	IE-PNA-5-RJ45-10-Y-2-22-1-RJ45	2x2xAWG22	10	304
2171184	IE-PNA-5-RJ45-20-Y-2-22-1-RJ45	2x2xAWG22	20	608
<b>straight plug RJ45 on free conductor end</b>				
2171185	IE-PNA-5-RJ45-0,5-Y-2-22-1-OE	2x2xAWG22	0,5	15,2
2171186	IE-PNA-5-RJ45-1-Y-2-22-1-OE	2x2xAWG22	1	30,4
2171187	IE-PNA-5-RJ45-2-Y-2-22-1-OE	2x2xAWG22	2	60,8
2171188	IE-PNA-5-RJ45-3-Y-2-22-1-OE	2x2xAWG22	3	91,2
2171189	IE-PNA-5-RJ45-5-Y-2-22-1-OE	2x2xAWG22	5	152
2171190	IE-PNA-5-RJ45-10-Y-2-22-1-OE	2x2xAWG22	10	304
2171191	IE-PNA-5-RJ45-20-Y-2-22-1-OE	2x2xAWG22	20	608

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Other lengths and types of connectors are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

For detailed technical information please refer to the data sheet





**ETHERLINE® PN Flex Cat.5 M12**  
PROFINET Patchcord M12



**i Info**

- For PROFINET applications (D-coded)
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Norm references / Approvals**

- The cable is UL/CSA-certified (CMG)
- UL File Number: E249137

**Product Make-up**

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 10 x outer diameter

**IP** Protection rating  
IP 67 / IP 69

**Z<sub>∞</sub>** Characteristic impedance  
100 Ohm +/- 15%

**Temperature range**  
Flexing: -20°C to +60°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171025	IE-PNB-5-M12D-S-1-Y-2-22-7-M12D-S	2x2xAWG22	1	31,3
2171026	IE-PNB-5-M12D-S-2-Y-2-22-7-M12D-S	2x2xAWG22	2	62,6
2171027	IE-PNB-5-M12D-S-3-Y-2-22-7-M12D-S	2x2xAWG22	3	93,9
2171028	IE-PNB-5-M12D-S-5-Y-2-22-7-M12D-S	2x2xAWG22	5	156,5
2171029	IE-PNB-5-M12D-S-10-Y-2-22-7-M12D-S	2x2xAWG22	10	313
2171030	IE-PNB-5-M12D-S-20-Y-2-22-7-M12D-S	2x2xAWG22	20	626
<b>angled plug M12 on straight plug M12</b>				
2171037	IE-PNB-5-M12D-A-1-Y-2-22-7-M12D-S	2x2xAWG22	1	31,3
2171038	IE-PNB-5-M12D-A-2-Y-2-22-7-M12D-S	2x2xAWG22	2	62,6
2171039	IE-PNB-5-M12D-A-3-Y-2-22-7-M12D-S	2x2xAWG22	3	93,9
2171040	IE-PNB-5-M12D-A-5-Y-2-22-7-M12D-S	2x2xAWG22	5	156,5
2171041	IE-PNB-5-M12D-A-10-Y-2-22-7-M12D-S	2x2xAWG22	10	313
2171042	IE-PNB-5-M12D-A-20-Y-2-22-7-M12D-S	2x2xAWG22	20	626
<b>straight plug M12 on free conductor end</b>				
2171031	IE-PNB-5-M12D-S-1-Y-2-22-7-OE	2x2xAWG22	1	31,3
2171032	IE-PNB-5-M12D-S-2-Y-2-22-7-OE	2x2xAWG22	2	62,6
2171033	IE-PNB-5-M12D-S-3-Y-2-22-7-OE	2x2xAWG22	3	93,9
2171034	IE-PNB-5-M12D-S-5-Y-2-22-7-OE	2x2xAWG22	5	156,5
2171035	IE-PNB-5-M12D-S-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171036	IE-PNB-5-M12D-S-20-Y-2-22-7-OE	2x2xAWG22	20	626
<b>angled plug M12 on free conductor end</b>				
2171043	IE-PNB-5-M12D-A-1-Y-2-22-7-OE	2x2xAWG22	1	31,3
2171044	IE-PNB-5-M12D-A-2-Y-2-22-7-OE	2x2xAWG22	2	62,6
2171045	IE-PNB-5-M12D-A-3-Y-2-22-7-OE	2x2xAWG22	3	93,9
2171046	IE-PNB-5-M12D-A-5-Y-2-22-7-OE	2x2xAWG22	5	156,5
2171047	IE-PNB-5-M12D-A-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171048	IE-PNB-5-M12D-A-20-Y-2-22-7-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN Flex Cat.5 M12-RJ45

PROFINET Patchcord M12/RJ45



### Info

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

### Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



**Minimum bending radius**  
Flexing: 15 x outer diameter  
Fixed installation: 10 x outer diameter



**Protection rating**  
M12 - IP 67 / IP 69  
RJ45 - IP 20



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
Flexing: -20°C to +60°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug M12 on straight plug RJ45</b>				
2171214	IE-PNB-5-M12D-S-0,5-Y-2-22-7-RJ45	2x2xAWG22	0,5	15,65
2171215	IE-PNB-5-M12D-S-1-Y-2-22-7-RJ45	2x2xAWG22	1	31,3
2171216	IE-PNB-5-M12D-S-2-Y-2-22-7-RJ45	2x2xAWG22	2	62,6
2171217	IE-PNB-5-M12D-S-3-Y-2-22-7-RJ45	2x2xAWG22	3	93,9
2171218	IE-PNB-5-M12D-S-5-Y-2-22-7-RJ45	2x2xAWG22	5	156,5
2171219	IE-PNB-5-M12D-S-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171220	IE-PNB-5-M12D-S-20-Y-2-22-7-RJ45	2x2xAWG22	20	626
<b>angled plug M12 on straight plug RJ45</b>				
2171221	IE-PNB-5-M12D-A-0,5-Y-2-22-7-RJ45	2x2xAWG22	0,5	15,65
2171222	IE-PNB-5-M12D-A-1-Y-2-22-7-RJ45	2x2xAWG22	1	31,3
2171223	IE-PNB-5-M12D-A-2-Y-2-22-7-RJ45	2x2xAWG22	2	62,6
2171224	IE-PNB-5-M12D-A-3-Y-2-22-7-RJ45	2x2xAWG22	3	93,9
2171225	IE-PNB-5-M12D-A-5-Y-2-22-7-RJ45	2x2xAWG22	5	156,5
2171226	IE-PNB-5-M12D-A-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171227	IE-PNB-5-M12D-A-20-Y-2-22-7-RJ45	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® PN Flex Cat.5 RJ45**  
PROFINET Patchcord RJ45



**i Info**

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- For PROFINET applications type B
- Flexible use
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Norm references / Approvals**

- The cable is UL/CSA-certified (CMG)

**Product Make-up**

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry

**Minimum bending radius**  
During installation: 15 x outer diameter  
Fixed installation: 10 x outer diameter

**IP** **Protection rating**  
RJ45 - IP 20

**Z-∞** **Characteristic impedance**  
100 Ohm +- 15%

**Temperature range**  
During installation: -20°C to +60°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug RJ45 on straight plug RJ45</b>				
2171228	IE-PNB-5-RJ45-0,5-Y-2-22-7-RJ45	2x2xAWG22	0,5	15,65
2171229	IE-PNB-5-RJ45-1-Y-2-22-7-RJ45	2x2xAWG22	1	31,3
2171230	IE-PNB-5-RJ45-2-Y-2-22-7-RJ45	2x2xAWG22	2	62,6
2171231	IE-PNB-5-RJ45-3-Y-2-22-7-RJ45	2x2xAWG22	3	93,9
2171232	IE-PNB-5-RJ45-5-Y-2-22-7-RJ45	2x2xAWG22	5	156,5
2171233	IE-PNB-5-RJ45-10-Y-2-22-7-RJ45	2x2xAWG22	10	313
2171234	IE-PNB-5-RJ45-20-Y-2-22-7-RJ45	2x2xAWG22	20	626
<b>straight plug RJ45 on free conductor end</b>				
2171235	IE-PNB-5-RJ45-0,5-Y-2-22-7-OE	2x2xAWG22	0,5	15,65
2171236	IE-PNB-5-RJ45-1-Y-2-22-7-OE	2x2xAWG22	1	31,3
2171237	IE-PNB-5-RJ45-2-Y-2-22-7-OE	2x2xAWG22	2	62,6
2171238	IE-PNB-5-RJ45-3-Y-2-22-7-OE	2x2xAWG22	3	93,9
2171239	IE-PNB-5-RJ45-5-Y-2-22-7-OE	2x2xAWG22	5	156,5
2171240	IE-PNB-5-RJ45-10-Y-2-22-7-OE	2x2xAWG22	10	313
2171241	IE-PNB-5-RJ45-20-Y-2-22-7-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.  
For detailed technical information please refer to the data sheet



## ETHERLINE® PN FD Cat.5 M12

PROFINET Patchcord M12



### Info

- For PROFINET applications (D-coded)
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- For directly connecting two electric components
- Non-permanent connections allow for easy change of equipment
- CAT.5-Performance

### Application range

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Norm references / Approvals

- The cable is UL/CSA-certified (CMX)
- UL File Number: E249137

### Product Make-up

- Extra-fine wire, tinned braided conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 D-coded connectors
- 4 pole M12 connector with vibration protection

### Technical data

	ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Flexing: 8 x outer diameter
	<b>Protection rating</b> IP 67 / IP 69
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Flexing: -20°C to +60°C Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg / 1.000 pieces)
<b>straight plug M12 on straight plug M12</b>				
2171049	IE-PNC-5-M12D-S-1-P-2-22-FD-M12D-S	2x2xAWG22	1	31,3
2171050	IE-PNC-5-M12D-S-2-P-2-22-FD-M12D-S	2x2xAWG22	2	62,6
2171051	IE-PNC-5-M12D-S-3-P-2-22-FD-M12D-S	2x2xAWG22	3	93,9
2171052	IE-PNC-5-M12D-S-5-P-2-22-FD-M12D-S	2x2xAWG22	5	156,5
2171053	IE-PNC-5-M12D-S-10-P-2-22-FD-M12D-S	2x2xAWG22	10	313
2171054	IE-PNC-5-M12D-S-20-P-2-22-FD-M12D-S	2x2xAWG22	20	626
<b>angled plug M12 on straight plug M12</b>				
2171061	IE-PNC-5-M12D-A-1-P-2-22-FD-M12D-S	2x2xAWG22	1	31,3
2171062	IE-PNC-5-M12D-A-2-P-2-22-FD-M12D-S	2x2xAWG22	2	62,6
2171063	IE-PNC-5-M12D-A-3-P-2-22-FD-M12D-S	2x2xAWG22	3	93,9
2171064	IE-PNC-5-M12D-A-5-P-2-22-FD-M12D-S	2x2xAWG22	5	156,5
2171065	IE-PNC-5-M12D-A-10-P-2-22-FD-M12D-S	2x2xAWG22	10	313
2171066	IE-PNC-5-M12D-A-20-P-2-22-FD-M12D-S	2x2xAWG22	20	626
<b>straight plug M12 on free conductor end</b>				
2171055	IE-PNC-5-M12D-S-1-P-2-22-FD-OE	2x2xAWG22	1	31,3
2171056	IE-PNC-5-M12D-S-2-P-2-22-FD-OE	2x2xAWG22	2	62,6
2171057	IE-PNC-5-M12D-S-3-P-2-22-FD-OE	2x2xAWG22	3	93,9
2171058	IE-PNC-5-M12D-S-5-P-2-22-FD-OE	2x2xAWG22	5	156,5
2171059	IE-PNC-5-M12D-S-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171060	IE-PNC-5-M12D-S-20-P-2-22-FD-OE	2x2xAWG22	20	626
<b>angled plug M12 on free conductor end</b>				
2171067	IE-PNC-5-M12D-A-1-P-2-22-FD-OE	2x2xAWG22	1	31,3
2171068	IE-PNC-5-M12D-A-2-P-2-22-FD-OE	2x2xAWG22	2	62,6
2171069	IE-PNC-5-M12D-A-3-P-2-22-FD-OE	2x2xAWG22	3	93,9
2171070	IE-PNC-5-M12D-A-5-P-2-22-FD-OE	2x2xAWG22	5	156,5
2171071	IE-PNC-5-M12D-A-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171072	IE-PNC-5-M12D-A-20-P-2-22-FD-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



**ETHERLINE® PN FD Cat.5 M12-RJ45**  
PROFINET Patchcord M12/RJ45



**i Info**

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

**Application range**

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

**Norm references / Approvals**

- The cable is UL/CSA-certified (CMG)

**Product Make-up**

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcords with M12 connector, D-coded and RJ45-connector
- 4 pole M12 connector with vibration protection

**Technical data**

	ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Flexing: 8 x outer diameter
	<b>Protection rating</b> M12 - IP 67 / IP 69 RJ45 - IP 20
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Flexing: -20°C to +60°C Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>angled plug M12 on straight plug RJ45</b>				
2171271	IE-PNC-5-M12D-A-0,5-P-2-22-FD-RJ45	2x2xAWG22	0.5	15.65
2171272	IE-PNC-5-M12D-A-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171276	IE-PNC-5-M12D-A-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171273	IE-PNC-5-M12D-A-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171277	IE-PNC-5-M12D-A-20-P-2-22-FD-RJ45	2x2xAWG22	20	626
2171274	IE-PNC-5-M12D-A-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171275	IE-PNC-5-M12D-A-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5
<b>straight plug M12 on straight plug RJ45</b>				
2171264	IE-PNC-5-M12D-S-0,5-P-2-22-FD-RJ45	2x2xAWG22	0.5	15.65
2171265	IE-PNC-5-M12D-S-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171269	IE-PNC-5-M12D-S-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171266	IE-PNC-5-M12D-S-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171270	IE-PNC-5-M12D-S-20-P-2-22-FD-RJ45	2x2xAWG22	20	626
2171267	IE-PNC-5-M12D-S-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171268	IE-PNC-5-M12D-S-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## ETHERLINE® PN FD Cat.5 RJ45

PROFINET Patchcord RJ45



### Info

- For PROFINET applications
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

### Benefits

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.5-Performance

### Application range

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

### Product features

- Meets the requirements according to CAT.5e, ISO/IEC 11801 and EN 50173, Class D
- 2pair: 10/100 Mbit/s for Industrial Ethernet

### Norm references / Approvals

- The cable is UL/CSA-certified (CMG)

### Product Make-up

- Flexible fine-wire copper conductor
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with RJ45 connectors

### Technical data



ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry



**Minimum bending radius**  
Flexing: 8 x outer diameter



**Protection rating**  
RJ45 - IP 20



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
During installation: -20°C to +60°C  
Fixed installation: -30°C to +70°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>straight plug RJ45 on straight plug RJ45</b>				
2171278	IE-PNC-5-RJ45-0,5-P-2-22-FD-RJ45	2x2xAWG22	0,5	15.65
2171279	IE-PNC-5-RJ45-1-P-2-22-FD-RJ45	2x2xAWG22	1	31.3
2171280	IE-PNC-5-RJ45-2-P-2-22-FD-RJ45	2x2xAWG22	2	62.6
2171281	IE-PNC-5-RJ45-3-P-2-22-FD-RJ45	2x2xAWG22	3	93.9
2171282	IE-PNC-5-RJ45-5-P-2-22-FD-RJ45	2x2xAWG22	5	156.5
2171283	IE-PNC-5-RJ45-10-P-2-22-FD-RJ45	2x2xAWG22	10	313
2171284	IE-PNC-5-RJ45-20-P-2-22-FD-RJ45	2x2xAWG22	20	626
<b>straight plug RJ45 on free conductor end</b>				
2171285	IE-PNC-5-RJ45-0,5-P-2-22-FD-OE	2x2xAWG22	0,5	15.65
2171286	IE-PNC-5-RJ45-1-P-2-22-FD-OE	2x2xAWG22	1	31.3
2171287	IE-PNC-5-RJ45-2-P-2-22-FD-OE	2x2xAWG22	2	62.6
2171288	IE-PNC-5-RJ45-3-P-2-22-FD-OE	2x2xAWG22	3	93.9
2171289	IE-PNC-5-RJ45-5-P-2-22-FD-OE	2x2xAWG22	5	156.5
2171290	IE-PNC-5-RJ45-10-P-2-22-FD-OE	2x2xAWG22	10	313
2171291	IE-PNC-5-RJ45-20-P-2-22-FD-OE	2x2xAWG22	20	626

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. For detailed technical information please refer to the data sheet



**ETHERLINE® FD CAT.6<sub>A</sub> M12**



**Info**

- CAT.6<sub>A</sub> for drag chain, qualified for 10Gbit/s
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.6<sub>A</sub> qualified for 10Gbit/s

**Application range**

- For PROFINET applications type C
- Highly flexible application
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- CAT.6<sub>A</sub> for drag chain, qualified for 10Gbit/s
- Min. 2.5 million bending cycles in the power chain
- Meets the requirements according to CAT.6<sub>A</sub> ISO/IEC 11801 and EN 50173

**Product Make-up**

- 7-wire tinned stranded copper conductor
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with M12 X-coded connectors

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002599  
ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
- Minimum bending radius**  
Flexing: 15 x outer diameter
- IP** Protection rating  
IP 67
- Z<sub>∞</sub>** Characteristic impedance  
100 Ohm +- 15%
- Temperature range**  
Flexing: -30°C to +70°C  
Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>Straight connector on straight connector</b>				
2172000	IE-6A-M12X-S-0,5-P-4-24-FD-M12X-S	4x2xAWG24	0,5	22
2172001	IE-6A-M12X-S-1-P-4-24-FD-M12X-S	4x2xAWG24	1	44
2172002	IE-6A-M12X-S-2-P-4-24-FD-M12X-S	4x2xAWG24	2	88
2172003	IE-6A-M12X-S-3-P-4-24-FD-M12X-S	4x2xAWG24	3	132
2172004	IE-6A-M12X-S-5-P-4-24-FD-M12X-S	4x2xAWG24	5	220
2172005	IE-6A-M12X-S-10-P-4-24-FD-M12X-S	4x2xAWG24	10	440
2172006	IE-6A-M12X-S-20-P-4-24-FD-M12X-S	4x2xAWG24	20	880
<b>straight connector on free conductor end</b>				
2172007	IE-6A-M12X-S-0,5-P-4-24-FD-OE	4x2xAWG24	0,5	22
2172008	IE-6A-M12X-S-1-P-4-24-FD-OE	4x2xAWG24	1	44
2172009	IE-6A-M12X-S-2-P-4-24-FD-OE	4x2xAWG24	2	88
2172010	IE-6A-M12X-S-3-P-4-24-FD-OE	4x2xAWG24	3	132
2172011	IE-6A-M12X-S-5-P-4-24-FD-OE	4x2xAWG24	5	220
2172012	IE-6A-M12X-S-10-P-4-24-FD-OE	4x2xAWG24	10	440
2172013	IE-6A-M12X-S-20-P-4-24-FD-OE	4x2xAWG24	20	880
<b>Straight connector to straight socket</b>				
2172028	IE-6A-M12XF-S-0,5-P-4-24-FD-M12X-S	4x2xAWG24	0,5	22
2172029	IE-6A-M12XF-S-1-P-4-24-FD-M12X-S	4x2xAWG24	1	44
2172030	IE-6A-M12XF-S-2-P-4-24-FD-M12X-S	4x2xAWG24	2	88
2172031	IE-6A-M12XF-S-3-P-4-24-FD-M12X-S	4x2xAWG24	3	132
2172032	IE-6A-M12XF-S-5-P-4-24-FD-M12X-S	4x2xAWG24	5	220
2172033	IE-6A-M12XF-S-10-P-4-24-FD-M12X-S	4x2xAWG24	10	440
2172034	IE-6A-M12XF-S-20-P-4-24-FD-M12X-S	4x2xAWG24	20	880
<b>socket on free conductor end</b>				
2172170	IE-6A-M12XF-S-0,5-P-4-24-FD-OE	4x2xAWG24	0,5	22
2172171	IE-6A-M12XF-S-1-P-4-24-FD-OE	4x2xAWG24	1	44
2172172	IE-6A-M12XF-S-2-P-4-24-FD-OE	4x2xAWG24	2	88
2172173	IE-6A-M12XF-S-3-P-4-24-FD-OE	4x2xAWG24	3	132
2172174	IE-6A-M12XF-S-5-P-4-24-FD-OE	4x2xAWG24	5	220
2172175	IE-6A-M12XF-S-10-P-4-24-FD-OE	4x2xAWG24	10	440
2172176	IE-6A-M12XF-S-20-P-4-24-FD-OE	4x2xAWG24	20	880

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Other lengths and types of connectors are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466

**ETHERLINE® TORSION Cat.6<sub>A</sub> M12****Info**

- Industrial Ethernet Cable, 4-pair, suitable for torsion stress
- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request

**Benefits**

- Non-permanent connections allow for easy change of equipment
- For directly connecting two electric components
- CAT.6<sub>A</sub> qualified for 10Gbit/s

**Application range**

- For PROFINET applications type C
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Suitable for EtherCAT and EtherNet/IP applications
- Suitable for use in industrial applications
- For indoor use

**Product features**

- Meets the requirements according to CAT.6<sub>A</sub>, ISO/IEC 11801 and EN 50173
- Industrial Ethernet Cable, 4-pair, suitable for torsion stress

**Product Make-up**

- 7-wire tinned stranded copper conductor
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath made of PUR
- Colour: green (based on RAL 6018)
- Pre-assembled patchcord with M12 X-coded connectors

**Technical data**

	ETIM 5.0 Class-ID: EC002599 ETIM 5.0 Class-Description: Patch cord copper (twisted pair) industry
	<b>Minimum bending radius</b> Flexing: 15 x outer diameter
	<b>Protection rating</b> IP 67
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Flexing: -30°C to +70°C Fixed installation: -40°C to +80°C

Article number	Article designation	Number of pairs and AWG per conductor	Length (m)	Copper index (kg/1.000 pieces)
<b>Straight connector on straight connector</b>				
2172100	IE-6A-M12X-S-0,5-P-4-24-T-M12X-S	4x2xAWG24	0,5	22
2172101	IE-6A-M12X-S-1-P-4-24-T-M12X-S	4x2xAWG24	1	44
2172102	IE-6A-M12X-S-2-P-4-24-T-M12X-S	4x2xAWG24	2	88
2172103	IE-6A-M12X-S-3-P-4-24-T-M12X-S	4x2xAWG24	3	132
2172104	IE-6A-M12X-S-5-P-4-24-T-M12X-S	4x2xAWG24	5	220
2172105	IE-6A-M12X-S-10-P-4-24-T-M12X-S	4x2xAWG24	10	440
2172106	IE-6A-M12X-S-20-P-4-24-T-M12X-S	4x2xAWG24	20	880
<b>straight connector on free conductor end</b>				
2172107	IE-6A-M12X-S-0,5-P-4-24-T-OE	4x2xAWG24	0,5	22
2172108	IE-6A-M12X-S-1-P-4-24-T-OE	4x2xAWG24	1	44
2172109	IE-6A-M12X-S-2-P-4-24-T-OE	4x2xAWG24	2	88
2172110	IE-6A-M12X-S-3-P-4-24-T-OE	4x2xAWG24	3	132
2172111	IE-6A-M12X-S-5-P-4-24-T-OE	4x2xAWG24	5	220
2172112	IE-6A-M12X-S-10-P-4-24-T-OE	4x2xAWG24	10	440
2172113	IE-6A-M12X-S-20-P-4-24-T-OE	4x2xAWG24	20	880
<b>Straight connector to straight socket</b>				
2172128	IE-6A-M12XF-S-0,5-P-4-24-T-M12X-S	4x2xAWG24	0,5	22
2172129	IE-6A-M12XF-S-1-P-4-24-T-M12X-S	4x2xAWG24	1	44
2172130	IE-6A-M12XF-S-2-P-4-24-T-M12X-S	4x2xAWG24	2	88
2172131	IE-6A-M12XF-S-3-P-4-24-T-M12X-S	4x2xAWG24	3	132
2172132	IE-6A-M12XF-S-5-P-4-24-T-M12X-S	4x2xAWG24	5	220
2172133	IE-6A-M12XF-S-10-P-4-24-T-M12X-S	4x2xAWG24	10	440
2172134	IE-6A-M12XF-S-20-P-4-24-T-M12X-S	4x2xAWG24	20	880
<b>socket on free conductor end</b>				
2172177	IE-6A-M12XF-S-0,5-P-4-24-T-OE	4x2xAWG24	0,5	22
2172178	IE-6A-M12XF-S-1-P-4-24-T-OE	4x2xAWG24	1	44
2172179	IE-6A-M12XF-S-2-P-4-24-T-OE	4x2xAWG24	2	88
2172180	IE-6A-M12XF-S-3-P-4-24-T-OE	4x2xAWG24	3	132
2172181	IE-6A-M12XF-S-5-P-4-24-T-OE	4x2xAWG24	5	220
2172182	IE-6A-M12XF-S-10-P-4-24-T-OE	4x2xAWG24	10	440
2172183	IE-6A-M12XF-S-20-P-4-24-T-OE	4x2xAWG24	20	880

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- EPIC® DATA M12X refer to page 465
- EPIC® DATA CCR FA refer to page 466





**Info**

- For PROFINET applications
- Installation without tools

**EPIC® DATA PN AX RJ45**



**Product features**

- For PROFINET applications
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Colour-coded in accordance with PROFINET for Cat.5 applications

**Norm references / Approvals**

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

**Technical data**

	ETIM 5.0 Class-ID: EC002641 ETIM 5.0 Class-Description: Modular connector (industrial connector)
	<b>Protection rating</b> IP 20
	<b>Ambient temperature (operation)</b> -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire
<b>EPIC® DATA PN AX RJ45</b>							
21700605	ED-IE-AX-5-PN-20-FC	5	9	1.6	1	24 - 22	27 - 22

Photographs are not to scale and do not represent detailed images of the respective products.  
10 pieces in one blister



**Info**

- For PROFINET applications
- Installation without tools
- 4 different angled cable outlets possible

**EPIC® DATA PN 90 RJ45**



**Product features**

- For PROFINET applications
- Cable outlet in 4 different 90° angles possible
- Housing: zinc die-casting, grey
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Colour-coded in accordance with PROFINET for Cat.5 applications

**Norm references / Approvals**

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

**Technical data**

	ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	<b>Protection rating</b> IP 20
	<b>Ambient temperature (operation)</b> -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire
<b>EPIC® DATA PN 90 RJ45</b>							
21700638	ED-IE-90-6 <sub>A</sub> -PN-20-FC	5.5	10	1	1.6	24 - 22	27 - 22

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA AX RJ45 Cat.6<sub>A</sub>



### Info

- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Installation without tools

### Product features

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm

- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

### Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

### Technical data

ETIM 5.0 Class-ID: EC001121  
ETIM 5.0 Class-Description: Modular connector

**Protection rating**  
IP 20

**Ambient temperature (operation)**  
-40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
<b>RJ45 connector acc. to T568A</b>								
21700600	EPIC® DATA ED-IE-AX-6 <sub>A</sub> -A-20-FC	5	9	1	1.6	24 - 22	27 - 22	
<b>RJ45 connector acc. to T568A, specifically for cables with 19-wire cores</b>								
21700615	EPIC DATA ED-IE-AX-6 <sub>A</sub> -A-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26
<b>RJ45 connector acc. to T568B</b>								
21700601	EPIC® DATA ED-IE-AX-6 <sub>A</sub> -B-20-FC	5	9	1	1.6	24 - 22	27 - 22	
<b>RJ45 connector acc. to T568B, specifically for cables with 19-wire cores</b>								
21700616	EPIC DATA ED-IE-AX-6 <sub>A</sub> -B-20-FD-FC	5	9	0.85	1.1	26 - 24	27 - 24	26

Photographs are not to scale and do not represent detailed images of the respective products.

10 pieces in one blister

An approval is necessary for 19-wire cables by Lapp Group



## EPIC® DATA RJ45F Cat.6A

RJ45 female connector



### Product features

- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm

- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

### Norm references / Approvals

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

### Technical data

ETIM 5.0 Class-ID: EC001121  
ETIM 5.0 Class-Description: Modular connector

**Protection rating**  
IP 20

**Ambient temperature (operation)**  
-40°C to +70°C

Article number	Article designation
<b>RJ45 Modul acc. to T568A</b>	
21700611	ED-IE-AX-RJ45F-6 <sub>A</sub> -A-FC
<b>RJ45 Modul acc. to T568B</b>	
21700612	ED-IE-AX-RJ45F-6 <sub>A</sub> -B-FC

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® DATA 90 RJ45 Cat.6<sub>A</sub>**



**Info**

- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Installation without tools
- 4 different angled cable outlets possible

**Product features**

- Cable outlet in 4 different 90° angles possible
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG24/1- 22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

**Norm references / Approvals**

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

**Technical data**

	ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	<b>Protection rating</b> IP 20
	<b>Ambient temperature (operation)</b> -40°C to +85°C

Article number	Article designation	Min. outer diameter (mm)	Max. outer diameter (mm)	Min. Core diameter in mm	Max. Core diameter in mm	AWG solid	AWG 7-wire	AWG 19-wire
<b>RJ45 connector acc. to T568A</b>								
21700636	ED-IE-90-6 <sub>A</sub> -A-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
<b>RJ45 connector acc. to T568A, specifically for cables with 19-wire cores</b>								
21700639	ED-IE-90-6 <sub>A</sub> -A-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26
<b>RJ45 connector acc. to T568B</b>								
21700637	ED-IE-90-6 <sub>A</sub> -B-20-FC	5.5	10	1	1.6	24 - 22	27 - 22	
<b>RJ45 connector acc. to T568B, specifically for cables with 19-wire cores</b>								
21700640	ED-IE-90-6 <sub>A</sub> -B-20-FD-FC	5.5	10	0.85	1.1	26 - 24	27 - 24	26

Photographs are not to scale and do not represent detailed images of the respective products. An approval is necessary for 19-wire cables by Lapp Group

**Info**

- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Installation without tools

**Product features**

- Housing: brass nickel plated
- Qualified for 10 Gigabit Ethernet
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1
- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm

**Norm references / Approvals**

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-File E353543)

**Technical data**

	ETIM 5.0 Class-ID: EC002635 ETIM 5.0 Class-Description: Circular connector (industrial connector)
	<b>Protection rating</b> IP 68
	<b>Ambient temperature (operation)</b> Plug/socket -40°C to +70°C circular housing: -40°C to +85°C

Article number	Article designation
<b>circular connector (male) inclusive RJ45 connector</b>	
21700630	ED-IE-AX-RJ45-6 <sub>A</sub> -B-68-FC
<b>dust cap for RJ45 connector</b>	
21700631	ED-IE-AX-RJ45-AC-DC
<b>circular bulkhead housing inclusive RJ45 Modul acc. to T568B</b>	
21700632	ED-IE-RJ45F-6 <sub>A</sub> -B-68-FC
<b>dust cap for RJ45 Modul</b>	
21700633	ED-IE-RJ45F-AC-DC

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA HS RJ45F Cat.6<sub>A</sub>

Cat.6<sub>A</sub> rail mount adapter



### Product features

- Plastic housing including Easy Connect RJ45 Modul Cat.6<sub>A</sub> 10G
- Suitable for use in industrial applications
- Integrated strain relief for cable O.D. to 9 mm
- Colour: light grey (RAL 7035)
- Suitable for stranded cores with AWG27/7 -22/7 and for solid conductors with AWG26/1- 22/1

### Norm references / Approvals

- Field assembly Industrial Ethernet module RJ45 according to IEC 60603-7-51

### Technical data

	ETIM 5.0 Class-ID: EC001121 ETIM 5.0 Class-Description: Modular connector
	<b>Protection rating</b> IP 20
	<b>Ambient temperature (operation)</b> -40°C to +70°C

Article number	Article designation
<b>Inclusive RJ45 Modul acc. to T568A</b>	
21700613	EPIC DATA HS RJ45 F 10G A
<b>Inclusive RJ45 Modul acc. to T568B</b>	
21700614	EPIC DATA HS RJ45 F 10G B

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® DATA M12D

M12 D-coded connectors



### Product features

- Field assembly Industrial Ethernet connector, M12 D-coded according to IEC 61076-2-101
- Suitable for use in industrial applications
- Robust and vibrations- resistant
- Insulation displacement contacts for conductor diameter of AWG26 - AWG22; max. outer diameter 8 mm
- Toolfree installation, small and compact design

### Norm references / Approvals

- Data transmission is conform to category Cat.5 acc. to ISO 11801

### Info

- CAT.5-Performance
- Installation without tools

### Technical data

	<b>Protection rating</b> IP 67
	<b>Ambient temperature (operation)</b> Plug/socket -40°C to +85°C

Article number	Article designation
<b>PROFINET/ETHERNET, 4-pin straight connector, fast-connection</b>	
22260820	AB-C4-M12MSD-SH
<b>PROFINET/ETHERNET, 4-pin straight socket, fast-connection</b>	
22261016	AB-C4-M12FSD-SH

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® DATA M12X**  
M12 X-coded connectors

**Info**

- CAT.6<sub>A</sub> qualified for 10Gbit/s
- Installation without tools



- Product features**
- Field assembly Industrial Ethernet connector, M12 X-coded according to IEC 61076-2-109
  - Qualified for 10 Gigabit Ethernet
  - Suitable for use in industrial applications
  - Robust and vibrations-resistant
  - Housing: zinc die-casting, grey
  - Insulation displacement contacts for conductor diameter of AWG27/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm
  - Toolfree installation, small and compact design

- Norm references / Approvals**
- Acc. to standard IEC 61076-2-109
  - Data transmission is conform to category Cat.6<sub>A</sub> acc. to ISO/IEC 11801:2010

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC002635  
ETIM 5.0 Class-Description: Circular connector (industrial connector)
- IP** **Protection rating**  
IP 67
- Ambient temperature (operation)**  
Plug/socket -40°C to +85°C

Article number	Article designation
<b>M12 x-coded male connector straight</b>	
21700602	ED-IE-AX-M12X-6 <sub>A</sub> -67-FC
<b>M12 x-coded female connector straight</b>	
21700621	ED-IE-AX-M12XF-6 <sub>A</sub> -67-FC
<b>M12 x-coded female connector straight for wall mounting</b>	
21700622	ED-IE-AX-M12XF-RM-6 <sub>A</sub> -67-FC

Photographs are not to scale and do not represent detailed images of the respective products.

**EPIC® DATA FT IE**  
Industrial Ethernet feed through



- Product features**
- Designs for front and rear wall-mounting
  - M12 panel feed-throughs for direct connecting with PCB
  - Can be used for Industrial Ethernet in harsh industrial environments
  - Housing: zinc die-casting, grey

- Norm references / Approvals**
- Acc. to standard IEC 61076-2
  - D-coded: Cat.5 acc. to ISO 11801  
X-coded: Cat.6<sub>A</sub> acc. to ISO 11801

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001121  
ETIM 5.0 Class-Description: Modular connector
- IP** **Protection rating**  
IP 67
- Ambient temperature (operation)**  
-25°C to +85°C

Article number	Article designation
<b>M12 feed through, socket on socket, D-coded</b>	
22262022	AB-C4-DSI-M12FSD-M12FSD-M16-SH
<b>M12 flush-type connector socket for front-mounting, X-coded</b>	
21700617	ED-IE-M12F-X-FM
<b>M12 flush-type connector socket for rear-mounting, solder contacts, X-coded</b>	
21700618	ED-IE-M12F-X-RM

Photographs are not to scale and do not represent detailed images of the respective products.

Connectors for industrial cabling • Cable coupler



## EPIC® DATA CCR FA

Cable coupler round



### Product features

- Field mountable cable coupler for data cables up to Cat.7<sub>A</sub>
- Compact, round design
- Qualified for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibrations-resistant
- Housing: zinc die-casting, grey

- Insulation displacement contacts for conductor diameter of AWG24/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter 9,7 mm

### Norm references / Approvals

- Compliance to class F<sub>A</sub> up to 1000 MHz in connection with Cat.7<sub>A</sub> cables
- Data transmission is conform to category Cat.7<sub>A</sub> acc. to ISO/IEC 11801

### Info

- Cable coupler round class F<sub>A</sub>
- Installation without tools

### Technical data

	ETIM 5.0 Class-ID: EC000371 ETIM 5.0 Class-Description: Telecommunication terminal strip
	<b>Protection rating</b> IP 67
	<b>Ambient temperature (operation)</b> Plug/socket -40°C to +85°C

Article number	Article designation
EPIC® DATA CCR FA	
21700623	EPIC® DATA CCR FA

Photographs are not to scale and do not represent detailed images of the respective products.

Ethernet cable for structured building cabling • Cables for fixed installation



## UNITRONIC® LAN 200 - Cat.5e

Fixed installation



### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T
- IEEE 802.5: ISDN; FDDI; ATM

### Norm references / Approvals

- LAN CAT.5e cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class D).

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Minimum bending radius</b> during installation: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Operating temperature: -20°C to +60°C During installation: 0°C to +50°C

### Product Make-up

- Solid conductor
- U/UTP: no overall or pair shielding
- F/UTP: foil screening as overall screening
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- Outer sheath either as PVC or LSZH (color grey RAL 7035)

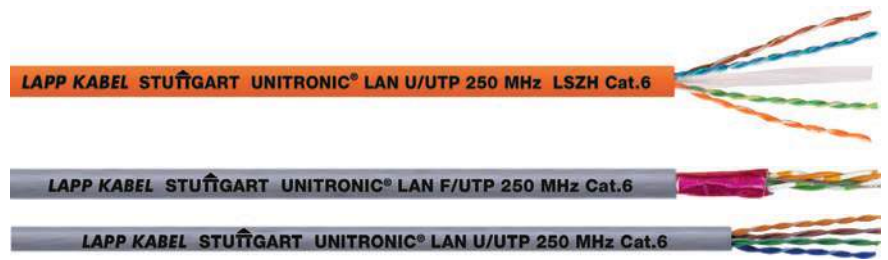
Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC version</b>					
2170125	200 U/UTP Cat.5e	4 x 2 x AWG24/1	5.6	17	33
2170126	200 F/UTP Cat.5e	4 x 2 x AWG24/1	6.4	18	39
2170128	200 SF/UTP Cat.5e	4 x 2 x AWG24/1	6.7	32	49
<b>Halogen-free versions</b>					
2170173	200 U/UTP Cat.5e LSZH	4 x 2 x AWG24/1	5.6	17	33
2170138	200 SF/UTP Cat.5e LSZH	4 x 2 x AWG24/1	6.7	32	49

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® LAN 250 - Cat.6

Fixed installation



### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

### Product features

- Transfer of digital and analogue data signals
- LAN Cat.6 cables are specified up to 350 MHz
- IEEE 802.3: 10/100/1000Base-T  
IEEE 802.5: ISDN; FDDI; ATM

### Norm references / Approvals

- Class E out of the standard ISO/IEC 11801 corresponds to CAT.6
- LAN CAT.6 cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class E - permanent link).

### Product Make-up

- Solid conductor
- U/UTP: no overall or pair shielding
- F/UTP: foil screening as overall screening
- Outer sheath either as PVC (color grey RAL1015) or LSZH (color orange RAL2003)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Minimum bending radius</b> during installation: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Operating temperature: -20°C to +60°C During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC versions</b>					
2170186	250 U/UTP Cat.6	4 x 2 x AWG24/1	6,5	18	46
<b>Halogen-free versions</b>					
2170193	250 U/UTP Cat.6 LSZH	4x2xAWG24/1	6,5	18	46
2170194	250 F/UTP Cat.6 LSZH	4x2xAWG24/1	7,5	19	54

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

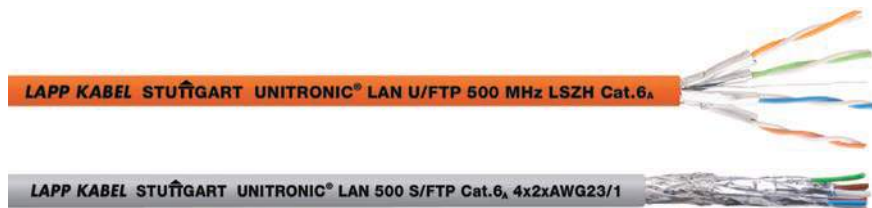
### Accessories

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 476
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463



## UNITRONIC® LAN 500 - Cat.6<sub>A</sub>

Fixed installation



### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T IEEE 802.5: ISDN; FDDI; ATM

### Norm references / Approvals

- Class E<sub>A</sub> out of the standard ISO/IEC 11801 corresponds to Cat.6<sub>A</sub>
- LAN Cat.6<sub>A</sub> cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class E<sub>A</sub> - permanent link).

### Product Make-up

- Solid conductor
- U/FTP: aluminium compound foil as pair screening
- F/FTP: aluminium compound foil as overall screening and pair screening
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath either as PVC (color grey RAL1015) or LSZH (color orange RAL2003)

### Technical data

ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable

**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter

**Characteristic impedance**  
100 Ohm +/- 15%

**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC version</b>					
2170143	500 S/FTP Cat.6 <sub>A</sub>	4 x 2 x AWG23/1	7.7	27	58
<b>Halogen-free versions</b>					
2170195	500 U/FTP Cat.6 <sub>A</sub> LSZH	4 x 2 x AWG23/1	7.4	21	52
2170196	500 F/FTP Cat.6 <sub>A</sub> LSZH	4 x 2 x AWG23/1	7.6	22	56

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Coil 100 m; Drum (500; 1000) m

CAT.6a is available as a draft

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463
- DATA STRIP stripping tool refer to page 1001





## UNITRONIC® LAN 1000 S/FTP Cat.7

Fixed installation



### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE

### Norm references / Approvals

- Class F in the ISO/IEC 11801 standard corresponds to CAT.7

### Product Make-up

- Solid conductor
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 7032)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Minimum bending radius</b> during installation: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +/- 15%
	<b>Temperature range</b> Operating temperature: -20°C to +60°C During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Halogen-free versions</b>					
2170614	1000 S/FTP Cat.7 LSZH	4 x 2 x AWG23/1	7.7	27	60
2170634	1000 S/FTP Cat.7 duplex	2 x (4 x 2 x AWG23/1)	7.7 x 15.4	54	120

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil 100 m; Drum (500; 1000) m  
 Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
 Photographs are not to scale and do not represent detailed images of the respective products.



## UNITRONIC® LAN 1200 S/FTP Cat.7<sub>A</sub>



### Info

- Complies with the EN 50173 and ISO/IEC 11801 standards

### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- The cable is specified for up to 1.2 GHz
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE

### Norm references / Approvals

- LAN Cat.7<sub>A</sub> cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class F<sub>A</sub> - permanent link).
- Exceeds the requirements of EN 50173 and ISO/IEC 11801 standards

### Product Make-up

- Solid bare copper wire AWG22
- Cellular polyolefin core insulation, max. core diameter 1.6 mm
- Pair screen made of aluminium-lined plastic foil, overall screening made of tinned-copper braiding
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 7032)

### Technical data



ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable



**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Characteristic impedance**  
100 Ohm +/- 15%



**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>UNITRONIC® LAN 1200 S/FTP Cat.7<sub>A</sub></b>					
2170615	1200 S/FTP Cat.7 <sub>A</sub> LSZH	4 x 2 x AWG22/1	8.1	34	66
2170618	1200 S/FTP Cat.7 <sub>A</sub> LSZH duplex	4 x 2 x AWG22	16.3	68	132

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Drum

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- LANmark-7A GG45 SnapIn Connector refer to page 478
- Multipurpose shears A and B refer to page 998
- DATA STRIP stripping tool refer to page 1001



## UNITRONIC® LAN 1500 S/FTP Cat.7<sub>A</sub>

LAPP KABEL STUTTGART UNITRONIC® LAN S/FTP 1500 MHz Cat.7A



### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

### Product features

- Transfer of digital and analogue data signals
- Cable is specified for up to 1.5 GHz
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE, VoIP

### Norm references / Approvals

- LAN Cat.7<sub>A</sub> cables from Lapp Kabel for “Structured Cabling Systems” meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class F<sub>A</sub> - permanent link).
- Exceeds the requirements of EN 50173 and ISO/IEC 11801 standards

### Product Make-up

- Solid bare copper wire AWG22
- Cellular polyolefin core insulation, max. core diameter 1.6 mm
- Pair screen made of aluminium-lined plastic foil, overall screening made of tinned-copper braiding
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 7032)

### Technical data

	ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	<b>Minimum bending radius</b> during installation: 8 x outer diameter Fixed installation: 4 x outer diameter
	<b>Characteristic impedance</b> 100 Ohm +- 15%
	<b>Temperature range</b> Operating temperature: -20°C to +60°C During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)
UNITRONIC® LAN 1500 S/FTP Cat.7 <sub>A</sub>				
2170199	1500 S/FTP Cat.7A LSZH	4 x 2 x AWG22/1	8.5	42

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- LANmark-7A GG45 SnapIn Connector refer to page 478



## UNITRONIC® LAN OUTDOOR

Fixed installation



**Info**

- Data cable for primary, secondary and tertiary cabling with PE outer sheath for outdoor applications
- Suitable for direct burial

### Benefits

- Suitable for outdoor use and direct burial
- UV-resistant longitudinally and laterally watertight
- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- For outdoor use
- Suitable for direct burial
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE

### Norm references / Approvals

- LAN Cat.7 cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class F - permanent link).

### Product Make-up

- Solid conductor
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Core insulation: foamed polyolefin
- PE outer sheath
- Colour: black (RAL 9005)

### Technical data

- ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Minimum bending radius**  
During installation: 10 x outer diameter  
Fixed installation: 4 x outer diameter
- Characteristic impedance**  
100 Ohm +/- 15%
- Temperature range**  
During installation: -15 °C to +60 °C  
Operation: -40 °C to +70 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>Suitable for direct burial</b>					
2170198	1000 S/FTP Cat.7 (L)PE	4 x 2 x AWG23/1	10.0	34	90
<b>Suitable for direct routing underground, not transversely waterproof</b>					
2170197	1000 S/FTP Cat.7 PE	4 x 2 x AWG23/1	9.6	34	75

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil 100 m; Drum (500; 1000) m  
Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
Photographs are not to scale and do not represent detailed images of the respective products.



**UNITRONIC® LAN FLEX**

Flexible use

**Info**

- Only for patch cable applications (max. 60 m)



**Benefits**

- For directly connecting two electric components
- Easy to assemble

**Application range**

- Indoor applications
- LAN connections
- Control cabinet wiring

**Product features**

- Good flexibility - easy installation with tight space requirements

**Product Make-up**

- F/UTP: foil screening as overall screening
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath either as PVC or LSZH (color grey RAL 7035)

**Technical data**

- ETIM 5.0 Class-ID: EC000830  
ETIM 5.0 Class-Description: Data cable
- Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter
- Characteristic impedance**  
100 Ohm +- 15%
- Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C

Article number	Article designation	Number of pairs and AWG per conductor	Max. outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
<b>PVC versions</b>					
2170127	200 F/UTP Cat.5e	4 x 2 x AWG26/7	5.6	13	28
2170129	200 SF/UTP Cat.5e	4 x 2 x AWG26/7	6.0	22	36
2170144	600 S/FTP CAT7 Y	4 x 2 x AWG26/7	6.5	22	39
<b>Halogen-free versions</b>					
2170172	200 F/UTP Cat.5e LSZH	4 x 2 x AWG26/7	5.6	13	28
2170139	200 SF/UTP Cat.5e LSZH	4 x 2 x AWG26/7	6.0	22	36
2170142	600 S/FTP CAT7 LSZH	4 x 2 x AWG26/7	6.2	21	40

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil 100 m; Drum (500; 1000) m  
 Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- Field-Terminable Connector RJ45 CAT.5e FM45 refer to page 476
- EPIC® DATA AX RJ45 Cat.6<sub>A</sub> refer to page 462
- EPIC® DATA 90 RJ45 Cat.6<sub>A</sub> refer to page 463



## Patchcable RJ45 CAT.5e



### Application range

- Indoor applications
- Building Installation

### Product features

- F/UTP patch cable CAT.5e
- Foil screening, 300 MHz, grey, FRNC, with Hirose TM 11 connector, also available in different colours, allocation according to TIA/EIA 568B

- S/FTP patch cable CAT.5e
- Foil and braid screening, 300 MHz, grey, FRNC, with Hirose TM 11 connector, also available in different colours, allocation according to TIA/EIA 568B

### Technical data



ETIM 5.0 Class-ID: EC000309  
ETIM 5.0 Class-Description:  
Module for active network component/  
network unit

Article number	Article designation	Colour	Length (m)
<b>F/UTP patch cable CAT.5e</b>			
CE6547	F/UTP Patch Cable CAT.5e 0,5m GY	grey	0.5
CE6548	F/UTP Patch Cable CAT.5e 1m GY	grey	1
CE6549	F/UTP Patch Cable CAT.5e 1,5m GY	grey	1.5
CE6550	F/UTP Patch Cable CAT.5e 2m GY	grey	2
CE6551	F/UTP Patch Cable CAT.5e 3m GY	grey	3
CE6552	F/UTP Patch Cable CAT.5e 5m GY	grey	5
CE6553	F/UTP Patch Cable CAT.5e 7,5m GY	grey	7.5
CE6554	F/UTP Patch Cable CAT.5e 10m GY	grey	10
CE6555	F/UTP Patch Cable CAT.5e 15m GY	grey	15
CE6556	F/UTP Patch Cable CAT.5e 20m GY	grey	20
<b>S/FTP patch cable CAT.5e</b>			
CE6647	SF/UTP Patch Cable CAT.5e 0,5m GY	grey	0.5
CE6648	Patchcable RJ45 CAT.5e S-FTP 1.0m	grey	1
CE6649	SF/UTP Patch Cable CAT.5e 1,5m GY	grey	1.5
CE6650	SF/UTP Patch Cable CAT.5e 2m GY	grey	2
CE6651	SF/UTP Patch Cable CAT.5e 3m GY	grey	3
CE6652	SF/UTP Patch Cable CAT.5e 5m GY	grey	5
CE6653	SF/UTP Patch Cable CAT.5e 7,5m GY	grey	7.5
CE6654	SF/UTP Patch Cable CAT.5e 10m GY	grey	10
CE6655	SF/UTP Patch Cable CAT.5e 15m GY	grey	15
CE6656	SF/UTP Patch Cable CAT.5e 20m GY	grey	20

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Other colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## Patchcable RJ45 CAT.6 S/FTP



### Application range

- Indoor applications
- For use in the workplace (tertiary area) to connect various devices within the scope of "Structured Cabling"

### Product features

- PiMF 500 MHz, with Hirose TM21 connector
- Halogen-free
- Configuration is in accordance with TIA/EIA 568B
- Colour: grey; other colours are available upon request

### Technical data



ETIM 5.0 Class-ID: EC000309  
ETIM 5.0 Class-Description:  
Module for active network component/  
network unit

Article number	Article designation	Colour	Length (m)
<b>S-STP patch cable CAT.6</b>			
CE6847	S/FTP Patchcable CAT.6 0,5m GY	grey	0.5
CE6848	S/FTP Patchcable CAT.6 1m GY	grey	1
CE6849	S/FTP Patchcable CAT.6 1,5m GY	grey	1.5
CE6850	S/FTP Patchcable CAT.6 2m GY	grey	2
CE6851	S/FTP Patchcable CAT.6 3M GY	grey	3
CE6852	S/FTP Patchcable CAT.6 5m GY	grey	5
CE6853	S/FTP Patchcable CAT.6 7,5m GY	grey	7.5
CE6854	S/FTP Patchcable CAT.6 10m GY	grey	10
CE6855	S/FTP Patchcable CAT.6 15m GY	grey	15
CE6856	S/FTP Patchcable CAT.6 20m GY	grey	20

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Other colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## LANmark-6 RJ45 Patchcord

### Product features

- 10Gigabit Ethernet
- The patchcord fully complies to Category 6, maximising the channel performance and exceeding the requirements of ISO/IEC 11801:2002 as part of a LANmark-6 wiring of Class E. This offers an improved data transmission rates and enables the inclusion of consolidation points for maximum system flexibility.
- Halogen-free, flame-retardant sheath with lower smoke development
- Screened version

### Technical data



ETIM 5.0 Class-ID: EC000309  
 ETIM 5.0 Class-Description:  
 Module for active network component/  
 network unit



Article number	Article designation	Colour	Length (m)
<b>LANmark-6 RJ45 Patchcord</b>			
CE6147	LANmark-6 RJ45 Patchcord 0.5m	orange	0.5
CE6148	LANmark-6 RJ45 Patchcord 1.0m	orange	1
CE6149	LANmark-6 RJ45 Patchcord 1.5m	orange	1.5
CE6150	LANmark-6 RJ45 Patchcord 2.0m	orange	2
CE6151	LANmark-6 RJ45 Patchcord 3.0m	orange	3
CE6152	LANmark-6 RJ45 Patchcord 5.0m	orange	5
CE6154	LANmark-6 RJ45 Patchcord 10.0m	orange	10
CE6155	LANmark-6 RJ45 Patchcord 15.0m	orange	15

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

### Info

- Cat.5e

### Product features

- For interconnecting two computers without the use of a central active component (hub, switch...).
- SF/UTP: braid of tinned copper wire and plastic laminated aluminum foil as overall screening

- Outer sheath: halogen-free, flame-retardant compound
- Hirose TM 11 connector
- Outer sheath and anti-kink sleeve colour: red

### Technical data



ETIM 5.0 Class-ID: EC000309  
 ETIM 5.0 Class-Description:  
 Module for active network component/  
 network unit



## S-FTP Patchcable Crossover RJ45 CAT.5e

Article number	Article designation	Colour	Length (m)
<b>Crossover patch cable</b>			
CE6660	Crossover Patchcable RJ45 CAT.5e S-FTP 2.0m	red	2
CE6661	Crossover Patchcable RJ45 CAT.5e S-FTP 3.0m	red	3
CE6662	Crossover Patchcable RJ45 CAT.5e S-FTP 5.0m	red	5
CE6664	Crossover Patchcable RJ45 CAT.5e S-FTP 10.0m	red	10

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## Connector RJ45 CAT.5 Hirose TM11



### Product features

- Screened version
- Suitable for stranded conductors (AWG26)
- Included: bend protection and guide plate
- Anti-kink protection: beige
- Max. outer sheath diameter: 5.8 mm

### Technical data



ETIM 5.0 Class-ID: EC002641  
ETIM 5.0 Class-Description:  
Modular connector (industrial connector)

Article number	Article designation
<b>Connector RJ45 CAT.5 Hirose TM11</b>	
CE6321	Connector RJ45 CAT.5 Hirose TM11

Hirose is a registered trademark of the HIROSE ELECTRIC Group

Other colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Crimping tool RJ45 Hirose refer to page 478

## Connector RJ45 CAT.5 Stewart SS37



### Product features

- Screened version
- Suitable for stranded conductors (AWG26)
- Included: bend protection and guide plate
- Anti-kink protection: light grey
- Max. outer sheath diameter: 5.72 mm

### Technical data



ETIM 5.0 Class-ID: EC002641  
ETIM 5.0 Class-Description:  
Modular connector (industrial connector)

Article number	Article designation
<b>Connector RJ45 CAT.5 Stewart SS37</b>	
CE6323	Connector RJ45 CAT.5 Stewart SS37

Stewart is a registered trademark of Bel Fuse Inc.

Other colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Crimping tool RJ45 Stewart refer to page 479

## Field-Terminable Connector RJ45 CAT.5e FM45



### Product features

- Screened version
- Suitable for AWG 23 - 26, AWG 22 possible with restrictions
- IDC/piercing terminal according to 60352-4
- Suitable for solid and stranded conductors
- Suitable for use in industrial applications

### Technical data



ETIM 5.0 Class-ID: EC002641  
ETIM 5.0 Class-Description:  
Modular connector (industrial connector)



**Protection rating**  
IP 20



**Ambient temperature (operation)**  
-20°C to +70°C

Article number	Article designation
<b>RJ45 connector acc. to T568A</b>	
21700540	Field-Terminable Connector RJ45 CAT.5e FM45

Photographs are not to scale and do not represent detailed images of the respective products.




## Connector RJ45 CAT.6 Hirose TM21

### Product features

- Channel Class E up to 250 MHz (CAT.6)
- Fully screened
- Conductor: Ø 0.5 mm solid wire:  
AWG 24 & 26;  
guide plate for 1.1 mm diameter wire;  
cable outer diameter: 6.6 mm
- Easy to handle
- Included: bend protection and guide plate
- Anti-kink protection: beige
- Suitable for solid and stranded conductors

### Technical data

	ETIM 5.0 Class-ID: EC002641
	ETIM 5.0 Class-Description: Modular connector (industrial connector)



Article number	Article designation
<b>Connector RJ45 CAT.6 Hirose TM21</b>	
CE6324	Connector RJ45 CAT.6 Hirose TM21

Hirose is a registered trademark of the HIROSE ELECTRIC Group  
Other colours are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories


- Crimping tool RJ45 Hirose refer to page 478

## LANmark-6 EVO SnapIn Connector

### Product features

- CAT.6 socket screened incl. EMC cover
- Colour-coded in accordance with EIA/TIA 568A and B
- Fast and optimised termination of all 8 cores
- Suitable for modular components
- All services of CAT.6/Class E according to EN 50173:2002 and ISO/IEC 11801:2002 are supported:
- 10BaseT

### Technical data

	ETIM 5.0 Class-ID: EC002641
	ETIM 5.0 Class-Description: Modular connector (industrial connector)



Article number	Article designation
<b>LANmark-6 EVO SnapIn Connector</b>	
62104	LANmark-6 EVO SnapIn Connector


Photographs are not to scale and do not represent detailed images of the respective products.

## LANmark-6 EVO SnapIn Connector AWG26

### Product features

- CAT.6 socket screened incl. EMC cover
- Colour-coded in accordance with EIA/TIA 568A and B
- Fast and optimised termination of all 8 cores
- Suitable for modular components
- All services of CAT.6/Class E according to EN 50173:2002 and ISO/IEC 11801:2002 are supported:

### Technical data

	ETIM 5.0 Class-ID: EC002641
	ETIM 5.0 Class-Description: Modular connector (industrial connector)



Article number	Article designation
<b>LANmark-6 EVO SnapIn Connector AWG26</b>	
62105	LANmark-6 EVO SnapIn Connector AWG26

Photographs are not to scale and do not represent detailed images of the respective products.

## LANmark-6 EVO SnapIn Connector 10G



### Product features

- Suitable for AWG 22, 23 and 24
- Colour-coded in accordance with EIA/TIA 568A and B
- Fast and optimised termination of all 8 cores
- Suitable for modular components
- All services of CAT.6/Class E according to EN 50173:2002 and ISO/IEC 11801:2002, as well as for 10 Gigabit Ethernet according to IEEE 802.3an draft 1.11, are supported:

### Technical data



ETIM 5.0 Class-ID: EC001121  
ETIM 5.0 Class-Description:  
Modular connector

Article number	Article designation
<b>LANmark-6 EVO SnapIn Connector 10G</b>	
62106	LANmark-6 EVO SnapIn Connector 10G

Photographs are not to scale and do not represent detailed images of the respective products.

## LANmark-7<sub>A</sub> GG45 SnapIn Connector



### Product features

- CAT.7 GG45 socket screened incl. EMC cover
- Suitable for AWG 22, 23 and 24
- Colour-coded in accordance with EIA/TIA 568A and B
- Fast and optimised termination of all 8 cores
- Suitable for modular components
- All applications defined for CAT.5 / 6 and 7 are supported:

### Technical data



ETIM 5.0 Class-ID: EC002641  
ETIM 5.0 Class-Description:  
Modular connector (industrial connector)

Article number	Article designation
<b>LANmark-7<sub>A</sub> GG45 SnapIn Connector</b>	
63104	LANmark-7A, 1000 MHz Snap-In GG45 Conn.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Keystone Clips for SnapIn Connectors refer to page 481

## Crimping tool RJ45 Hirose



### Product features

- Crimping tool for RJ45 connector Hirose TM11 and TM21

### Technical data



ETIM 5.0 Class-ID: EC000385  
ETIM 5.0 Class-Description: Special  
tool for telecommunication technique

Article number	Article designation
<b>Crimping tool RJ45 Hirose</b>	
CE5091	Crimping tool RJ45 Hirose TM11/TM21 8-pole

Hirose is a registered trademark of the HIROSE ELECTRIC Group

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Connector RJ45 CAT.5 Hirose TM11 refer to page 476
- Connector RJ45 CAT.6 Hirose TM21 refer to page 477

## Crimping tool RJ45 Stewart

### Product features

- Crimping tool for RJ45 connector CAT.5 Stewart SS37
- Crimping tool for RJ plug 4, 6, 6-DEC and 8-pin

### Technical data



ETIM 5.0 Class-ID: EC000385  
ETIM 5.0 Class-Description: Special tool for telecommunication technique



Article number	Article designation
<b>Crimping tool RJ45 Stewart</b>	
CE5093	Crimping tool RJ45 Stewart SS37 8-pole
CE5092	Crimping tool RJ 4-, 6-, 6-DEC- and 8-pole

Stewart is a registered trademark of Bel Fuse Inc.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Connector RJ45 CAT.5 Stewart SS37 refer to page 476

### Product features

- This tool is recommended for quick, easy and reliable installation of Snapln connectors. All 8 cores are terminated in one simple step.
- The marking on the pliers defines the correct stripping dimension.

### Technical data



ETIM 5.0 Class-ID: EC000385  
ETIM 5.0 Class-Description: Special tool for telecommunication technique



Article number	Article designation
<b>Comfort Tool</b>	
60501	Comfort Tool

Photographs are not to scale and do not represent detailed images of the respective products.

## Easy Termination Tool

### Product features

- Precise and fast removal of pair screening in PiMF cables.
- All foils are removed at exactly the same length, ensuring that the distances of the four foil screens match the available space on the GG45.
- The integrated holder for the wire manager simplifies insertion of the cores. Simple handling for quick and reproducible stripping results.
- An application sheet is included. The piercing terminals are adjustable and replaceable.

### Technical data



ETIM 5.0 Class-ID: EC000385  
ETIM 5.0 Class-Description: Special tool for telecommunication technique



Article number	Article designation
<b>Easy Termination Tool</b>	
60503	Easy Termination Tool

Caution! The Easy Termination Tools are meant for GG45 installation.  
Photographs are not to scale and do not represent detailed images of the respective products.

## Patchpanel Modular extendable



## Product features

- 19" modular patch panel, extendable
- Front screen can be pulled out and swivelled at an angle of 45°, allowing simple and fast installation, as well as simple maintenance (sliding mechanism)
- 24 connections with integrated dust-protection caps
- Compatible with all Snap-In Connectors
- Stable metal structure
- Flexible label for the numbering system
- Dimensions: 19" - 1RU - 125 mm
- Colour: grey-white (RAL 9002)

## Technical data



ETIM 5.0 Class-ID: EC002601  
ETIM 5.0 Class-Description: Box/  
housing for built-in mounting in the  
wall/ceiling

Article number	Article designation
<b>Patchpanel Modular extendable</b>	
60124	Patchpanel Modular extendable

Delivered without snap-in connectors!

Photographs are not to scale and do not represent detailed images of the respective products.

Frontplate 19" 1HE Cat.6<sub>A</sub>

## Product features

- 19" modular patch panel, for fixed installation
- 24 Ports
- Stable metal structure
- Dimensions: 19" - 1RU
- Colour: grey (RAL 7035)
- Unpopulated
- Incl. cable strain relief and cable ties
- On frontplate portnumbers are printed on
- Potential equalisation with incl. grounding set (0,3 m)



## Info

- Specially for RJ45 Cat.6<sub>A</sub> female connector

## Technical data



ETIM 5.0 Class-ID: EC002601  
ETIM 5.0 Class-Description: Box/  
housing for built-in mounting in the  
wall/ceiling

Article number	Article designation
<b>Frontplate 19" 1HE Cat.6<sub>A</sub></b>	
24441122	Frontplate 19" 1HE Cat.6 <sub>A</sub>

Photographs are not to scale and do not represent detailed images of the respective products.

## Accessories

- EPIC® DATA RJ45F Cat.6A refer to page 462

## Keystone Clips for EVO SnapIn Connectors



## Product features

- Red keystone clips for LANmark EVO SnapIn with keystone format (wall thickness 1.5 - 1.75 mm)
- Suitable for EVO SnapIn Connectors
- Not suitable for GG45 connectors

## Technical data



ETIM 5.0 Class-ID: EC002601  
ETIM 5.0 Class-Description: Box/  
housing for built-in mounting in the  
wall/ceiling

Article number	Article designation
<b>Keystone Clips for EVO SnapIn Connectors</b>	
61203	Keystone Clips for EVO SnapIn Connectors

Photographs are not to scale and do not represent detailed images of the respective products.

## Keystone Clips for SnapIn Connectors

### Product features

- Keystone clips for LANmark SnapIn with keystone format
- Suitable for GG45 Connectors
- Not suitable for EVO SnapIn Connectors

### Technical data



ETIM 5.0 Class-ID: EC002601  
ETIM 5.0 Class-Description: Box/  
housing for built-in mounting in the  
wall/ceiling



Article number	Article designation
<b>Keystone Clips for SnapIn Connectors</b>	
61201	Keystone Clips for SnapIn Connectors

Photographs are not to scale and do not represent detailed images of the respective products.

### Product features

- Plastic housing including CAT.6 SnapIn Connector
- Suitable for use in industrial applications
- Angled outlet at 45°
- Several adapters can be connected in series
- Covers packed in pairs (right/left)
- Side cover for SnapIn rail adapter (60797)
- Colour: pure white (RAL 9010)

### Technical data



ETIM 5.0 Class-ID: EC002641  
ETIM 5.0 Class-Description:  
Modular connector (industrial connector)

## SnapIn rail mount Adapter



Article number	Article designation
<b>SnapIn rail mount Adapter</b>	
60795	SnapIn rail mount Adapter

Photographs are not to scale and do not represent detailed images of the respective products.

### Suitable housing

- Surface-Mounted Case (84x84 mm) and coverplate

### Product features

- Flush-mounted outlet 80 x 80 LSA+ CAT.6
- 2x RJ45 angled outlet
- Colour-coded in accordance with EIA/TIA 568A and B
- Suitable for cable types (AWG 22, 23 and 24)
- Colour: pure white (RAL 9010)

### Technical data



ETIM 5.0 Class-ID: EC000371  
ETIM 5.0 Class-Description:  
Telecommunication terminal strip

## Flush-Mounted Outlet LSA+



Article number	Article designation
<b>Flush-Mounted Outlet LSA+</b>	
62722	Flush-mounted outlet 80 x 80 LSA+ CAT.6

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Punch down tool LSA+ refer to page 482

## Data Binder LSA+



### Product features

- A data connector allows installation cables to be easily extended and damaged cables to be replaced, without having to reinstall the entire cable network.
- Cable inlet 7.5 mm
- Screw-adjustable strain relief
- Adhesive strips for fastening

### Technical data



ETIM 5.0 Class-ID: EC000309  
 ETIM 5.0 Class-Description:  
 Module for active network component/  
 network unit

Article number	Article designation
<b>Data Binder LSA+</b>	
CE6382	Data Binder LSA+ CAT.6

Photographs are not to scale and do not represent detailed images of the respective products.

## Punch down tool LSA+



### Product features

- LSA+ punch-down tool for setting the individual cores on the data outlets or patch panel.
- Cores are set properly in the terminal strip and cut off at the same time.

### Technical data



ETIM 5.0 Class-ID: EC000385  
 ETIM 5.0 Class-Description: Special  
 tool for telecommunication technique

Article number	Article designation
<b>Punch down tool LSA+</b>	
CE5076	Punch down tool LSA+

Photographs are not to scale and do not represent detailed images of the respective products.

# HITRONIC®

## Optical transmission systems



HITRONIC® fibre optic cables make transmitting large data volumes easy: fault free, bug proof and at almost light speed. Even electromagnetic radiation does not interfere with the transmission. The HITRONIC® range includes the ideal solution for indoor or outdoor use, for demanding conditions, and even for use in power chains.

### **Application range**

- Telecommunications and network technology
- Industrial cabling and automation level
- Industrial machinery and plant engineering
- Data transmission under harsh conditions (mining and tunnel construction, oil and gas platforms, wind power plants)

**POF - Polymer Optical Fibre Cable****One Buffered Fibre Applications (SIMPLEX)**

HITRONIC® POF SIMPLEX BUFFERED FIBRE	488
HITRONIC® POF SIMPLEX CABLE	489

**Two buffered fibres applications (DUPLEX)**

HITRONIC® POF DUPLEX BUFFERED FIBRES	490
HITRONIC® POF DUPLEX CABLE	491
HITRONIC® POF cables for PROFINET Applications	New 492

**POF - Polymer optical fibre accessories****Connectors and adapters**

POF Connector and Adapter HFBR	493
POF Connector F05 Simplex	494
POF Connector F-SMA and ST(BFOC)	494
POF Connector SC-RJ	495
POF Adapter F-SMA	495
POF Adapter ST (BFOC)	495
POF Assembly Sets	496
POF Cutting Tools	496

**Tools and Accessories**

POF Polishing tools and accessories	497
POF Measurement Equipment	498

**PCF - Plastic Cladded Fibre Cable****One Buffered Fibre Applications (SIMPLEX)**

HITRONIC® PCF SIMPLEX Cable	499
-----------------------------	-----

**Two buffered fibres applications (DUPLEX)**

HITRONIC® PCF DUPLEX Cable	500
HITRONIC® PCF DUPLEX FD cables	501
HITRONIC® PCF cables for PROFINET Applications	New 502

**PCF - Plastic Cladded Fibre Accessories****Connectors and adapters**

PCF Connector HFBR	503
PCF Connector F-SMA and ST(BFOC)	503
PCF Connector SC-RJ	504
PCF Assembly Sets	504

**Tools and Accessories**

PCF Cutting Tools	505
PCF Measurement Equipment	505

**GOF - Glass Optical Fibre****Industrial and special applications**

HITRONIC® FIRE	506
HITRONIC® TORSION	507
HITRONIC® HDM Cable	508
HITRONIC® HRM-FD Cable	509
<b>FTTx applications</b>	
HITRONIC® HMDC Micro Cable	New 510
HITRONIC® HVN-Mini Cable	511

**Outdoor area**

HITRONIC® HQN Outdoor Cable	512
HITRONIC® HVN Outdoor Cable	513
HITRONIC® HQW Armoured Outdoor Cable	514
HITRONIC® HVW Armoured Outdoor Cable	515
HITRONIC® HQW-Plus Armoured Outdoor Cable	516

**Outdoor area - aerial cable**

HITRONIC® HQA Aerial Cable	517
HITRONIC® HQA-Plus Aerial Cable	518

**Outdoor and indoor area**

HITRONIC® HUN Universal Cable	519
HITRONIC® HUW Armoured Universal Cable	520

**Indoor area**

HITRONIC® HRH Breakout Cable	521
HITRONIC® HDH Mini-Breakout Cable	522

**GOF - Fibre optic accessories****Harnessed cables**

GOF DUPLEX Patchcord	523
GOF SIMPLEX Pigtail	524

**Connectors and adapters**

GOF Connector	525
GOF Adapters	526

**Housing and distribution boxes**

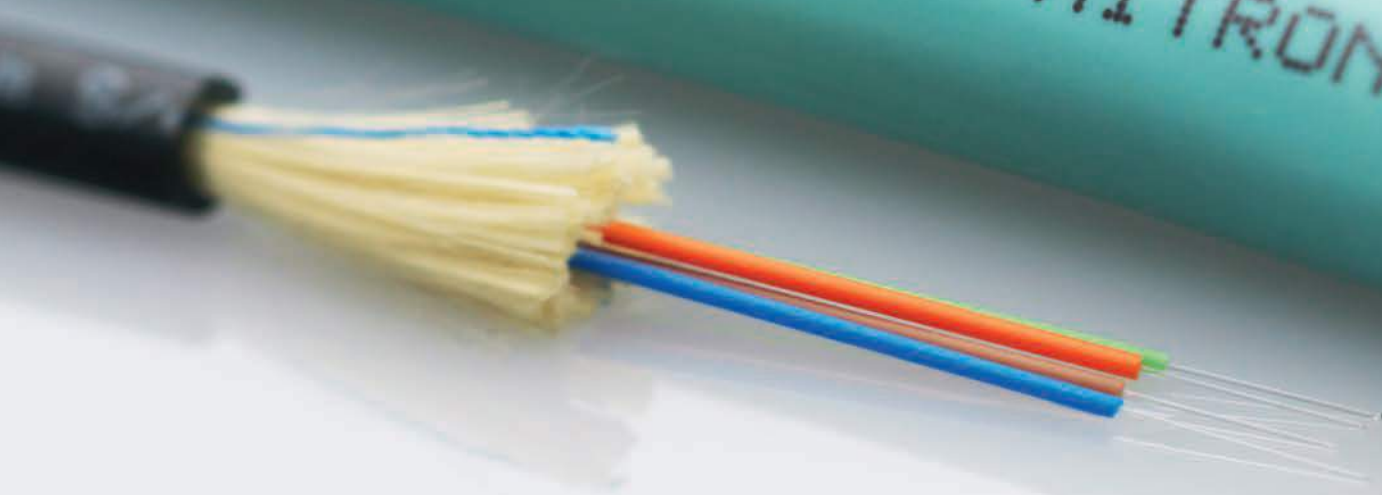
19" Splice Box for ST	527
19" Splice Box for SC	527
Splice Box Compact	527
Mini wall-mounted rack	528
Accessories for splice boxes and wall-mounted rack	528





U268 L

KABEL STUTTGART HITRONIC



Type of fibre	Cables	Connectors and adapters	Accessories
POF	POF SIMPLEX PE		
	POF DUPLEX PE		
	POF SIMPLEX PE-PUR		
	POF DUPLEX PE-PUR		
	POF DUPLEX Heavy		
	POF SIMPLEX/DUPLEX FD PE-PUR		
	POF DUPLEX for PROFINET® applications		
PCF	PCF SIMPLEX Outdoor		
	PCF DUPLEX Outdoor		
	PCF DUPLEX Indoor		
	PCF DUPLEX FD Universal		
	PCF DUPLEX for PROFINET® applications		
GOF	HITRONIC® FIRE		
	HITRONIC® TORSION		
	HRM-FD Flexible		
	HDM Reel		
	HQN Outdoor		
	HVN Stranded Outdoor		
	HVN-Mini Outdoor (air blowable)		
	HQW Armoured Outdoor		
	HVW Armoured Stranded Outdoor		
	HQW-Plus Armoured Outdoor		
	HQA Aerial ADSS		
	HQA-Plus Aerial ADSS		
	HUN Universal		
	HUW Armoured Universal		
	HRH Breakout		
HDH Mini Breakout			

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

## Fibre optic technology – General

The optical transmission of signals in fibre optic cables functions according to the principle of “total reflection”. The reflection is attained by surrounding a light-conducting core with a sheath that is optically thinner – the light is totally reflected by the boundary surface of the sheath, enabling it to be guided through the fibre optic cable.

At a time when the demand for fast and secure communication networks is constantly growing, fibre optic cables are now an indispensable and irreplaceable communication medium.

### Benefits of using fibre optic cables

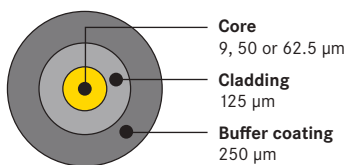
- Insensitivity to electromagnetic interference
- Electrical isolation of connected devices
- Low attenuation values
- Large transmission distances and high bandwidths
- Lightweight design
- Compact dimensions
- Can be installed in explosive environments
- High level of interception protection



### GOF – Glass Optical Fibre

There are the following different types of fibres:

- Singlemode (SM) fibre, E9/125 OS2
- Multimode (MM) fibre, G62.5/125 OM1, G50/125 OM2 to OM4

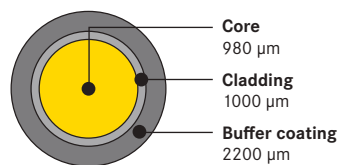


### POF – Polymer Optical Fibre

- P980/1000

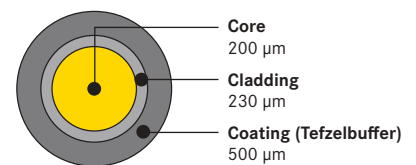
A distinction is made between the following application cases

- SIMPLEX (one buffered fibre)
- DUPLEX (two buffered fibres)



### PCF – Plastic Cladded Fibre

- K200/230
- PCF – Plastic Cladded Fibre
- Also known as HCS (Hard Cladded Silica Optical Fibre)



Fibre type/ wavelength	max. attenuation [dB/km]				max. transmission length [m]				Colour
	650 nm	850 nm	1300 nm	1550 nm	650 nm	850 nm	1300 nm	1550 nm	
POF 980 µm	160				100 MBit/s (PN): 50				
PCF 200 µm	10.0	8.0			100 MBit/s (PN): 100				
GOF MM 62.5 µm OM1		3.5 (3.0)	1.5 (0.7)			100 Mbit/s: 550 1 Gbit/s: 275 10 Gbit/s: 33	100 Mbit/s: 2.000 1 Gbit/s: 550 10 Gbit/s: 300		Orange
GOF MM 50 µm OM2		3.5 (2.5)	1.5 (0.7)			100 Mbit/s: 550 1 Gbit/s: 550 10 Gbit/s: 82	100 Mbit/s: 2.000 1 Gbit/s: 550 10 Gbit/s: 300		Orange
GOF MM 50 µm OM3		3.5 (2.5)	1.5 (0.7)			1 Gbit/s: 1.000 10 Gbit/s: 300 40 Gbit/s: 100 100 Gbit/s: 100	1 Gbit/s: 550 10 Gbit/s: 300		Aqua
GOF MM 50 µm OM4		3.5 (2.5)	1.5 (0.7)			1 Gbit/s: 1.100 10 Gbit/s: 550 40 Gbit/s: 150 100 Gbit/s: 150	1 Gbit/s: 550 10 Gbit/s: 300		Violet
GOF SM 9 µm OS2 (G652.D)			0.40 (0.35)	0.40 (0.21)				40 GBit/s: 10.000 40 GBit/s: 40.000	Yellow

Photographs are not to scale and do not represent detailed images of the respective products. For specific cable parameters see product pages or technical data sheets.



## HITRONIC® POF SIMPLEX BUFFERED FIBRE



### Info

- J-V2Y 1P 980/1000
- Simplex polymer fibre-optic cable for direct connector assembly

### Benefits

- Transmission lengths up to 70 m
- Suitable for direct connector assembly
- Easy to handle
- No crosstalk
- EMC protection

### Application range

- For optical signal transmission in industrial applications
- Very suitable for fixed installation in control cabinets, cable ducts, or pipes with low mechanical stress

### Product features

- Lightweight
- High flexibility
- Halogen-free buffer tube

### Product Make-up

- Polymer Optical Fibre (POF)
- PE buffer tube
- Without outer sheath
- Colour: black

### Technical data



ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description:  
Fibre optic cable



**Optical fibre type**  
Core material: PMMA  
Cladding material: fluoropolymers



**Permissible bending radius**  
≥ 10 x outer diameter



**Permissible tensile force**  
Fixed installation: 5 N  
Short-term: 15 N



**Temperature range**  
Operation: -55°C to +85°C  
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® POF SIMPLEX PE</b>					
28000001	HITRONIC® POF SIMPLEX PE	980/1000 POF	1	2.2	3.8

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- HITRONIC® POF SIMPLEX CABLE refer to page 489

### Accessories

- POF Connector and Adapter HFBR refer to page 493
- POF Cutting Tools refer to page 496
- POF Connector F05 Simplex refer to page 494
- UNIVERSAL STRIP stripping tool refer to page 1006



## HITRONIC® POF SIMPLEX CABLE



### Info

- J-V2Y(ZN)11Y 1P 980/1000
- Simplex POF cable with strain relief and PUR outer sheath
- FD - Highly flexible (power chains)



### Benefits

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

### Application range

- For optical signal transmission in industrial applications
- As a link between moving parts
- FD cable version: for flexible applications (power chains)

### Product features

- Resistant to abrasion, oil, microbes and hydrolysis
- Adhesion-free
- Outer sheath flame-retardant and halogen-free
- FD cable version: 5.000.000 bending cycles

### Product Make-up

- Polymer Optical Fibre (POF)
- PE buffer tube
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: orange (RAL 2003)

### Technical data

	ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	<b>Optical fibre type</b> Core material: PMMA Cladding material: fluoropolymers
	<b>Permissible bending radius</b> ≥ 10 x outer diameter
	<b>Permissible tensile force</b> Fixed installation: 100 N Short-term: 600 N
	<b>Temperature range</b> Operation: -20 °C to +70 °C Installation: -10 °C to +50 °C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® POF SIMPLEX PE-PUR</b>					
28020001	HITRONIC® POF SIMPLEX PE-PUR	980/1000 POF	1	5.5	25
<b>HITRONIC® POF SIMPLEX FD PE-PUR for draig chain application</b>					
28320001	HITRONIC® POF SIMPLEX FD PE-PUR	980/1000 POF	1	6	30

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- POF Assembly Sets refer to page 496
- POF Cutting Tools refer to page 496
- POF Connector F-SMA and ST(BFOC) refer to page 494
- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool



## HITRONIC® POF DUPLEX BUFFERED FIBRES



### Info

- J-V2Y 2x1P 980/1000
- Duplex polymer fibre-optic cable for direct connector assembly

### Benefits

- Transmission lengths up to 70 m
- Suitable for direct connector assembly
- Easy to handle
- No crosstalk
- EMC protection

### Application range

- For optical signal transmission in industrial applications
- Very suitable for fixed installation in control cabinets, cable ducts, or pipes with low mechanical stress
- Light mechanical stress
- Identification by white dots

### Product features

- Halogen-free
- Lightweight
- High flexibility

### Product Make-up

- Polymer Optical Fibre (POF)
- Twin cable
- PE buffer tube
- Without outer sheath
- Colour: black

### Technical data



ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description:  
Fibre optic cable



**Dimensions**  
Twin cable  
2x2.2mm



**Optical fibre type**  
Core material: PMMA  
Cladding material: fluoropolymers



**Permissible bending radius**  
≥ 10 x outer diameter



**Permissible tensile force**  
Fixed installation: 10 N  
Short-term: 30 N



**Temperature range**  
Operation: -55°C to +85°C  
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® POF DUPLEX BUFFERED FIBRES</b>					
28000002	HITRONIC® POF DUPLEX PE	980/1000 POF	2	2.2	7.6

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- HITRONIC® POF SIMPLEX BUFFERED FIBRE refer to page 488

### Accessories

- POF Connector and Adapter HFBR refer to page 493
- POF Cutting Tools refer to page 496
- UNIVERSAL STRIP stripping tool refer to page 1006



## HITRONIC® POF DUPLEX CABLE

**i Info**

- J-V2Y(ZN)11Y 2P 980/1000
- Duplex plastic fibre optic cable with strain relief and PUR outer sheath
- FD - Highly flexible (power chains)



**Benefits**

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

**Application range**

- For optical signal transmission in industrial applications
- FD cable version: for flexible applications (power chains)

**Product features**

- Outer sheath flame-retardant and halogen-free
- Resistant to abrasion, oil, microbes and hydrolysis
- Adhesion-free
- FD cable version: 5.000.000 bending cycles

**Product Make-up**

- Polymer Optical Fibre (POF)
- PE buffer tube
- Fibre colour coding: black, orange
- Aramid yarns as strain relief
- PUR outer sheath, orange (RAL 2003)

**Technical data**

- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: PMMA  
Cladding material: fluoropolymers
- Permissible bending radius**  
≥ 10 x outer diameter
- Permissible tensile force**  
Fixed installation: 100 N (PE-PUR), 130 N (Heavy PE-PUR)  
Short-term: 400 N
- Temperature range**  
Operation: -40°C to +7 °C (FD: -20°C to +70°C)  
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® POF DUPLEX PE-PUR</b>					
28020002	HITRONIC® POF DUPLEX PE-PUR	980/1000 POF	2	5.5	27
<b>HITRONIC® POF DUPLEX HEAVY PE-PUR</b>					
28030002	HITRONIC® POF DUPLEX HEAVY PE-PUR	980/1000 POF	2	8	57
<b>HITRONIC® POF DUPLEX FD PE-PUR for draig chain application</b>					
28320002	HITRONIC® POF DUPLEX FD PE-PUR	980/1000 POF	2	6	30

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- POF Assembly Sets refer to page 496
- POF Cutting Tools refer to page 496
- POF Connector F-SMA and ST(BFOC) refer to page 494
- POF Connector SC-RJ refer to page 495
- STAR STRIP stripping tool refer to page 1000

POF - Polymer Optical Fibre Cable • Two buffered fibres applications (DUPLEX)



## HITRONIC® POF cables for PROFINET Applications



**Info**

- PROFINET compliant
  - Type B or Type C
- J-V4Y(ZN)11Y 2P980/1000  
J-V4Y(ZN)Y 2P980/1000  
J-V4Y(ZN)11Y 2P980/1000 flex

### Benefits

- Optical data transmission up to 70m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

### Application range

- For optical signal transmission in industrial applications
- PROFINET / Industrial Ethernet
- At 100 Mbit/s: max 50 m cable length
- PROFINET type B: for fixed laying
- PROFINET type C: for flexible applications (power chains)

### Product features

- Cable version with PVC outer sheath: for standard applications in industrial environments
- Cable version with PUR outer sheath: for high mechanical or chemical stress in industrial environments
- PNB - PROFINET-Type B
- PNC - PROFINET-Type C
- FD - Highly flexible (power chains)

### Product Make-up

- Polymer Optical Fibre (POF)
- PA buffer tube
- Fibre colour coding: black, orange (with arrow printing)
- Aramid yarns as strain relief
- Outer sheath material PUR or PVC (see article description)
- Outer sheath colour: green (RAL 6018)

### Technical data

ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable

**Dimensions**  
Buffered fibre: 2.2mm  
Cable: see table

**Core identification code**  
Black, orange (with arrow printing)

**Optical fibre type**  
Core material: PMMA  
Cladding material: fluoropolymers

**Permissible bending radius**  
≥ 10 x outer diameter

**Permissible tensile force**  
see data sheet

**Temperature range**  
Operation: -20 °C to +70 °C  
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>POF DUPLEX - PROFINET TYPE B</b>					
28051002	HITRONIC® POF DUPLEX PNB PA-PUR	980/1000 POF	2	8	56
28052002	HITRONIC® POF DUPLEX PNB PA-PVC	980/1000 POF	2	7.8	59
<b>POF DUPLEX - PROFINET TYPE C</b>					
28351002	HITRONIC® POF DUPLEX FD PNC PA-PUR	980/1000 POF	2	8	55

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- POF Assembly Sets refer to page 496
- POF Cutting Tools refer to page 496
- POF Connector F-SMA and ST(BFOC) refer to page 494
- POF Connector SC-RJ refer to page 495
- EPIC® DATA PB Sub-D FO refer to page 351
- STAR STRIP stripping tool refer to page 1000

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## POF Connector and Adapter HFBR

### Benefits

- Compatible with HP Versatile Link Connectors and Components series
- Different colours for channel coding

### Application range

- Factory automation
- Medical equipment
- Telecommunications Switching Systems
- Automotive Networks
- Printed Circuit Board

### Product features

- HFBR connector series for 2.2 mm POF
- For crimping or clamping
- Simplex or Duplex variations

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description:  
Fibre optic connector



Article number	Article designation	PU
<b>Connector HFBR-4501, Simplex, with Crimp Sleeve</b>		
29140099	POF Connector HFBR4501 GY Simplex /4PC	4 piece
29140098	POF Connector HFBR4501 GY Simplex /50PC	50 piece
<b>Latching Connector HFBR-4503, Simplex, with Crimp Sleeve</b>		
29141099	POF Connector HFBR4503 GY Simplex /4PC	4 piece
29141098	POF Connector HFBR4503 GY Simplex /50PC	50 piece
<b>Connector HFBR-4506, Duplex, with Crimp Sleeve</b>		
29142099	POF Connector HFBR4506 WH Duplex /4PC	4 piece
29142098	POF Connector HFBR4506 WH Duplex /50PC	50 piece
<b>Connector HFBR-4511, Simplex, with Crimp Sleeve</b>		
29143099	POF Connector HFBR4511 BL Simplex /4PC	4 piece
29143098	POF Connector HFBR4511 BL Simplex /50PC	50 piece
<b>Latching Connector HFBR-4513, Simplex, with Crimp Sleeve</b>		
29144099	POF Connector HFBR4513 BL Simplex /4PC	4 piece
29144098	POF Connector HFBR4513 BL Simplex /50PC	50 piece
<b>Latching Connector HFBR-4516, Duplex, with Crimp Sleeve</b>		
29145099	POF Connector HFBR4516 GY Duplex /4PC	4 piece
29145098	POF Connector HFBR4516 GY Duplex /50PC	50 piece
<b>Clamp Connector HFBR-4531, Simplex</b>		
29146099	POF Connector HFBR4531 BK Simplex /4PC	4 piece
29146098	POF Connector HFBR4531 BK Simplex /50PC	50 piece
<b>Clamp and Latching Connector HFBR-4532, Simplex</b>		
29147099	POF Connector HFBR4532 BK Simplex /4PC	4 piece
29147098	POF Connector HFBR4532 BK Simplex /50PC	50 piece
<b>Clamp Connector HFBR-4533, Simplex</b>		
29148099	POF Connector HFBR4533 BL Simplex /4PC	4 piece
29148098	POF Connector HFBR4533 BL Simplex /50PC	50 piece
<b>HFBR4505 Adapters</b>		
29440099	POF Adapter HFBR4505 GY Simplex /4PC	4 piece
<b>HFBR4515 Adapters</b>		
29441099	POF Adapter HFBR4515 BL Simplex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- POF Cutting Tools refer to page 496
- POF Polishing tools and accessories refer to page 497

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

## POF Connector F05 Simplex



### Benefits

- Easy to assemble

### Application range

- Digital audio
- Factory automation
- Office Automation (Smart House)

### Product features

- F-05 (TOCP) SIMPLEX clamp connector for connecting to polymer optical fibre without crimping or gluing
- Snap-In Connector
- Suitable for 2.2 mm POF



### Info

- Compatible with TOCP155K

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description:  
Fibre optic connector

Article number	Article designation	PU
<b>Connector F05 Simplex</b>		
29150099	POF Connector F05 Simplex /4PC	4 piece
29150098	POF Connector F05 Simplex /50PC	50 piece
<b>Adapter for Connector F05 Simplex</b>		
29450099	POF Adapter F05 Simplex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- POF Cutting Tools refer to page 496
- POF Polishing tools and accessories refer to page 497

## POF Connector F-SMA and ST(BFOC)



### Benefits

- As crimp or clamp version for easy assembling

### Product features

- FSMA and ST(BFOC) connector with knurled nut or hexagonal nut for crimping, gluing or easy clamping
- Suitable for 2.2 mm POF
- Available for different cable diameters (2.2 mm and 6.0 mm)
- Connector including bend protection boot and dust cap
- Bend protection boot colour: black and red



### Info

- FSMA and ST(BFOC) connectors for POF cable assembly

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description:  
Fibre optic connector

Article number	Article designation	PU
<b>FSMA Connectors with knurled nut for crimping</b>		
29135099	POF Connector FSMA Crimp 2.2 /4PC	4 piece
29135098	POF Connector FSMA Crimp 2.2 /50PC	50 piece
29137099	POF Connector FSMA Crimp 6.0 /4PC	4 piece
29137098	POF Connector FSMA Crimp 6.0 /50PC	50 piece
<b>FSMA Connectors with hexagonal nut for crimping</b>		
29135089	POF Connector FSMA Hex Crimp 2.2 /4PC	4 piece
29135088	POF Connector FSMA Hex Crimp 2.2 /50PC	50 piece
29132089	POF Connector FSMA Hex Crimp 6.0 /4PC	4 piece
29132088	POF Connector FSMA Hex Crimp 6.0 /50PC	50 piece
<b>FSMA Connectors with knurled nut for clamping</b>		
29130099	POF Connector FSMA Clamp 2.2 /4PC	4 piece
29130098	POF Connector FSMA Clamp 2.2 /50PC	50 piece
<b>FSMA Connectors with hexagonal nut for clamping</b>		
29130089	POF Connector FSMA Hex Clamp 2.2 /4PC	4 piece
29130088	POF Connector FSMA Hex Clamp 2.2 /50PC	50 piece
<b>ST(BFOC) Connectors for crimping</b>		
29125099	POF Connector ST(BFOC) Crimp 2.2 /4PC	4 piece
29125098	POF Connector ST(BFOC) Crimp 2.2 /50PC	50 piece
<b>ST(BFOC) Connectors for clamping</b>		
29120099	POF Connector ST(BFOC) Clamp 2.2 /4PC	4 piece
29120098	POF Connector ST(BFOC) Clamp 2.2 /50PC	50 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- POF Assembly Sets refer to page 496
- POF Cutting Tools refer to page 496
- POF Polishing tools and accessories refer to page 497
- POF Measurement Equipment refer to page 498



### POF Connector SC-RJ



#### Benefits

- As crimp version for easy assembling

#### Product features

- Connector set included two SC connectors, SC-RJ housing, two bending protection boots, dust caps
- Suitable for 2.2 mm POF
- Bend protection boot colour: black and red

**Info**

- SC-RJ connectors for POF cable assembly
- Connectors for PROFINET Data Cabling

**Technical data**

ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector

Article number	Article designation	PU
<b>POF Connector SC-RJ</b>		
29161097	POF Connector SC-RJ Crimp 2.2	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- POF Assembly Sets refer to page 496
- POF Cutting Tools refer to page 496
- POF Polishing tools and accessories refer to page 497
- POF Measurement Equipment refer to page 498

#### Product features

- POF Adapter FSMA: version with two fixing nuts and lock washer
- POF Adapter FSMA hexa: version with hexagonal flange, fixing nuts and lock washer

**Info**

- Can be used for POF and PCF connector types

**Technical data**

ETIM 5.0 Class-ID: EC000752  
ETIM 5.0 Class-Description: Fibre optic coupler



Article number	Article designation	PU
<b>FSMA Adapters</b>		
29430099	POF Adapter FSMA /4PC	4 piece
29430089	POF Adapter FSMA Hex /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### POF Adapter ST (BFOC)



#### Product features

- ST(BFOC) adapter with flange, fixing nuts and lock washer

**Info**

- Can be used for POF and PCF connector types

**Technical data**

ETIM 5.0 Class-ID: EC000752  
ETIM 5.0 Class-Description: Fibre optic coupler

Article number	Article designation	PU
<b>ST(BFOC) Adapters</b>		
29420099	POF Adapter ST (BFOC) /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## POF Assembly Sets



### Benefits

- Easy to handle
- Set includes all the necessary tools for connector assembly
- Suitable for on-site assembly

### Product features

- Sets available for POF connector types FSMA and ST (BFOC) and SC / SC-RJ
- Contents: crimp tool, buffered fibre stripper, polishing disc FSMA, polishing film, cutter

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description:  
Fibre optic connector

Article number	Article designation	PU
<b>Assembly Set for POF FSMA Connector</b>		
29500001	Assembly Set POF Connector FSMA	1 piece
<b>Assembly Set for POF ST(BFOC) Connector</b>		
29500002	Assembly Set POF Connector ST(BFOC)	1 piece
<b>Assembly Set for POF SC/SC-RJ Connector</b>		
29500004	Assembly Set for POF Connector SC	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## Optical transmission systems

## POF Cutting Tools



### Technical data



ETIM 5.0 Class-ID: EC001126  
ETIM 5.0 Class-Description:  
Fibre optic cleaver

### Benefits

- Cutting tools for the POF cable and connector product range

### Application range

- Cable stripper for different jacket materials and cable diameter

### Product features

- Various tools for cutting buffered fibres (2.2mm) from very simple to version with automatic blade advance
- Crimping tool suitable for the POF(PCF) connector program

Article number	Article designation	PU
<b>POF Bare Fibre Cutter</b>		
29500014	POF Cutter 2.2/1.0mm Guillotine	5 pieces
29500015	POF BufferedFibreCutter 2.2mm manuel	1 piece
29500016	POF BufferedFibreCutter 2.2mm automatic	1 piece
<b>POF Cable Stripper</b>		
29500011	POF Buffered Fibre Stripper 2.2 mm (P980/1000)	1 piece
29500013	POF Cable Stripper PA 2.2mm	1 piece
29500012	POF Cable Stripper 3.6/6.0mm	1 piece
<b>Strain relief element scissors</b>		
29500017	Strain relief element scissors	1 piece
<b>POF Crimping Tool</b>		
29500010	POF Crimp Tool 2.5/3.0/4.5/4.95mm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- POF Assembly Sets refer to page 496

**POF Polishing tools and accessories**

**Benefits**

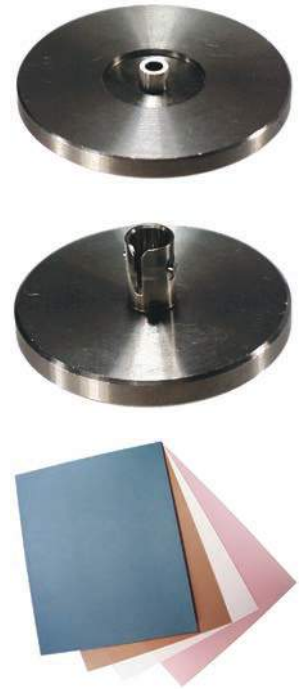
- Easy to handle
- Suitable to POF Connector Assembly Sets

**Product features**

- Accessories for POF Assembly
- Polishing disc for various POF connector types
- Other versions are available upon request
- Polishing film with different graining size types for fibre end face treatment
- Polishing process:
  - POF - Polishing Film 1000 (BU)
  - Polishing Film 5µm (BN)
  - Polishing Film 1µm (GN)
  - PCF - Polishing Film 5 µm (BN)
  - Polishing Film 1 µm (GN)
  - Polishing Film 0.3 µm (WH)

**Technical data**

ETIM 5.0 Class-ID: EC001126  
 ETIM 5.0 Class-Description:  
 Fibre optic cleaver



Article number	Article designation	PU
<b>Polishing Disc for POF connector assembly</b>		
29500031	Polishing Disc POF FSMA Connector	1 piece
29500032	Polishing Disc POF ST(BFOC) Connector	1 piece
29500033	Polishing Disc POF HFBR4501/4511 SIMPLEX	1 piece
29500034	Polishing Disc POF HFBR4516 DUPLEX	1 piece
29500035	Polishing Disc POF F05 Connector	1 piece
29500036	Polishing Disc POF Simplex 2.2mm	1 piece
29500733	Polishing Disc PCF HFBR4521 Connector	1 piece
29500037	Polishing Disc POF SC Connector	1 piece
<b>Polishing film</b>		
29500021	Polishing film graining size 1000 (BL)	10 pieces
29500024	Polishing film graining size 5 µm (BR)	10 pieces
29500023	Polishing film graining size 1 µm (GN)	10 pieces
29500022	Polishing film graining size 0.3 µm (WH)	10 pieces
<b>Polishing accessories</b>		
29500020	Polishing glass plate 150x230mm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- POF Assembly Sets refer to page 496

## POF Measurement Equipment



### Benefits

- Measuring Equipment Set for wavelengths 660/850nm
- Suitable for the measurement of assembled POF and PCF systems
- Measuring Equipment Set for different wave lengths and connector types. Connector type and wavelength is defined by interchangeable adapter system

### Product features

- The measurement device is supplied without adapters. Please order separately
- Optical Transmitter (TMR): wavelength dependent on interchangeable adapter
  - 650nm
  - 660nm
  - 850nm (on request)
- Optical Power Meter: for attenuation measurement of an assembled POF (PCF) systems adapted to Optical Transmitter (TMR)

### Product Make-up

- Optical Transmitter with digital display, wavelength dependent on adapter, active interchangeable adapters are not included, please order separately
- Optical Power Meter with digital display, wavelength meter 660/850 nm, interchangeable adapters (receiver side) are not included, please order separately
- Measuring Set (29500089): Optical Transmitter and Power Meter as set in a black suitcase, interchangeable adapters are not included

Article number	Article designation	PU
<b>POF Measurement Equipment</b>		
29500070	POF Optical Transmitter (TMR)	1 piece
<b>POF TMR Adapter, wavelength 650nm</b>		
29500071	POF Optical TMR Adapter HFBR, 650nm	1 piece
29500072	POF Optical TMR Adapter FSMA, 650nm	1 piece
29500073	POF Optical TMR Adapter ST(BFOC), 650nm	1 piece
<b>POF TMR Adapter, wavelength 660nm</b>		
29500074	POF Optical TMR Adapter F05, 660nm	1 piece
29500075	POF Optical TMR Adapter HFBR, 660nm	1 piece
29500076	POF Optical TMR Adapter FSMA, 660nm	1 piece
29500077	POF Optical TMR Adapter ST(BFOC), 660nm	1 piece
<b>POF Optical Power Meter 660/850 nm</b>		
29500080	POF Optical Power Meter 660/850 nm	1 piece
<b>POF Power Meter Adapters</b>		
29500081	POF Power Meter Adapter HFBR4501/4521	1 piece
29500082	POF Power Meter Adapter FSMA	1 piece
29500083	POF Power Meter Adapter ST(BFOC)	1 piece
29500084	POF Power Meter Adapter F05	1 piece
<b>POF Measuring Equipment Set without adapters</b>		
29500089	POF Measuring Equipment Set 660/850nm	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® PCF SIMPLEX Cable

**i Info**

- A-V(ZN) 11Y
- Simplex plastic cladded fibre (PCF) cable for direct connector assembly



**Benefits**

- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- High mechanical strength
- UV-resistant
- EMC protection

**Application range**

- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- Industrial environments

**Product features**

- Possible transmission wavelengths: 650 nm and 850 nm
- Outer sheath flame-retardant and halogen-free

**Product Make-up**

- Tight-buffered fibres
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: black (RAL 9005)

**Technical data**

- ETIM 5.0 Class-ID:** EC000034  
**ETIM 5.0 Class-Description:** Fibre optic cable
- Minimum bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Optical fibre type**  
Core material: glass  
Cladding material: fluoropolymers
- Permissible tensile force**  
Fixed installation: 200 N
- Temperature range**  
Operation: -10°C to +60°C  
Installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® PCF SIMPLEX Cable</b>					
28600701	HITRONIC® PCF SIMPLEX PUR Outdoor	200/230 PCF	1	2.9	7.5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- PCF Assembly Sets refer to page 504
- PCF Connector HFBR refer to page 503
- PCF Connector F-SMA and ST(BFOC) refer to page 503
- PCF Cutting Tools refer to page 505



## HITRONIC® PCF DUPLEX Cable



**Info**

- PCF DUPLEX Indoor: J-V(ZN)H11Y 2K200/230
- PCF DUPLEX Outdoor: A-VQ(ZN)HB2Y 2K200/230
- Plastic-cladded fibre (PCF) cable compatible with all BUS systems

### Benefits

- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- Good resistance to oil, petrol, acids and alkalis
- High mechanical strength
- EMC protection

### Application range

- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- Industrial environments

### Product features

- Possible transmission wavelengths: 650 nm and 850 nm
- Complies with requirements for all BUS systems
- Halogen-free outer sheath

### Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with FRNC sheath (2.9mm)
- Aramid yarns as strain relief
- PUR outer sheath (indoor); PE outer sheath (outdoor)
- Colour: orange (indoor); black (outdoor)

### Technical data

- ETIM 5.0 Class-ID:** EC000034  
**ETIM 5.0 Class-Description:** Fibre optic cable
- Minimum bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Optical fibre type**  
Core material: glass  
Cladding material: fluoropolymers
- Permissible tensile force**  
Fixed installation: 400 N (indoor); 500 N (outdoor)  
Short-term: 1200 N (indoor); 1500 N (outdoor)
- Temperature range**  
Operation: -20 °C to +70 °C  
Installation: -10 °C to +50 °C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Indoor</b>					
28020702	HITRONIC® PCF DUPLEX FRNC-PUR Indoor	200/230 PCF	2	8	53
<b>Outdoor</b>					
28620702	HITRONIC® PCF DUPLEX FRNC-PE Outdoor	200/230 PCF	2	10,5	89

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
The cables can also be supplied as pre-terminated fibre optic trunks.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- HITRONIC® PCF DUPLEX FD cables refer to page 501
- HITRONIC® PCF cables for PROFINET Applications refer to page 502

### Accessories

- PCF Assembly Sets refer to page 504
- PCF Connector HFBR refer to page 503
- PCF Connector F-SMA and ST(BFOC) refer to page 503
- PCF Connector SC-RJ refer to page 504
- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool





## HITRONIC® PCF DUPLEX FD cables



### Info

- A/J-V(ZN)H11Y
- Flexible PCF cable compatible with all BUS systems



### Benefits

- Designed for use in power chains
- Transmission lengths up to 500 m
- Suitable for direct connector assembly
- Good resistance to oil, petrol, acids and alkalis
- EMC protection

### Application range

- For highly flexible applications
- For data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.
- As a link between moving parts
- Industrial environments






### Product features

- Possible transmission wavelengths: 650 nm and 850 nm
- Complies with requirements for all BUS systems
- Outer sheath flame-retardant and halogen-free

### Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with FRNC sheath
- Sub cable outer diameter: 2.2mm
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: orange (RAL 2003)

### Technical data

-  ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
-  **Minimum bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
-  **Optical fibre type**  
Core material: glass  
Cladding material: fluoropolymers
-  **Permissible tensile force**  
Fixed installation: 800 N  
Short-term: 2000 N
-  **Temperature range**  
Operation: -20 °C to +70 °C  
Installation: -10 °C to +50 °C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® PCF DUPLEX FD cables</b>					
28320702	HITRONIC® PCF DUPLEX FD FRNC-PUR	200/230 PCF	2	8.8	63

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products.

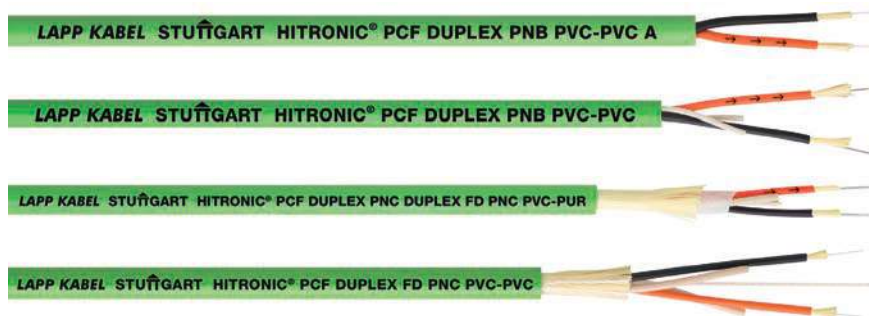
### Accessories

- PCF Assembly Sets refer to page 504
- PCF Connector HFBR refer to page 503
- PCF Connector F-SMA and ST(BFOC) refer to page 503
- PCF Cutting Tools refer to page 505
- PCF Connector SC-RJ refer to page 504
- STAR STRIP stripping tool refer to page 1000

PCF - Plastic Cladded Fibre Cable • Two buffered fibres applications (DUPLEX)



## HITRONIC® PCF cables for PROFINET Applications



**Info**

- PROFINET compliant
  - Type B or Type C
- J-V(ZN)YY 2K200/230  
 J-V(ZN)Y(ZN)11Y 2K200/230 flex  
 J-V(ZN)Y(ZN)Y 2K200/230 flex

### Benefits

- Optical data transmission up to 500m
- Easy to handle
- No interference by external fields
- No grounding problems
- Suitable for direct connector assembly

### Application range

- PCF DUPLEX cables for optical signal transmission in industrial applications
- PROFINET / Industrial Ethernet
- At 100 Mbit/s: max 100 m cable length
- PROFINET type B: for fixed laying
- PROFINET type C: for flexible applications (power chains)

### Product features

- Cable version with PVC outer sheath: for standard applications in industrial environments
- Cable version with PUR outer sheath: for high mechanical or chemical stress in industrial environments
- PNB - PROFINET-Type B
- PNC - PROFINET-Type C
- FD - Highly flexible (power chains)

### Norm references / Approvals

- 28055702: with c(UL)us certification (OFNG 75°C)

### Product Make-up

- Colour-coded, tight-buffered PCF sub-cable with PVC sheath
- Sub cable outer diameter: 2.2mm
- Aramid yarns as strain relief
- Outer sheath material PUR or PVC (see article description)
- Outer sheath colour: green (RAL 6018)

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Dimensions**  
Sub cable outer diameter: 2.2mm  
Cable: see table
- Core identification code**  
Black, orange (with arrow printing)
- Minimum bending radius**  
see data sheet
- Optical fibre type**  
Core material: glass  
Cladding material: fluoropolymers
- Permissible tensile force**  
see data sheet
- Temperature range**  
See data sheet

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>PCF DUPLEX - PROFINET TYPE B</b>					
28055702	HITRONIC® PCF DUPLEX PNB PVC-PVC A	200/230 PCF	2	7.5	59
28052702	HITRONIC® PCF DUPLEX PNB PVC-PVC	200/230 PCF	2	7.2	55
<b>PCF DUPLEX - PROFINET TYPE C</b>					
28351702	HITRONIC® PCF DUPLEX FD PNC PVC-PUR	200/230 PCF	2	8.8	71
28352702	HITRONIC® PCF DUPLEX FD PNC PVC-PVC	200/230 PCF	2	8.8	76

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- PCF Assembly Sets refer to page 504
- PCF Connector F-SMA and ST(BFOC) refer to page 503
- PCF Cutting Tools refer to page 505
- PCF Connector SC-RJ refer to page 504
- EPIC® DATA PB Sub-D FO refer to page 351
- STAR STRIP stripping tool refer to page 1000

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## PCF Connector HFBR



### Benefits

- Compatible with HP Versatile Link Connectors and Components series


### Application range

- Factory automation
- Medical equipment
- Telecommunications Switching Systems

### Product features

- HFBR4521 connector for 2.2 mm PCF cable diameter as crimp version
- HFBR4521 connector for 3.0 mm PCF cable diameter as clamp version
- HFBR4521 clamp connector compatible with Assembly Set PCF Connector HFBR4521

### Technical data

 ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector

Article number	Article designation	PU
<b>Connector HFBR4521 for 2.2 mm cables - crimp version</b>		
29140799	PCF Connector HFBR4521 BK Simplex 2.2 /4PC	4 piece
29140798	PCF Connector HFBR4521 BK Simplex 2.2 /50PC	50 piece
<b>Connector HFBR4521 for 3.0 mm cables - clamp version</b>		
29141799	PCF Connector HFBR4521 Clamp 3.0 /4PC	4 piece
29141798	PCF Connector HFBR4521 Clamp 3.0 /50PC	50 piece

Photographs are not to scale and do not represent detailed images of the respective products.


### Benefits

- Easy to assemble
- Designed for field assembly
- Reusable as it can be removed

### Product features

- Connectors for clamp and cleave assembly
- Available for different cable diameters (2.2mm and 3.0mm)
- Adapters available on request
- Bend protection boot colour: black and red

### Technical data

 ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector



## PCF Connector F-SMA and ST(BFOC)

Article number	Article designation	PU
<b>Connector FSMA Clamp for 3.0 mm cables</b>		
29136799	PCF Connector FSMA Clamp 3.0 /4PC	4 piece
29136798	PCF Connector FSMA Clamp 3.0 /50PC	50 piece
<b>Connector FSMA Clamp for 2.2 mm cables</b>		
29135799	PCF Connector SC-RJ Clamp 2.2	4 piece
29135798	PCF Connector FSMA Clamp 2.2 /50PC	50 piece
<b>Connector ST(BFOC) Clamp for 3.0 mm cables</b>		
29126799	PCF Connector ST (BFOC) Clamp 3.0 /4PC	4 piece
29126798	PCF Connector ST (BFOC) Clamp 3.0 /50PC	50 piece
<b>Connector ST(BFOC) Clamp for 2.2 mm cables</b>		
29125799	PCF Connector ST (BFOC) Clamp 2.2 /4PC	4 piece
29125798	PCF Connector ST (BFOC) Clamp 2.2 /50PC	50 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- POF Adapter F-SMA refer to page 495
- POF Adapter ST (BFOC) refer to page 495

### Accessories

- PCF Assembly kit
- PCF Cutting Tools refer to page 505



## PCF Connector SC-RJ



### Benefits

- Easy to assemble
- Designed for field assembly
- Reusable as it can be removed

### Product features

- Connector set included two SC connectors, SC-RJ housing, two bending protection boots, dust caps
- Connectors for clamp and cleave assembly
- Available for different cable diameters (2.2mm and 3.0mm)
- Bend protection boot colour: black and red



### Info

- Connectors for PROFINET Data Cabling

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector

Article number	Article designation	PU
<b>PCF Connector SC-RJ</b>		
29166797	PCF Connector SC-RJ Clamp 3.0	1 piece
29165797	PCF Connector SC-RJ Clamp 2.2	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- PCF Assembly kit
- PCF Cutting Tools refer to page 505

## PCF Assembly Sets



### Benefits

- Easy to handle
- Set includes all the necessary tools for connector assembly from clamp connector versions
- Suitable for on-site assembly

### Product features

- Sets available for PCF clamp connector types FSMA, ST (BFOC), SC and HFBR4521
- Contents: stripper, cleave tool, kevlar scissor, cutter, microscope

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector

Article number	Article designation	PU
<b>Assembly Set For PCF FSMA Connectors</b>		
29500701	Assembly Set PCF Connector FSMA	1 piece
<b>Assembly Set For PCF ST(BFOC) Connectors</b>		
29500702	Assembly Set PCF Connector ST(BFOC)	1 piece
<b>Assembly Set For PCF HFBR4521 Connectors</b>		
29500703	Assembly Set PCF Connector HFBR4521	1 piece
<b>Assembly Set For PCF SC/SC-RJ Connectors</b>		
29500704	Assembly Set PCF Connector SC	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- PCF Connector F-SMA and ST(BFOC) refer to page 503
- PCF Cutting Tools refer to page 505
- PCF Connector SC-RJ refer to page 504

## PCF Cutting Tools

### Benefits

- Optimally coordinated tools for the PCF cable and connector product range
- For the processing of PCF fibres

### Product features

- PCF cleaving tool for connector types:
  - FSMA
  - ST(BFOC)
  - HFBR4521
  - SC

### Technical data



ETIM 5.0 Class-ID: EC001122  
 ETIM 5.0 Class-Description:  
 Fibre optic connector



Article number	Article designation	PU
<b>PCF Buffered Fibre Stripper</b>		
29500711	PCF Buffered Fibre Stripper 0.5mm (K200/230)	1 piece
<b>PCF Fibre Cleaving Tool</b>		
29500712	PCF Cleaving Tool FSMA Connector	1 piece
29500713	PCF Cleaving Tool ST(BFOC) Connector	1 piece
29500714	PCF Cleaving Tool HFBR4521 Connector	1 piece
29500715	PCF Cleaving Tool SC Connector	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- PCF Assembly Sets refer to page 504

## PCF Measurement Equipment

### Benefits

- Inspection Microscope with 100x magnification for connector inspection
- Easy to handle

### Product features

- Interchangeable adapter for PCF connector types FSMA, ST(BFOC), HFBR
- Interchangeable adapters are not included in microscope, please order separately
- Other adapters available on request



Article number	Article designation	PU
<b>PCF Inspection Microscope (100x) without adapter</b>		
29500770	PCF Inspection Microscope (100x)	1 piece
<b>PCF Microscope Adapter For Connector Types</b>		
29500771	PCF Microscope Adapter FSMA Simplex	1 piece
29500772	PCF Microscope Adapter ST(BFOC) Simplex	1 piece
29500773	PCF Microscope Adapter HFBR Simplex	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® FIRE



### Info

- A/J-DQ(ZN)BH(SR)H or U-DQ(ZN)BH(SR)H
- Fire-resistant for at least 180 minutes in the event of fire

### Benefits

- Ensures that the fibres can still transmit data during and after a fire (according to IEC 60331-25)
- Suitable for installation in underground tunnels where fire safety is critical
- Additional sheath protects the fibres for use in harsh environments
- Armouring provides excellent protection against high mechanical stress and rodents
- UV-resistant longitudinally and laterally watertight

### Application range

- In industrial areas that use fire as a tool
- Highly combustible or fire-prone areas
- For indoor and outdoor use
- Methods of Deployment: empty plastic pipes, ducts and trays

### Product features

- Fire behaviour:
  - Halogen-free (IEC 60754-1)
  - Flame-retardant (IEC 60332-3)
  - Low smoke density (IEC 61034-1/2)
  - Circuit integrity (IEC 60331-25); Optical fibre cables
- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Outer sheath flame-retardant and halogen-free

### Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- LSZH inner and outer sheaths
- Colour: black (RAL 9005)

### Technical data

	ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	<b>Optical fibre type</b> Core material: glass Cladding material: glass
	<b>Permissible bending radius</b> Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	<b>Permissible tensile force</b> Fixed installation: 1500 N Short-term: 2200 N
	<b>Temperature range</b> Fixed installation: $-30^{\circ}\text{C}$ to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
27560304	HITRONIC® FIRE 4G 50/125 OM3	50/125 OM3	4	9.6	123
27560308	HITRONIC® FIRE 8G 50/125 OM3	50/125 OM3	8	9.6	123
27560312	HITRONIC® FIRE 12G 50/125 OM3	50/125 OM3	12	9.6	123
27560324	HITRONIC® FIRE 24G 50/125 OM3	50/125 OM3	24	12.6	188
<b>Multimode G 50 OM2</b>					
27560204	HITRONIC® FIRE 4G 50/125 OM2	50/125 OM2	4	9.6	123
27560208	HITRONIC® FIRE 8G 50/125 OM2	50/125 OM2	8	9.6	123
27560212	HITRONIC® FIRE 12G 50/125 OM2	50/125 OM2	12	9.6	123
27560224	HITRONIC® FIRE 24G 50/125 OM2	50/125 OM2	24	12.6	188
<b>Multimode G 62.5 OM1</b>					
27560104	HITRONIC® FIRE 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	123
27560108	HITRONIC® FIRE 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	123
27560112	HITRONIC® FIRE 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	123
27560124	HITRONIC® FIRE 24G 62.5/125 OM1	62.5/125 OM1	24	12.6	188
<b>Single-mode E 9 OS2</b>					
27560904	HITRONIC® FIRE 4E 9/125 OS2	9/125 OS2	4	9.6	123
27560908	HITRONIC® FIRE 8E 9/125 OS2	9/125 OS2	8	9.6	123
27560912	HITRONIC® FIRE 12E 9/125 OS2	9/125 OS2	12	9.6	123
27560924	HITRONIC® FIRE 24E 9/125 OS2	9/125 OS2	24	12.6	188

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products. Available on request with Multimode OM4 fibres.

### Accessories

- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool



**HITRONIC® TORSION**



**Info**

- A/J-V(ZN)H11Y
- Breakout cable designed to withstand high torsional stresses
- Torsion-resistant and very flexible



**Benefits**

- Designed to withstand high torsion in the windmill drip loop
- Suitable for field assembly
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

**Application range**

- For fixed and flexible installations, as well as for applications with torsional movements (e.g. machinery, wind turbines)
- Industrial environments
- In vertical installations
- As a link between moving parts
- For indoor and outdoor use




**Product features**

- Based on military norm MIL-C-85045
- Torsion-resistant and very flexible
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

**Product Make-up**

- 2.5 mm tight-buffered sub-cable with LSZH sheath
- Aramid yarns as strain relief
- Central element
- PUR outer sheath
- Colour: black (RAL 9005)

**Technical data**

-  **Optical fibre type**  
Core material: glass  
Cladding material: glass
-  **Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
-  **Temperature range**  
Fixed installation: -40°C to +70°C  
Occasional flexing: -30°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
26310302	HITRONIC® TORSION 2G 50/125 OM3	50/125 OM3	2	8.4	54
26310304	HITRONIC® TORSION 4G 50/125 OM3	50/125 OM3	4	8.4	54
26310308	HITRONIC® TORSION 8G 50/125 OM3	50/125 OM3	8	11.6	95
26310312	HITRONIC® TORSION 12G 50/125 OM3	50/125 OM3	12	14.7	122
<b>Multimode G 50 OM2</b>					
26310202	HITRONIC® TORSION 2G 50/125 OM2	50/125 OM2	2	8.4	54
26310204	HITRONIC® TORSION 4G 50/125 OM2	50/125 OM2	4	8.4	54
26310208	HITRONIC® TORSION 8G 50/125 OM2	50/125 OM2	8	11.6	95
26310212	HITRONIC® TORSION 12G 50/125 OM2	50/125 OM2	12	14.7	122
<b>Multimode G 62.5 OM1</b>					
26310102	HITRONIC® TORSION 2G 62.5/125 OM1	62.5/125 OM1	2	8.4	54
26310104	HITRONIC® TORSION 4G 62.5/125 OM1	62.5/125 OM1	4	8.4	54
26310108	HITRONIC® TORSION 8G 62.5/125 OM1	62.5/125 OM1	8	11.6	95
26310112	HITRONIC® TORSION 12G 62.5/125 OM1	62.5/125 OM1	12	14.7	122
<b>Single-mode E 9 OS2</b>					
26310902	HITRONIC® TORSION 2E 9/125 OS2	9/125 OS2	2	8.4	54
26310904	HITRONIC® TORSION 4E 9/125 OS2	9/125 OS2	4	8.4	54
26310908	HITRONIC® TORSION 8E 9/125 OS2	9/125 OS2	8	11.6	95
26310912	HITRONIC® TORSION 12E 9/125 OS2	9/125 OS2	12	14.7	122

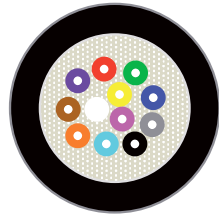
Photographs are not to scale and do not represent detailed images of the respective products.  
Available on request with Multimode OM4 fibres.

**Accessories**

- STAR STRIP stripping tool refer to page 1000



## HITRONIC® HDM Cable



### Info

- A/J-V(ZN) 11Y
- Mini breakout/distribution cable designed for frequent reeling and unreeling use
- Mobile field cables

### Benefits

- Suitable for field application
- Reelable for mobile use
- Very easy to install due to small dimensions, high flexibility, and small bending radius
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- Light & sound technology
- For indoor and outdoor use
- Industrial environments
- TV broadcasts
- Camera technology
- Building monitoring
- Field application

### Product features

- Based on military norm MIL-C-85045
- Highly flexible, reelable and tensile strength
- Colour-coded tight buffered fibres for easy channel identification
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

### Product Make-up

- Up to 12 tight-buffered fibres (900µm)
- Colour-coded
- Aramid yarns as strain relief
- PUR outer sheath
- Colour: black (RAL 9005)

### Technical data



ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description:  
Fibre optic cable



#### Optical fibre type

Core material: glass  
Cladding material: glass



#### Permissible bending radius

Static:  $\geq 15 \times$  outer diameter  
Dynamic:  $\geq 20 \times$  outer diameter



#### Temperature range

Fixed installation:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Flexible use:  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM4</b>					
26610404	HITRONIC® HDM600 4G 50/125 OM4	50/125 OM4	4	5.5	24
26610406	HITRONIC® HDM600 6G 50/125 OM4	50/125 OM4	6	5.6	29
26610408	HITRONIC® HDM700 8G 50/125 OM4	50/125 OM4	8	6.2	36
<b>Multimode G 50 OM3</b>					
26610304	HITRONIC® HDM600 4G 50/125 OM3	50/125 OM3	4	5.5	24
26610306	HITRONIC® HDM600 6G 50/125 OM3	50/125 OM3	6	5.6	29
26610308	HITRONIC® HDM700 8G 50/125 OM3	50/125 OM3	8	6.2	36
<b>Multimode G 50 OM2</b>					
26610204	HITRONIC® HDM600 4G 50/125 OM2	50/125 OM2	4	5.5	24
26610206	HITRONIC® HDM600 6G 50/125 OM2	50/125 OM2	6	5.6	29
26610208	HITRONIC® HDM700 8G 50/125 OM2	50/125 OM2	8	6.2	36
<b>Multimode G 62.5 OM1</b>					
26610104	HITRONIC® HDM600 4G 62.5/125 OM1	62.5/125 OM1	4	5.5	24
26610106	HITRONIC® HDM600 6G 62.5/125 OM1	62.5/125 OM1	6	5.6	29
26610108	HITRONIC® HDM700 8G 62.5/125 OM1	62.5/125 OM1	8	6.2	36
<b>Single-mode E 9 OS2</b>					
26610904	HITRONIC® HDM600 4E9/125 OS2	9/125 OS2	4	5.5	24
26610906	HITRONIC® HDM600 6E9/125 OS2	9/125 OS2	6	5.6	29
26610908	HITRONIC® HDM700 8E9/125 OS2	9/125 OS2	8	6.2	36
26610912	HITRONIC® HDM700 12E9/125 OS2	9/125 OS2	12	6.7	49

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.



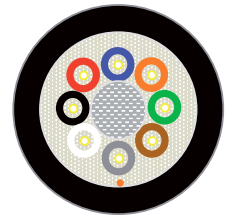


**HITRONIC® HRM-FD Cable**



**Info**

- A/J-V(ZN)H(ZN)11Y
- Flexible breakout cable designed for use in power chain applications



**Benefits**

- Designed for use in power chains
- Suitable for field assembly
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

**Application range**

- For highly flexible industrial applications
- As a link between moving parts
- In vertical installations
- Industrial environments
- For indoor and outdoor use

**Product features**

- Based on military norm MIL-C-85045
- For use in power chains and moving machinery parts in dry or damp rooms
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

**Product Make-up**

- 2.0 mm tight-buffered sub-cable with LSZH sheath
- Aramid yarns as strain relief
- Central element
- PUR outer sheath
- Colour: black (RAL 9005)

**Technical data**

- ETIM 5.0 Class-ID:** EC000034  
**ETIM 5.0 Class-Description:** Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Temperature range**  
Fixed installation: -40°C to +70°C  
Flexible use: -20°C to +60°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM4</b>					
26300402	HITRONIC® HRM-FD800 2G 50/125 OM4	50/125 OM4	2	7.8	50
26300404	HITRONIC® HRM-FD1000 4G 50/125 OM4	50/125 OM4	4	7.8	50
26300408	HITRONIC® HRM-FD1400 8G 50/125 OM4	50/125 OM4	8	10.4	93
26300412	HITRONIC® HRM-FD1800 12G 50/125 OM4	50/125 OM4	12	13	98
<b>Multimode G 50 OM3</b>					
26300302	HITRONIC® HRM-FD800 2G 50/125 OM3	50/125 OM3	2	7.8	50
26300304	HITRONIC® HRM-FD1000 4G 50/125 OM3	50/125 OM3	4	7.8	50
26300308	HITRONIC® HRM-FD1400 8G 50/125 OM3	50/125 OM3	8	10.4	93
26300312	HITRONIC® HRM-FD1800 12G 50/125 OM3	50/125 OM3	12	13	98
<b>Multimode G 50 OM2</b>					
26300202	HITRONIC® HRM-FD800 2G 50/125 OM2	50/125 OM2	2	7.8	50
26300204	HITRONIC® HRM-FD1000 4G 50/125 OM2	50/125 OM2	4	7.8	50
26300208	HITRONIC® HRM-FD1400 8G 50/125 OM2	50/125 OM2	8	10.4	93
26300212	HITRONIC® HRM-FD1800 12G 50/125 OM2	50/125 OM2	12	13	98
<b>Multimode G 62.5 OM1</b>					
26300102	HITRONIC® HRM-FD800 2G 62.5/125 OM1	62.5/125 OM1	2	7.8	50
26300104	HITRONIC® HRM-FD1000 4G 62.5/125 OM1	62.5/125 OM1	4	7.8	50
26300108	HITRONIC® HRM-FD1400 8G 62.5/125 OM1	62.5/125 OM1	8	10.4	93
26300112	HITRONIC® HRM-FD1800 12G 62.5/125 OM1	62.5/125 OM1	12	13	98
<b>Single-mode E 9 OS2</b>					
26300902	HITRONIC® HRM-FD800 2E 9/125 OS2	9/125 OS2	2	7.8	50
26300904	HITRONIC® HRM-FD1000 4E 9/125 OS2	9/125 OS2	4	7.8	50
26300908	HITRONIC® HRM-FD1400 8E 9/125 OS2	9/125 OS2	8	10.4	93
26300912	HITRONIC® HRM-FD1800 12E 9/125 OS2	9/125 OS2	12	13	98

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® HMDC Micro Cable



### Info

- A-D(ZN)2Y
- Micro special cable designed for installation by air-blowing systems (Micro Ducts)

### Benefits

- Suitable for blowing into micro-ducts
- Very compact dimensions (between 2mm to 2.5mm diameter)
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- FTTH applications
- House connection
- Telecommunications network
- For installations by blowing
- Methods of deployment: for blowing or pulling into micro ducts

### Product features

- Colour-coded fibres
- High reduced dimensions (cable diameter ≤ 2.5mm)
- Halogen-free, low-friction outer sheath
- UV-resistant

### Product Make-up

- Central mini subunit with up to 12 fibres
- Standard with single-mode fibre type G.657.A1 (low macrobending sensitive fibre)
- Aramid yarns as strain relief
- PE outer sheath
- Colour: black (RAL 9005)

### Technical data



ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable

**Fibre type**  
Single-mode  
ITU-T G657.A1

**Standard designation**  
A-D(ZN)2Y



**Optical fibre type**  
Core material: glass  
Cladding material: glass



**Permissible bending radius**  
≥ 25 x outer diameter



**Permissible tensile force**  
Installation: 200N



**Temperature range**  
Fixed installation: -40°C to +80°C  
During installation: -10°C to +50°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>HITRONIC® HMDC Micro Cable</b>					
27009802	HITRONIC® HMDC 2E9/125 G.657.A1	9/125 G.657.A1	2	2	5
27009804	HITRONIC® HMDC 4E9/125 G.657.A1	9/125 G.657.A1	4	2	5
27009806	HITRONIC® HMDC 6E9/125 G.657.A1	9/125 G.657.A1	6	2.2	5
27009808	HITRONIC® HMDC 8E9/125 G.657.A1	9/125 G.657.A1	8	2.3	5
27009812	HITRONIC® HMDC 12E9/125 G.657.A1	9/125 G.657.A1	12	2.5	5

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- HITRONIC® HQN Outdoor Cable refer to page 512
- HITRONIC® HVN-Mini Cable refer to page 511



## HITRONIC® HVN-Mini Cable

**i Info**

- A-DQ(ZN)2Y
- Mini outdoor cable designed for installation by air-blowing systems (Ducts)



**Benefits**

- Suitable for blowing into ducts
- Compact dimensions
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

**Application range**

- Backbone-Area, FTTH applications
- Telecommunications network
- WAN applications
- For installations by blowing
- Methods of deployment: for blowing or pulling into ducts

**Product features**

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Reduced dimensions
- Halogen-free, low-friction outer sheath
- UV-resistant

**Product Make-up**

- Up to 12 stranded gel-filled loose tubes
- Central GRP strength element
- Reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

**Technical data**

ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable

**Standard designation**  
A-DQ(ZN)2Y

**Optical fibre type**  
Core material: glass  
Cladding material: glass

**Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter

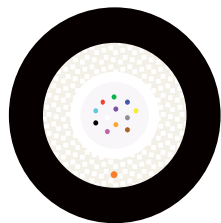
**Temperature range**  
Fixed installation: -40°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Single-mode E 9 OS2</b>					
26609912	HITRONIC® HVN-Mini500 1x12E 9/125 OS2	9/125 OS2	12	5.8	30
26609924	HITRONIC® HVN-Mini500 2x12E 9/125 OS2	9/125 OS2	24	5.8	30
26609948	HITRONIC® HVN-Mini500 4x12E 9/125 OS2	9/125 OS2	48	5.8	33
26609972	HITRONIC® HVN-Mini500 6x12E 9/125 OS2	9/125 OS2	72	5.8	33
26609996	HITRONIC® HVN-Mini 1200 8x12E 9/125 OS2	9/125 OS2	96	7.2	52
26609944	HITRONIC® HVN-Mini1000 12x12E 9/125	9/125 OS2	144	8	80

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® HQN Outdoor Cable



### Info

- A-DQ(ZN)B2Y
- Outdoor cable with central loose tube and non-metallic strain relief

### Benefits

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

### Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

### Product Make-up

- Glass fibres with primary coating
- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

### Technical data



ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description:  
Fibre optic cable



#### Optical fibre type

Core material: glass  
Cladding material: glass



#### Permissible bending radius

Static:  $\geq 15 \times$  outer diameter  
Dynamic:  $\geq 20 \times$  outer diameter



#### Permissible tensile force

Fixed installation: 1500 N  
Short-term: 3000 N



#### Temperature range

Fixed installation: -40°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
27600304	HITRONIC® HQN1500 4G 50/125 OM3	50/125 OM3	4	7.3	40
27600308	HITRONIC® HQN1500 8G 50/125 OM3	50/125 OM3	8	7.3	40
27600312	HITRONIC® HQN1500 12G 50/125 OM3	50/125 OM3	12	7.3	40
27600324	HITRONIC® HQN1500 24G 50/125 OM3	50/125 OM3	24	8.3	65
<b>Multimode G 50 OM2</b>					
27600204	HITRONIC® HQN1500 4G 50/125 OM2	50/125 OM2	4	7.3	40
27600208	HITRONIC® HQN1500 8G 50/125 OM2	50/125 OM2	8	7.3	40
27600212	HITRONIC® HQN1500 12G 50/125 OM2	50/125 OM2	12	7.3	40
27600224	HITRONIC® HQN1500 24G 50/125 OM2	50/125 OM2	24	8.3	65
<b>Multimode G 62.5 OM1</b>					
27600104	HITRONIC® HQN1500 4G 62.5/125 OM1	62.5/125 OM1	4	7.3	40
27600108	HITRONIC® HQN1500 8G 62.5/125 OM1	62.5/125 OM1	8	7.3	40
27600112	HITRONIC® HQN1500 12G 62.5/125 OM1	62.5/125 OM1	12	7.3	40
27600124	HITRONIC® HQN1500 24G 62.5/125 OM1	62.5/125 OM1	24	8.3	65
<b>Single-mode E 9 OS2</b>					
27600904	HITRONIC® HQN1500 4E 9/125 OS2	9/125 OS2	4	7.3	40
27600908	HITRONIC® HQN1500 8E 9/125 OS2	9/125 OS2	8	7.3	40
27600912	HITRONIC® HQN1500 12E 9/125 OS2	9/125 OS2	12	7.3	40
27600924	HITRONIC® HQN1500 24E 9/125 OS2	9/125 OS2	24	8.3	65

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

Available on request with Multimode OM4 fibres.

### Similar products

- HITRONIC® HUN Universal Cable refer to page 519
- HITRONIC® HVN Outdoor Cable refer to page 513
- HITRONIC® HQW Armoured Outdoor Cable refer to page 514

### Accessories

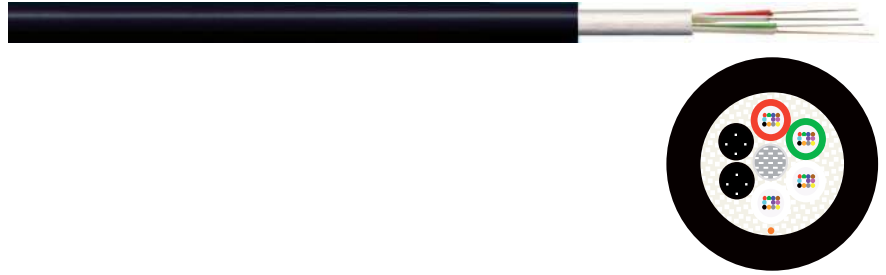
- GOF SIMPLEX Pigtail refer to page 524
- DATA STRIP stripping tool refer to page 1001



# HITRONIC® HVN Outdoor Cable

**i Info**

- A-DQ(ZN)B2Y
- Outdoor cable with stranded loose tubes and non-metallic strain relief



**Benefits**

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

**Application range**

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

**Product features**

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

**Product Make-up**

- Up to 12 stranded gel-filled loose tubes
- Central GRP strength element
- Water-blocking reinforced glass yarn strain relief
- PE outer sheath
- Colour: black (RAL 9005)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Temperature range**  
Fixed installation: -40°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
26600324	HITRONIC® HVN5000 2x12G 50/125 OM3	50/125 OM3	24	11	64
26600348	HITRONIC® HVN5000 4x12G 50/125 OM3	50/125 OM3	48	11	84
<b>Multimode G 50 OM2</b>					
26600224	HITRONIC® HVN5000 2x12G 50/125 OM2	50/125 OM2	24	11	64
26600248	HITRONIC® HVN5000 4x12G 50/125 OM2	50/125 OM2	48	11	84
<b>Single-mode E 9 OS2</b>					
26600924	HITRONIC® HVN5000 2x12E 9/125 OS2	9/125 OS2	24	11	64
26600948	HITRONIC® HVN5000 4x12E 9/125 OS2	9/125 OS2	48	11	84
<b>HVN Telecom Single-mode E 9 OS2</b>					
26601924	HITRONIC® HVN1500 2x12E 9/125 OS2	9/125 OS2	24	10.5	89
26601948	HITRONIC® HVN1500 4x12E 9/125 OS2	9/125 OS2	48	10.5	91
26601972	HITRONIC® HVN2000 6x12E 9/125 OS2	9/125 OS2	72	10.8	97
26601996	HITRONIC® HVN2000 8x12E 9/125 OS2	9/125 OS2	96	11.9	121
26601944	HITRONIC® HVN2000 12x12E 9/125 OS2	9/125 OS2	144	14.3	183

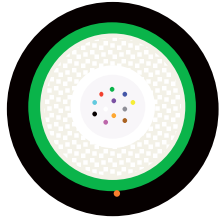
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
The cables can also be supplied as pre-terminated fibre optic trunks.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Other models are available upon request.

**Similar products**

- HITRONIC® HVN-Mini Cable refer to page 511
- HITRONIC® HVW Armoured Outdoor Cable refer to page 515



## HITRONIC® HQW Armoured Outdoor Cable



### Info

- A-DQ(ZN)(SR)2Y
- Double-sheathed outdoor cable with corrugated steel tape armour, and non-metallic strength elements

### Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight

### Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

### Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

### Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE outer sheath
- Colour: black (RAL 9005)

### Technical data

- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static:  $\geq 15 \times$  outer diameter  
Dynamic:  $\geq 20 \times$  outer diameter
- Permissible tensile force**  
Fixed installation: 3000 N  
Short-term: 5000 N
- Temperature range**  
Fixed installation:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
27900304	HITRONIC® HQW3000 4G 50/125 OM3	50/125 OM3	4	9.6	88
27900308	HITRONIC® HQW3000 8G 50/125 OM3	50/125 OM3	8	9.6	88
27900312	HITRONIC® HQW3000 12G 50/125 OM3	50/125 OM3	12	9.6	88
27900324	HITRONIC® HQW3000 24G 50/125 OM3	50/125 OM3	24	9.6	88
<b>Multimode G 50 OM2</b>					
27900204	HITRONIC® HQW3000 4G 50/125 OM2	50/125 OM2	4	9.6	88
27900208	HITRONIC® HQW3000 8G 50/125 OM2	50/125 OM2	8	9.6	88
27900212	HITRONIC® HQW3000 12G 50/125 OM2	50/125 OM2	12	9.6	88
27900224	HITRONIC® HQW3000 24G 50/125 OM2	50/125 OM2	24	9.6	88
<b>Multimode G 62.5 OM1</b>					
27900104	HITRONIC® HQW3000 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	88
27900108	HITRONIC® HQW3000 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	88
27900112	HITRONIC® HQW3000 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	88
27900124	HITRONIC® HQW3000 24G 62.5/125 OM1	62.5/125 OM1	24	9.6	88
<b>Single-mode E 9 OS2</b>					
27900904	HITRONIC® HQW3000 4E 9/125 OS2	9/125 OS2	4	9.6	88
27900908	HITRONIC® HQW3000 8E 9/125 OS2	9/125 OS2	8	9.6	88
27900912	HITRONIC® HQW3000 12E 9/125 OS2	9/125 OS2	12	9.6	88
27900924	HITRONIC® HQW3000 24E 9/125 OS2	9/125 OS2	24	9.6	88

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool

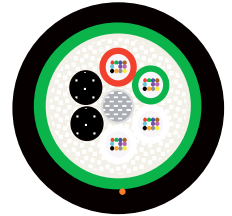


# HITRONIC® HVW Armoured Outdoor Cable



## Info

- A-DQ(ZN)(SR)2Y
- Outdoor cable with corrugated steel tape armour, stranded loose tubes and non-metallic strain relief



## Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight

## Application range

- Methods of Deployment: empty plastic pipes, ducts and trays
- For outdoor use
- Campus backbone
- WAN applications
- Industrial environments

## Product features

- Stranded loose tubes with up to 144 fibres (12 loose tubes with each 12 fibres)
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

## Product Make-up

- Up to 12 stranded gel-filled loose tubes
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE outer sheath
- Colour: black (RAL 9005)

## Technical data

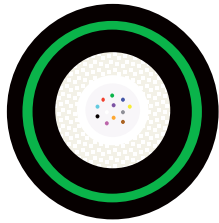
	ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	<b>Optical fibre type</b> Core material: glass Cladding material: glass
	<b>Permissible bending radius</b> Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	<b>Permissible tensile force</b> Fixed installation: 3000 N Short-term: 5000 N
	<b>Temperature range</b> Fixed installation: $-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Single-mode E 9 OS2</b>					
26900924	HITRONIC® HVW3000 2x12E 9/125 OS2	9/125 OS2	24	10	98
26900948	HITRONIC® HVW3000 4x12E 9/125 OS2	9/125 OS2	48	12.5	148
26900972	HITRONIC® HVW3000 6x12E 9/125 OS2	9/125 OS2	72	16	215
26900996	HITRONIC® HVW3000 8x12E 9/125 OS2	9/125 OS2	96	16	222
26900944	HITRONIC® HVW3000 12x12E 9/125 OS2	9/125 OS2	144	18.5	261

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® HQW-Plus Armoured Outdoor Cable



### Info

- A-DQ(ZN)B2Y(SR)2Y
- Double-sheathed outdoor cable with corrugated steel tape armour, and non-metallic strength elements

### Benefits

- Additional sheath protects the fibres for use in harsh environments
- Armouring provides excellent protection against high mechanical stress and rodents
- Suitable for direct burial
- UV-resistant longitudinally and laterally watertight

### Application range

- For outdoor use
- Harsh industrial environment
- Campus backbone
- WAN applications
- Methods of Deployment: empty plastic pipes, ducts and trays






### Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection
- Robust, halogen-free outer sheath

### Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- PE inner and outer sheaths
- Colour: black (RAL 9005)

### Technical data

	ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	<b>Optical fibre type</b> Core material: glass Cladding material: glass
	<b>Permissible bending radius</b> Static: $\geq 15 \times$ outer diameter Dynamic: $\geq 20 \times$ outer diameter
	<b>Permissible tensile force</b> Fixed installation: 3000 N Short-term: 5000 N
	<b>Temperature range</b> Fixed installation: $-40^{\circ}\text{C}$ to $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
27920304	HITRONIC® HQW-Plus3000 4G 50/125 OM3	50/125 OM3	4	9.6	95
27920308	HITRONIC® HQW-Plus3000 8G 50/125 OM3	50/125 OM3	8	9.6	95
27920312	HITRONIC® HQW-Plus3000 12G 50/125 OM3	50/125 OM3	12	9.6	95
27920324	HITRONIC® HQW-Plus3000 24G 50/125 OM3	50/125 OM3	24	12.6	135
<b>Multimode G 50 OM2</b>					
27920204	HITRONIC® HQW-Plus3000 4G 50/125 OM2	50/125 OM2	4	9.6	95
27920208	HITRONIC® HQW-Plus3000 8G 50/125 OM2	50/125 OM2	8	9.6	95
27920212	HITRONIC® HQW-Plus3000 12G 50/125 OM2	50/125 OM2	12	9.6	95
27920224	HITRONIC® HQW-Plus3000 24G 50/125 OM2	50/125 OM2	24	12.6	135
<b>Multimode G 62.5 OM1</b>					
27920104	HITRONIC® HQW-Plus3000 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	95
27920108	HITRONIC® HQW-Plus3000 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	95
27920112	HITRONIC® HQW-Plus3000 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	95
27920124	HITRONIC® HQW-Plus3000 24G 62.5/125 OM1	62.5/125 OM1	24	12.6	135
<b>Single-mode E 9 OS2</b>					
27920904	HITRONIC® HQW-Plus3000 4E 9/125 OS2	9/125 OS2	4	9.6	95
27920908	HITRONIC® HQW-Plus3000 8E 9/125 OS2	9/125 OS2	8	9.6	95
27920912	HITRONIC® HQW-Plus3000 12E 9/125 OS2	9/125 OS2	12	9.6	95
27920924	HITRONIC® HQW-Plus3000 24E 9/125 OS2	9/125 OS2	24	12.6	135

Photographs are not to scale and do not represent detailed images of the respective products.

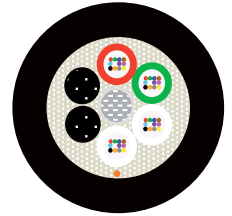




**HITRONIC® HQA Aerial Cable**

**i Info**

- A-DQ(ZN)2Y - ADSS
- Outdoor self-supporting aerial cable with stranded loose tubes and non-metallic strain relief



- Benefits**
- Suitable for mild weather conditions
  - Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
  - UV-resistant longitudinally and laterally watertight
  - Zero electromagnetic interference as the cable contains no metal (totally dielectric)
- Application range**
- For outdoor use
  - Hanging on poles
  - Laying on poles

- Product features**
- Stranded loose tubes with up to 96 fibres
  - Colour-coded fibres and loose tubes
  - Longitudinal watertight
  - Robust, halogen-free outer sheath
  - Span width up to 90m
- Product Make-up**
- Up to 8 stranded gel-filled loose tubes
  - Central GRP strength element
  - Aramid yarns as strain relief
  - PE outer sheath
  - Colour: black (RAL 9005)

**Technical data**

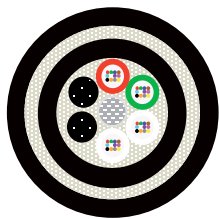
- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Permissible tensile force**  
MAT: 2000 N  
EDS: 800 N
- Temperature range**  
Fixed installation: -40°C to +70°C  
Occasional flexing: -30°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Single-mode E 9 OS2</b>					
26640912	HITRONIC® HQA800 6x2E 9/125 OS2	9/125 OS2	12	9.7	73
26640924	HITRONIC® HQA800 6x4E 9/125 OS2	9/125 OS2	24	9.7	73
26640948	HITRONIC® HQA800 6x8E 9/125 OS2	9/125 OS2	48	10.9	92
26640972	HITRONIC® HQA800 6x12E 9/125 OS2	9/125 OS2	72	10.9	94
26640996	HITRONIC® HQA800 8x12E 9/125 OS2	9/125 OS2	96	12.4	121

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## HITRONIC® HQA-Plus Aerial Cable



### Benefits

- Designed to withstand harsh weather conditions
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- For long span widths
- Hanging on poles
- For outdoor use
- Laying on poles

### Product features

- Stranded loose tubes with up to 96 fibres
- Colour-coded fibres and loose tubes
- Longitudinal watertight
- Robust, halogen-free outer sheath
- Span width up to 250m

### Product Make-up


- Up to 8 stranded gel-filled loose tubes
- Central GRP strength element
- Aramid yarns as strain relief
- PE inner and outer sheaths
- Colour: black (RAL 9005)





### Info


- A-DQ2Y(ZN)2Y ADSS
- Double-sheathed, self-supporting aerial cable with stranded loose tubes and non-metallic strain relief


### Technical data

 ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable

 **Optical fibre type**  
Core material: glass  
Cladding material: glass

 **Permissible bending radius**  
Static:  $\geq 15 \times$  outer diameter  
Dynamic:  $\geq 20 \times$  outer diameter

 **Permissible tensile force**  
MAT: 8000 N  
EDS: 3200 N

 **Temperature range**  
Fixed installation:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$   
Occasional flexing:  $-30^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Single-mode E 9 OS2</b>					
26644912	HITRONIC® HQA-Plus3200 6x2E 9/125 OS2	9/125 OS2	12	12.8	132
26644924	HITRONIC® HQA-Plus3200 6x4E 9/125 OS2	9/125 OS2	24	12.8	132
26644948	HITRONIC® HQA-Plus3200 6x8E 9/125 OS2	9/125 OS2	48	13.7	151
26644972	HITRONIC® HQA-Plus3200 6x12E 9/125 OS2	9/125 OS2	72	13.7	153
26644996	HITRONIC® HQA-Plus3200 8x12E 9/125 OS2	9/125 OS2	96	15.3	188

Photographs are not to scale and do not represent detailed images of the respective products.

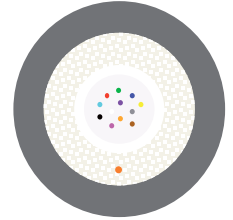


HITRONIC® HUN Universal Cable



Info

- A/J-DQ(ZN)BH or U-DQ(ZN)BH
- Universal cable with central or stranded loose tube and non-metallic strain relief



Benefits

- Flame retardance makes it suitable for indoor and outdoor installations
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV-resistant longitudinally and laterally watertight
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

Application range

- For indoor and outdoor use
- Campus backbone
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays

Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Outer sheath flame-retardant and halogen-free
- Rodent-protection

Product Make-up

- Glass fibres with primary coating
- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- LSZH outer sheath
- Colour: dark grey

Technical data

- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Permissible tensile force**  
Fixed installation: 1500 N  
Short-term: 2000 N
- Temperature range**  
Fixed installation: -30°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
27400304	HITRONIC® HUN1500 4G 50/125 OM3	50/125 OM3	4	7.3	53
27400308	HITRONIC® HUN1500 8G 50/125 OM3	50/125 OM3	8	7.3	53
27400312	HITRONIC® HUN1500 12G 50/125 OM3	50/125 OM3	12	7.3	53
27400324	HITRONIC® HUN1500 24G 50/125 OM3	50/125 OM3	24	8.3	60
26400324	HITRONIC® HUN1500 2x12G 50/125 OM3	50/125 OM3	24	10.1	84
26400348	HITRONIC® HUN1500 4x12G 50/125 OM3	50/125 OM3	48	11	109
<b>Multimode G 50 OM2</b>					
27400204	HITRONIC® HUN1500 4G 50/125 OM2	50/125 OM2	4	7.3	53
27400208	HITRONIC® HUN1500 8G 50/125 OM2	50/125 OM2	8	7.3	53
27400212	HITRONIC® HUN1500 12G 50/125 OM2	50/125 OM2	12	7.3	53
27400224	HITRONIC® HUN1500 24G 50/125 OM2	50/125 OM2	24	8.3	60
<b>Multimode G 62.5 OM1</b>					
27400104	HITRONIC® HUN1500 4G 62.5/125 OM1	62.5/125 OM1	4	7.3	53
27400108	HITRONIC® HUN1500 8G 62.5/125 OM1	62.5/125 OM1	8	7.3	53
27400112	HITRONIC® HUN1500 12G 62.5/125 OM1	62.5/125 OM1	12	7.3	53
27400124	HITRONIC® HUN1500 24G 62.5/125 OM1	62.5/125 OM1	24	8.3	60
<b>Single-mode E 9 OS2</b>					
27400904	HITRONIC® HUN1500 4E 9/125 OS2	9/125 OS2	4	7.3	53
27400908	HITRONIC® HUN1500 8E 9/125 OS2	9/125 OS2	8	7.3	53
27400912	HITRONIC® HUN1500 12E 9/125 OS2	9/125 OS2	12	7.3	53
27400924	HITRONIC® HUN1500 24E 9/125 OS2	9/125 OS2	24	8.3	60
26400924	HITRONIC® HUN1500 2x12E 9/125 OS2	9/125 OS2	24	10.1	84
26400948	HITRONIC® HUN1500 4x12E 9/125 OS2	9/125 OS2	48	11	109
26400972	HITRONIC® HUN2000 6x12E 9/125 OS2	9/125 OS2	72	12.6	148
26400996	HITRONIC® HUN2000 8x12E 9/125 OS2	9/125 OS2	96	14.3	190
26400944	HITRONIC® HUN2000 12x12E 9/125 OS2	9/125 OS2	144	17	221

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

The cables can also be supplied as pre-terminated fibre optic trunks.

Photographs are not to scale and do not represent detailed images of the respective products.

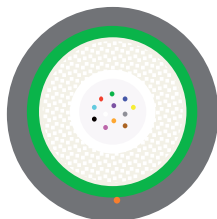
Available on request with Multimode OM4 fibres.

Accessories

- GOF SIMPLEX Pigtail refer to page 524
- DATA STRIP stripping tool refer to page 1001



## HITRONIC® HUW Armoured Universal Cable



### Info

- A/J-DQ(ZN)(SR)H or U-DQ(ZN)(SR)H
- Universal cable with corrugated steel tape armour, central loose tube and non-metallic strain relief

### Benefits

- Armouring provides excellent protection against high mechanical stress and rodents
- Flame retardance makes it suitable for indoor and outdoor installations
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- Water-resistant

### Application range

- For indoor and outdoor use
- Campus backbone
- Industrial environments
- Methods of Deployment: empty plastic pipes, ducts and trays






### Product features

- Outer sheath flame-retardant and halogen-free
- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Excellent rodent protection

### Product Make-up

- Gel-filled loose tube
- Water-blocking reinforced glass yarn strain relief
- Corrugated steel tape armour
- LSZH outer sheath
- Colour: green (based on RAL 6018)

### Technical data

	ETIM 5.0 Class-ID: EC000034 ETIM 5.0 Class-Description: Fibre optic cable
	<b>Optical fibre type</b> Core material: glass Cladding material: glass
	<b>Permissible bending radius</b> Static: ≥ 15 x outer diameter Dynamic: ≥ 20 x outer diameter
	<b>Permissible tensile force</b> Fixed installation: 1500 N Short-term: 2000 N
	<b>Temperature range</b> Fixed installation: -30°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM4</b>					
27500404	HITRONIC® HUW 1500 4G 50/125 OM4	50/125 OM4	4	9.6	88
27500408	HITRONIC® HUW 1500 8G 50/125 OM4	50/125 OM4	8	9.6	88
27500412	HITRONIC® HUW 1500 12G 50/125 OM4	50/125 OM4	12	9.6	88
27500424	HITRONIC® HUW 1500 24G 50/125 OM4	50/125 OM4	24	9.6	88
<b>Multimode G 50 OM3</b>					
27500304	HITRONIC® HUW 1500 4G 50/125 OM3	50/125 OM3	4	9.6	88
27500308	HITRONIC® HUW 1500 8G 50/125 OM3	50/125 OM3	8	9.6	88
27500312	HITRONIC® HUW 1500 12G 50/125 OM3	50/125 OM3	12	9.6	88
27500324	HITRONIC® HUW 1500 24G 50/125 OM3	50/125 OM3	24	9.6	88
<b>Multimode G 50 OM2</b>					
27500204	HITRONIC® HUW 1500 4G 50/125 OM2	50/125 OM2	4	9.6	88
27500208	HITRONIC® HUW 1500 8G 50/125 OM2	50/125 OM2	8	9.6	88
27500212	HITRONIC® HUW 1500 12G 50/125 OM2	50/125 OM2	12	9.6	88
27500224	HITRONIC® HUW 1500 24G 50/125 OM2	50/125 OM2	24	9.6	88
<b>Multimode G 62.5 OM1</b>					
27500104	HITRONIC® HUW 1500 4G 62.5/125 OM1	62.5/125 OM1	4	9.6	88
27500108	HITRONIC® HUW 1500 8G 62.5/125 OM1	62.5/125 OM1	8	9.6	88
27500112	HITRONIC® HUW 1500 12G 62.5/125 OM1	62.5/125 OM1	12	9.6	88
27500124	HITRONIC® HUW 1500 24G 62.5/125 OM1	62.5/125 OM1	24	9.6	88
<b>Single-mode E 9 OS2</b>					
27500904	HITRONIC® HUW 1500 4E 9/125 OS2	9/125 OS2	4	9.6	88
27500908	HITRONIC® HUW 1500 8E 9/125 OS2	9/125 OS2	8	9.6	88
27500912	HITRONIC® HUW 1500 12E 9/125 OS2	9/125 OS2	12	9.6	88
27500924	HITRONIC® HUW 1500 24E 9/125 OS2	9/125 OS2	24	9.6	88

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
The cables can also be supplied as pre-terminated fibre optic trunks.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

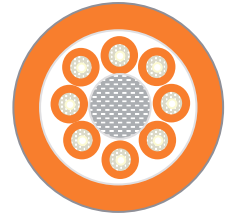
- STAR STRIP stripping tool refer to page 1000
- SMART STRIP stripping tool



## HITRONIC® HRH Breakout Cable

**Info**

- J-V(ZN)HH
- Breakout cable for direct connector assembly



- Benefits**
- Suitable for field assembly
  - Universal cable for cabling of buildings
  - Very easy to install due to compact design, high flexibility, and small bending radii
  - Zero electromagnetic interference as the cable contains no metal (totally dielectric)

- Application range**
- For indoor use
  - Tertiary cabling
  - Structured cabling - backbone
  - Methods of Deployment: laying in trunking, ducts, trays, empty plastic pipes, building riser, raised floors and plenums

- Product features**
- Installation cable with up to 12 Simplex cables
  - Outer sheath flame-retardant and halogen-free
  - Mechanically robust

- Product Make-up**
- 2.1 mm tight-buffered sub-cable with LSZH sheath (identified by numbers)
  - Central GRP strength element
  - Aramid yarns as strain relief
  - LSZH inner and outer sheaths
  - Colour: aqua (RAL 6027) for OM3, orange (RAL 2003) for OM2 and OM1

**Technical data**

- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Temperature range**  
Fixed installation: -20°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
26000302	HITRONIC® HRH400 2G 50/125 OM3	50/125 OM3	2	7	35
26000304	HITRONIC® HRH600 4G 50/125 OM3	50/125 OM3	4	7	44
26000308	HITRONIC® HRH1200 8G 50/125 OM3	50/125 OM3	8	9.7	77
26000312	HITRONIC® HRH1700 12G 50/125 OM3	50/125 OM3	12	10.3	100
<b>Multimode G 50 OM2</b>					
26000202	HITRONIC® HRH400 2G 50/125 OM2	50/125 OM2	2	7	35
26000204	HITRONIC® HRH600 4G 50/125 OM2	50/125 OM2	4	7	44
26000208	HITRONIC® HRH1200 8G 50/125 OM2	50/125 OM2	8	9.7	77
26000212	HITRONIC® HRH1700 12G 50/125 OM2	50/125 OM2	12	10.3	100
<b>Multimode G 62.5 OM1</b>					
26000102	HITRONIC® HRH400 2G 62.5/125 OM1	62.5/125 OM1	2	7	35
26000104	HITRONIC® HRH600 4G 62.5/125 OM1	62.5/125 OM1	4	7	44
26000108	HITRONIC® HRH1200 8G 62.5/125 OM1	62.5/125 OM1	8	9.7	77
26000112	HITRONIC® HRH1700 12G 62.5/125 OM1	62.5/125 OM1	12	10.3	100

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
The cables can also be supplied as pre-terminated fibre optic trunks.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Available on request with Multimode OM4 fibres.

- Accessories**
- DATA STRIP stripping tool refer to page 1001



## HITRONIC® HDH Mini-Breakout Cable



**Info**

- J-V(ZN)H
- Mini breakout/distribution cable for direct connector assembly

### Benefits

- Very easy to install due to small dimensions, high flexibility, and small bending radius
- Suitable for field assembly
- Universal cable for cabling of buildings
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- For indoor use
- Tertiary cabling
- Structured cabling - backbone
- Methods of Deployment: laying in trunking, ducts, trays, empty plastic pipes, building riser, raised floors and plenums

### Product features

- Up to 12 tight-buffered fibres (900µm)
- Colour-coded fibres
- Outer sheath flame-retardant and halogen-free
- Mechanically robust

### Product Make-up

- Tight-buffered fibres
- Water-blocking reinforced glass yarn strain relief
- LSZH outer sheath
- Colour: aqua (RAL 6027) for OM3, orange (RAL 2003) for OM2 and OM1
- Available on request: single-mode OS2 (yellow) and multimode OM4 (violet)

### Technical data

- ETIM 5.0 Class-ID: EC000034  
ETIM 5.0 Class-Description: Fibre optic cable
- Optical fibre type**  
Core material: glass  
Cladding material: glass
- Permissible bending radius**  
Static: ≥ 15 x outer diameter  
Dynamic: ≥ 20 x outer diameter
- Temperature range**  
Fixed installation: -20°C to +70°C

Article number	Article designation	Fibre type	Number of fibres	Outer diameter (mm)	Weight (kg/km)
<b>Multimode G 50 OM3</b>					
26010302	HITRONIC® HDH 2G 50/125 OM3	50/125 OM3	2	6	34
26010304	HITRONIC® HDH 4G 50/125 OM3	50/125 OM3	4	6.3	37
26010308	HITRONIC® HDH 8G 50/125 OM3	50/125 OM3	8	7.5	57
26010312	HITRONIC® HDH 12G 50/125 OM3	50/125 OM3	12	8.3	69
<b>Multimode G 50 OM2</b>					
26010202	HITRONIC® HDH 2G 50/125 OM2	50/125 OM2	2	6	34
26010204	HITRONIC® HDH 4G 50/125 OM2	50/125 OM2	4	6.3	37
26010208	HITRONIC® HDH 8G 50/125 OM2	50/125 OM2	8	7.5	57
26010212	HITRONIC® HDH 12G 50/125 OM2	50/125 OM2	12	8.3	69
<b>Multimode G 62.5 OM1</b>					
26010102	HITRONIC® HDH 2G 62.5/125 OM1	62.5/125 OM1	2	6	34
26010104	HITRONIC® HDH 4G 62.5/125 OM1	62.5/125 OM1	4	6.3	37
26010108	HITRONIC® HDH 8G 62.5/125 OM1	62.5/125 OM1	8	7.5	57
26010112	HITRONIC® HDH 12G 62.5/125 OM1	62.5/125 OM1	12	8.3	69

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. The cables can also be supplied as pre-terminated fibre optic trunks. Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- DATA STRIP stripping tool refer to page 1001

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

**GOF DUPLEX Patchcord**

**Info**

- J-VH 2x1G/E
- Pre-terminated tight buffered duplex cable with durable ceramic ferrules
- Other types are available on [www.lappgroup.com/assemblyfinder](http://www.lappgroup.com/assemblyfinder) or upon request



**Benefits**

- “Plug & Play” connection between any optical devices
- Non-permanent connections allow for easy change of equipment
- Direct connection between two active optical components
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

**Application range**

- For indoor use
- LAN connections
- Data Centers
- Distributor cabinet

**Product features**

- Outer sheath flame-retardant and halogen-free
- High flexibility
- Cable termination with durable ceramic ferrules

**Product Make-up**

- Tight-buffered duplex cable with LSZH outer sheath
- Connector: LC, SC or ST
- Cable colour: violet for multimode OM4, aqua for multimode OM3, orange for multimode OM2 and OM1, yellow for single-mode OS2
- Standard length: 2 m
- On request: 1 m, 3 m, 5 m and 10 m

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001263  
ETIM 5.0 Class-Description: Fibre optic patch cord

**Optical fibre type**  
Core material: glass  
Cladding material: glass

**Permissible bending radius**  
Static: ≥ 30 mm  
Dynamic: ≥ 40 mm

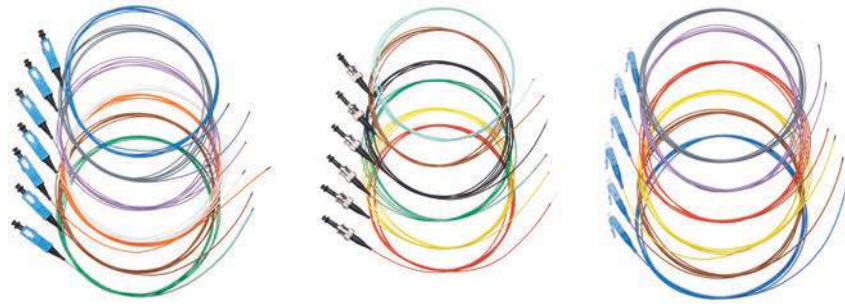
**Permissible tensile force**  
Fixed installation: 100 N

**Temperature range**  
Fixed installation: -20°C to +60°C  
Occasional flexing: -5°C to +50°C

Article number	Article designation	PU
<b>Multimode G 50 OM4</b>		
29011402	GOF Duplex Patchcord SC/SC G50 OM4, 2m	1 piece
29021402	GOF Duplex Patchcord ST/SC G50 OM4, 2m	1 piece
29022402	GOF Duplex Patchcord ST/ST G50 OM4, 2m	1 piece
29031402	GOF Duplex Patchcord LC/SC G50 OM4, 2m	1 piece
29032402	GOF Duplex Patchcord LC/ST G50 OM4, 2m	1 piece
29033402	GOF Duplex Patchcord LC/LC G50 OM4, 2m	1 piece
29044402	GOF Duplex Patchcord FC/FC G50 OM4, 2m	1 piece
<b>Multimode G 50 OM3</b>		
29011302	GOF Duplex Patchcord SC/SC G50 OM3, 2m	1 piece
29021302	GOF Duplex Patchcord ST/SC G50 OM3, 2m	1 piece
29022302	GOF Duplex Patchcord ST/ST G50 OM3, 2m	1 piece
29031302	GOF Duplex Patchcord LC/SC G50 OM3, 2m	1 piece
29032302	GOF Duplex Patchcord LC/ST G50 OM3, 2m	1 piece
29033302	GOF Duplex Patchcord LC/LC G50 OM3, 2m	1 piece
29044302	GOF Duplex Patchcord FC/FC G50 OM3, 2m	1 piece
<b>Multimode G 50 OM2</b>		
29011202	GOF Duplex Patchcord SC/SC G50 OM2, 2m	1 piece
29021202	GOF Duplex Patchcord ST/SC G50 OM2, 2m	1 piece
29022202	GOF Duplex Patchcord ST/ST G50 OM2, 2m	1 piece
29031202	GOF Duplex Patchcord LC/SC G50 OM2, 2m	1 piece
29032202	GOF Duplex Patchcord LC/ST G50 OM2, 2m	1 piece
29033202	GOF Duplex Patchcord LC/LC G50 OM2, 2m	1 piece
29044202	GOF Duplex Patchcord FC/FC G50 OM2, 2m	1 piece
<b>Multimode G 62.5 OM1</b>		
29011102	GOF Duplex Patchcord SC/SC G62.5, 2m	1 piece
29021102	GOF Duplex Patchcord ST/SC G62.5, 2m	1 piece
29022102	GOF Duplex Patchcord ST/ST G62.5, 2m	1 piece
29031102	GOF Duplex Patchcord LC/SC G62.5, 2m	1 piece
29032102	GOF Duplex Patchcord LC/ST G62.5, 2m	1 piece
29033102	GOF Duplex Patchcord LC/LC G62.5, 2m	1 piece
29044102	GOF Duplex Patchcord FC/FC G62.5, 2m	1 piece
<b>Single-mode E 9 OS2</b>		
29011902	GOF Duplex Patchcord SC/SC E9 OS2, 2m	1 piece
29021902	GOF Duplex Patchcord ST/SC E9 OS2, 2m	1 piece
29022902	GOF Duplex Patchcord ST/ST E9 OS2, 2m	1 piece
29031902	GOF Duplex Patchcord LC/SC E9 OS2, 2m	1 piece
29032902	GOF Duplex Patchcord LC/ST E9 OS2, 2m	1 piece
29033902	GOF Duplex Patchcord LC/LC E9 OS2, 2m	1 piece
29033802	GOF DUPLEX Patchcord LC/LC 9/125 APC, 2m	1 piece
29039902	GOF DUPLEX Patchcord LC/SC-APC E9 OS2, 2m	1 piece

Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

## GOF SIMPLEX Pigtail



### Info

- J-VH 1G/E
- Pre-terminated tight-buffered simplex cable with one durable ceramic ferrule

### Benefits

- Ease of installation and assembly
- Create a direct plug connection for installation cables with splicing
- Zero electromagnetic interference as the cable contains no metal (totally dielectric)

### Application range

- For indoor use
- Connection to an end optical device

### Product features

- Outer sheath flame-retardant and halogen-free
- High flexibility
- Cable termination with durable ceramic ferrules
- Set consisting of 12 colour-coded pigtails

### Product Make-up

- Tight-buffered simplex fibre with LSZH outer sheath
- Connector: LC, SC or ST
- Colour-coded primary and secondary coatings
- Standard length: 2 m

### Technical data



ETIM 5.0 Class-ID: EC000748  
ETIM 5.0 Class-Description: Pigtail



**Optical fibre type**  
Core material: glass  
Cladding material: glass



**Permissible tensile force**  
Fixed installation: 100 N



**Temperature range**  
Fixed installation: -20°C to +60°C  
Occasional flexing: -5°C to +50°C

Article number	Article designation	PU
<b>Multimode G 50 OM4</b>		
29310402	GOF Simplex Pigtail SC G50 OM4, 2m	12 piece
29320402	GOF Simplex Pigtail ST G50 OM4, 2m	12 piece
29330402	GOF Simplex Pigtail LC G50 OM4, 2m	12 piece
<b>Multimode G 50 OM3</b>		
29310302	GOF Simplex Pigtail SC G50 OM3, 2m	12 piece
29320302	GOF Simplex Pigtail ST G50 OM3, 2m	12 piece
29330302	GOF Simplex Pigtail LC G50 OM3, 2m	12 piece
<b>Multimode G 50 OM2</b>		
29310202	GOF Simplex Pigtail SC G50 OM2, 2m	12 piece
29320202	GOF Simplex Pigtail ST G50 OM2, 2m	12 piece
29330202	GOF Simplex Pigtail LC G50 OM2, 2m	12 piece
<b>Multimode G 62.5 OM1</b>		
29310102	GOF Simplex Pigtail SC G62.5, 2m	12 piece
29320102	GOF Simplex Pigtail ST G62.5, 2m	12 piece
29330102	GOF Simplex Pigtail LC G62.5, 2m	12 piece
<b>Single-mode E 9 OS2</b>		
29310902	GOF Simplex Pigtail SC E9 OS2, 2m	12 piece
29320902	GOF Simplex Pigtail ST E9 OS2, 2m	12 piece
29330902	GOF Simplex Pigtail LC E9 OS2, 2m	12 piece

Other types of connectors (e.g. LC, MTRJ, E2000) are available upon request. Judy Lim: This will not apply to Hitronic anymore, as LC will become a standard product and MTRJ/E2000 will be removed.

Photographs are not to scale and do not represent detailed images of the respective products.



## GOF Connector



### Benefits

- Ideal for assembling
- For assembly process: cable preparation/ glueing/crimping/polishing
- Assembly instructions can be found in the GOF assembly toolbox (not included in Lapp product range)
- Trained optical installers should be used in all connector assembly

### Application range

- For connector assemblies in production or laboratory environment

### Product features

- Connector sets include all needed parts for assembly

### Norm references / Approvals

- LC comply with IEC standard 61754-20
- SC comply with IEC standard 61754-4
- ST comply with IEC standard 61754-2

### Product Make-up

- Ferrule diameter:
  - LC: 1.25mm (zirconia)
  - SC, ST: 2.5mm (zirconia)
- Can be assembled with cables of 1.7mm-2.1mm diameter
- LC and SC connector sets available in green (single-mode APC), blue (single-mode PC) and grey (multimode)

### Technical data



ETIM 5.0 Class-ID: EC001122  
ETIM 5.0 Class-Description: Fibre optic connector



**Permissible tensile force**  
Tensile load 70N  
Tensile strength after assembly > 100N



**Temperature range**  
Operating  
LC: -40°C to 75°C  
SC: -40°C to 75°C  
ST: -40°C to 85°C  
Humidity 95%  
Flammability UL 94 V-0

Article number	Article designation	PU
<b>Singlemode</b>		
29110999	GOF Connector SC Single-mode Blue /4PC	4 piece
29110998	GOF Connector SC Single-mode Blue /50PC	50 piece
29110989	GOF Connector SC Single-mode APC Green/ 4PC	4 piece
29110988	GOF Connector SC Single-mode APC Green/ 50PC	50 piece
29130999	GOF Connector LC Single-mode Blue /4PC	4 piece
29130998	GOF Connector LC Single-mode Blue /50PC	50 piece
29130989	GOF Connector LC Single-mode APC GR /4PC	4 piece
29130988	GOF Connector LC Single-mode APC GR/50PC	50 piece
29120999	GOF Connector ST Single-mode /4PC	4 piece
29120998	GOF Connector ST Single-mode /50PC	50 piece
29140999	GOF Connector FC Single-mode /4PC	4 piece
<b>Multimode</b>		
29110199	GOF Connector SC Multimode Beige /4PC	4 piece
29110198	GOF Connector SC Multimode Beige /50PC	50 piece
29130199	GOF Connector LC Multimode Beige /4PC	4 piece
29130198	GOF Connector LC Multimode Beige /50PC	50 piece
29120199	GOF Connector ST Multimode /4PC	4 piece
29120198	GOF Connector ST Multimode /50PC	50 piece
29140199	GOF Connector FC Multimode /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## GOF Adapters



### Product features

- The couplings connect the glass fibre connectors with the same or different connector types.

### Norm references / Approvals

- LC comply with IEC standard 61754-20
- SC comply with IEC standard 61754-4
- ST comply with IEC standard 61754-2
- Comply with IEC, EIA/TIA standards

### Product Make-up

- Zirconia sleeves
- LC and SC adapters available in green (single-mode APC), blue (single-mode PC) and grey (multimode)

### Technical data



ETIM 5.0 Class-ID: EC000752  
ETIM 5.0 Class-Description:  
Fibre optic coupler

#### Attenuation

Attenuation (dB) < 0.2  
Repeatability  
1000 cycles (dB) < 0.2



#### Temperature range

Operating  
LC: -25°C to 70°C  
SC: -40°C to 75°C  
ST: -40°C to 85°C  
Humidity 95%  
Flammability UL 94 V-0

Article number	Article designation	PU
<b>Singlemode</b>		
29410999	GOF Adapter Duplex SC Single-mode Blue /4PC	4 piece
29410989	GOF Adapter Duplex SC Single-mode APC Green /4PC	4 piece
29430999	GOF Adapter Duplex LC Single-mode Blue /4PC	4 piece
29430989	GOF Adapter Duplex LC Single-mode APC Green /4PC	4 piece
29420999	GOF Adapter Simplex ST(BFOC) Single-mode /4PC	4 piece
29421999	GOF Adapter Duplex ST-SC Single-mode /4PC	4 piece
<b>Multimode</b>		
29410199	GOF Adapter Duplex SC Multimode Beige /4PC	4 piece
29430199	GOF Adapter Duplex LC Multimode Beige /4PC	4 piece
29420199	GOF Adapter Simplex ST(BFOC) Multimode /4PC	4 piece
29421199	GOF Adapter Duplex ST-SC Multimode /4PC	4 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## 19" Splice Box for ST

### Product features

- For up to 12 or 24 fibres
- Can be pulled out
- Unpopulated
- For a maximum of 4 splicing cartridges
- Height: 1 RU
- Dimensions (WxHxD): 483 x 44.5 x 244 mm
- Material: steel plate, 1.5 mm
- Colour: light grey (RAL 7035)



Article number	Article designation	PU
<b>Splice Box Compact</b>		
CE9138	19" Splice Box for 12 ST	1 piece
CE9139	19" Splice Box for 24 ST	1 piece

Splice boxes for more fibres with other types of connectors are available upon request. Also available in pre-assembled versions with couplings and pigtails. Photographs are not to scale and do not represent detailed images of the respective products.

## 19" Splice Box for SC

### Product features

- For up to 24 fibres
- Included: front panel with 12 SC-duplex holes
- Can be pulled out
- Unpopulated
- Height: 1 RU
- Dimensions (WxHxD): 483 x 44.5 x 170 mm
- Material: steel plate, 1.5 mm
- Colour: light grey (RAL 7035)



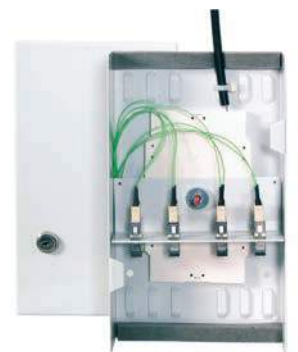
Article number	Article designation	PU
<b>Splice Box Compact</b>		
CE9135	19" Splice Box for SC	1 piece

Splice boxes for more fibres with other types of connectors are available upon request. Also available in pre-assembled versions with couplings and pigtails. Photographs are not to scale and do not represent detailed images of the respective products.

## Splice Box Compact

### Product features

- Panel mounting
- Lockable
- Max. capacity of 8 splicing cartridges or 4 splicing cartridges and one distribution plate
- Includes distributor plate for 8 ST couplings
- Includes distributor plate for 4 SC duplex couplings
- Dimensions (WxHxD): 265 x 150 x 55 mm
- Colour: light grey (RAL 7035)



Article number	Article designation	PU
<b>Splice Box Compact</b>		
CE9147	Splice Box Compact	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## Mini wall-mounted rack



### Product features

- Panel mounting
- Lockable
- Max. capacity of 8 splicing cartridges or 4 splicing cartridges and one distribution plate
- Accessories for Mini wall-mounted rack:
  - Distributor plate for 24 ST couplings
  - Distributor plate for 24 SC Simplex couplings
  - Distributor plate for 12 SC Duplex couplings
- Dimensions (W x H x D): 320 x 280 x 54 mm
- Colour: light grey (RAL 7035)

Article number	Article designation	PU
<b>Mini wall-mounted rack</b>		
CE9150	Mini wall-mounted rack	1 piece
<b>Accessories for Mini wall-mounted rack</b>		
CE9151	Distribution plate for 24 x ST-Couplers	1 piece
CE9152	Distribution plate for 24 x SC-simplex-Couplers	1 piece
CE9153	Distribution plate for 12 x SC-duplex-Couplers	1 piece

Photographs are not to scale and do not represent detailed images of the respective products.

## Accessories for splice boxes and wall-mounted rack



### Product features

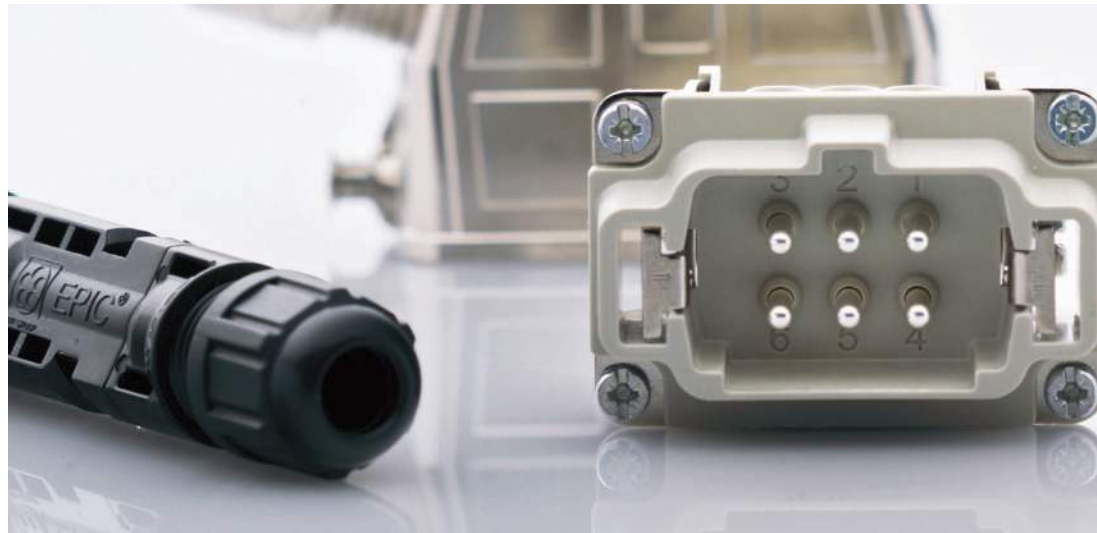
- Splicing cassette for up to 2 splicing protection holders
- Cover for splicing cartridge
- 12-fold splicing protection holder
- Splicing protection sleeve for ANT splicing device
- Blind cap instead of E2000 coupling
- Blind cap instead of ST coupling
- Dummy cap instead of SC duplex coupling

Article number	Article designation	PU
<b>Accessories for splice boxes and wall-mounted rack</b>		
CE9914	Splicing cassette for up to 2 splicing protection holders	1 piece
CE9914D	Cover for splicing cartridge	1 piece
CE9916	12-fold splicing protection holder	1 piece
CE9913	Splicing protection sleeve for ANT splicing device	15 pieces
CE9917	Blind cap instead of E2000 coupling	10 pieces
CE9918	Blind cap instead of ST coupling	10 pieces
CE9919	Blind cap instead of SC duplex coupling	10 pieces

Photographs are not to scale and do not represent detailed images of the respective products.

# EPIC®

## Industrial connectors



EPIC® industrial connectors can be found everywhere in industrial machinery and plant engineering, for measuring, control and drives. EPIC® is a flexible system of housings, inserts and contacts: all extremely robust, absolutely safe and simplicity itself to assemble.

### **Application range**

- Electronics and telecommunications
- Measurement, testing and control technology
- Industrial machinery and appliances
- Drive technology and industrial automation
- Photovoltaic plants

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

**Rectangular connectors**

**EPIC® H-A Inserts**

EPIC® H-A 3	534
EPIC® H-A 4	534
EPIC® H-A 10	535
EPIC® H-A 16	535

**EPIC® STA inserts**

EPIC® STA 6 Screw termination	536
EPIC® STA 6 Solder termination	536
EPIC® STA 14 Screw termination	537
EPIC® STA 14 Solder termination	537
EPIC® STA 20 Screw termination	538
EPIC® STA 20 Solder termination	538

**EPIC® H-Q 5 / H-Q.12 Inserts**

EPIC® H-Q 5	539
EPIC® H-Q 12	539

**EPIC® H-D Inserts**

EPIC® H-D 7 machined	540
EPIC® H-D 7 stamped	540
EPIC® H-D 8	541
EPIC® H-D 15 machined	542
EPIC® H-D 15 stamped	542
EPIC® H-D 25 machined	543
EPIC® H-D 25 stamped	543
EPIC® H-D 40 machined	544
EPIC® H-D 40 stamped	544
EPIC® H-D 64 machined	545
EPIC® H-D 64 stamped	545

**EPIC® H-DD Inserts**

EPIC® H-DD 24	546
EPIC® H-DD 42	546
EPIC® H-DD 72	547
EPIC® H-DD 108	547

**EPIC® H-BE Inserts**

EPIC® H-BE 6 Screw termination	548
EPIC® H-BE 6 Crimp termination	548
EPIC® H-BE 6 Cage clamp	548
EPIC® H-BE 6 Push-In termination	548
EPIC® H-BE 10 Screw termination	550
EPIC® H-BE 10 Crimp termination	550
EPIC® H-BE 10 Cage clamp	550
EPIC® H-BE 10 Push-In termination	550
EPIC® H-BE 16 Screw termination	552
EPIC® H-BE 16 Crimp termination	552
EPIC® H-BE 16 Cage clamp	552
EPIC® H-BE 16 Push-In termination	552
EPIC® H-BE 24 Screw termination	554
EPIC® H-BE 24 Crimp termination	554
EPIC® H-BE 24 Cage clamp	554
EPIC® H-BE 24 Push-In termination	554

**EPIC® H-EE Inserts**

EPIC® H-EE 10	556
EPIC® H-EE 18	556
EPIC® H-EE 32	557
EPIC® H-EE 46	557

**EPIC® H-BS Inserts**

EPIC® H-BS 6	558
EPIC® H-BS 12	558

**EPIC® H-BVE Inserts**

EPIC® H-BVE 3	559
EPIC® H-BVE 6	559
EPIC® H-BVE 10	559

**H-S Inserts**

Power H-S	New	560
-----------	-----	-----

**EPIC® K-Inserts**

EPIC® Power K 4/0	561
EPIC® Power K 4/2	561

**EPIC® TB-H-BE Terminal adapter**

EPIC® TB-H-BE 16	562
EPIC® TB-H-BE 24	562

**EPIC® MC Modules**

EPIC® MC Module: High Current 1+PE	563	
EPIC® MC Module: High Current 2pole	563	
EPIC® Power Module HC2	New	564
Power Module HHC2	565	

Power Module HHC1	New	566
EPIC® MC Module: High Voltage 3pole	567	
EPIC® MC Module: High Voltage 4+PE	568	
EPIC® MC Module: 3pole	568	
EPIC® MC Module: HE 4pole	568	
EPIC® MC Module: 5pole	569	
EPIC® MC Module: 10pole	569	
EPIC® MC Module: 10pole stamped	570	
EPIC® MC Module: 20pole	570	
EPIC® MC Dummy Module	570	
EPIC® MC Module: Koax 3pole	571	
EPIC® MC Module: PROFIBUS DP	571	
EPIC® MC Module: Universal Bus	571	
EPIC® MC Module: RJ45	572	
EPIC® CE6326 Connector RJ45	573	
EPIC® MC Module Pneumatic 1pole	574	
EPIC® MC Module Pneumatic 2pole	574	
EPIC® MC Module removal tool	575	
<b>EPIC® MCR Frames</b>		
EPIC® MCR 6	576	
EPIC® MCR 10	576	
EPIC® MCR 16	576	
EPIC® MCR 24	576	
EPIC® M-D 1.0 D-Sub stamped contacts-on-reel	577	
EPIC® Tools for M-D 1,0 D-Sub contacts-on-reel stamped	577	
EPIC® M-D 1.0 D-Sub stamped contacts-on-reel	577	
EPIC® Tools for M-D 1,0 D-Sub contacts-on-reel stamped	577	
<b>EPIC® Contacts + tools</b>		
EPIC® H-D 1.6 machined contacts	578	
EPIC® Tools for contacts H-D 1.6 machined	578	
EPIC® H-D 1.6 stamped contacts	579	
EPIC® Tools for contacts H-D 1.6 stamped	579	
EPIC® H-D 1.6 stamped contacts-on-reel	New	580
EPIC® Tools for contacts-on-reel H-D 1.6 stamped	580	
EPIC® H-BE 2.5 machined contacts	581	
EPIC® Tools for contacts H-BE 2.5 machined	581	
EPIC® MC 2.5 machined contacts	582	
EPIC® Tools for contacts MC 2.5 machined	582	
EPIC® MC 2.5 stamped contacts	583	
EPIC® Tools for contacts MC 2.5 stamped	583	
EPIC® MC 2.5 stamped contacts-on-reel	New	584
EPIC® Tools for contacts-on-reel MC 2.5 stamped	584	
EPIC® Modular 3.6 machined contacts	585	
EPIC® Tools for contacts MC 3.6 machined	585	
EPIC® Modular 3.6 machined contacts 16 mm <sup>2</sup>	586	
Modular 6.0 machined contacts	586	
EPIC® Modular 10.0 machined contacts	587	
EPIC® MC Coax-Contacts	New	588
EPIC® Tools for contacts MC Coax	588	
<b>EPIC® H-A 3 Housings</b>		
EPIC® H-A 3 MTG	589	
EPIC® H-A 3 TG	589	
EPIC® H-A 3 MTS	590	
EPIC® H-A 3 TS	590	
EPIC® H-A 3 AG	591	
EPIC® H-A 3 MAGD	591	
EPIC® H-A 3 AGS	591	
EPIC® H-A 3 AGSV	592	
EPIC® H-A 3 AGSV open bottom	592	
EPIC® H-A 3 MTGVB	593	
EPIC® H-A 3 TGVB	593	
<b>EPIC® H-A 10 Housings</b>		
EPIC® H-A 10 TG	594	
EPIC® H-A 10 TGH	594	
EPIC® H-A 10 TS	595	
EPIC® H-A 10 TSH	595	
EPIC® H-A 10 AG-LB	596	
EPIC® H-A 10 AD-LB	596	
EPIC® H-A 10 SGR-LB	597	
EPIC® H-A 10 SGRL-LB	597	
EPIC® H-A 10 SDR-LB	598	
EPIC® H-A 10 SDRL-LB	598	
EPIC® H-A 10 TBF-LB	599	
EPIC® H-A 10 TBFH-LB	599	
<b>EPIC® H-A 16 Housings</b>		

EPIC® H-A 16 TG	600	EPIC® H-B 10 SDRH-BO	628
EPIC® H-A 16 TGH	600	EPIC® H-B 10 SDRLH-BO	628
EPIC® H-A 16 TS	601	EPIC® H-B 10 TBF-LB	629
EPIC® H-A 16 TSH	601	EPIC® H-B 10 TBFH-LB	629
EPIC® H-A 16 AG-LB	602	EPIC® H-B 10 TBF	629
EPIC® H-A 16 AD-LB	602	EPIC® H-B 10 TBFH	630
EPIC® H-A 16 SGR-LB	603	<b>EPIC® H-B 16 Housings</b>	
EPIC® H-A 16 SGRL-LB	603	EPIC® H-B 16 AD-BO	631
EPIC® H-A 16 SDR-LB	604	EPIC® H-B 16 SGR-LB	631
EPIC® H-A 16 SDRL-LB	604	EPIC® H-B 16 SGRL-LB	631
EPIC® H-A 16 TBF-LB	605	EPIC® H-B 16 SDRL-LB	632
EPIC® H-A 16 TBFH-LB	605	EPIC® H-B 16 SDRH-LB	632
<b>EPIC® ULTRA H-B 6</b>		EPIC® H-B 16 SDRLH-LB	632
EPIC® ULTRA H-B 6 TG LB	606	EPIC® H-B 16 SGRH-LB	633
EPIC® ULTRA H-B 6 TS LB	606	EPIC® H-B 16 SGRLH-LB	633
EPIC® ULTRA H-B 6 AG LB	607	EPIC® H-B 16 SDR-LB	633
EPIC® ULTRA H-B 6 SGR LB	607	EPIC® H-B 16 SGR	634
<b>EPIC® ULTRA H-B 10</b>		EPIC® H-B 16 SGRL	634
EPIC® ULTRA H-B 10 TS QB	608	EPIC® H-B 16 SGRH	634
EPIC® ULTRA H-B 10 AG QB	608	EPIC® H-B 16 AG-LB	635
<b>EPIC® ULTRA H-B 16</b>		EPIC® H-B 16 AD-LB	635
EPIC® ULTRA H-B 16 TS QB	609	EPIC® H-B 16 AG	635
EPIC® ULTRA H-B 16 AG QB	609	EPIC® H-B 16 TSH	636
<b>EPIC® ULTRA H-B 24</b>		EPIC® H-B 16 TSB	636
EPIC® ULTRA H-B 24 TS QB	610	EPIC® H-B 16 TSBH	636
EPIC® ULTRA H-B 24 AG QB	610	EPIC® H-B 16 TGB	637
<b>EPIC® H-B 6 Housings</b>		EPIC® H-B 16 TGBH	637
EPIC® H-B 6 TG	611	EPIC® H-B 16 TS	637
EPIC® H-B 6 TGH	611	EPIC® H-B 16 TGH	638
EPIC® H-B 6 TS	611	EPIC® H-B 16 TGH 2X	638
EPIC® H-B 6 TSH	612	EPIC® H-B 16 TSH-RO	639
EPIC® H-B 6 AG-LB	612	EPIC® H-B 16 TG	639
EPIC® H-B 6 AD-LB	612	EPIC® H-B 16 TG 2X	639
EPIC® H-B 6 SGR-LB	613	EPIC® H-B 16 TG-RO	640
EPIC® H-B 6 SGRL-LB	613	EPIC® H-B 16 TGH-RO	640
EPIC® H-B 6 SGRH-LB	613	EPIC® H-B 16 TS-RO	640
EPIC® H-B 6 SGRLH-LB	614	EPIC® H-B 16 SGRLH	641
EPIC® H-B 6 SDR-LB	614	EPIC® H-B 16 SDR-BO	641
EPIC® H-B 6 SDRL-LB	614	EPIC® H-B 16 SDRL-BO	641
EPIC® H-B 6 SDRH-LB	615	EPIC® H-B 16 SDRH-BO	642
EPIC® H-B 6 SDRLH-LB	615	EPIC® H-B 16 SDRLH-BO	642
EPIC® H-B 6 TBF-LB	616	EPIC® H-B 16 TBF-LB	643
EPIC® H-B 6 TBFH-LB	616	EPIC® H-B 16 TBFH-LB	643
<b>EPIC® H-B 10 Housings</b>		EPIC® H-B 16 TBF	643
EPIC® H-B 10 TGB	617	EPIC® H-B 16 TBFH	644
EPIC® H-B 10 TGBH	617	<b>EPIC® H-B 24 Housings</b>	
EPIC® H-B 10 TS	617	EPIC® H-B 24 TG-RO	645
EPIC® H-B 10 TG-RO	618	EPIC® H-B 24 TGH-RO	645
EPIC® H-B 10 TGH-RO	618	EPIC® H-B 24 TS-RO	645
EPIC® H-B 10 TS-RO	618	EPIC® H-B 24 TSH-RO	646
EPIC® H-B 10 TSH	619	EPIC® H-B 24 TG	646
EPIC® H-B 10 TSB	619	EPIC® H-B 24 TG 2X	646
EPIC® H-B 10 TSBH	619	EPIC® H-B 24 TGH	647
EPIC® H-B 10 TSH-RO	620	EPIC® H-B 24 TGH 2X	647
EPIC® H-B 10 TG	620	EPIC® H-B 24 TGB	648
EPIC® H-B 10 TGH	620	EPIC® H-B 24 TGBH	648
EPIC® H-B 10 AG-LB	621	EPIC® H-B 24 TS	648
EPIC® H-B 10 AD-LB	621	EPIC® H-B 24 TSH	649
EPIC® H-B 10 AG	621	EPIC® H-B 24 TSB	649
EPIC® H-B 10 AD-BO	621	EPIC® H-B 24 TSBH	649
EPIC® H-B 10 SGR-LB	622	EPIC® H-B 24 AG-LB	650
EPIC® H-B 10 SGRL-LB	622	EPIC® H-B 24 AD-LB	650
EPIC® H-B 10 SGRH-LB	623	EPIC® H-B 24 AG	650
EPIC® H-B 10 SGRLH-LB	623	EPIC® H-B 24 AD-BO	650
EPIC® H-B 10 SDR-LB	623	EPIC® H-B 24 SGR-LB	651
EPIC® H-B 10 SDRL-LB	624	EPIC® H-B 24 SGRL-LB	651
EPIC® H-B 10 SDRH-LB	624	EPIC® H-B 24 SGRH-LB	652
EPIC® H-B 10 SDRLH-LB	624	EPIC® H-B 24 SGRLH-LB	652
EPIC® H-B 10 AGS-LB	625	EPIC® H-B 24 SDR-LB	652
EPIC® H-B 10 SGR	626	EPIC® H-B 24 SDRL-LB	653
EPIC® H-B 10 SGRL	626	EPIC® H-B 24 SDRH-LB	653
EPIC® H-B 10 SGRH	626	EPIC® H-B 24 SDRLH-LB	653
EPIC® H-B 10 SGRLH	627	EPIC® H-B 24 SGR	654
EPIC® H-B 10 SDR-BO	627	EPIC® H-B 24 SGRL	654
EPIC® H-B 10 SDRL-BO	627	EPIC® H-B 24 SGRH	654

New

EPIC® H-B 24 SGRLH	655
EPIC® H-B 24 SDR-BO	655
EPIC® H-B 24 SDRL-BO	655
EPIC® H-B 24 SDRH-BO	656
EPIC® H-B 24 SDRLH-BO	656
EPIC® H-B 24 TBF-LB	657
EPIC® H-B 24 TBFH-LB	657
EPIC® H-B 24 TBF	657
EPIC® H-B 24 TBFH	658
<b>EPIC® Housing accessories</b>	
EPIC® Flat gaskets for housings H-A und H-B	659
EPIC® Fixing screws	659
EPIC® Coding parts	659
EPIC® Protective cover H-A 3	660
EPIC® Protective cover H-A	660
EPIC® Protective cover H-B	660
EPIC® Cover plates	661
EPIC® Adapter plates for 1 D-Sub insert	661
EPIC® Adapter plates for 2 D-Sub inserts	661
EPIC® Locking levers	661

**Circular connectors**

<b>EPIC® POWER M12 630V</b>	
EPIC® POWER M12 630V panel base	662
EPIC® POWER M12 630V cable connector	662
<b>EPIC® POWER M17</b>	
EPIC® POWER M17 A1	663
EPIC® POWER M17 A3	663
EPIC® POWER M17 G4	663
EPIC® POWER M17 D6	665
EPIC® POWER M17 F6	665
<b>EPIC® SIGNAL M17</b>	
EPIC® SIGNAL M17 A1	666
EPIC® SIGNAL M17 A3	666
EPIC® SIGNAL M17 G4	666
EPIC® SIGNAL M17 D6	667
EPIC® SIGNAL M17 F6	667
<b>EPIC® M17 Contacts, tools, accessories</b>	
EPIC® M17 Contacts	668
EPIC® M17 Tools	668
<b>EPIC® SIGNAL M23 Housings</b>	
EPIC® SIGNAL M23 A1	669
EPIC® SIGNAL M23 A1 D3.2	669
EPIC® SIGNAL M23 A3	669
EPIC® SIGNAL M23 G4	670
EPIC® SIGNAL M23 G5	670
EPIC® SIGNAL M23 G6	670
EPIC® SIGNAL M23 B1	671
EPIC® SIGNAL M23 B2	671
EPIC® SIGNAL M23 D6	672
EPIC® SIGNAL M23 F6	672
EPIC® SIGNAL M23 F7	672
<b>EPIC® SIGNAL M23 Inserts</b>	
EPIC® SIGNAL M23 Inserts 6 pole	673
EPIC® SIGNAL M23 Inserts 7 pole	673
EPIC® SIGNAL M23 Inserts 8+1 pole	674
EPIC® SIGNAL M23 Inserts 9 pole	674
EPIC® SIGNAL M23 Inserts 12 pole	675
EPIC® SIGNAL M23 Inserts 16 pole	675
EPIC® SIGNAL M23 Inserts 17 pole	676
EPIC® SIGNAL M23 Inserts 12 pole D-Sub	677
EPIC® SIGNAL M23 Inserts 17 pole D-Sub	677
<b>EPIC® SIGNAL M23 Contacts, tools, accessories</b>	
EPIC® SIGNAL M23 Contacts male	678
EPIC® SIGNAL M23 Contacts female	678
EPIC® SIGNAL M23 Tools	679
EPIC® SIGNAL M23 Accessories	679
<b>EPIC® SIGNAL R 3.0</b>	
EPIC® SIGNAL R 3.0 D PG16	680
EPIC® SIGNAL R 3.0 F PG16	680
EPIC® SIGNAL R 3.0 A	680
EPIC® SIGNAL R 3.0 B1	681
EPIC® SIGNAL R 3.0 B2	681
EPIC® SIGNAL R 3.0 G1	681


<b>EPIC® SIGNAL R3.0 tools, accessories</b>	
EPIC® SIGNAL R 3.0 Tools	682
EPIC® SIGNAL R 3.0 Accessories	682
<b>EPIC® POWER LS1</b>	
EPIC® POWER LS1 A1	683
EPIC® POWER LS1 A3	683
EPIC® POWER LS1 G5	684
EPIC® POWER LS1 A6	684
EPIC® POWER LS1 D6	685
EPIC® POWER LS1 D6 (short)	685
EPIC® POWER LS1 F6	686
EPIC® POWER LS1 F7	686
<b>EPIC® POWER LS1 Contacts, tools, accessories</b>	
EPIC® POWER LS1 Contacts male	687
EPIC® POWER LS1 Contacts female	687
EPIC® POWER LS1 Tools	688
EPIC® POWER LS1 Accessories	688
<b>EPIC® POWER LS1.5</b>	
EPIC® POWER LS1.5 A1	689
EPIC® POWER LS1.5 A3	689
EPIC® POWER LS1.5 A6	689
EPIC® POWER LS1.5 D6	690
EPIC® POWER LS1.5 F6	690
<b>EPIC® POWER LS1.5 contact, tools, accessories</b>	
EPIC® POWER LS1.5 Contacts male	691
EPIC® POWER LS1.5 Contacts female	691
EPIC® POWER LS1.5 Tools	691
<b>EPIC® POWER LS3</b>	
EPIC® POWER LS3 A1	692
EPIC® POWER LS3 D6	692
EPIC® POWER LS3 F6	692
<b>EPIC® POWER LS3 Contacts, tools, accessories</b>	
EPIC® POWER LS3 male contacts	693
EPIC® POWER LS3 female contacts	693
EPIC® POWER LS3 Tools	693
<b>EPIC® POWERLOCK SCREW 400A</b>	
EPIC® POWERLOCK A1 S	694
EPIC® POWERLOCK A6 S	694
EPIC® POWERLOCK D6 S	695
EPIC® POWERLOCK F6 S	695
POWERLOCK BOX S*	696
<b>EPIC® POWERLOCK Contacts, tools, accessories</b>	
EPIC® POWERLOCK Screw contacts	697
EPIC® POWERLOCK Tools	697
EPIC® POWERLOCK Accessories	697
<b>EPIC® POWERLOCK CRIMP 660A</b>	
EPIC® POWERLOCK A1 C	698
EPIC® POWERLOCK A6 C	698
EPIC® POWERLOCK D6 C	699
EPIC® POWERLOCK F6 C	699
POWERLOCK BOX C*	700
EPIC® POWERLOCK Accessories	700
<b>EPIC® POWERLOCK Contacts, tools, accessories</b>	
EPIC® POWERLOCK Crimp contacts	701
EPIC® POWERLOCK Tools	701

**Solar connectors**

<b>EPIC® SOLAR 4</b>	
EPIC® SOLAR PL008	New 702
EPIC® SOLAR 4 M	New 703
EPIC® SOLAR 4 F	703
<b>EPIC® SOLAR TOOL</b>	
EPIC® CRIMPTOOL	704
EPIC® SOLAR TOOL CSC	New 704
EPIC® SOLAR TOOL	704
<b>EPIC® SOLAR 4</b>	
EPIC® SOLAR 4 Splitter	New 705
EPIC® SOLAR 4 Built in socket	New 706



At a glance

Properties 	Connection type					Connection cross section in mm² depending on connection type	Rated voltage according to standards			Rated current for largest connection cross section according to standards			Approvals International
	Screw	Crimp	Spring	Push-In	Solder		IEC	UL/USR	CSA/CNR	IEC	UL/USR	CSA/CNR	
<b>Rectangular – inserts fixed</b>													
EPIC® H-A 3, 4	●					0.5 – 2.5	400 V	600 V	600 V	23 A	10 A	10 A	VDE, UR, CSA
EPIC® H-A 10, 16, 32, 48	●					0.5 – 2.5	250 V	600 V	600 V	16 A	14 A	16 A	VDE, UR, CSA
EPIC® STA 6, 14, 20	●				●	0.5 – 1.5/ max. 1.5	24 VAC/60 VDC	48 V	48 V	10 A	10 A	10 A	UR, CSA
EPIC® H-Q 5		●				0.14 – 4.0	230 V/400 V	600 V	600 V	16 A	16 A	16 A	UR, CSA
EPIC® H-D 7, 8		●				0.14 – 2.5	H*	250 V	-	10 A	10 A	-	UR
EPIC® H-D 15, 25, 40, 64		●				0.14 – 2.5	250 V	250 V	-	10 A	10 A	-	UR
EPIC® H-DD 24, 42, 72, 108		●				0.14 – 2.5	250 V	600 V	600 V	10 A	8.5 A	10 A	UR, CSA
EPIC® H-BE 6, 10, 16, 24, 32, 48	●	●	●	●		0.5 – 2.5/ 0.14 – 4.0	500 V	600 V	600 V	16 A	16 A	16 A	VDE, cURus
EPIC® H-EE 10, 18, 32, 46		●				0.14 – 4.0	500 V	600 V	600 V	16 A	16 A	16 A	UR, CSA
EPIC® H-BS 6, 12	●					0.5 – 6.0	500 V	600 V	600 V	35 A	35 A	35 A	UR, CSA
EPIC® H-BVE 3, 6, 10	●					0.5 – 2.5	630 V	600 V	600 V	16 A	16 A	16 A	VDE, cURus
POWER H-S 4	●					2.5 – 10.0	1000 V	-	-	65 A	-	-	-
EPIC® POWER K 4/0, 4/2	●					1.5 – 16.0	830 V	-	-	80 A	-	-	-
EPIC® TB-H-BE 16, 24	●					0.5 – 4.0	500 V	600 V	600 V	16 A	16 A	16 A	UR, CSA
<b>Rectangular – inserts modular</b>													
High voltage 1+PE, 2	●					10.0 – 25.0	1000 V	600 V	-	82 A	82 A	-	VDE, cURus
EPIC® POWER HC2		●				16	1000 V	-	-	65 A	-	-	-
POWER HHC2		●				16.0 – 35.0	1000 V	-	-	150 A	-	-	-
POWER HHC1		●				50.0 – 95.0	1000 V	-	-	220 A	-	-	-
High voltage 3-pin		●				1.5 – 10.0	1000 V	-	-	50 A	-	-	-
High voltage 4+PE		●				0.5 – 2.5	1000 V	-	-	16 A	-	-	-
3-pin		●				1.5 – 10.0	630 V	600 V	600 V	40 A	40 A	35 A	UR, CSA
HE 4-pin		●				0.5 – 4.0	630 V	-	-	25 A	-	-	-
Cage clamp 4-pin			●			0.5 – 2.5	400 V	-	-	14 A	-	-	-
5-pin		●				0.5 – 4.0	400 V	400 V	400 V	20 A	20 A	16 A	UR, CSA
10-pin		●				0.14 – 2.5	250 V	250 V	240 V	10 A	10 A	10 A	UR, CSA
10-pin stamped		●				0.14 – 2.5	250 V	-	-	10 A	-	-	-
20-pin		●				0.08 – 0.56	100 V	100 V	100 V	4 A	4 A	4 A	UR, CSA
Blind						-	-	-	-	-	-	-	-
Coaxial		●				Coaxial	250 V	-	-	-	-	-	-
PROFIBUS® DP	●					0.08 – 1.5	30 V	-	-	1 A	-	-	-
Universal bus	●					0.08 – 1.5	30 V	-	-	1 A	-	-	-
RJ45		●				0.14 – 2.5/ 0.12 – 0.2	600 V/ 125 V	-	-	P: 10 A S: 1.5 A	-	-	-
Pneumatic 1, 2-pin				●		∅ 2.5/4.0 mm ∅ 2.5/4.0 mm	-	-	-	-	-	-	-
<b>Round</b>													
EPIC® POWER M12 3+PE	●					0.75 – 1.5	630 V	600 V	-	12 A	12 A	12 A	cURus
EPIC® SIGNAL M17 8, 17		●				0.06 – 0.56/ 0.06 – 1.0	60 V	-	-	3.6 A	-	-	-
EPIC® POWER M17 3+PE		●				0.5 – 2.5	630 V	-	-	20 A	-	-	-
EPIC® POWER M17 5+PE, 6+PE, 7+PE		●				0.06 – 1.0	630 V	-	-	14 A	-	-	-
EPIC® POWER M17 3+PE+5		●				0.06 – 1.0/ 0.06 – 0.56	630 V/ 60 V	-	-	P: 14 A S: 3.6 A	-	-	-
EPIC® SIGNAL M23 6, 7		●		●		0.06 – 2.5	150 V	150 V	150 V	18 A	15 A	15 A	VDE, cURus
EPIC® SIGNAL M23 8+1		●		●		0.06 – 1.0/ 0.06 – 2.5	150 V	150 V	150 V	P: 20 A S: 7 A	P: 20 A S: 7 A	P: 20 A S: 7 A	VDE, cURus
EPIC® SIGNAL M23 9		●		●		0.06 – 1.0	150 V	150 V	150 V	7 A	7 A	6 A	VDE, cURus
EPIC® SIGNAL M23 12, 16		●		●		0.06 – 1.0	100 V	100 V	100 V	7 A	7 A	6 A	VDE, cURus
EPIC® SIGNAL M23 17		●		●		0.06 – 1.0	50 V	50 V	50 V	7 A	7 A	7 A	VDE, cURus
EPIC® SIGNAL R3.0				●		0.06 – 1.0	24 VAC/60 VDC	-	-	7.5 A	-	-	-
EPIC® POWER LS1 5+PE		●				0.5 – 4.0	630 V	600 V	600 V	25 A	22 A	17 A	VDE, cURus
EPIC® POWER LS1 3+PE+4		●				0.5 – 4.0/ 0.4 – 1.0	630 V/250 V	600 V/ 250 V	600 V/ 250 V	P: 26 A S: 7 A	P: 22 A S: 7 A	P: 17 A S: 7 A	VDE, cURus
EPIC® POWER LS1.5 3+PE+2, 3+PE+4		●				0.75 – 10.0/ 0.14 – 4.0	630 V/250 V	-	-	P: 70 A S: 30 A	-	-	-
EPIC® POWER LS3 3+PE+2, 3+PE+4		●				10.0 – 50.0/ 0.75 – 1.5	630 V/250 V	-	-	P: 150 A S: 12 A	-	-	-
EPIC® POWERLOCK S	●					50.0 – 120.0	1000 V	-	-	400 A	-	-	VDE
EPIC® POWERLOCK C	●					35.0 – 240.0	1000 V	-	-	660 A	-	-	VDE
<b>SOLAR</b>													
EPIC® SOLAR 4	●					2.5 – 6.0	1000 V	-	-	30 A	-	-	TÜV

P: Power S: Signal H\*: In metal housing; 24 VAC/60 VDC; in plastic housing: 250 V

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

## EPIC® rectangular connectors

Flexible, robust connectors for mechanical engineering



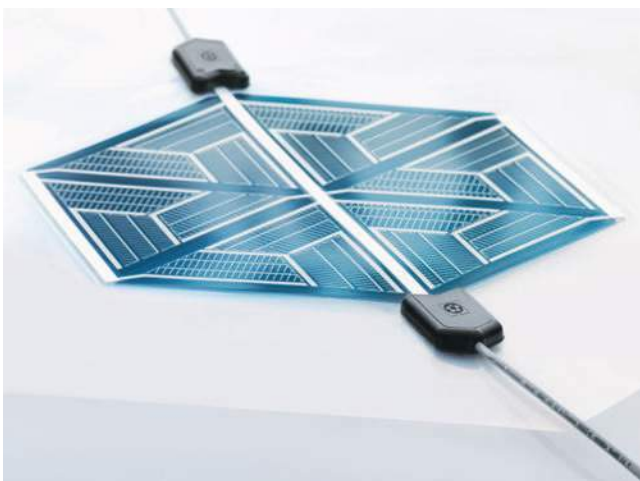
The connector system for mechanical and plant engineering and wherever a robust connection system is required. EPIC® Rectangular connectors are available as components. The right connector for any application can be made individually from housings, inserts and contacts. [www.lappgroup.com/connectorfinder](http://www.lappgroup.com/connectorfinder)

For the housing, there are two performance classes to choose from

- EPIC® Standard is robust and there is a flexible choice of cable entries [www.lappgroup.com/connector-housing](http://www.lappgroup.com/connector-housing)
- EPIC® ULTRA has a high corrosion protection, EMC protection as well as a stainless steel interlocking device

EPIC® inserts are available in a fixed pin design and as a modular system

- EPIC® fixed pin inserts are easy to handle and come in a wide variety of designs
- EPIC® modular inserts offer flexibility with modules for data, signals, power, fibre-optics and pneumatics. This means every insert is individually tailor-made for the relevant modul configuration



Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® circular connectors

Compact connectors for motion control and energy transfer



Circular connections come in two designs, a signal design with gold-plated contacts for transmitting delicate signals and as high-reserve power connectors.

EPIC® SIGNAL connectors are available as M17, M23 and R3.0 (M27)

- The metal housing with an integrated EMC screen contact reliably prevents electromagnetic interferences
- Gold-plated signal contacts reliably transmit with the lowest of currents and voltages

EPIC® POWER connectors are available as M12, M17, LS1 (M23), LS1.5 (M40) and LS3 (M58)

- The integrated EMC cable glands offer strain relief and are perfectly sealed
- High-quality sealing materials for good chemical protection

EPIC® POWERLOCK

- Perfect for transmitting very high currents
- Colour coded and geometrically coded in order to prevent incorrect connections

## EPIC® SOLAR connectors

Durable connectors for photovoltaics

High-quality connections for a long-term and reliable outdoor connection

EPIC® SOLAR field harnessable

- Crimp and insert the contact, twist the cable gland, it's that simple

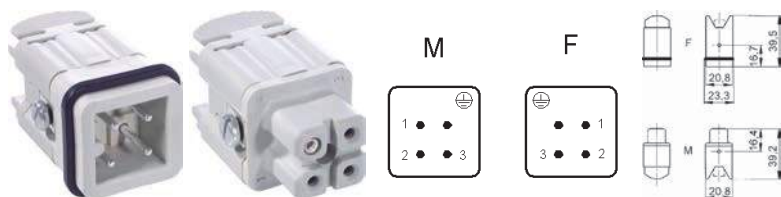
EPIC® SOLAR Map for organic PV modules

- Customised production instead of off-the-shelf products, that's what the new PV connection technology made by Lapp is about



### EPIC® H-A 3

H-A inserts with screw termination up to 2.5 mm<sup>2</sup> wire cross section

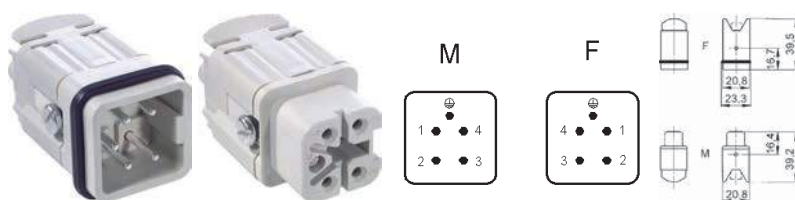


**Info**

- Small power connector for single- or three-phase current
- Easy to assemble due to straight entry of conductors

### EPIC® H-A 4

H-A inserts with screw termination up to 2.5 mm<sup>2</sup> wire cross section



**Info**

- Insert for three-phase current application with neutral conductor
- Easy to assemble due to straight entry of conductors

#### Suitable housing

- EPIC® H-A 3 Housings
- Refer to Selection Table A10 to select the required inserts and housings

#### Benefits

- The small H-A 3 / H-A 4 are used whenever there is minimal space.
- Easy to service screw connection
- Easy cable connection with strait cable entry in the contacts

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Apparatus construction

#### Suitable tools

- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 400 V  
UL: 600 V  
CSA: 600 V

**Rated impulse voltage**  
4 kV

**Rated current (A)**  
IEC: 23 A  
UL: 10 A  
CSA: 10 A

**Degree of soiling**  
3

**Contact resistance**  
1.5 - 4 mohm

**Contacts**  
Copper alloy, hard silver-plated

**Number of contacts**  
**EPIC® H-A 3**  
3 + PE  
**EPIC® H-A 4**  
4 + PE

**Termination methods**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>  
(2.5 mm<sup>2</sup> with conductor end sleeves depending on the crimping profile)

**Stripping length (mm)**  
6

**Cycle of mechanical operation**  
100

**VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>H-A 3 screw termination</b>				
10420000	H-A 3 SS	male	1 - 3	10
10421000	H-A 3 BS	female	1 - 3	10
<b>H-A 4 screw termination</b>				
10431000	H-A 4 SS	male	1 - 4	10
10432000	H-A 4 BS	female	1 - 4	10

Photographs are not to scale and do not represent detailed images of the respective products.

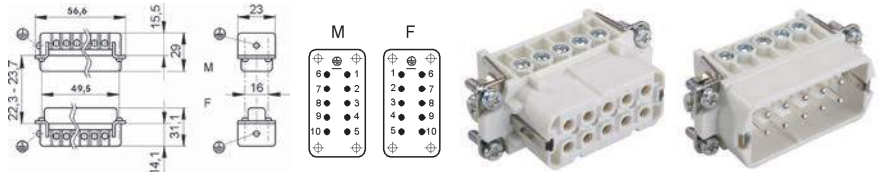


## EPIC® H-A 10

H-A inserts with screw termination up to 2.5 mm<sup>2</sup> wire cross section

**Info**

- Slim standard insert, easy to connect by screw
- Universal for current and voltage transmission



## EPIC® H-A 16

H-A inserts with screw termination up to 2.5 mm<sup>2</sup> wire cross section

**Info**

- Slim standard insert, easy to connect by screw
- Universal for current and voltage transmission



### Suitable housing

#### EPIC® H-A 10

- EPIC® H-A 10 Housings

#### EPIC® H-A 16

- EPIC® H-A 10 Housings
- Refer to Selection Table A 10 to select the required inserts and housings

### Similar products

- Further products with higher numbering in the internet. (H-A 32, H-A 48)

### Benefits

- Slim connector insert for standard application
- Easy to service screw connection
- Universal for current and voltage transmission

### Application range

- Machine and equipment manufacturing
- Control engineering

### Suitable tools

- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 250 V  
UL: 600 V  
CSA: 600 V

**Rated impulse voltage**  
4 kV

**Rated current (A)**  
IEC: 16 A  
UL: 14 A  
CSA: 16 A

**Degree of soiling**  
3

**Contact resistance**  
1.5 - 4 mohm

**Contacts**  
Copper alloy, hard silver-plated

**Number of contacts**  
**EPIC® H-A 10**  
10 + PE  
**EPIC® H-A 16**  
16 + PE

**Termination methods**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup> (2.5 mm<sup>2</sup> with conductor end sleeves depending on the crimping profile)

**Stripping length (mm)**  
8

**Cycle of mechanical operation**  
100

**VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-A 10 screw termination</b>					
10440100	H-A 10 SS	male	yes	1 - 10	5
10441100	H-A 10 BS	female	yes	1 - 10	5
10440000	H-A 10 SS	male		1 - 10	5
10441000	H-A 10 BS	female		1 - 10	5
<b>H-A 16 screw termination</b>					
10530000	H-A 16 SS	male	yes	1 - 16	5
10531000	H-A 16 BS	female	yes	1 - 16	5
10532000	H-A 16 SS	male		1 - 16	5
10533000	H-A 16 BS	female		1 - 16	5

Photographs are not to scale and do not represent detailed images of the respective products.

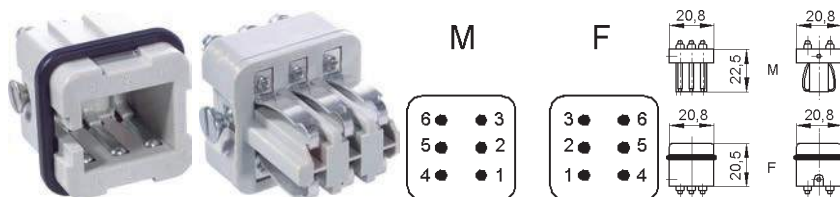
### Similar products

- Further products with higher numbering in the internet. (H-A 32, H-A 48)



### EPIC® STA 6 Screw termination

The proven STA inserts with spring contacts

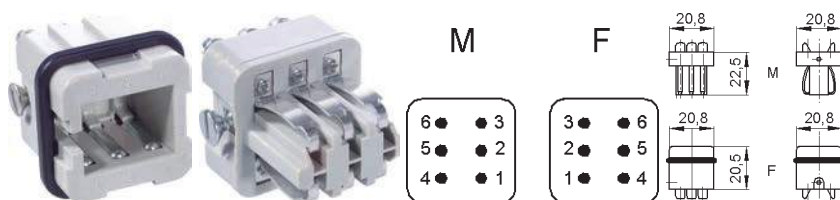


**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts

### EPIC® STA 6 Solder termination

The proven STA inserts with spring contacts



**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts

#### Suitable housing

- EPIC® H-A 3 Housings
- Refer to Selection Table A10 to select the required inserts and housings

#### Benefits

- Good contact due to the strong contact springs.
- The proven STA inserts with spring contacts

#### Application range

- Control systems
- Rack technology
- Electronic laboratory

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 24 V AC, 60 V DC  
UL: 48 V  
CSA: 48 V

**Amp.** **Rated current (A)**  
IEC: 10 A  
UL: 10 A  
CSA: 10 A

**Degree of soiling**  
2

**Contact resistance**  
< 3 mOhm

**Contacts**  
Copper alloy, tinned

**Number of contacts**  
6

**Termination methods**  
**EPIC® STA 6 Screw termination**  
Screw termination: 0.5 - 1.5 mm<sup>2</sup>  
**EPIC® STA 6 Solder termination**  
Solder termination: up to 1.5 mm<sup>2</sup>

**Stripping length (mm)**  
5

**Cycle of mechanical operation**  
100

**DIN VDE**  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C up to +80°C

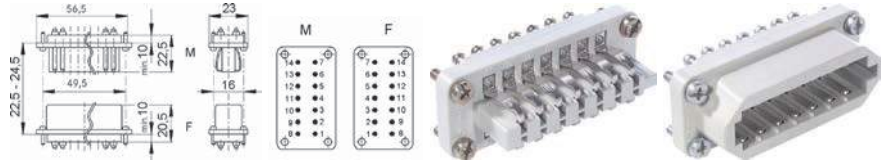
Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>STA 6 screw termination</b>				
10486100	STA 6 SS	male	1 - 6	10
10488100	STA 6 FS	Spring	1 - 6	10
<b>STA 6 solder termination</b>				
10485200	STA 6 SL	male	1 - 6	10
10487200	STA 6 FL	Spring	1 - 6	10

Photographs are not to scale and do not represent detailed images of the respective products.



**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts

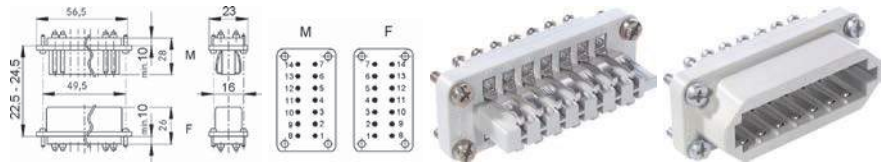


**EPIC® STA 14 Solder termination**

The proven STA inserts with spring contacts

**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts



**Suitable housing**

- EPIC® H-A 10 Housings
- Refer to Selection Table A10 to select the required inserts and housings

**Benefits**

- Good contact due to the strong contact springs.
- The proven STA inserts with spring contacts

**Application range**

- Control systems
- Rack technology
- Electronic laboratory

**Technical data**

<b>ETIM</b>	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Number of contacts</b> 14
<b>Rated voltage (V)</b>	IEC: 24 V AC, 60 V DC UL: 48 V CSA: 48 V	<b>Termination methods</b> EPIC® STA 14 Screw termination Screw termination: 0.5 - 1.5 mm <sup>2</sup> EPIC® STA 14 Solder termination Solder termination: up to 1.5 mm <sup>2</sup>
<b>Rated current (A)</b>	IEC: 7.5 A UL: 7.5 A CSA: 7.5 A	<b>Stripping length (mm)</b> 5
<b>Degree of soiling</b>	2	<b>Cycle of mechanical operation</b> 100
<b>Contact resistance</b>	< 3 mOhm	UL-tested: UL File Number: E75770
<b>Contacts</b>	Copper alloy, tinned	<b>Temperature range</b> -40°C up to +80°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>STA 14 screw termination</b>				
10491100	STA 14 SS	male	1 - 14	5
10493100	STA 14 FS	Spring	1 - 14	5
<b>STA 14 solder termination</b>				
10490200	STA 14 SL	male	1 - 14	5
10492200	STA 14 FL	Spring	1 - 14	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® STA 20 Screw termination

The proven STA inserts with spring contacts



**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts

### EPIC® STA 20 Solder termination

The proven STA inserts with spring contacts



**Info**

- For reliable signal transmission in harsh environmental conditions
- Mechanically robust spring contacts

#### Suitable housing

- EPIC® H-A 16 Housings
- Refer to Selection Table A10 to select the required inserts and housings

#### Benefits

- Good contact due to the strong contact springs.
- The proven STA inserts with spring contacts

#### Application range

- Control systems
- Rack technology
- Electronic laboratory

#### Technical data

	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors		<b>Number of contacts</b> 20
	<b>Rated voltage (V)</b> IEC: 24 V AC, 60 V DC UL: 48 V CSA: 48 V		<b>Termination methods</b> <b>EPIC® STA 20 Screw termination</b> Screw termination: 0.5 - 1.5 mm <sup>2</sup> <b>EPIC® STA 20 Solder termination</b> Solder termination: up to 1.5 mm <sup>2</sup>
	<b>Rated current (A)</b> IEC: 7 A UL: 7 A CSA: 7 A		<b>Stripping length (mm)</b> 5
	<b>Degree of soiling</b> 2		<b>Cycle of mechanical operation</b> 100
	<b>Contact resistance</b> < 3 mOhm		UL-tested: UL File Number: E75770
	<b>Contacts</b> Copper alloy, tinned		<b>Temperature range</b> -40°C up to +80°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>STA 20 screw termination</b>				
10501100	STA 20 SS	male	1 - 20	5
10503100	STA 20 FS	Spring	1 - 20	5
<b>STA 20 solder termination</b>				
10500200	STA 20 SL	male	1 - 20	5
10502200	STA 20 FL	Spring	1 - 20	5

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## EPIC® H-Q 5

With five working contacts in the proven crimp technology and one PE contact with screw termination.

### Info

- Compact, powerful standard insert
- Space saving, crimping contact

### Suitable housing

- EPIC® H-A 3 Housings
- Refer to Selection Table A 10 to select the required inserts and housings

### Suitable contacts:

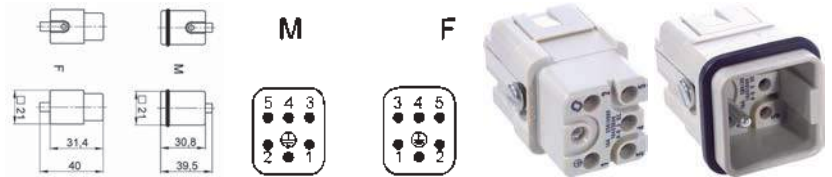
- EPIC® H-BE 2.5 machined contacts  
Page 581

### Benefits

- High performance crimping contacts
- PE contact with screw connection

### Application range

- Machine and equipment manufacturing
- Control engineering



### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 230 V / 400 V  
UL: 600 V  
CSA: 600 V

**Rated impulse voltage**  
4 kV

**Rated current (A)**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A

**Degree of soiling**  
3

**Contact resistance**  
< 2 mOhm

**Contacts**  
Copper alloy, hard silver/gold-plated

**Number of contacts**  
5 + PE

**Termination methods**  
Crimp termination: 0.5 - 2.5 mm<sup>2</sup>

**Cycle of mechanical operation**  
100

UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>H-Q 5 crimp termination</b>				
10431500	H-Q 5 SC	male	1 - 5	10
10432500	H-Q 5 BC	female	1 - 5	10

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® H-Q 12

Multi-pole insert for the small H-A 3 housing

### Info

- 12 power contacts in confined spaces
- Space saving, crimping contact

### Suitable housing

- EPIC® H-A 3 Housings
- Refer to Selection Table A 10 to select the required inserts and housings

### Suitable contacts:

- EPIC® H-D 1.6 machined contacts  
Page 578

### Benefits

- High performance crimping contacts
- PE contact with screw connection

### Application range

- Machine and equipment manufacturing
- Control engineering



### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 400 V  
UL: 600 V  
CSA: 600 V

**Rated impulse voltage**  
6 kV

**Rated current (A)**  
IEC: 10 A  
UL: 14 A  
CSA: 10 A

**Degree of soiling**  
3

**Contact resistance**  
< 3 mOhm

**Contacts**  
Copper alloy, hard silver/gold-plated

**Number of contacts**  
12 + PE

**Termination methods**  
Crimp termination: 0.14 - 2.5 mm<sup>2</sup>

**Cycle of mechanical operation**  
200

CSA-tested:  
CSA File Number: 262771

UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +120°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>H-Q 12 Crimp termination</b>				
44424049	H-Q 12 SC	male	1 - 12	10
44424050	H-Q 12 BC	female	1 - 12	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

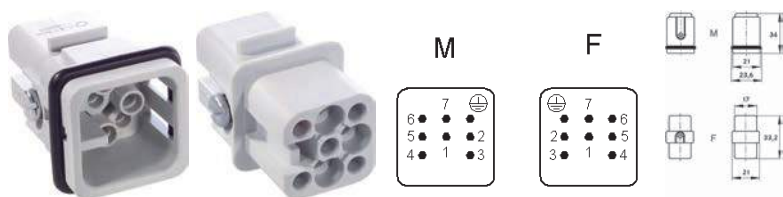
- EPIC® Coding parts refer to page 659





### EPIC® H-D 7 machined

multi-pole inserts for machined crimp contacts

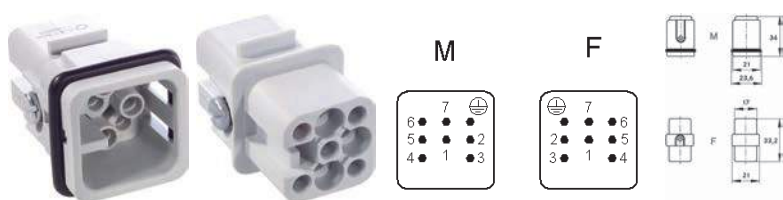


**Info**

- Compact, powerful standard insert
- For machined contacts for fast processing with the crimping tool

### EPIC® H-D 7 stamped

multi-pole inserts for stamped crimp contacts



**Info**

- For automated production with crimping machine
- Space saving, crimping contact
- Suitable for processing with contacts on reel

#### Suitable housing

- EPIC® H-A 3 Housings
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-D 7 machined

- EPIC® H-D 1.6 machined contacts Page 578

##### EPIC® H-D 7 stamped

- EPIC® H-D 1.6 machined contacts Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580

#### Benefits

- Small, high-performance connector
- High performance crimping contacts
- PE contact with screw connection

#### Application range

- Machine and equipment manufacturing
- Control engineering

#### Technical data

- ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors
- Rated voltage (V)**  
IEC: 24 V (AC)/60 V (DC) metal housing; 250 V thermoplastic housing; UL: 250 V
- Rated impulse voltage**  
2.5 kV
- Rated current (A)**  
IEC: 10 A  
UL: 10 A
- Degree of soiling**  
3
- Contact resistance**  
< 2 mOhm

- Contacts**  
Copper alloy, hard silver/gold-plated
- Number of contacts**  
7 + PE
- Termination methods**  
Crimp termination: 0.14 - 2.5 mm<sup>2</sup>
- Cycle of mechanical operation**  
100
- VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-D 7 crimp termination</b>					
11250500	H-D 7 SCM	male	machined	1 - 7	10
11251500	H-D 7 BCM	female	machined	1 - 7	10
<b>EPIC® H-D 7 stamped</b>					
11250000	H-D 7 SCG	male	stamped	1 - 7	10
11251000	H-D 7 BCG	female	stamped	1 - 7	10

Photographs are not to scale and do not represent detailed images of the respective products.

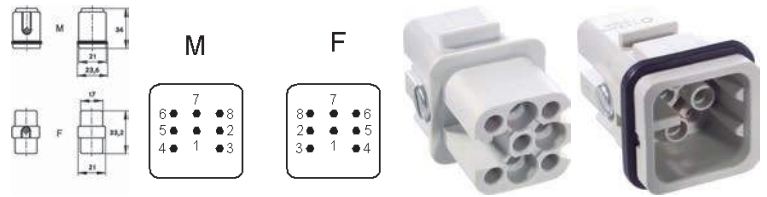


**EPIC® H-D 8**

multi-pole inserts for machined crimp contacts

**Info**

- Compact, powerful standard insert
- For machined contacts for fast processing with the crimping tool



**Suitable housing**

- EPIC® H-A 3 Housings
- Refer to Selection Table A10 to select the required inserts and housings

**Suitable contacts:**

- EPIC® H-D 1.6 machined contacts  
Page 578

**Benefits**

- Small, high-performance connector
- High performance crimping contacts
- PE contact with screw connection

**Application range**

- Machine and equipment manufacturing
- Control engineering

**Technical data**

<b>ETIM</b>	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Contacts</b> Copper alloy, hard silver/gold-plated
<b>Rated voltage (V)</b>	IEC: 24 V (AC)/60 V (DC) metal housing; 250 V thermoplastic housing; UL: 250 V	<b>Number of contacts</b> 8
<b>Rated impulse voltage</b>	2.5 kV	<b>Termination methods</b> Crimp termination: 0.14 - 2.5 mm <sup>2</sup>
<b>Rated current (A)</b>	IEC: 10 A UL: 10 A	<b>Cycle of mechanical operation</b> 100
<b>Degree of soiling</b>	3	<b>VDE-tested</b> Certified production control: VDE-REG. no.: B437 UL-tested: UL File Number: E75770
<b>Contact resistance</b>	< 2 mOhm	<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>H-D 8 crimp termination</b>				
11252500	H-D 8 SCM	male	1 - 8	10
11253500	H-D 8 BCM	female	1 - 8	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-D 15 machined

multi-pole inserts for machined crimp contacts



**Info**

- For machined contacts for fast processing with the crimping tool

### EPIC® H-D 15 stamped

multi-pole inserts for stamped crimp contacts



**Info**

- For automated production with crimping machine
- Suitable for processing with contacts on reel

#### Suitable housing

##### EPIC® H-D 15 machined

- EPIC® H-A 10 Housings
- EPIC® H-D 1.6 machined contacts Page 578

##### EPIC® H-D 15 stamped

- EPIC® H-A 10 Housings
- EPIC® H-D 1.6 machined contacts Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-D 15 machined

- EPIC® H-D 1.6 machined contacts Page 578

##### EPIC® H-D 15 stamped

- EPIC® H-D 1.6 machined contacts Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580

#### Benefits

- Inserts of the connector series H-D are designed for applications in which a high number of contacts are required.

#### Application range

- Machine and equipment manufacturing
- Control engineering

#### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000438 <b>ETIM 5.0 Class-Description:</b> Contact insert for industrial connectors		<b>Contacts</b> Copper alloy, hard silver/gold-plated
	<b>Rated voltage (V)</b> IEC: 250 V UL: 250 V		<b>Number of contacts</b> 15 + PE
	<b>Rated impulse voltage</b> 2.5 kV		<b>Termination methods</b> Crimp termination: 0.14 - 2.5 mm <sup>2</sup>
	<b>Rated current (A)</b> IEC: 10 A UL: 10 A		<b>Cycle of mechanical operation</b> 100
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> Certified production control: VDE-REG. no.: B437 UL-tested: UL File Number: E75770
	<b>Contact resistance</b> < 2 mOhm		<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-D 15 crimp termination</b>					
11283200	H-D 15 SCM	male	machined	1 - 15	5
11282200	H-D 15 BCM	female	machined	1 - 15	5
<b>EPIC® H-D 15 stamped</b>					
11255000	H-D 15 SCG	male	stamped	1 - 15	5
11256000	H-D 15 BCG	female	stamped	1 - 15	5

Photographs are not to scale and do not represent detailed images of the respective products.

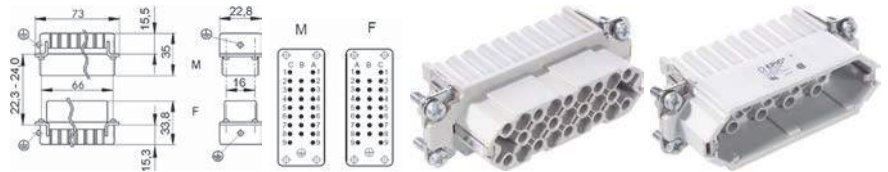


### EPIC® H-D 25 machined

multi-pole inserts for machined crimp contacts

**Info**

- For machined contacts for fast processing with the crimping tool

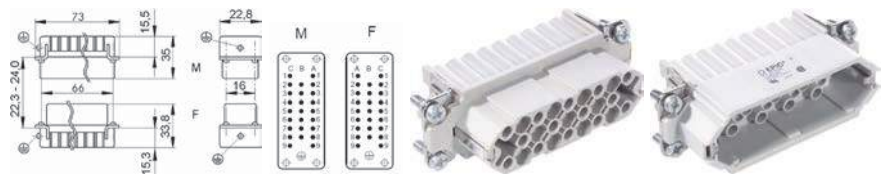


### EPIC® H-D 25 stamped

multi-pole inserts for stamped crimp contacts

**Info**

- For automated production with crimping machine
- Suitable for processing with contacts on reel



#### Suitable housing

##### EPIC® H-D 25 machined

- EPIC® H-A 16 Housings
- EPIC® H-D 1.6 machined contacts  
Page 578

##### EPIC® H-D 25 stamped

- EPIC® H-A 16 Housings
- Refer to Selection Table A 10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-D 25 machined

- EPIC® H-D 1.6 machined contacts  
Page 578

##### EPIC® H-D 25 stamped

- EPIC® H-D 1.6 machined contacts  
Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel  
Page 580

#### Technical data

- ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors
- Rated voltage (V)**  
IEC: 250 V  
UL: 250 V
- Rated impulse voltage**  
2.5 kV
- Rated current (A)**  
IEC: 10 A  
UL: 10 A
- Degree of soiling**  
3
- Contact resistance**  
< 2 mOhm

- Contacts**  
Copper alloy, hard silver /gold-plated
- Number of contacts**  
25 + PE
- Termination methods**  
Crimp termination: 0.14 - 2.5 mm<sup>2</sup>
- Cycle of mechanical operation**  
100
- VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

#### Benefits

- Inserts of the connector series H-D are designed for applications in which a high number of contacts are required.

#### Application range

- Machine and equipment manufacturing
- Control engineering

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-D 25 crimp termination</b>					
11283300	H-D 25 SCM	male	machined	1 - 25	5
11282300	H-D 25 BCM	female	machined	1 - 25	5
<b>EPIC® H-D 25 stamped</b>					
11260000	H-D 25 SCG	male	stamped	1 - 25	5
11261000	H-D 25 BCG	female	stamped	1 - 25	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-D 40 machined

multi-pole inserts for machined crimp contacts



**Info**

- For machined contacts for fast processing with the crimping tool

### EPIC® H-D 40 stamped

multi-pole inserts for stamped crimp contacts



**Info**

- For automated production with crimping machine
- Suitable for processing with contacts on reel

#### Suitable housing

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system

#### Suitable contacts:

##### EPIC® H-D 40 machined

- EPIC® H-D 1.6 machined contacts Page 578

##### EPIC® H-D 40 stamped

- EPIC® H-D 1.6 machined contacts Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580

#### Benefits

- Inserts of the connector series H-D are designed for applications in which a high number of contacts are required.

#### Application range

- Plant engineering
- Light & sound technology

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 250 V  
UL: 250 V

**Rated impulse voltage**  
2.5 kV

**Rated current (A)**  
IEC: 10 A  
UL: 10 A

**Degree of soiling**  
3

**Contact resistance**  
< 2 mOhm

**Contacts**  
Copper alloy, hard silver/gold-plated

**Number of contacts**  
40 + PE

**Termination methods**  
Crimp termination: 0.14 - 2.5 mm<sup>2</sup>

**Cycle of mechanical operation**  
100

**VDE-tested**  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-D 40 crimp termination</b>					
11265200	H-D 40 SCM	male	machined	1 - 40	10
11266200	H-D 40 BCM	female	machined	1 - 40	10
<b>EPIC® H-D 40 stamped</b>					
11265000	H-D 40 SCG	male	stamped	1 - 40	5
11266000	H-D 40 BCG	female	stamped	1 - 40	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-D 64 machined

multi-pole inserts for machined crimp contacts

**Info**

- For machined contacts for fast processing with the crimping tool



### EPIC® H-D 64 stamped

multi-pole inserts for stamped crimp contacts

**Info**

- For automated production with crimping machine
- Suitable for processing with contacts on reel



#### Suitable housing

- EPIC® ULTRA H-B 24
- EPIC® H-B 24 Housings
- EPIC® QUICK & EASY Mounting system

#### Suitable contacts:

##### EPIC® H-D 64 machined

- EPIC® H-D 1.6 machined contacts Page 578

##### EPIC® H-D 64 stamped

- EPIC® H-D 1.6 machined contacts Page 578
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580

#### Benefits

- Inserts of the connector series H-D are designed for applications in which a high number of contacts are required.

#### Application range

- Plant engineering
- Light & sound technology

#### Technical data

<b>ETIM 5.0 Class-ID:</b> EC000438 <b>ETIM 5.0 Class-Description:</b> Contact insert for industrial connectors	<b>Contacts</b> Copper alloy, hard silver/gold-plated
<b>Rated voltage (V)</b> IEC: 250 V UL: 250 V	<b>Number of contacts</b> 64 + PE
<b>Rated impulse voltage</b> 2.5 kV	<b>Termination methods</b> Crimp termination: 0.14 - 2.5 mm <sup>2</sup>
<b>Rated current (A)</b> IEC: 10 A UL: 10 A	<b>Cycle of mechanical operation</b> 100
<b>Degree of soiling</b> 3	<b>VDE-tested</b> UL-tested: UL File Number: E75770
<b>Contact resistance</b> < 2 mOhm	<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

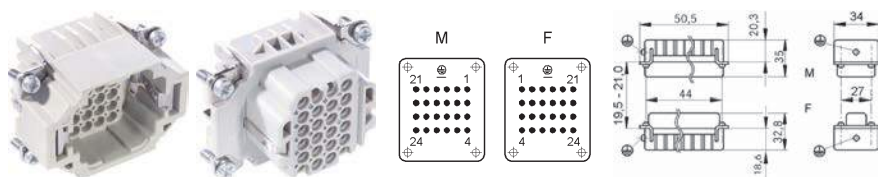
Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-D 64 crimp termination</b>					
11272000	H-D 64 SCM	male	machined	1 - 64	10
11273000	H-D 64 BCM	female	machined	1 - 64	10
<b>EPIC® H-D 64 stamped</b>					
11270000	H-D 64 SCG	male	stamped	1 - 64	5
11271000	H-D 64 BCG	female	stamped	1 - 64	5

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® H-DD 24

The H-DD series with machined crimp contacts - for a high number of pin in very tight spaces.

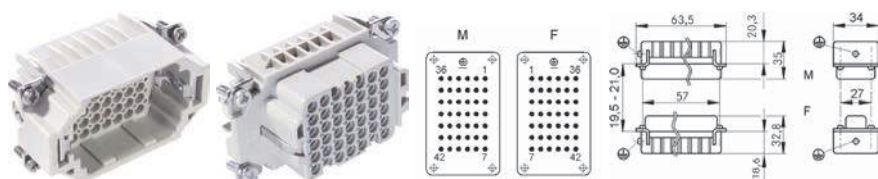


**Info**

- Highest packing density for compact connectors

## EPIC® H-DD 42

The H-DD series with machined crimp contacts - for a high number of pin in very tight spaces.



**Info**

- Highest packing density for compact connectors

### Suitable housing

#### EPIC® H-DD 24

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

#### EPIC® H-DD 42

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

### Suitable contacts:

- EPIC® H-D 1.6 machined contacts  
Page 578

### Benefits

- The H-DD series with machined contacts is designed for a high number of pins in very tight spaces. This allows for smaller housing types to be chosen.

### Application range

- Mechanical engineering
- Light & sound technology
- Plastics industry

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

#### Rated voltage (V)

IEC: 250 V  
UL: 600 V  
CSA: 600 V

#### Rated impulse voltage

2.5 kV

#### Rated current (A)

IEC: 10 A  
UL: 8.5 A  
CSA: 10 A

#### Degree of soiling

2

#### Contact resistance

< 3 mOhm



#### Contacts

Copper alloy, hard silver/gold-plated



#### Number of contacts

**EPIC® H-DD 24**  
24 + PE  
**EPIC® H-DD 42**  
42 + PE



#### Termination methods

Crimp termination: 0.14 - 2.5 mm²



#### Cycle of mechanical operation

100



#### VDE-tested

Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



#### Temperature range

-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-DD 24 crimp termination</b>					
11285000	H-DD 24 SCM	male	machined	1 - 24	5
11286000	H-DD 24 BCM	female	machined	1 - 24	5
<b>H-DD 42 crimp termination</b>					
11285100	H-DD 42 SCM	male	machined	1 - 42	5
11286100	H-DD 42 BCM	female	machined	1 - 42	5

Photographs are not to scale and do not represent detailed images of the respective products.



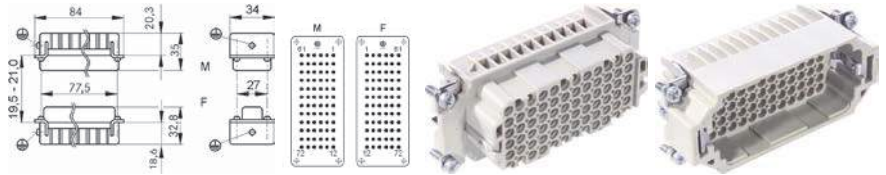
## EPIC® H-DD 72

The H-DD series with machined crimp contacts - for a high number of pin in very tight spaces.



### Info

- Highest packing density for compact connectors
- Also as EPIC® H-DD 144 available



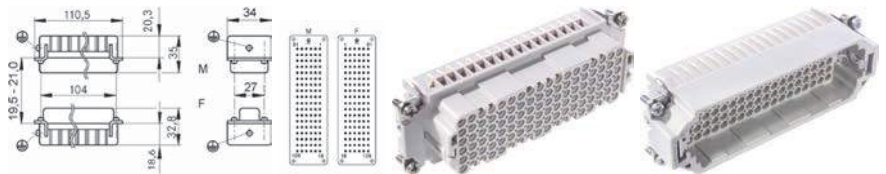
## EPIC® H-DD 108

The H-DD series with machined crimp contacts - for a high number of pin in very tight spaces.



### Info

- Highest packing density for compact connectors
- Also as EPIC® H-DD 216 available



### Suitable housing

#### EPIC® H-DD 72

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system

#### EPIC® H-DD 108

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system

### Suitable contacts:

- EPIC® H-D 1.6 machined contacts  
Page 578

### Similar products

- Further products with higher numbering in the internet. (H-DD 144, H-DD 216)

### Benefits

- The H-DD series with machined contacts is designed for a high number of pins in very tight spaces. This allows for smaller housing types to be chosen.

### Application range

- Mechanical engineering
- Light & sound technology
- Plastics industry

### Technical data

ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

#### Rated voltage (V)

IEC: 250 V  
UL: 600 V  
CSA: 600 V

**Rated impulse voltage**  
2.5 kV

#### Rated current (A)

IEC: 10 A  
UL: 8.5 A  
CSA: 10 A

#### Degree of soiling

2

**Contact resistance**  
< 3 mOhm



#### Contacts

Copper alloy, hard silver/gold-plated



#### Number of contacts

**EPIC® H-DD 72**  
72 + PE  
**EPIC® H-DD 108**  
108 + PE



#### Termination methods

Crimp termination: 0.14 - 2.5 mm<sup>2</sup>



#### Cycle of mechanical operation

100



#### VDE-tested

Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



#### Temperature range

-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-DD 72 crimp termination</b>					
11285200	H-DD 72 SCM	male	machined	1 - 72	5
11286200	H-DD 72 BCM	female	machined	1 - 72	5
<b>H-DD 108 crimp termination</b>					
11285300	H-DD 108 SCM	male	machined	1 - 108	5
11286300	H-DD 108 BCM	female	machined	1 - 108	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

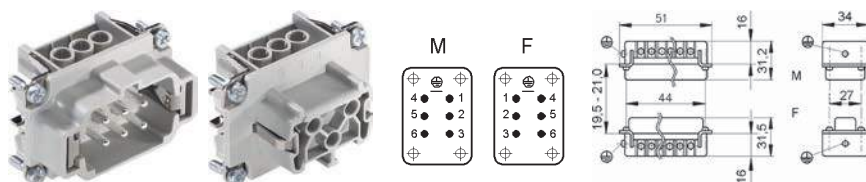
- Further products with higher numbering in the internet. (H-DD 144, H-DD 216)





### EPIC® H-BE 6 Screw termination

The proven standard inserts for easy assembly

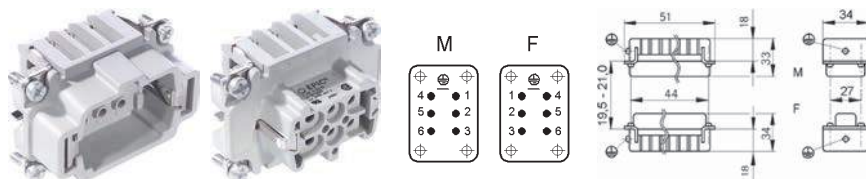


**Info**

- Proven screw for easy installation
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 6 Crimp termination

The proven standard inserts for easy assembly

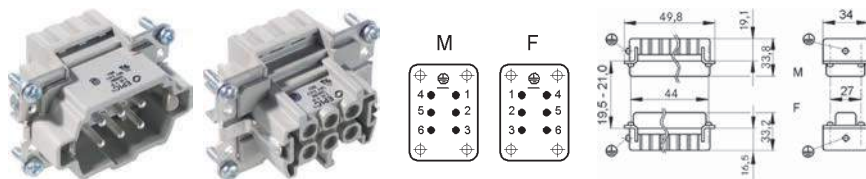


**Info**

- For wire connection up to 4 mm<sup>2</sup>
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 6 Cage clamp

The proven standard inserts for easy assembly



**Info**

- Vibration resistant and fast wire connection
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 6 Push-In termination

The proven standard inserts for easy assembly



**Info**

- Push-In version - fast and easy tool free connection technology
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Multifunctional insert for versatile applications

#### Suitable housing

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

- EPIC® H-BE 6 Crimp termination
- EPIC® H-BE 2.5 machined contacts
- Page 581

#### Benefits

- Standard inserts with screw, crimp cage clamp and Push-In termination
- The EPIC® H-BE series is suitable for applications that require a reliable connection when working with high voltages and currents

#### EPIC® H-BE 6 Crimp termination EPIC® H-BE 6 Push-In termination

- Insertion of cores with end sleeves in Push-In inserts gives mounting safety and time saving without any tools
- Easy dismantling and insertion of wires by pushing the orange button
- Test socket for standard 2mm test tip for easy testing of Push-In inserts

#### Application range


- Mechanical engineering
- Light & sound technology
- Plastics industry


#### Suitable tools

##### EPIC® H-BE 6 Screw termination


- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078
- Recommended crimping tool when conductor end-sleeves are used: MULTICRIMP 6


**Technical data**

 ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors


 **Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V


**Rated impulse voltage**  
6 kV


 **Rated current (A)**  
**EPIC® H-BE 6 Screw termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 6 Crimp termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 6 Cage clamp**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 6 Push-In termination**  
IEC: 16 A  
UL: 13 A  
CSA: 13 A

 **Degree of soiling**  
3


**Contact resistance**  
**EPIC® H-BE 6 Screw termination**  
< 2 mOhm  
**EPIC® H-BE 6 Crimp termination**  
< 2 mOhm  
**EPIC® H-BE 6 Cage clamp**  
1.5 - 4 mohm  
**EPIC® H-BE 6 Push-In termination**  
< 2 mOhm


 **Contacts**  
**EPIC® H-BE 6 Screw termination**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 6 Crimp termination**  
Copper alloy, hard silver/gold-plated  
**EPIC® H-BE 6 Cage clamp**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 6 Push-In termination**  
Copper alloy, hard silver-plated


 **Number of contacts**  
6 + PE

 **Termination methods**  
**EPIC® H-BE 6 Screw termination**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 6 Crimp termination**  
Crimp termination: 0.5 - 4.0 mm<sup>2</sup>  
**EPIC® H-BE 6 Cage clamp**  
Cage clamp termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 6 Push-In termination**  
Push-In termination: 0.14 - 2.5mm<sup>2</sup>

**Stripping length (mm)**  
**EPIC® H-BE 6 Screw termination**  
8  
**EPIC® H-BE 6 Cage clamp**  
7  
**EPIC® H-BE 6 Push-In termination**  
10

 **Cycle of mechanical operation**  
100

 **VDE-tested**  
**EPIC® H-BE 6 Screw termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 6 Crimp termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 6 Cage clamp**  
UL-tested:  
UL File Number: E75770

 **Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

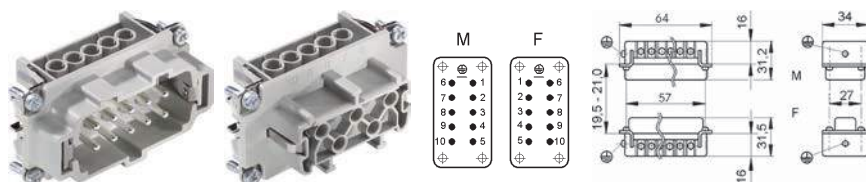
Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BE 6 screw termination</b>					
10190000	EPIC® H-BE 6 SS	male	yes	1 - 6	10
10191000	EPIC® H-BE 6 BS	female	yes	1 - 6	10
10190100	EPIC® H-BE 6 SS	male		1 - 6	10
10191100	EPIC® H-BE 6 BS	female		1 - 6	10
<b>H-BE 6 crimp termination</b>					
10180000	EPIC® H-BE 6 SCM	male		1 - 6	10
10181000	EPIC® H-BE 6 BCM	female		1 - 6	10
<b>H-BE 6 cage clamp termination</b>					
10400000	EPIC® H-BE 6 SF	male	yes	1 - 6	10
10401000	EPIC® H-BE 6 BF	female	yes	1 - 6	10
<b>H-BE 6 Push-In termination</b>					
44423200	EPIC® H-BE 6 SP	male	yes	1 - 6	10
44423201	EPIC® H-BE 6 BP	female	yes	1 - 6	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-BE 10 Screw termination

The proven standard inserts for easy assembly

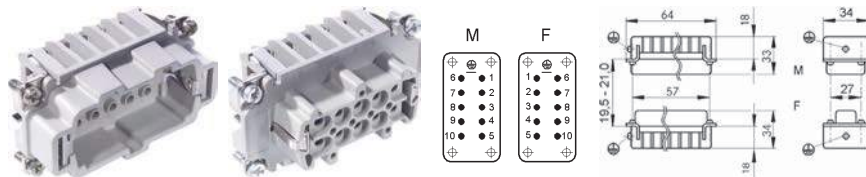


**Info**

- Proven screw for easy installation
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 10 Crimp termination

The proven standard inserts for easy assembly

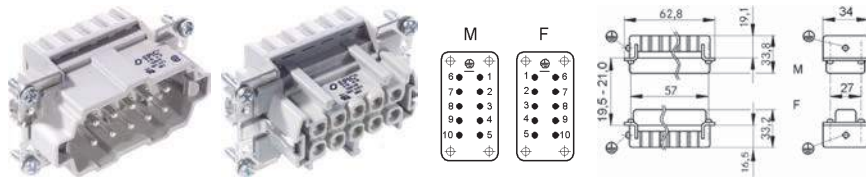


**Info**

- For wire connection up to 4 mm<sup>2</sup>
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 10 Cage clamp

The proven standard inserts for easy assembly



**Info**

- Multifunctional insert for versatile applications
- Screw, crimp, cage clamp and Push-In version - freely combinable

### EPIC® H-BE 10 Push-In termination

The proven standard inserts for easy assembly



**Info**

- Push-In version - fast and easy tool free connection technology
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Multifunctional insert for versatile applications

#### Suitable housing

- EPIC® ULTRA H-B 10
- EPIC® H-B 10 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-BE 10 Crimp termination

- EPIC® H-BE 2.5 machined contacts Page 581

#### Benefits

- Standard inserts with screw, crimp cage clamp and Push-In termination
- The EPIC® H-BE series is suitable for applications that require a reliable connection when working with high voltages and currents

#### EPIC® H-BE 10 Crimp termination EPIC® H-BE 10 Push-In termination

- Insertion of cores with end sleeves in Push-In inserts gives mounting safety and time saving without any tools
- Easy dismantling and insertion of wires by pushing the orange button
- Test socket for standard 2mm test tip for easy testing of Push-In inserts

#### Application range

- Mechanical engineering
- Light & sound technology
- Plastics industry


#### Suitable tools


##### EPIC® H-BE 10 Screw termination

- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers


- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078
- Recommended crimping tool when conductor end-sleeves are used: MULTICRIMP 6


**Technical data**

 ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors


 **Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V


**Rated impulse voltage**  
6 kV


 **Rated current (A)**  
**EPIC® H-BE 10 Screw termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 10 Crimp termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 10 Cage clamp**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 10 Push-In termination**  
IEC: 16 A  
UL: 13 A  
CSA: 13 A

 **Degree of soiling**  
3


**Contact resistance**  
**EPIC® H-BE 10 Screw termination**  
< 2 mOhm  
**EPIC® H-BE 10 Crimp termination**  
< 2 mOhm  
**EPIC® H-BE 10 Cage clamp**  
1.5 - 4 mohm  
**EPIC® H-BE 10 Push-In termination**  
< 2 mOhm


 **Contacts**  
**EPIC® H-BE 10 Screw termination**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 10 Crimp termination**  
Copper alloy, hard silver/gold-plated  
**EPIC® H-BE 10 Cage clamp**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 10 Push-In termination**  
Copper alloy, hard silver-plated


 **Number of contacts**  
10 + PE

 **Termination methods**  
**EPIC® H-BE 10 Screw termination**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 10 Crimp termination**  
Crimp termination: 0.5 - 4.0 mm<sup>2</sup>  
**EPIC® H-BE 10 Cage clamp**  
Cage clamp termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 10 Push-In termination**  
Push-In termination: 0.14 - 2.5mm<sup>2</sup>

**Stripping length (mm)**  
**EPIC® H-BE 10 Screw termination**  
8  
**EPIC® H-BE 10 Cage clamp**  
7  
**EPIC® H-BE 10 Push-In termination**  
10

 **Cycle of mechanical operation**  
100

 **VDE-tested**  
**EPIC® H-BE 10 Screw termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 10 Crimp termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 10 Cage clamp**  
UL-tested:  
UL File Number: E75770

 **Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BE 10 screw termination</b>					
10192000	EPIC® H-BE 10 SS	male	yes	1 - 10	10
10193000	EPIC® H-BE 10 BS	female	yes	1 - 10	10
10192100	EPIC® H-BE 10 SS	male		1 - 10	10
10193100	EPIC® H-BE 10 BS	female		1 - 10	10
<b>H-BE 10 crimp termination</b>					
10182000	EPIC® H-BE 10 SCM	male		1 - 10	10
10183000	EPIC® H-BE 10 BCM	female		1 - 10	10
<b>H-BE 10 cage clamp termination</b>					
10400100	EPIC® H-BE 10 SF	male	yes	1 - 10	10
10401100	EPIC® H-BE 10 BF	female	yes	1 - 10	10
<b>H-BE 10 Push-In termination</b>					
44423202	EPIC® H-BE 10 SP	male	yes	1 - 10	10
44423203	EPIC® H-BE 10 BP	female	yes	1 - 10	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-BE 16 Screw termination

The proven standard inserts for easy assembly

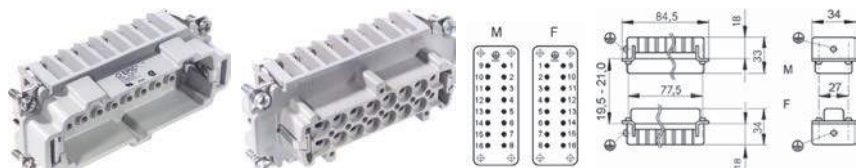


**Info**

- Proven screw for easy installation
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 32 available

### EPIC® H-BE 16 Crimp termination

The proven standard inserts for easy assembly

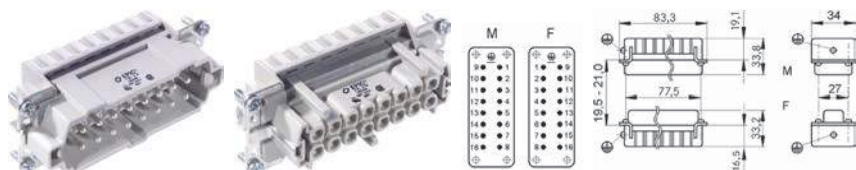


**Info**

- For wire connection up to 4 mm<sup>2</sup>
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 32 available

### EPIC® H-BE 16 Cage clamp

The proven standard inserts for easy assembly



**Info**

- Multifunctional insert for versatile applications
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 32 available

### EPIC® H-BE 16 Push-In termination

The proven standard inserts for easy assembly



**Info**

- Push-In version - fast and easy tool free connection technology
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Multifunctional insert for versatile applications

#### Suitable housing

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-BE 16 Crimp termination

- EPIC® H-BE 2.5 machined contacts  
Page 581

#### Similar products

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

#### Benefits

- Standard inserts with screw, crimp cage clamp and Push-In termination
- The EPIC® H-BE series is suitable for applications that require a reliable connection when working with high voltages and currents

#### EPIC® H-BE 16 Push-In termination

- Insertion of cores with end sleeves in Push-In inserts gives mounting safety and time saving without any tools
- Easy dismantling and insertion of wires by pushing the orange button
- Test socket for standard 2mm test tip for easy testing of Push-In inserts

#### Application range


- Mechanical engineering
- Light & sound technology
- Plastics industry


#### Suitable tools

##### EPIC® H-BE 16 Screw termination


- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078
- Recommended crimping tool when conductor end-sleeves are used: MULTICRIMP 6


**Technical data**

 ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors


 **Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V


**Rated impulse voltage**  
6 kV


 **Rated current (A)**  
**EPIC® H-BE 16 Screw termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 16 Crimp termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 16 Cage clamp**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 16 Push-In termination**  
IEC: 16 A  
UL: 13 A  
CSA: 13 A

 **Degree of soiling**  
3


**Contact resistance**  
**EPIC® H-BE 16 Screw termination**  
< 2 mOhm  
**EPIC® H-BE 16 Crimp termination**  
< 2 mOhm  
**EPIC® H-BE 16 Cage clamp**  
1.5 - 4 mohm  
**EPIC® H-BE 16 Push-In termination**  
< 2 mOhm


 **Contacts**  
**EPIC® H-BE 16 Screw termination**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 16 Crimp termination**  
Copper alloy, hard silver/gold-plated  
**EPIC® H-BE 16 Cage clamp**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 16 Push-In termination**  
Copper alloy, hard silver-plated


 **Number of contacts**  
16 + PE

 **Termination methods**  
**EPIC® H-BE 16 Screw termination**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 16 Crimp termination**  
Crimp termination: 0.5 - 4.0 mm<sup>2</sup>  
**EPIC® H-BE 16 Cage clamp**  
Cage clamp termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 16 Push-In termination**  
Push-In termination: 0.14 - 2.5mm<sup>2</sup>

**Stripping length (mm)**  
**EPIC® H-BE 16 Screw termination**  
8  
**EPIC® H-BE 16 Cage clamp**  
7  
**EPIC® H-BE 16 Push-In termination**  
10

 **Cycle of mechanical operation**  
100

 **VDE-tested**  
**EPIC® H-BE 16 Screw termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 16 Crimp termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 16 Cage clamp**  
UL-tested:  
UL File Number: E75770

 **Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BE 16 screw termination</b>					
10194000	EPIC® H-BE 16 SS	male	yes	1 - 16	5
10195000	EPIC® H-BE 16 BS	female	yes	1 - 16	5
10194100	EPIC® H-BE 16 SS	male		1 - 16	5
10195100	EPIC® H-BE 16 BS	female		1 - 16	5
<b>H-BE 16 crimp termination</b>					
10184000	EPIC® H-BE 16 SCM	male		1 - 16	5
10185000	EPIC® H-BE 16 BCM	female		1 - 16	5
<b>H-BE 16 cage clamp termination</b>					
10400200	EPIC® H-BE 16 SF	male	yes	1 - 16	5
10401200	EPIC® H-BE 16 BF	female	yes	1 - 16	5
<b>H-BE 16 Push-In termination</b>					
44423204	EPIC® H-BE 16 SP	male	yes	1 - 16	5
44423205	EPIC® H-BE 16 BP	female	yes	1 - 16	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

**EPIC® H-BE 16 Screw termination**

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

**EPIC® H-BE 16 Crimp termination**

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

**EPIC® H-BE 16 Käfigzugfeder**

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)



### EPIC® H-BE 24 Screw termination

The proven standard inserts for easy assembly



**Info**

- Proven screw for easy installation
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 48 available

### EPIC® H-BE 24 Crimp termination

The proven standard inserts for easy assembly

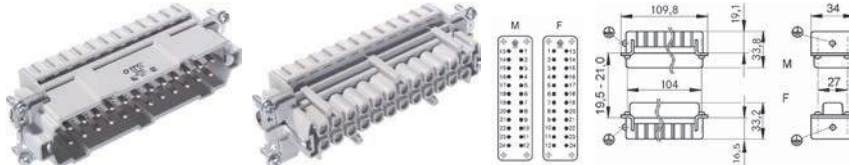


**Info**

- For wire connection up to 4 mm<sup>2</sup>
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 48 available

### EPIC® H-BE 24 Cage clamp

The proven standard inserts for easy assembly



**Info**

- Multifunctional insert for versatile applications
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Also as EPIC® H-BE 48 available

### EPIC® H-BE 24 Push-In termination

The proven standard inserts for easy assembly



**Info**

- Push-In version - fast and easy tool free connection technology
- Screw, crimp, cage clamp and Push-In version - freely combinable
- Multifunctional insert for versatile applications

#### Suitable housing

##### EPIC® H-BE 24 Screw termination

- EPIC® ULTRA H-B 24
- EPIC® H-B 24 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

##### EPIC® H-BE 24 Crimp termination

- EPIC® H-BE 2.5 machined contacts  
Page 581

#### Similar products

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

#### Benefits

- Standard inserts with screw, crimp cage clamp and Push-In termination
- The EPIC® H-BE series is suitable for applications that require a reliable connection when working with high voltages and currents

#### EPIC® H-BE 24 Push-In termination

- Insertion of cores with end sleeves in Push-In inserts gives mounting safety and time saving without any tools
- Easy dismantling and insertion of wires by pushing the orange button
- Test socket for standard 2mm test tip for easy testing of Push-In inserts

#### Application range


- Mechanical engineering
- Light & sound technology
- Plastics industry


#### Suitable tools

##### EPIC® H-BE 24 Screw termination


- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078
- Recommended crimping tool when conductor end-sleeves are used: MULTICRIMP 6


**Technical data**

 ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors


 **Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V


**Rated impulse voltage**  
6 kV


 **Rated current (A)**  
**EPIC® H-BE 24 Screw termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 24 Crimp termination**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 24 Cage clamp**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A  
**EPIC® H-BE 24 Push-In termination**  
IEC: 16 A  
UL: 13 A  
CSA: 13 A

 **Degree of soiling**  
3


**Contact resistance**  
**EPIC® H-BE 24 Screw termination**  
< 2 mOhm  
**EPIC® H-BE 24 Crimp termination**  
< 2 mOhm  
**EPIC® H-BE 24 Cage clamp**  
1.5 - 4 mohm  
**EPIC® H-BE 24 Push-In termination**  
< 2 mOhm


 **Contacts**  
**EPIC® H-BE 24 Screw termination**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 24 Crimp termination**  
Copper alloy, hard silver/gold-plated  
**EPIC® H-BE 24 Cage clamp**  
Copper alloy, hard silver-plated  
**EPIC® H-BE 24 Push-In termination**  
Copper alloy, hard silver-plated


 **Number of contacts**  
24 + PE

 **Termination methods**  
**EPIC® H-BE 24 Screw termination**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 24 Crimp termination**  
Crimp termination: 0.5 - 4.0 mm<sup>2</sup>  
**EPIC® H-BE 24 Cage clamp**  
Cage clamp termination: 0.5 - 2.5 mm<sup>2</sup>  
**EPIC® H-BE 24 Push-In termination**  
Push-In termination: 0.14 - 2.5mm<sup>2</sup>

**Stripping length (mm)**  
**EPIC® H-BE 24 Screw termination**  
8  
**EPIC® H-BE 24 Cage clamp**  
7  
**EPIC® H-BE 24 Push-In termination**  
10

 **Cycle of mechanical operation**  
100

 **VDE-tested**  
**EPIC® H-BE 24 Screw termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 24 Crimp termination**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770  
**EPIC® H-BE 24 Cage clamp**  
UL-tested:  
UL File Number: E75770

 **Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BE 24 screw termination</b>					
10196000	EPIC® H-BE 24 SS	male	yes	1 - 24	5
10197000	EPIC® H-BE 24 BS	female	yes	1 - 24	5
10196100	EPIC® H-BE 24 SS	male		1 - 24	5
10197100	EPIC® H-BE 24 BS	female		1 - 24	5
<b>H-BE 24 crimp termination</b>					
10186000	EPIC® H-BE 24 SCM	male		1 - 24	5
10187000	EPIC® H-BE 24 BCM	female		1 - 24	5
<b>H-BE 24 cage clamp termination</b>					
10400300	EPIC® H-BE 24 SF	male	yes	1 - 24	5
10401300	EPIC® H-BE 24 BF	female	yes	1 - 24	5
<b>H-BE 24 Push-In termination</b>					
44423206	EPIC® H-BE 24 SP	male	yes	1 - 24	5
44423207	EPIC® H-BE 24 BP	female	yes	1 - 24	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

**EPIC® H-BE 24 Screw termination**

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

**EPIC® H-BE 24 Crimp termination**

- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)

**EPIC® H-BE 24 Käfigzugfeder**

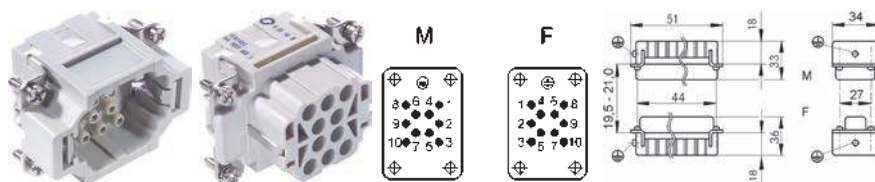
- Further products with higher numbering in the internet. (H-BE 32, H-BE 48)





### EPIC® H-EE 10

H-EE inserts with high contact density based on the proven H-BE series.

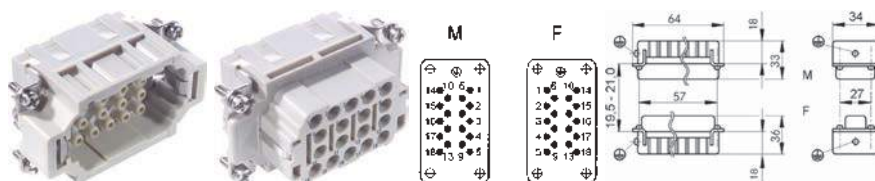


**Info**

- Inserts with high contact density for medium power

### EPIC® H-EE 18

H-EE inserts with high contact density based on the proven H-BE series.



**Info**

- Inserts with high contact density for medium power

#### Suitable housing

##### EPIC® H-EE 10

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system
- EPIC® H-BE 2.5 machined contacts Page 581

##### EPIC® H-EE 18

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A10 to select the required inserts and housings

#### Suitable contacts:

- EPIC® H-BE 2.5 machined contacts Page 581

#### Benefits

- The H-EE inserts with machined contacts for a high number of pins in very tight spaces.
- For assembly in H-B housing

#### Application range

- Mechanical engineering
- Plant engineering
- Appliance and apparatus construction

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

#### Rated voltage (V)

IEC: 500 V  
UL: 600 V  
CSA: 600 V

#### Rated impulse voltage

6 kV

#### Amp. Rated current (A)

IEC: 16 A  
UL: 16 A  
CSA: 16 A

#### Degree of soiling

3

#### Contact resistance

< 2 mOhm



#### Contacts

Copper alloy, hard silver/gold-plated



#### Number of contacts

**EPIC® H-EE 10**

10 + PE

**EPIC® H-EE 18**

18 + PE



#### Termination methods

Crimp termination: 0.5 - 4.0 mm<sup>2</sup>



#### Cycle of mechanical operation

100



UL-tested:

UL File Number: E75770



#### Temperature range

-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-EE 10 crimp termination</b>					
10180400	H-EE 10 SC	male	machined	1 - 10	10
10181400	H-EE 10 BC	female	machined	1 - 10	10
<b>H-EE 18 crimp termination</b>					
10182400	H-EE 18 SC	male	machined	1 - 18	10
10183400	H-EE 18 BC	female	machined	1 - 18	10

Photographs are not to scale and do not represent detailed images of the respective products.

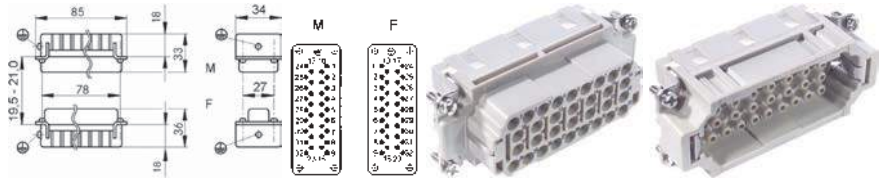


## EPIC® H-EE 32

H-EE inserts with high contact density based on the proven H-BE series.

**Info**

- Inserts with high contact density for medium power
- Also as EPIC® H-EE 64 available

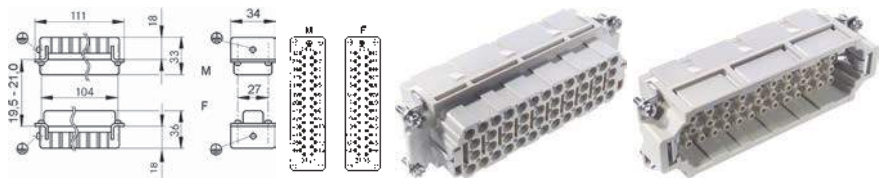


## EPIC® H-EE 46

H-EE inserts with high contact density based on the proven H-BE series.

**Info**

- Inserts with high contact density for medium power
- Also as EPIC® H-EE 92 available



### Suitable housing

#### EPIC® H-EE 32

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system
- EPIC® H-BE 2.5 machined contacts  
Page 581

#### EPIC® H-EE 46

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system
- Refer to Selection Table A 10 to select the required inserts and housings

### Suitable contacts:

- EPIC® H-BE 2.5 machined contacts  
Page 581

### Similar products

- Further products with higher numbering in the internet. (H-EE 64, H-EE 92)

### Benefits

- The H-EE inserts with machined contacts for a high number of pins in very tight spaces.
- For assembly in H-B housing

### Application range

- Mechanical engineering
- Plant engineering
- Appliance and apparatus construction

**Technical data**

<b>ETIM</b>	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Contacts</b>	Copper alloy, hard silver / gold-plated
<b>Rated voltage (V)</b>	IEC: 500 V UL: 600 V CSA: 600 V	<b>Number of contacts</b>	<b>EPIC® H-EE 32</b> 32 + PE <b>EPIC® H-EE 46</b> 46 + PE
<b>Rated impulse voltage</b>	6 kV	<b>Termination methods</b>	Crimp termination: 0.5 - 4.0 mm <sup>2</sup>
<b>Rated current (A)</b>	IEC: 16 A UL: 16 A CSA: 16 A	<b>Cycle of mechanical operation</b>	100
<b>Degree of soiling</b>	3	<b>UL-tested:</b>	UL File Number: E75770
<b>Contact resistance</b>	< 2 mOhm	<b>Temperature range</b>	-40°C to +100°C, short-term up to +125°C

Article number	Article description	Contact type	Article designation	Number of operating contacts	Pieces / PU
<b>H-EE 32 crimp termination</b>					
10184400	H-EE 32 SC	male	machined	1 - 32	5
10185400	H-EE 32 BC	female	machined	1 - 32	5
<b>H-EE 46 crimp termination</b>					
10186400	H-EE 46 SC	male	machined	1 - 46	5
10187400	H-EE 46 BC	female	machined	1 - 46	5

Photographs are not to scale and do not represent detailed images of the respective products.

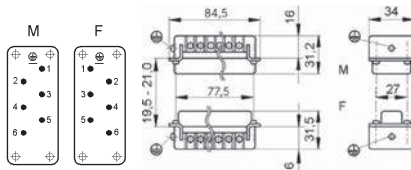
### Similar products

- Further products with higher numbering in the internet. (H-EE 64, H-EE 92)



## EPIC® H-BS 6

Inserts for high currents.

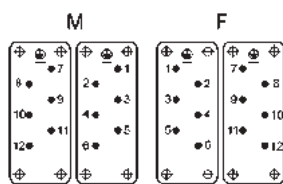


**Info**

- Standard insert for currents up to 35A

## EPIC® H-BS 12

Inserts for high currents.



**Info**

- Standard insert for currents up to 35A

### Suitable housing

#### EPIC® H-BS 6

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system

#### EPIC® H-BS 12

- EPIC® ULTRA H-B 16
- Refer to Selection Table A10 to select the required inserts and housings

### Benefits

#### EPIC® H-BS 6

- High rating for currents up to 35 A
- Screw termination up to a conductor cross section of 6 mm<sup>2</sup>

#### EPIC® H-BS 12

- High rating for currents up to 35 A
- Screw termination up to a conductor cross section of 6 mm<sup>2</sup>
- Two H-BS 6 inserts with different contact-numbering for one housing.

### Application range

- Plant engineering
- Mechanical engineering
- Drive systems

### Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to page 1078

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V  
Conductor - conductor: 690 V

**Rated impulse voltage**  
6 kV

**Amp.** **Rated current (A)**  
IEC: 35 A  
UL: 35 A  
CSA: 35 A

**Degree of soiling**  
3

**Contact resistance**  
< 2 mOhm

**Contacts**  
Copper alloy, hard silver-plated

**Number of contacts**  
**EPIC® H-BS 6**  
6 + PE

**EPIC® H-BS 12**  
12 + PE

**Termination methods**  
Screw termination: 0.5 - 6 mm<sup>2</sup>

**Stripping length (mm)**  
8

**Cycle of mechanical operation**  
100

**DIN VDE** **VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BS 6 screw termination</b>					
10170000	H-BS 6 SS	male	yes	1 - 6	5
10171000	H-BS 6 BS	female	yes	1 - 6	5
<b>H-BS 12 screw termination</b>					
10170600	H-BS 6 SS	male	yes	7 - 12	5
10171600	H-BS 6 BS	female	yes	7 - 12	5

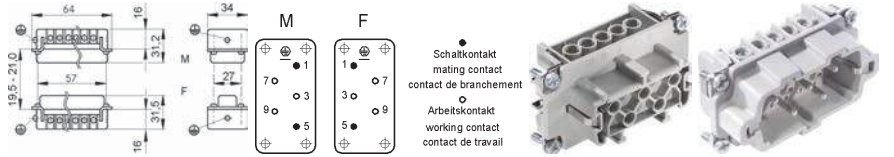
Photographs are not to scale and do not represent detailed images of the respective products.



**Info**

- Multipole insert with lagging switch contacts
- Switching operations possible for disconnecting under load

These high-voltage inserts are additionally equipped with 2 switching contacts

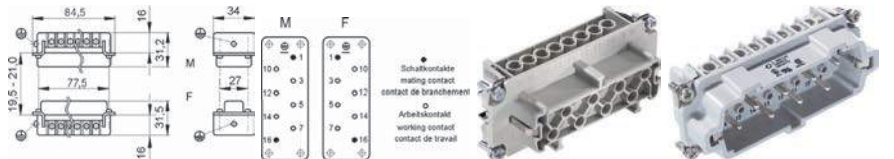


**EPIC® H-BVE 3**

**Info**

- Multipole insert with lagging switch contacts
- Switching operations possible for disconnecting under load

These high-voltage inserts are additionally equipped with 2 switching contacts



**EPIC® H-BVE 6**

**Info**

- Multipole insert with lagging switch contacts
- Switching operations possible for disconnecting under load

These high-voltage inserts are additionally equipped with 2 switching contacts



**EPIC® H-BVE 10**

- Suitable housing**
- EPIC® H-BVE 3**
    - EPIC® ULTRA H-B 10
    - EPIC® H-B 10 Housings
    - EPIC® QUICK & EASY Mounting system
  - EPIC® H-BVE 6**
    - EPIC® ULTRA H-B 10
    - EPIC® H-B 10 Housings
    - EPIC® QUICK & EASY Mounting system
  - EPIC® H-BVE 10**
    - EPIC® ULTRA H-B 10
    - EPIC® H-B 10 Housings
    - EPIC® QUICK & EASY Mounting system

- Benefits**
- These high-voltage inserts are additionally equipped with 2 switching contacts
  - With the relevant wiring, the lagging switch contacts interrupt the power supply before the working contacts are separated

- Application range**
- Plant engineering
  - Mechanical engineering

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors
- Rated voltage (V)**  
IEC: 630 V  
UL: 600 V  
CSA: 600 V
- Rated impulse voltage**  
6 kV
- Rated current (A)**  
IEC: 16 A  
UL: 16 A  
CSA: 16 A
- Degree of soiling**  
3
- Contact resistance**  
< 2 mOhm
- Contacts**  
Copper alloy, hard silver-plated
- Number of contacts**  
**EPIC® H-BVE 3**  
3 + 2 + PE  
**EPIC® H-BVE 6**  
6 + 2 + PE  
**EPIC® H-BVE 10**  
10 + 2 + PE
- Termination methods**  
Screw termination: 0.5 - 2.5 mm<sup>2</sup>
- Stripping length (mm)**  
8
- Cycle of mechanical operation**  
100
- VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

- Suitable tools**
- Kraftform® adjustable torque screwdriver/  
Kraftform Kompakt® Set refer to page 1078

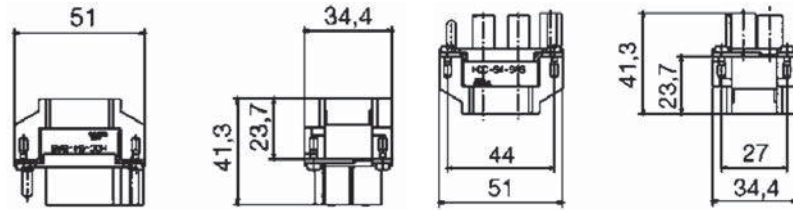
Article number	Article description	Contact type	Wire protection	Number of operating contacts	Pieces / PU
<b>H-BVE 3 screw termination</b>					
10210010	H-BVE 3 SS	male	yes	3 + 2	10
10211010	H-BVE 3 BS	female	yes	3 + 2	10
10210110	H-BVE 3 SS	male		3 + 2	10
10211110	H-BVE 3 BS	female		3 + 2	10
<b>H-BVE 6 screw termination</b>					
10239010	H-BVE 6 SS	male	yes	6 + 2	5
10240010	H-BVE 6 BS	female	yes	6 + 2	5
10239110	H-BVE 6 SS	male		6 + 2	5
10240110	H-BVE 6 BS	female		6 + 2	5
<b>H-BVE 10 screw termination</b>					
10270010	H-BVE 10 SS	male	yes	10 + 2	5
10271010	H-BVE 10 BS	female	yes	10 + 2	5
10270110	H-BVE 10 SS	male		10 + 2	5
10271110	H-BVE 10 BS	female		10 + 2	5

Photographs are not to scale and do not represent detailed images of the respective products.



## Power H-S

Power inserts



**Info**

- Very high current transfer in a small space
- Axial screw termination for assembly without special tool

### Suitable housing

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings

### Benefits

- Fast and easy assembly
- Very high current transfer
- Lower space requirement
- Axial screw termination for assembly without special tool

### Application range

- Mechanical engineering
- Plant engineering
- Renewable energy

### Technical data

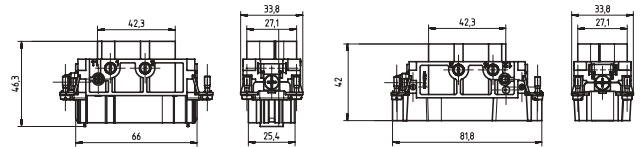
<b>ETIM</b>	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Number of contacts</b> 4 + PE
<b>Rated voltage (V)</b>	1000	<b>Termination methods</b> Axial screw termination 2,5 mm² ... 10 mm²
<b>Rated impulse voltage</b>	8 kV	<b>Stripping length (mm)</b> 8
<b>Rated current (A)</b>	65	<b>Material</b> PC, polycarbonate
<b>Degree of soiling</b>	3	<b>Cycle of mechanical operation</b> 500
<b>Contact resistance</b>	< 1 mOhm	<b>Temperature range</b> -40°C ... +125°C

Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>H-S Axial screw connection</b>				
10407910	H-S 4+2xPE SAS	male	4 + PE	10
10407900	H-S 4+2xPE BAS	female	4 + PE	10
<b>Tool for axial connection</b>				
44424028	TOOL HEX 2x100	For tightening the contacts		1

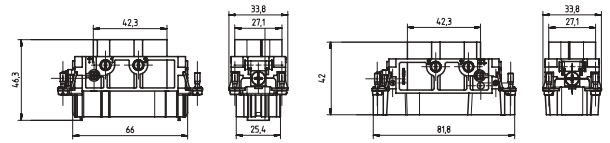
Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® Power K 4/0**  
Combination insert Power



**EPIC® Power K 4/2**  
Combination insert Power and Control



**Info**

- Combination insert Power

**Info**

- Combination insert Power and Control

**Suitable housing**

- EPIC® ULTRA H-B 16
- EPIC® H-B 16 Housings
- EPIC® QUICK & EASY Mounting system

**Benefits**

**EPIC® Power K 4/0**

- High power in one connector insert
- Best in combination with ÖLFLEX® SERVO

**EPIC® Power K 4/2**

- Power and control in one connector insert
- Best in combination with ÖLFLEX® SERVO

**Application range**

- Mechanical engineering
- Renewable energy
- Control engineering

**Technical data**

	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Contact resistance</b> < 5 mOhm
	<b>Rated voltage (V)</b> <b>EPIC® Power K 4/0</b> 830 V Power <b>EPIC® Power K 4/2</b> 830 V Power 400 V Control	<b>Number of contacts</b> <b>EPIC® Power K 4/0</b> 4 + PE <b>EPIC® Power K 4/2</b> 4 + 2 + PE
	<b>Rated current (A)</b> <b>EPIC® Power K 4/0</b> 80 A Power <b>EPIC® Power K 4/2</b> 80 A Power 16 A Control	<b>Termination methods</b> Screw termination: 1.5 - 16.0 mm <sup>2</sup>
	<b>Rated impulse voltage</b> 8 kV	<b>Stripping length (mm)</b> 16 6
	<b>Degree of soiling</b> 3	<b>Material</b> PC, polycarbonate
		<b>Cycle of mechanical operation</b> 500
		<b>Temperature range</b> -40°C ... +125°C

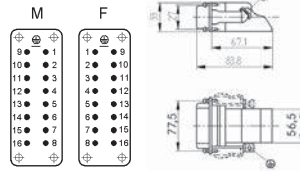
Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>EPIC® 4/0 screw termination</b>				
44424041	EPIC® K 4/0 SS	male	4 + PE	10
44424042	EPIC® K 4/0 BS	female	4 + PE	10
<b>EPIC® K 4/2 screw termination</b>				
44424043	EPIC® K 4/2 SS	male	4 + 2 + PE	10
44424044	EPIC® K 4/2 BS	female	4 + 2 + PE	10

PE connection with a 16mm<sup>2</sup> wire only with the recommended ring lug 44424029  
The inserts must be used with the appropriate housings  
Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® TB-H-BE 16

For convenient, clear wiring in control cabinets.  
Assembly in panel-mount base housings.

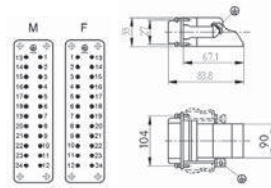


**Info**

- Plug connection for control cabinets

### EPIC® TB-H-BE 24

For convenient, clear wiring in control cabinets.  
Assembly in panel-mount base housings.



**Info**

- Plug connection for control cabinets

#### Suitable housing

##### EPIC® TB-H-BE 16

- EPIC® ULTRA H-B 16 AG QB Page 609
- EPIC® H-B 16 AG-LB Page 635
- EPIC® H-B 16 AD-LB Page 635
- EPIC® H-B 16 AG Page 635
- EPIC® H-B 16 AD-BO Page 631
- EPIC® H-B 16 AG-ZR

##### EPIC® TB-H-BE 24

- EPIC® ULTRA H-B 16 AG QB Page 609
- EPIC® H-B 16 AG-LB Page 635
- EPIC® H-B 16 AD-LB Page 635
- EPIC® H-B 16 AG Page 635
- EPIC® H-B 16 AD-BO Page 631
- EPIC® H-B 16 AG-ZR

#### Benefits

- Standard H-BE inserts for use with switch cabinets
- Pluggable with H-BE male inserts in hoods
- Fastening on side = "left" means that when mounting the terminal adapter on the left wall of a control cabinet, the PE connection and pin "1" are on the "top" side

#### Application range

- Control cabinet manufacturing
- Plant engineering

#### Technical data

<b>ETIM</b> 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors	<b>Number of contacts</b> <b>EPIC® TB-H-BE 16</b> 16 + PE <b>EPIC® TB-H-BE 24</b> 24 + PE
<b>Rated voltage (V)</b> IEC: 500 V UL: 600 V CSA: 600 V	<b>Termination methods</b> Screw termination: 0.5 - 4.0 mm <sup>2</sup>
<b>Rated current (A)</b> IEC: 16 A UL: 16 A CSA: 16 A	<b>Stripping length (mm)</b> 12
<b>Degree of soiling</b> 3	<b>Cycle of mechanical operation</b> 200
<b>Contacts</b> Copper alloy, hard silver-plated	UL-tested: UL File Number: E75770
	<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

Article number	Article description	Contact type	Fastening on side	Number of operating contacts	Pieces / PU
<b>16-pin terminal adapter</b>					
70315100	TB-H-BE 16 BRE	female	right	1 - 16	10
70314100	TB-H-BE 16 BLI	female	left	1 - 16	10
<b>24-pin terminal adapter</b>					
70317100	TB-H-BE 24 BRE	female	right	1 - 24	10
70316100	TB-H-BE 24 BLI	female	left	1 - 24	10

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



### EPIC® MC Module: High Current 1+PE

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- High power module with screw connection and reinforced protection earth
- Lever for rapid removal of the module



### EPIC® MC Module: High Current 2pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- High power module 2pole with screw connection
- Lever for rapid removal of the module



#### Suitable housing

- EPIC® MCR Frames
- Higher housing
- The suitable connector housings depend on the modular frame used

#### Benefits

##### EPIC® MC Module: High Current 1+PE

- The mix of different functions in one plug guarantees high flexibility
- Screw connection up to 25mm<sup>2</sup> for easy assembly without special tools
- Separate protective conductor for increased safety

##### EPIC® MC Module: High Current 2pole

- The mix of different functions in one plug guarantees high flexibility
- Screw connection up to 25mm<sup>2</sup> for easy assembly without special tools

#### Application range

- Plant engineering
- Printing machines
- Control engineering

#### Suitable tools

- PEW 12 universal tool refer to page 1034
- When connecting 25 mm<sup>2</sup> cables, please use the special crimping die (11147500) for the cable-end sleeves

#### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000438 <b>ETIM 5.0 Class-Description:</b> Contact insert for industrial connectors		<b>Number of contacts</b> EPIC® MC Module: High Current 1+PE 1 + PE EPIC® MC Module: High Current 2pole 2
	<b>Rated voltage (V)</b> IEC: 1000 V UL: 600 V CSA: 600 V		<b>Termination methods</b> Screw termination: 10 - 25 mm <sup>2</sup>
	<b>Rated current (A)</b> 82 A	<b>Stripping length (mm)</b> 15	
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 100
	<b>Contact resistance</b> < 2 mOhm		<b>VDE-tested</b> Certified production control: VDE-REG. no. <b>A870</b> UL-tested: UL File Number: E75770
	<b>Contacts</b> Copper alloy, hard silver-plated		<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: high current 1-pin + PE (occupies 2 slots in the MCR frame)</b>					
10344600	MCS-HC 1+PE	male	1 + PE	2	5
10345600	MCB-HC 1+PE	female	1 + PE	2	5
<b>Module: high current 2-pin (occupies 2 slots in the MCR frame)</b>					
10344100	MCS-HC 2	male	2	2	5
10345100	MCB-HC 2	female	2	2	5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

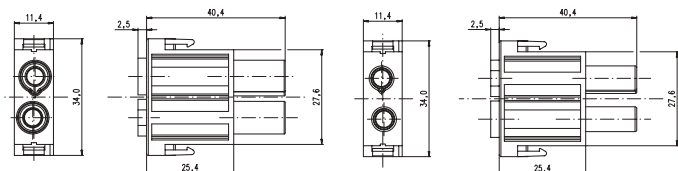
- EPIC® MC Module removal tool refer to page 575





## EPIC® Power Module HC2

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



### Info

- High current with only one module slot

### Suitable housing

- EPIC® MCR Frames
- EPIC® H-B housing use in high version

### Suitable contacts:

- EPIC® Modular 3.6 machined contacts 16 mm<sup>2</sup> Page 586
- Use only EPIC® MC 3.6 contacts 16mm<sup>2</sup>

### Benefits

- High current transfer
- Only one slot needed in the frame
- The mix of different functions in one plug guarantees high flexibility
- Crimp connection for permanent vibration proof contact

### Application range

- Plant engineering
- Robotics industry
- Control engineering
- Mechanical engineering

### Technical data

	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors		<b>Number of contacts</b> 2
	<b>Rated voltage (V)</b> 1000 V		<b>Termination methods</b> Crimp termination: 16.0 mm <sup>2</sup>
	<b>Rated impulse voltage</b> 8 kV		<b>Material</b> PA6
	<b>Rated current (A)</b> 65		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>Temperature range</b> -40°C ... +125°C

Article number	Article description	Contact type	Slots	Pieces / PU
<b>EPIC® Power Module HC2</b>				
44424012	EPIC® MCS HC2	male	1	10
44424013	EPIC® MCB HC2	female	1	10

PE connection with a 16mm<sup>2</sup> wire only with the recommended ring lug 44424029  
The inserts must be used with the appropriate housings  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® MCR Frames

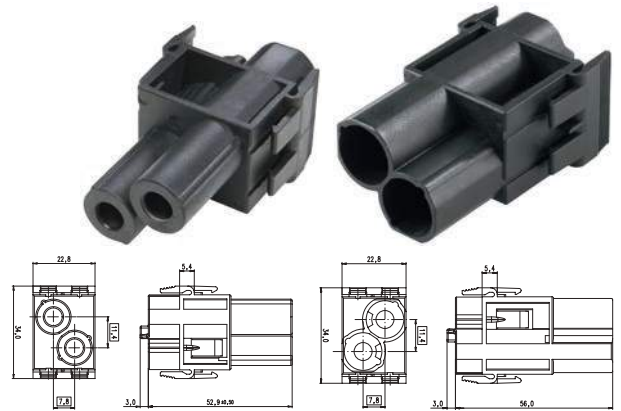


## Power Module HHC2

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- High current for sufficient power reserves
- Lever for rapid removal of the module



**Suitable housing**

- EPIC® MCR Frames
- EPIC® H-B housing use in high version

**Suitable contacts:**

- Modular 6.0 machined contacts  
Page 586

**Benefits**

- Very high current transfer
- The mix of different functions in one plug guarantees high flexibility
- Crimp connection for permanent vibration proof contact

**Application range**

- Mechanical engineering
- Robotics industry
- Plant engineering
- Renewable energy

**Technical data**

	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors		<b>Number of contacts</b> 2
	<b>Rated voltage (V)</b> 1000		<b>Termination methods</b> Crimp termination: 16 mm² ... 35 mm²
	<b>Rated impulse voltage</b> 8 kV		<b>Material</b> PA6
	<b>Rated current (A)</b> 150		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>Temperature range</b> -40°C ... +125°C

Article number	Article description	Contact type	Slots	Pieces / PU
<b>Power Module HHC2</b>				
44424017	MCS HHC2	male	2	10
44424018	MCB HHC2	female	2	10

\* Trade product, no Lapp product  
Due to reduced cross sections at PE contacts of frames, the PE contact has to be additionally protected against short circuits by using a protection circuit offering a sufficiently short breaking time (<0.25s).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

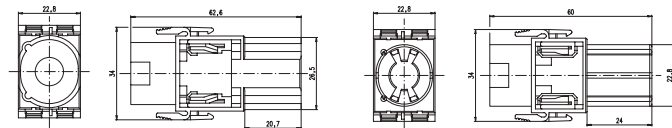
- EPIC® MCR Frames

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## Power Module HHC1

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



### Info

- Extremely high current for sufficient power reserves
- Lever for rapid removal of the module

### Suitable housing

- EPIC® MCR Frames
- EPIC® H-B housing use in high version

### Suitable contacts:

- EPIC® Modular 10.0 machined contacts Page 587

### Benefits

- Extremely high current transfer
- The mix of different functions in one plug guarantees high flexibility
- Crimp connection for permanent vibration proof contact

### Application range

- Robotics industry
- Renewable energy
- Plant engineering
- Mechanical engineering

### Technical data

	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors
	<b>Rated voltage (V)</b> 1000
	<b>Rated impulse voltage</b> 8 kV
	<b>Rated current (A)</b> 220
	<b>Degree of soiling</b> 3

	<b>Number of contacts</b> 1
	<b>Termination methods</b> Crimp termination: 50 mm² ... 95mm²
	<b>Material</b> PA6
	<b>Cycle of mechanical operation</b> 500
	<b>Temperature range</b> -40°C ... +125°C

Article number	Article description	Contact type	Slots	Pieces / PU
<b>Power Module HHC1</b>				
44424030	MCS HHC1	male	2	1
44424031	MCB HHC1	female	2	1

\* Trade product, no Lapp product

Due to reduced cross sections at PE contacts of frames, the PE contact has to be additionally protected against short circuits by using a protection circuit offering a sufficiently short breaking time (<0.25s).

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® MCR Frames

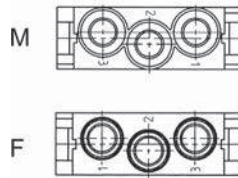


## EPIC® MC Module: High Voltage 3pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- Very high current transfer in a small space



### Suitable housing

- EPIC® MCR Frames
- The suitable connector housings depend on the modular frame used

### Suitable contacts:

- EPIC® Modular 3.6 machined contacts  
Page 585

### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

### Application range

- Plant engineering
- Printing machines
- Control engineering

### Technical data

- ETIM 5.0 Class-ID:** EC000438  
**ETIM 5.0 Class-Description:** Contact insert for industrial connectors
- Rated voltage (V)**  
1000 V
- Rated current (A)**  
50 A
- Degree of soiling**  
3
- Contact resistance**  
< 2 mOhm
- Contacts**  
Copper alloy, hard silver-plated

- Number of contacts**  
3
- Termination methods**  
Crimp termination: 1.5 - 10 mm²
- Cycle of mechanical operation**  
100
- UL-tested:**  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: high voltage 3-pin</b>					
10399800	MCS 3 CM-HV	male	3	1	10
10399900	MCB 3 CM-HV	female	3	1	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- EPIC® MC Module removal tool refer to page 575



### EPIC® MC Module: High Voltage 4+PE

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Suitable for processing with contacts on reel
- For automated production with crimping machine

### EPIC® MC Module: 3pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Very high current transfer in a small space

### EPIC® MC Module: HE 4pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Lever for rapid removal of the module

#### Suitable housing

- EPIC® MCR Frames
- The suitable connector housings depend on the modular frame used

#### Suitable contacts:

##### EPIC® MC Modul: High Voltage 4+PE

- EPIC® MC 2.5 stamped contacts Page 583
- EPIC® MC 2.5 stamped contacts-on-reel Page 584

##### EPIC® MC Module: 3pol.

- EPIC® MC 2.5 stamped contacts Page 583

##### EPIC® MC Module: HE 4pol.

- EPIC® MC 2.5 stamped contacts Page 583

#### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Application range

- Plant engineering
- Printing machines
- Control engineering

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
EPIC® MC Module: High Voltage 4+PE 1000 V  
EPIC® MC Module: 3pole 630 V  
EPIC® MC Module: HE 4pole 630 V

**Rated current (A)**  
EPIC® MC Module: High Voltage 4+PE 16 A  
EPIC® MC Module: 3pole 40 A  
EPIC® MC Module: HE 4pole 25 A

**Degree of soiling**  
3

**Contact resistance**  
< 2 mOhm

**Contacts**  
Copper alloy, hard silver-plated

**Number of contacts**  
EPIC® MC Module: High Voltage 4+PE 4 + PE  
EPIC® MC Module: 3pole 3  
EPIC® MC Module: HE 4pole 4

**Termination methods**  
EPIC® MC Module: High Voltage 4+PE Crimp termination: 0.5 - 2.5 mm<sup>2</sup>  
EPIC® MC Module: 3pole Crimp termination: 1.5 - 10 mm<sup>2</sup>  
EPIC® MC Module: HE 4pole Crimp termination: 0.5 - 4.0 mm<sup>2</sup>

**Cycle of mechanical operation**  
100

**DIN VDE** EPIC® MC Module: High Voltage 4+PE UL-tested:  
UL File Number: E75770  
EPIC® MC Module: 3pole UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: high voltage 4-pin + PE</b>					
10383200	MCS 5 CG	male	4 + PE	1	10
10383300	MCB 5 CG	female	4 + PE	1	10
<b>Module: 3-pin</b>					
10382000	MCS 3 CM	male	3	1	10
10382100	MCB 3 CM	female	3	1	10
<b>Module: 4-pin HE</b>					
10399000	MCS 4 CM	male	4	1	10
10399100	MCB 4 CM	female	4	1	10

Photographs are not to scale and do not represent detailed images of the respective products.



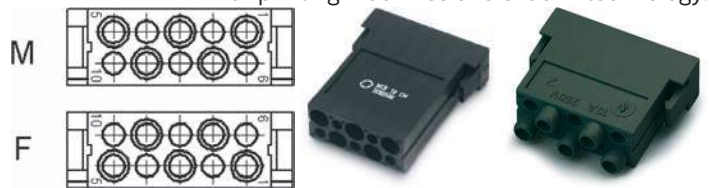
### EPIC® MC Module: 5pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



### EPIC® MC Module: 10pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**i Info**

- Ideal for data transmission

#### Suitable housing

- EPIC® MCR Frames
- The suitable connector housings depend on the modular frame used

#### Suitable contacts:

##### EPIC® MC Module: 5pol.

- EPIC® MC 2.5 machined contacts  
Page 582

##### EPIC® MC Module: 10pol.

- EPIC® MC 2.5 machined contacts  
Page 582

#### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Application range

- Plant engineering
- Printing machines
- Control engineering

#### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000438 <b>ETIM 5.0 Class-Description:</b> Contact insert for industrial connectors		<b>Number of contacts</b> <b>EPIC® MC Module: 5pole</b> 5 <b>EPIC® MC Module: 10pole</b> 10
	<b>Rated voltage (V)</b> 400 V		<b>Termination methods</b> <b>EPIC® MC Module: 5pole</b> Crimp termination: 0.5 - 4.0 mm <sup>2</sup> <b>EPIC® MC Module: 10pole</b> Crimp termination: 0.14 - 2.5 mm <sup>2</sup>
	<b>Rated current (A)</b> <b>EPIC® MC Module: 5pole</b> 20 A <b>EPIC® MC Module: 10pole</b> max. 10 A		<b>Cycle of mechanical operation</b> 100
	<b>Degree of soiling</b> 3		<b>EPIC® MC Module: 5pole</b> UL-tested: UL File Number: E75770 <b>EPIC® MC Module: 10pole</b> UL-tested: UL File Number: E75770
	<b>Contact resistance</b> <b>EPIC® MC Module: 5pole</b> < 2 mOhm <b>EPIC® MC Module: 10pole</b> < 2 mOhm		<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C
	<b>Contacts</b> <b>EPIC® MC Module: 5pole</b> Copper alloy, hard silver-plated <b>EPIC® MC Module: 10pole</b> Copper alloy, hard silver/gold-plated		

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: 5-pin</b>					
10382200	MCS 5 CM	male	5	1	10
10382300	MCB 5 CM	female	5	1	10
<b>Module: 10-pin</b>					
10382400	MCS 10 CM	male	10	1	10
10382500	MCB 10 CM	female	10	1	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® MC Module: 10pole stamped

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Suitable for processing with contacts on reel
- For automated production with crimping machine

### EPIC® MC Module: 20pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Suitable for processing with contacts on reel
- For automated production with crimping machine

### EPIC® MC Dummy Module

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Dummy module as a placeholder for future expansion

#### Suitable housing

- EPIC® MCR Frames
- The suitable connector housings depend on the modular frame used

#### Suitable contacts:

##### EPIC® MC Module: 10pole stamped

- EPIC® H-D 1.6 stamped contacts Page 579
- EPIC® H-D 1.6 stamped contacts-on-reel Page 580

##### EPIC® MC Module: 20pole

- EPIC® H-D 1.6 stamped contacts Page 579

#### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Application range

- Plant engineering
- Printing machines
- Control engineering

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Rated voltage (V)**  
EPIC® MC Module: 10pole stamped 250 V  
EPIC® MC Module: 20pole 100 V

**Rated current (A)**  
EPIC® MC Module: 10pole stamped max. 10 A  
EPIC® MC Module: 20pole 4 A

**Degree of soiling**  
EPIC® MC Module: 10pole stamped 3  
EPIC® MC Module: 20pole 3

**Contact resistance**  
EPIC® MC Module: 10pole stamped < 2 mOhm

**Contacts**  
EPIC® MC Module: 10pole stamped Copper alloy, hard silver/gold-plated  
EPIC® MC Module: 20pole Copper alloy, gold-plated

**Number of contacts**  
EPIC® MC Module: 10pole stamped 10  
EPIC® MC Module: 20pole 20

**Termination methods**  
EPIC® MC Module: 10pole stamped Crimp termination: 0.14 - 2.5 mm<sup>2</sup>  
EPIC® MC Module: 20pole Crimp termination: 0.08 - 0.56 mm<sup>2</sup>

**Cycle of mechanical operation**  
EPIC® MC Module: 10pole stamped 100  
EPIC® MC Module: 20pole 50

**DIN VDE**  
EPIC® MC Module: 10pole stamped UL-tested:  
UL File Number: E75770  
EPIC® MC Module: 20pole UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: 10-pin</b>					
10383400	MCS 10 CG	male	10	1	10
10383500	MCB 10 CG	female	10	1	10
<b>Module: 20-pin</b>					
10383600	MCS 20 CG	male	20	1	10
10383700	MCB 20 CG	female	20	1	10
<b>Dummy module</b>					
10399400	MCS 0 Blind	male	0	1	10
10399500	MCB 0 Blind	female	0	1	10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- EPIC® MC Module removal tool refer to page 575



### EPIC® MC Module: Koax 3pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- RGB video signal transmission in one module



### EPIC® MC Module: PROFIBUS DP

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- Profibus DP module for uninterruptible fieldbus operation
- Lever for rapid removal of the module



### EPIC® MC Module: Universal Bus

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**i Info**

- Connector for shielded data cables
- Lever for rapid removal of the module



#### Suitable housing

- EPIC® MCR Frames
- Higher housing
- The suitable connector housings depend on the modular frame used

#### Suitable contacts:

##### EPIC® MC Modul: Koax 3pol.

- EPIC® MC Coax-Contacts Page 588

#### Benefits

##### EPIC® MC Module: Koax 3pole

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

##### EPIC® MC Module: PROFIBUS DP

- Uninterruptible fieldbus operation when pulling the connector
- Transmission rate up to 12 MBit/s
- Easy assembly by screw connection
- Shielding connection by strain relief

##### EPIC® MC Module: Universal Bus

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Application range

- Plant engineering
- Light & sound technology
- Control engineering

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**⚡ Rated voltage (V)**  
EPIC® MC Module: Koax 3pole 250 V  
EPIC® MC Module: PROFIBUS DP 30 V  
EPIC® MC Module: Universal Bus 30 V

**Amp.** EPIC® MC Module: PROFIBUS DP 1 A  
EPIC® MC Module: Universal Bus 1 A

**🧻 Degree of soiling**  
3

**⚡ Contact resistance**  
EPIC® MC Module: Koax 3pole < 2,7 mOhm

**⚙️ Contacts**  
Copper alloy, gold-plated

**🔌 Number of contacts**  
EPIC® MC Module: Koax 3pole 3  
EPIC® MC Module: PROFIBUS DP 2 / 4 + shield  
EPIC® MC Module: Universal Bus 4 + shield

**🔧 Termination methods**  
EPIC® MC Module: Koax 3pole Solder termination: var. coax cables  
EPIC® MC Module: PROFIBUS DP Screw termination: for Profibus cable  
EPIC® MC Module: Universal Bus Screw termination: 0.08 - 1.5 mm<sup>2</sup>

**🔄 Cycle of mechanical operation**  
100

**🌡️ Temperature range**  
EPIC® MC Module: Koax 3pole -40°C to +100°C, short-term up to +125°C  
EPIC® MC Module: PROFIBUS DP -20 °C ... +85 °C  
EPIC® MC Module: Universal Bus -20 °C ... +85 °C



Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: 3-pin coax</b>					
10399200	MCS 3 coax	male	3	1	10
10399300	MCB 3 coax	female	3	1	10
<b>Module: Profibus DP</b>					
10390400	MCS 2 SS	male	2 + shield	1	5
10390500	MCS 2 BS	female	2 + shield	1	5
<b>Module: Universal Bus</b>					
10390600	MCS 4 SS	male	4 + shield	1	5
10390700	MCS 4 BS	female	4 + shield	1	5

Photographs are not to scale and do not represent detailed images of the respective products.

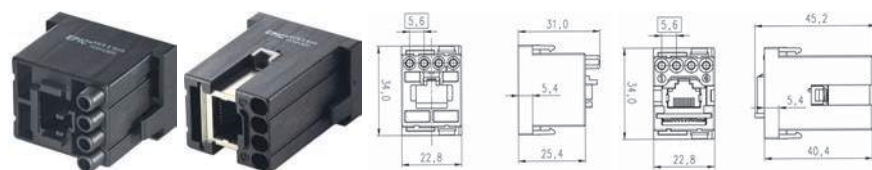
**Accessories**

- EPIC® MC Module removal tool refer to page 575



**EPIC® MC Module: RJ45**

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- CAT.5-Performance

**Suitable housing**

- EPIC® MCR Frames
- Higher housing
- The suitable connector housings depend on the modular frame used

**Suitable contacts:**

- EPIC® H-D 1.6 machined contacts  
Page 578

**Benefits**

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

**Application range**

- Plant engineering
- Control engineering

**Technical data**

- ETIM 5.0 Class-ID:** EC000438  
**ETIM 5.0 Class-Description:** Contact insert for industrial connectors
- Rated voltage (V)**  
max. 600 V/max. 125 V
- Rated current (A)**  
max. 10 A/max. 1.5 A
- Degree of shielding**  
3
- Contacts**  
Copper alloy, gold-plated

- Number of contacts**  
4 Power + 8 Data
- Termination methods**  
Power: crimp termination: 0.14 - 2.5 mm<sup>2</sup>, Data: IDC/piercing termination: Cat5, AWG 24-26
- Cycle of mechanical operation**  
100
- Temperature range**  
-20 °C ... +85 °C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: RJ 45 (occupies 2 slots in the frame)</b>					
10344300	MCS 8 RJ45	male	4 + 8	2	5
10345300	MCB 8 RJ45	female	4 + 8	2	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® MC Module removal tool refer to page 575



## EPIC® CE6326 Connector RJ45

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- RJ45 connector suitable for RJ45 module

### Suitable housing

- EPIC® MCR Frames
- The suitable connector housings depend on the modular frame used

### Benefits

- RJ45 connector for use in the module MCS 8 RJ45

### Application range

- Plant engineering
- Control engineering

### Suitable cables

- ETHERLINE® 4-pairs flexible/high flexible CAT.5e

### Suitable tools

- Crimping tool RJ45 Stewart refer to page 479
- Use crimping tool type CE5092

### Technical data

<b>ETIM</b>	ETIM 5.0 Class-ID: EC000309 ETIM 5.0 Class-Description: Module for active network component/ network unit	<b>Number of contacts</b>	8
<b>Rated voltage (V)</b>	max. 125 V	<b>Termination methods</b>	IDC/piercing termination: Cat 5, AWG 24-26
<b>Rated current (A)</b>	max. 1.5 A	<b>Cycle of mechanical operation</b>	100
<b>Degree of soiling</b>	3	<b>Temperature range</b>	-20 °C ... +85 °C
<b>Contacts</b>	Copper alloy, gold-plated		

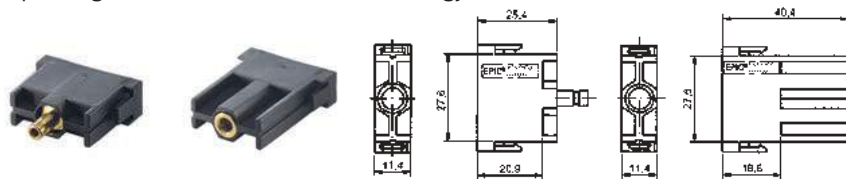
Article number	Article description	Contact type	Number of operating contacts	Pieces / PU
<b>RJ45 connector for MCS 8 RJ45</b>				
CE6326	CE6326	male	8	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® MC Module Pneumatic 1pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

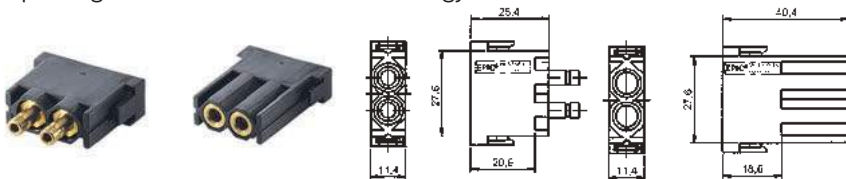


**Info**

- Pneumatic modules with valve for 2.5 und 4mm tubings

### EPIC® MC Module Pneumatic 2pole

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Pneumatic modules with valve for 2.5 und 4mm tubings

#### Suitable housing

- EPIC® MCR Frames
- Higher housing
- The suitable connector housings depend on the modular frame used

#### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Application range

- Plant engineering
- Printing machines
- Control engineering

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors

**Contacts**  
Brass

**Number of contacts**  
EPIC® MC Module Pneumatic 1pole  
1  
EPIC® MC Module Pneumatic 2pole  
2

**Termination methods**  
Plug-in connection: for hose with inner diameter 2.5 mm/4.0 mm

**Cycle of mechanical operation**  
100

**Operating pressure**  
8 bar

**Testing pressure**  
10 bar

**Temperature range**  
-20°C to +100°C

Article number	Article description	Contact type	Number of operating contacts	Slots	Pieces / PU
<b>Module: pneumatic 1-pin</b>					
44424004	MCS 1x2,5 PNEU (10)	male	1	1	10
44424005	MCB 1x2,5 PNEU (10)	female with valve	1	1	10
44424006	MCS 1x4,0 PNEU (10)	male	1	1	10
44424007	MCB 1x4,0 PNEU (10)	female with valve	1	1	10
<b>Module: pneumatic 2-pin</b>					
44424008	MCS 2x2,5 PNEU (10)	male	2	1	10
44424009	MCB 2x2,5 PNEU (10)	female with valve	2	1	10
44424010	MCS 2x4,0 PNEU (10)	male	2	1	10
44424011	MCB 2x4,0 PNEU (10)	female with valve	2	1	10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- EPIC® MC Module removal tool refer to page 575



## EPIC® MC Module removal tool

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



### Suitable housing

- EPIC® MCR Frames

### Benefits

- This tool is used to lift built-in modules out of the module frames

### Technical data



ETIM 5.0 Class-ID: EC000168  
 ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

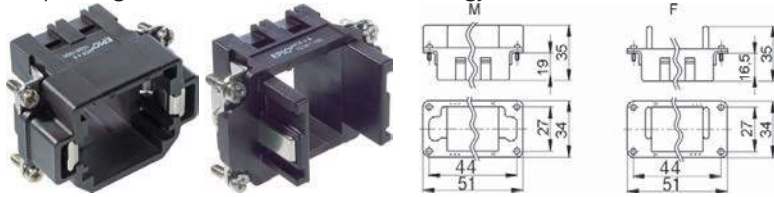
Article number	Article description	Pieces / PU
<b>MC module removal tool</b>		
11171200	MC module removal tool	1

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® MCR 6

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

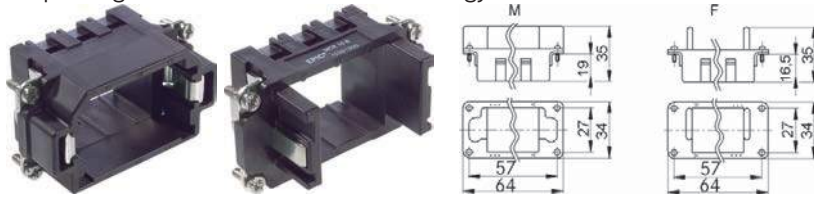


**Info**

- Frame system for modules
- Various functions can be used together in one connector

### EPIC® MCR 10

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

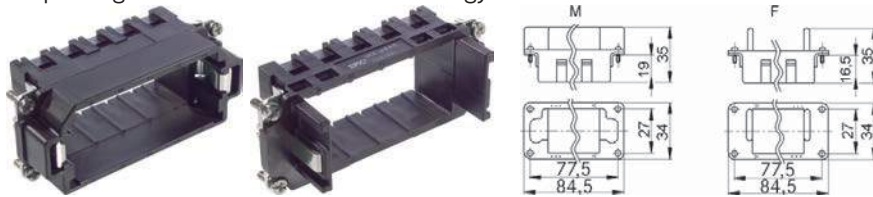


**Info**

- Frame system for modules
- Various functions can be used together in one connector

### EPIC® MCR 16

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Frame system for modules
- Various functions can be used together in one connector

### EPIC® MCR 24

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.



**Info**

- Frame system for modules
- Various functions can be used together in one connector

#### Suitable housing

##### EPIC® MCR 6

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

##### EPIC® MCR 10

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

##### EPIC® MCR 16

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

##### EPIC® MCR 24

- EPIC® ULTRA H-B 6
- EPIC® H-B 6 Housings
- EPIC® QUICK & EASY Mounting system

#### Benefits

- The mix of different functions in one plug guarantees high flexibility
- Assembly of individual connectors, suitable for different applications

#### Product features

- The MCR "male" frame version is designed for use with modules with male contacts; the "female" version is designed for use with modules with female contacts

#### Technical data



ETIM 5.0 Class-ID: EC002310  
ETIM 5.0 Class-Description: Fixing frame industrial connectors



Certified production control:  
VDE-REG. no. **A870**  
UL-tested:  
UL File Number: E75770

Article number	Article	Slots	Version	Pieces / PU
<b>MCR 6 frame</b>				
10381000	MCR 6 S	2	male	5
10381100	MCR 6 B	2	female	5
<b>MCR 10 frame</b>				
10381200	MCR 10 S	3	male	5
10381300	MCR 10 B	3	female	5
<b>MCR 16 frame</b>				
10381400	MCR 16 S	5	male	5
10381500	MCR 16 B	5	female	5
<b>MCR 24 frame</b>				
10381600	MCR 24 S	7	male	5
10381700	MCR 24 B	7	female	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® M-D 1.0 D-Sub stamped contacts-on-reel

For inserts and modules of the EPIC® rectangular connectors

**Info**

- Gold plated contacts in 2 quality levels
- For automated production with crimping machine
- 2 crimp areas for wire and insulation crimp



**Suitable tools**

- Crimping tool for contacts-on-reel D-Sub
- Removal tool

**Technical data**



ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Note	Pieces / PU
<b>Contacts</b>							
44429011	EPIC® D-SUB SCBG AU G2 0,08-0,22 (500)	male	0.08 - 0.22	Au (0.8 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429007	EPIC® D-SUB BCBG AU G2 0,08-0,22 (500)	female	0.08 - 0.22	Au (0.8 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429013	EPIC® D-SUB SCBG AU G3 0,08-0,22 (500)	male	0.08 - 0.22	Au (0.1 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429009	EPIC® D-SUB BCBG AU G3 0,08-0,22 (500)	female	0.08 - 0.22	Au (0.1 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429012	EPIC® D-SUB SCBG AU G2 0,22-0,56 (500)	male	0.22 - 0.56	Au (0.8 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429008	EPIC® D-SUB BCBG AU G2 0,22-0,56 (500)	female	0.22 - 0.56	Au (0.8 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429014	EPIC® D-SUB SCBG AU G3 0,22-0,56 (500)	male	0.22 - 0.56	Au (0.1 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1
44429010	EPIC® D-SUB BCBG AU G3 0,22-0,56 (500)	female	0.22 - 0.56	Au (0.1 µm)	2.5 + 0.5	1 reel (PU) = 500 contacts	1

Photographs are not to scale and do not represent detailed images of the respective products.

### EPIC® Tools for M-D 1,0 D-Sub contacts-on-reel stamped

For inserts and modules of the EPIC® rectangular connectors



**Suitable contacts:**

- EPIC® M-D 1.0 D-Sub stamped contacts-on-reel Page 577

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11158400	Crimping tool	In tool case	Crimping dies included, for contacts H-D 1.0 D-Sub (0.08 - 0.56 mm <sup>2</sup> )	1
11132500	Removal tool		For ribbon contacts: D-Sub 1.0 stamped	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® H-D 1.6 machined contacts

For inserts and modules of the EPIC® rectangular connectors



### Info

- Choice of high quality gold or silver plated contacts

### Suitable tools

- EPIC® Tools for contacts H-D 1.6 machined refer to page 578
- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data



ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description:  
Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Cross-section ratio	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>							
13162000	H-D 1.6 machined	male	0.14 - 0.37	1	Ag	8.0	100
13163000	H-D 1.6 machined	female	0.14 - 0.37	1	Ag	8.0	100
13162100	H-D 1.6 machined	male	0.50	2	Ag	8.0	100
13163100	H-D 1.6 machined	female	0.50	2	Ag	8.0	100
13162200	H-D 1.6 machined	male	0.75 - 1.00	3	Ag	8.0	100
13163200	H-D 1.6 machined	female	0.75 - 1.00	3	Ag	8.0	100
13162300	H-D 1.6 machined	male	1.50	4	Ag	8.0	100
13163300	H-D 1.6 machined	female	1.50	4	Ag	8.0	100
13162400	H-D 1.6 machined	male	2.50	5	Ag	5.8	100
13163400	H-D 1.6 machined	female	2.50	5	Ag	5.8	100
13162500	H-D 1.6 machined	male	0.14 - 0.37	1	Au	8.0	100
13163500	H-D 1.6 machined	female	0.14 - 0.37	1	Au	8.0	100
13162600	H-D 1.6 machined	male	0.50	2	Au	8.0	100
13163600	H-D 1.6 machined	female	0.50	2	Au	8.0	100
13162700	H-D 1.6 machined	male	0.75 - 1.00	3	Au	8.0	100
13163700	H-D 1.6 machined	female	0.75 - 1.00	3	Au	8.0	100
13162800	H-D 1.6 machined	male	1.50	4	Au	8.0	100
13163800	H-D 1.6 machined	female	1.50	4	Au	8.0	100
13162900	H-D 1.6 machined	male	2.50	5	Au	5.8	100
13163900	H-D 1.6 machined	female	2.50	5	Au	5.8	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts H-D 1.6 machined

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147100	Crimping dies	For crimping tools	For contacts: H-D 1.6 machined,	1
		11147000, 11147001	H-BE 2.5 machined, MC 2.5 machined	
11147200	Locator	For crimping tools	For contacts: H-D 1.6 machined, H-BE machined, MC 2.5 machined, MC 2.5 stamped	1
		11147000, 11147001		
11161000	Removal tool		For contacts: H-D 1.6 machined, H-D 1.6 stamped	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® H-D 1.6 stamped contacts

For inserts and modules of the EPIC® rectangular connectors



### Info

- Choice of high quality gold or silver plated contacts
- 2 crimp areas for wire and insulation crimp

### Suitable tools

- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts

- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data



ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description:  
Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>						
11241100	H-D 1.6 stamped	male	0.14 - 0.50	Ag	2.5 + 0.5	100
11231100	H-D 1.6 stamped	female	0.14 - 0.50	Ag	2.5 + 0.5	100
11221000	H-D 1.6 stamped	male	0.50 - 1.50	Ag	3.5 + 0.5	100
11236100	H-D 1.6 stamped	female	0.50 - 1.50	Ag	3.5 + 0.5	100
11223500	H-D 1.6 stamped	male	1.50 - 2.50	Ag	3.5 + 0.5	100
11228500	H-D 1.6 stamped	female	1.50 - 2.50	Ag	3.5 + 0.5	100
11243100	H-D 1.6 stamped	male	0.14 - 0.50	Au	2.5 + 0.5	100
11233100	H-D 1.6 stamped	female	0.14 - 0.50	Au	2.5 + 0.5	100
11221300	H-D 1.6 stamped	male	0.50 - 1.50	Au	3.5 + 0.5	100
11238100	H-D 1.6 stamped	female	0.50 - 1.50	Au	3.5 + 0.5	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts H-D 1.6 stamped

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147170	Crimping dies	For crimping tools	For contacts: H-D 1.6 stamped (0.14 - 0.5 mm <sup>2</sup> )	1
11147180	Crimping dies	11147000, 11147001 For crimping tools	For contacts: H-D 1.6 stamped (0.5 - 1.5 mm <sup>2</sup> ), MC 2.5 stamped (0.5 - 1.5 mm <sup>2</sup> )	1
11147190	Crimping dies	11147000, 11147001 For crimping tools	For contacts: H-D 1.6 stamped (1.5 - 2.5 mm <sup>2</sup> ), MC 2.5 stamped (1.5 - 2.5 mm <sup>2</sup> )	1
11147300	Locator		For contacts: H-D 1.6 machined, H-D 1.6 stamped	1
11161000	Removal tool		For contacts: H-D 1.6 machined, H-D 1.6 stamped	1

Photographs are not to scale and do not represent detailed images of the respective products.





## EPIC® H-D 1.6 stamped contacts-on-reel

For inserts and modules of the EPIC® rectangular connectors



### Info

- Choice of high quality gold or silver plated contacts
- For automated production with crimping machine
- 2 crimp areas for wire and insulation crimp

### Suitable tools

- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data



ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description: Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Note	Pieces / PU
<b>Contacts</b>							
11240700	H-D SCBG AG 0.14-0.5 200 LI	male	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 200 contacts	1
11230700	H-D BCBG AG 0.14-0.5 200 LI	female	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 200 contacts	1
11240400	H-D SCBG AG 0.14-0.5 2000 LI	male	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11230400	H-D BCBG AG 0.14-0.5 2000 LI	female	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11240000	H-D SCBG AG 0.14-0.5 2000 RE	male	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11230000	H-D BCBG AG 0.14-0.5 2000 RE	female	0.14 - 0.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11240500	H-D SCBG AU 0.14-0.5 2000 LI	male	0.14 - 0.50	Au	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11230500	H-D BCBG AU 0.14-0.5 2000 LI	female	0.14 - 0.50	Au	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11220700	H-D SCBG AG 0.5-1.5 200 LI	male	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 200 contacts	1
11235700	H-D BCBG AG 0.14-0.5 200 LI	female	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 200 contacts	1
11226000	H-D SCBG AG 0.5-1.5 2000 LI	male	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 2000 contacts	1
11226500	H-D BCBG AG 0.5-1.5 2000 LI	female	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 2000 contacts	1
11220000	H-D SCBG AG 0.5-1.5 2000 RE	male	0.50 - 1.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11235000	H-D BCBG AG 0.5-1.5 2000 RE	female	0.50 - 1.50	Ag	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11220100	H-D SCBG AU 0.5-1.5 2000 RE	male	0.50 - 1.50	Au	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11235200	H-D BCBG AG 0.5-1.5 200 LI	female	0.50 - 1.50	Au	2.5 + 0.5	1 reel (PU) = 2000 contacts	1
11223000	H-D SCBG AG 1.5-2.5 100 LI	male	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 100 contacts	1
11228000	H-D BCBG AG 1.5-2.5 100 LI	female	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 100 contacts	1
11222700	H-D SCBG AG 1.5-2.5 2000 LI	male	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 2000 contacts	1
11227700	H-D BCBG AG 1.5-2.5 2000 LI	female	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 2000 contacts	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts-on-reel H-D 1.6 stamped

For inserts and modules of the EPIC® rectangular connectors



Article number	Article description	Note	Pieces / PU
<b>EPIC® Tools for contacts-on-reel H-D 1.6 stamped</b>			
11161000	Removal tool	For contacts: H-D 1.6 machined, H-D 1.6 stamped	1
11147004	EPIC® TOOL H-D, MC 2,5 reel 0.14 ... 0.5mm <sup>2</sup>	inclusive crimping die and locator	1
11147005	EPIC® TOOL H-D, MC 2,5 reel 0.5 ... 1.5mm <sup>2</sup>	inclusive crimping die and locator	1
11147006	EPIC® TOOL H-D, MC 2,5 reel 1.5 ... 2.5mm <sup>2</sup>	inclusive crimping die and locator	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® H-BE 2.5 machined contacts

For inserts and modules of the EPIC® rectangular connectors

**Info**

- Choice of high quality gold or silver plated contacts



**Suitable tools**

- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts

- Crimping dies for single contacts
- Locator
- Removal tool

**Technical data**

ETIM ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description: Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm²)	Cross-section ratio	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>							
11190000	H-BE 2.5 machined	male	0.50	0	Ag	7.4	100
11195000	H-BE 2.5 machined	female	0.50	0	Ag	7.4	100
11190100	H-BE 2.5 machined	male	0.75 - 1.00	1	Ag	7.4	100
11195100	H-BE 2.5 machined	female	0.75 - 1.00	1	Ag	7.4	100
11190200	H-BE 2.5 machined	male	1.50	2	Ag	7.4	100
11195200	H-BE 2.5 machined	female	1.50	2	Ag	7.4	100
11190300	H-BE 2.5 machined	male	2.50	3	Ag	7.4	100
11195300	H-BE 2.5 machined	female	2.50	3	Ag	7.4	100
11190400	H-BE 2.5 machined	male	4.00	0	Ag	7.4	100
11195400	H-BE 2.5 machined	female	4.00	0	Ag	7.4	100
11190301	H-BE 2.5 machined	male	0,14 - 0,37		Au	7.4	100
11190302	H-BE 2.5 machined	female	0,14 - 0,37		Au	7.4	100
11192000	H-BE 2.5 machined	male	0.50	0	Au	7.4	100
11197000	H-BE 2.5 machined	female	0.50	0	Au	7.4	100
11192100	H-BE 2.5 machined	male	0.75 - 1.00	1	Au	7.4	100
11197100	H-BE 2.5 machined	female	0.75 - 1.00	1	Au	7.4	100
11192200	H-BE 2.5 machined	male	1.50	2	Au	7.4	100
11197200	H-BE 2.5 machined	female	1.50	2	Au	7.4	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts H-BE 2.5 machined

For inserts and modules of the EPIC® rectangular connectors



- Product features**
- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147100	Crimping dies	For crimping tools	For contacts: H-D 1.6 machined,	1
11147200	Locator	11147000, 11147001 For crimping tools	H-BE 2.5 machined, MC 2.5 machined For contacts: H-D 1.6 machined, H-BE machined, MC 2.5 machined, MC 2.5 stamped	1
11182500	Removal tool	11147000, 11147001	For contacts: H-BE 2.5 machined	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® MC 2.5 machined contacts

For inserts and modules of the EPIC® rectangular connectors



### Info

- Choice of high quality gold or silver plated contacts

### Suitable tools

- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data

ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description:  
Contact for industrial connectors

Article number	Article description	Version	Contact type	Conductor cross-section (mm <sup>2</sup> )	Cross-section ratio	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>								
1121300C	MC 2.5 machined	male		0.50		Ag	7.8	100
1121800C	MC 2.5 machined		female	0.50		Ag	7.8	100
1121310C	MC 2.5 machined	male		1.00	1	Ag	7.8	100
1121810C	MC 2.5 machined		female	1.00	1	Ag	7.8	100
1121320C	MC 2.5 machined	male		1.50	2	Ag	7.8	100
1121820C	MC 2.5 machined		female	1.50	2	Ag	7.8	100
1121330C	MC 2.5 machined	male		2.50	3	Ag	7.8	100
1121830C	MC 2.5 machined		female	2.50	3	Ag	7.8	100
1121340C	MC 2.5 machined	male		4.00		Ag	7.8	100
1121840C	MC 2.5 machined		female	4.00		Ag	7.8	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts MC 2.5 machined

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147100	Crimping dies	For crimping tools	For contacts: H-D 1.6 machined,	1
11147200	Locator	11147000, 11147001 For crimping tools	H-BE 2.5 machined, MC 2.5 machined For contacts: H-D 1.6 machined, H-BE machined, MC 2.5 machined, MC 2.5 stamped	1
11171000	Removal tool	11147000, 11147001	For contacts: MC 2.5 machined	1

Photographs are not to scale and do not represent detailed images of the respective products.



**i Info**

- Choice of high quality gold or silver plated contacts
- 2 crimp areas for wire and insulation crimp

## EPIC® MC 2.5 stamped contacts


For inserts and modules of the EPIC® rectangular connectors



### Suitable tools

- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data

 ETIM 5.0 Class-ID: EC000796  
ETIM 5.0 Class-Description:  
Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>						
11201000	MC 2.5 stamped	male	0.50 - 1.50	Ag	3.5 + 0.5	100
11205000	MC 2.5 stamped	female	0.50 - 1.50	Ag	3.5 + 0.5	100
11202000	MC 2.5 stamped	male	1.50 - 2.50	Ag	3.5 + 0.5	100
11206000	MC 2.5 stamped	female	1.50 - 2.50	Ag	3.5 + 0.5	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts MC 2.5 stamped

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

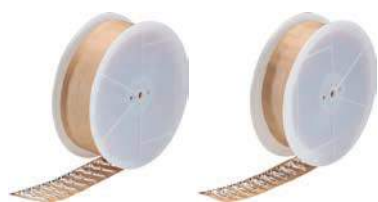
Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147180	Crimping dies	For crimping tools	For contacts: H-D 1.6 stamped (0.5 - 1.5 mm <sup>2</sup> ), MC 2.5 stamped (0.5 - 1.5 mm <sup>2</sup> )	1
11147190	Crimping dies	For crimping tools	For contacts: H-D 1.6 stamped (1.5 - 2.5 mm <sup>2</sup> ), MC 2.5 stamped (1.5 - 2.5 mm <sup>2</sup> )	1
11147300	Locator	11147000, 11147001	For contacts: H-D 1.6 machined, H-D 1.6 stamped	1
11160000	Removal tool		For contacts: MC 2.5 stamped	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® MC 2.5 stamped contacts-on-reel

For inserts and modules of the EPIC® rectangular connectors



**Info**

- Choice of high quality gold or silver plated contacts
- For automated production with crimping machine
- 2 crimp areas for wire and insulation crimp

### Suitable tools

- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool

### Technical data

ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Note	Pieces / PU
<b>Contacts</b>							
11208000	MC SCBG AG 0.5-1.5 200 LI	male	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 200 contacts	1
11209000	MC BCBG AG 0.5-1.5 200 LI	female	0.50 - 1.50	Ag	3.5 + 0.5	1 reel (PU) = 200 contacts	1
11208500	H-D SCBG AG 1.5-2.5 100 LI	male	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 100 contacts	1
11209500	MC BCBG AG 1.5-2.5 100 LI	female	1.50 - 2.50	Ag	3.5 + 0.5	1 reel (PU) = 100 contacts	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts-on-reel MC 2.5 stamped

For inserts and modules of the EPIC® rectangular connectors



Article number	Article description	Note	Pieces / PU
<b>EPIC® Tools for contacts-on-reel MC 2.5 stamped</b>			
11160000	Removal tool	For contacts: MC 2.5 stamped	1

Photographs are not to scale and do not represent detailed images of the respective products.

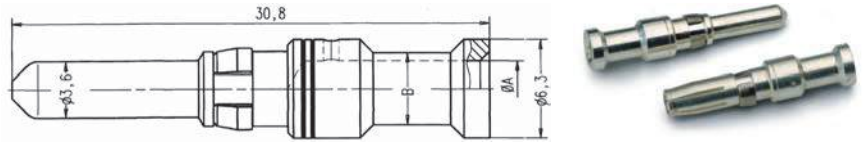


## EPIC® Modular 3.6 machined contacts

For inserts and modules of the EPIC® rectangular connectors

**Info**

- Silver plated and passivated contacts



- Suitable tools**
- Pneumatic crimping machine for single contacts
  - Crimping tool for single contacts
  - Crimping dies for single contacts
  - Locator
  - Removal tool

**Technical data**

ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors

Article number	Article description	Contact type	Conductor cross-section (mm <sup>2</sup> )	Surface	Stripping length (mm)	Pieces / PU
<b>Contacts</b>						
1121070C	MC 3.6 machined	male	1.50	Ag	10.0	100
1121570C	MC 3.6 machined	female	1.50	Ag	10.0	100
1121060C	MC 3.6 machined	male	2.50	Ag	10.0	100
1121560C	MC 3.6 machined	female	2.50	Ag	10.0	100
1121000C	MC 3.6 machined	male	4.00	Ag	10.0	100
1121500C	MC 3.6 machined	female	4.00	Ag	10.0	100
1121010C	MC 3.6 machined	male	6.00	Ag	10.0	100
1121510C	MC 3.6 machined	female	6.00	Ag	10.0	100
1121020C	MC 3.6 machined	male	10.00	Ag	10.0	100
1121520C	MC 3.6 machined	female	10.00	Ag	10.0	100

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts MC 3.6 machined

For inserts and modules of the EPIC® rectangular connectors



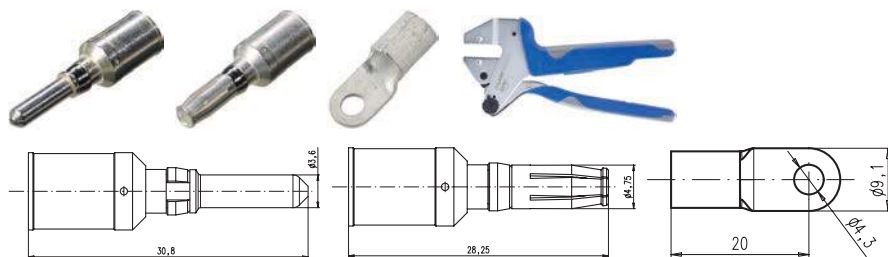
- Product features**
- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147110	Crimping dies	For crimping tools	For contacts: MC 3.6 machined (1.5 - 2.5 mm <sup>2</sup> )	1
11147120	Crimping dies	11147000, 11147001 For crimping tools	For contacts: MC 3.6 machined (4.0 - 10 mm <sup>2</sup> )	1
11147210	Locator	11147000, 11147001 For crimping tools	For contacts: MC 3.6 machined	1
11171100	Removal tool	11147000, 11147001	For contacts: MC 3.6 machined	1

Photographs are not to scale and do not represent detailed images of the respective products.

### EPIC® Modular 3.6 machined contacts 16 mm<sup>2</sup>

For inserts and modules of the EPIC® rectangular connectors



**Info**

- Crimping contact for power modules
- Silver plated and passivated contacts

**Technical data**

ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description: Contact for industrial connectors

**Contact resistance**  
 < 1 mOhm

**Contacts**  
 Copper alloy, hard silver-plated

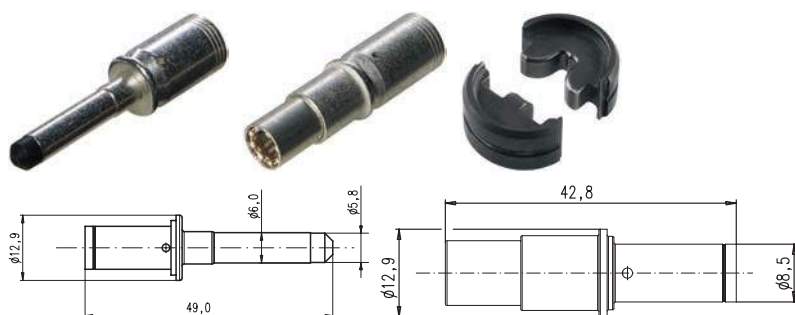
**Cycle of mechanical operation**  
 500

Article number	Article description	Inserts	Version	Cross-section (mm <sup>2</sup> )	Surface	Pieces / PU
<b>Contacts</b>						
44424014	EPIC® Modular SCEM AG 16 D=3.6	Crimping contacts for HC2 modules	male	16	Ag	20
44424015	EPIC® Modular BCEM AG 16 D=3.6	Crimping contacts for HC2 modules	female	16	Ag	20
<b>Ring lug for Protection earth</b>						
44424029	EPIC® KB 16-4R	Ring cable lug to connect a 16mm <sup>2</sup> protective wire to the module frame	Ringlug	16		10
<b>Tools</b>						
11147000	Crimping tool		In tool case			1
<b>Crimping die for contacts of HC2 modules</b>						
11147111	EPIC® TOOL DIE D=3.6/16 mm <sup>2</sup>	Crimping dies		16		1

Photographs are not to scale and do not represent detailed images of the respective products.

### Modular 6.0 machined contacts

For inserts and modules of the EPIC® rectangular connectors



**Info**

- Silver plated and passivated contacts

**Suitable tools**

- For use in pneumatic crimping tool Klauke type EK 60/22-L

**Technical data**

ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description: Contact for industrial connectors

**Contact resistance**  
 < 1 mOhm

**Material**  
 Copper alloy, hard silver-plated

**Cycle of mechanical operation**  
 500

Article number	Article description	Inserts	Version	Cross-section (mm <sup>2</sup> )	Cross-section ratio	Surface	Pieces / PU
<b>Contacts</b>							
44424019	EPIC® Modular SCEM AG 16 D=3.6	Crimping contacts for HHC2 modules	male	16	1	Ag	20
44424022	Modular BCEM AG 16 D=6.0	Crimping contacts for HHC2 modules	female	16	1	Ag	20
44424020	Modular SCEM AG 25 D=6.0	Crimping contacts for HHC2 modules	male	25	2	Ag	20
44424023	Modular BCEM AG 25 D=6.0	Crimping contacts for HHC2 modules	female	25	2	Ag	20
44424021	Modular SCEM AG 35 D=6.0	Crimping contacts for HHC2 modules	male	35	3	Ag	20
44424024	Modular BCEM AG 35 D=6.0	Crimping contacts for HHC2 modules	female	35	3	Ag	20
<b>Crimping die for contacts of HHC2 modules</b>							
44424025	TOOL DIE D=6.0/16 mm <sup>2</sup>	Crimping dies		16			1
44424026	TOOL DIE D=6.0/25 mm <sup>2</sup>	Crimping dies		25			1
44424027	TOOL DIE D=6.0/35 mm <sup>2</sup>	Crimping dies		35			1

\* Trade product, no Lapp product  
 Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

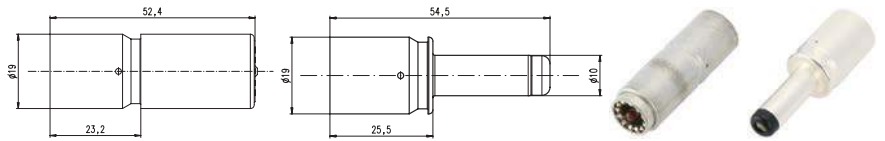
**EPIC® Modular 10.0 machined contacts**

For inserts and modules of the EPIC® rectangular connectors



**Info**

- Crimping contacts for maximum cross sections and currents
- Silver plated and passivated contacts



**Suitable tools**

- For use in pneumatic crimping tool Klauke type EK 120/42-L

**Technical data**



ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description: Contact for industrial connectors



**Material**  
 Copper alloy, hard silver-plated



**Cycle of mechanical operation**  
 500

**Contact resistance**  
 < 1 mOhm

Article number	Article description	Inserts	Version	Contact type	Cross-section (mm <sup>2</sup> )	Surface	Pieces / PU
<b>Contacts</b>							
44424032	Modular SCEM AG 50 D=10.0	Crimping contacts for HHC1 modules		male	50	Ag	1
44424035	Modular BCEM AG 50 D=10.0	Crimping contacts for HHC1 modules	female	female	50	Ag	1
44424033	Modular SCEM AG 70 D=10.0	Crimping contacts for HHC1 modules	male	male	70	Ag	1
44424036	Modular BCEM AG 70 D=10.0	Crimping contacts for HHC1 modules	female	female	70	Ag	1
44424034	Modular SCEM AG 95 D=10.0	Crimping contacts for HHC1 modules	male	male	95	Ag	1
44424037	Modular BCEM AG 95 D=10.0	Crimping contacts for HHC1 modules	female	female	95	Ag	1
<b>Crimping die for contacts of HHC1 modules</b>							
44424038	TOOL DIE D=10.0/50 mm <sup>2</sup>	Crimping dies			50		1
44424039	TOOL DIE D=10.0/70 mm <sup>2</sup>	Crimping dies			70		1
44424040	TOOL DIE D=10.0/95 mm <sup>2</sup>	Crimping dies			95		1

Photographs are not to scale and do not represent detailed images of the respective products.





## EPIC® MC Coax-Contacts

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Solder termination: the inner conductor and the outer sleeve of the COAX cable are terminated by soldering

### Suitable cables

- UNITRONIC® VIDEO FLAT
- UNITRONIC® VIDEO RL BK
- UNITRONIC® Combi cable

### Suitable tools

- Pneumatic crimping machine for single contacts
- Crimping tool for single contacts
- Crimping dies for single contacts
- Locator
- Removal tool



### Info

- Selection between 50 and 75 ohms contacts
- All contacts are high quality gold plated

### Technical data



ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors

Article number	Article description	Contact type	Surface	For cable type	Pieces / PU
<b>Solder termination</b>					
44429018	EPIC® MC SLEM 50Ohm RG58CU	male	Au	RG 58 CU	10
44429017	EPIC® MC BLEM 50Ohm RG58CU	female	Au	RG 58 CU	10
44429020	EPIC® MC SLEM 750hm RG180BU	male	Au	RG 180 BU	10
44429019	EPIC® MC BLEM 750hm RG180BU	female	Au	RG 180 BU	10
44429022	EPIC® MC SLEM 750hm RG187AU	male	Au	RG 187 AU	10
44429021	EPIC® MC BLEM 750hm RG187AU	female	Au	RG 187 AU	10
<b>Solder/crimp termination</b>					
11214200	MC SLEM COAX MALE	male	Au	RG 58	1
11219200	MC BLEM COAX FEMALE	female	Au	RG 58	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® Tools for contacts MC Coax

For inserts and modules of the EPIC® rectangular connectors



### Product features

- Locator and crimping dies fit together with the crimping tool 11147000 and the crimping machine 11147001

Article number	Article description	Version	Note	Pieces / PU
<b>Tools</b>				
11147000	Crimping tool	In tool case	without crimping dies, without locator	1
11147001	Crimping machine	Pneumatic, 5 - 10 bar	without crimping dies, without locator	1
11147130	Crimping dies	For crimping tools	For coax-contacts 11214200, 11219200	1
		11147000, 11147001		
11171100	Removal tool		For contacts: MC 3.6 machined	1

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® H-A 3 MTG**

Innovative metal and plastic housing design



**EPIC® H-A 3 TG**

Innovative metal and plastic housing design



**Info**

- Lightweight chemically resistant plastic housing

**Benefits**

- Housing in plastic or metal version. For power supply in the smallest possible space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

- Hood
- Bolts for single lever
- Straight cable entry
- Versions with / without cable gland

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
**EPIC® H-A 3 MTG**  
Housing: powder-coated zinc die-casting, grey  
Lever: zinc-plated steel

**EPIC® H-A 3 TG**  
Housing: grey thermoplastic, black  
Lever: zinc-plated steel

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** **VDE-tested**  
Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770

**Temperature range**  
-40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Material	Colour	Cable gland	Cable clamping range	Dimensions incl. cable gland	Pieces / PU
<b>H-A housing: hood (straight cable entry)</b>									
10512100	H-A 3 MTgv		11	Zinc die-casting	grey				10
10426500	H-A 3 MTgv		11	Zinc die-casting	grey	yes	6.5 - 12.0	57	10
19512100	H-A 3 MTgv M20	20		Zinc die-casting	grey				10
19426500	H-A 3 MTgv M20	20		Zinc die-casting	grey	yes	3.0 - 13.5	57	10
<b>EPIC® H-A 3 TG</b>									
10425500	H-A 3 Tgv		11	Thermoplastic	black				10
10426000	H-A 3 Tgv		11	Thermoplastic	grey				10
10426700	H-A 3 Tgv		11	Thermoplastic	black	yes	6.5 - 12.0	62	10
10426400	H-A 3 Tgv		11	Thermoplastic	grey	yes	6.5 - 12.0	62	10
19425500	H-A 3 Tgv M20	20		Thermoplastic	black				10
19426000	H-A 3 Tgv M20	20		Thermoplastic	grey				10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**EPIC® H-A 3 MTG**

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724

**EPIC® H-A 3 TG**

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724



## EPIC® H-A 3 MTS

Innovative metal and plastic housing design



## EPIC® H-A 3 TS

Innovative metal and plastic housing design



**Info**

- Lightweight chemically resistant plastic housing

### Benefits

- Housing in plastic or metal version. For power supply in the smallest possible space

### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

### Product features

- Hood
- Bolts for single lever
- Side cable entry
- Versions with / without cable gland

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors



**Material**  
**EPIC® H-A 3 MTS**  
Housing: powder-coated zinc die-casting, grey  
Lever: zinc-plated steel  
**EPIC® H-A 3 TS**  
Housing: grey thermoplastic, black  
Lever: zinc-plated steel



**Protection rating**  
IP 65 (latched)



**VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Material	Colour	Cable gland	Cable clamping range	Dimensions incl. cable gland	Pieces / PU
<b>H-A housing: hood (side cable entry)</b>									
10512300	H-A 3 MTs		11	Zinc die-casting	grey				10
10427500	H-A 3 MTs		11	Zinc die-casting	grey	yes	6.5 - 12.0	43	10
19512300	H-A 3 Ts M20	20		Zinc die-casting	grey				10
19427500	H-A 3 Ts M20	20		Zinc die-casting	grey	yes	3.0 - 13.5	43	10
<b>EPIC® H-A 3 TS</b>									
10427300	H-A 3 Ts		11	Thermoplastic	black				10
10427000	H-A 3 Ts		11	Thermoplastic	grey				10
10620600	H-A 3 Ts		11	Thermoplastic	black	yes	6.5 - 12.0	48	10
10427100	H-A 3 Ts		11	Thermoplastic	grey	yes	6.5 - 12.0	48	10
19427300	H-A 3 Ts M20	20		Thermoplastic	black				10
19427000	H-A 3 Ts M20	20		Thermoplastic	grey				10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### EPIC® H-A 3 MTS

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724

#### EPIC® H-A 3 TS

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724



**Info**

- Lightweight chemically resistant plastic housing

**Info**

- Metal lid with sturdy hinge

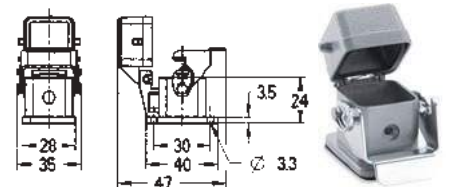
**Info**

- Lightweight chemically resistant plastic housing



**EPIC® H-A 3 MAGD**

Innovative metal and plastic housing design



**EPIC® H-A 3 AGS**

Innovative metal and plastic housing design



**Benefits**

- Housing in plastic or metal version. For power supply in the smallest possible space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 3 AG**

- Panel-mount base
- 1 lever
- Included: flat gasket

**EPIC® H-A 3 MAGD**

- Panel-mount base
- 1 lever
- Metal cover
- Included: flat gasket

**EPIC® H-A 3 AGS**

- Panel-mount base
- 1 lever
- Angled version
- Included: flat gasket

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Protection rating</b> <b>EPIC® H-A 3 AG</b> IP 65 (latched) <b>EPIC® H-A 3 MAGD</b> IP 65 (latched) IP 44 (Cover latched) <b>EPIC® H-A 3 AGS</b> IP 65 (latched)
	<b>Material</b> <b>EPIC® H-A 3 AG</b> Housing: powder-coated zinc die-casting, grey Lever: zinc-plated steel Sealing: NBR Housing: grey thermoplastic, black Lever: zinc-plated steel Sealing: NBR <b>EPIC® H-A 3 MAGD</b> Housing: powder-coated zinc die-casting, grey Lever: zinc-plated steel Sealing: NBR Metal cover <b>EPIC® H-A 3 AGS</b> Housing: powder-coated zinc die-casting, grey Lever: zinc-plated steel Sealing: NBR Housing: grey thermoplastic, black Lever: zinc-plated steel Sealing: NBR		<b>VDE-tested</b> <b>EPIC® H-A 3 AG</b> Certified production control: VDE-REG. no.: B437 UL-tested: UL File Number: E75770 <b>EPIC® H-A 3 MAGD</b> UL-tested: UL File Number: E75770 <b>EPIC® H-A 3 AGS</b> Certified production control: VDE-REG. no.: B437 UL-tested: UL File Number: E75770
			<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C

Article number	Article description	Colour	Material	Pieces / PU
<b>H-A housing: panel-mount base (straight)</b>				
10422500	H-A 3 Mag	grey	Zinc die-casting	10
10422200	H-A 3 Ag	black	Thermoplastic	10
10422000	H-A 3 Ag	grey	Thermoplastic	10
<b>H-A housing: panel-mount base with cover (with sealing, for female inserts)</b>				
44429015	H-A 3 MAGD	grey	Aluminium die-casting	10
<b>H-A housing: panel-mount base (angled)</b>				
10423500	H-A 3 Mags	grey	Zinc die-casting	10
10423100	H-A 3 Ags	black	Thermoplastic	10
10423000	H-A 3 Ags	grey	Thermoplastic	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- EPIC® Protective cover H-A 3 refer to page 660



### EPIC® H-A 3 AGSV

Innovative metal and plastic housing design



**Info**

- Lightweight chemically resistant plastic housing

### EPIC® H-A 3 AGSV open bottom

Innovative metal and plastic housing design



**Info**

- Lightweight chemically resistant plastic housing

#### Benefits

- Housing in plastic or metal version. For power supply in the smallest possible space

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 3 AGSV

- Surface-mount base
- 1 lever
- 1 cable entry
- Versions with / without cable gland

##### EPIC® H-A 3 AGSV open bottom

- Surface-mount base
- 1 lever
- 2 cable entries
- Housing type: with open base
- Included: flat gasket

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated zinc die-casting, grey  
Lever: zinc-plated steel  
Sealing: NBR  
Housing: grey thermoplastic, black  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** **VDE-tested**  
Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	M	PG	Material	Colour	Cable gland	Cable clamping range	Dimensions incl. cable gland	Pieces / PU
<b>H-A housing: surface-mount base</b>									
10512700	H-A 3 MAgsv		11	Zinc die-casting	grey			51.5	10
10424000	H-A 3 Agsv		11	Thermoplastic	grey			56	10
10424500	H-A 3 MAgsv		11	Zinc die-casting	grey	yes	6.5 - 12.0	57.5	10
10424200	H-A 3 Agsv		11	Thermoplastic	grey	yes	6.5 - 12.0	65	10
19512700	H-A 3 MAgsv M20	20		Zinc die-casting	grey			54.5	10
19421900	H-A 3 Agsv M20	20		Thermoplastic	grey	yes	3.0 - 13.5	56	10
19424500	H-A 3 MAgsv M20	20		Zinc die-casting	grey	yes	3.0 - 13.5	60.5	10
<b>H-A housing: surface-mount base (with open base)</b>									
19517200	H-A 3 MAgsv M20	20		Zinc die-casting	grey				10
19515200	H-A 3 Agsv M20	20		Thermoplastic	grey				10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

##### EPIC® H-A 3 AGSV

- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST refer to page 788
- SKINTOP® ST-M refer to page 712
- EPIC® Protective cover H-A refer to page 660

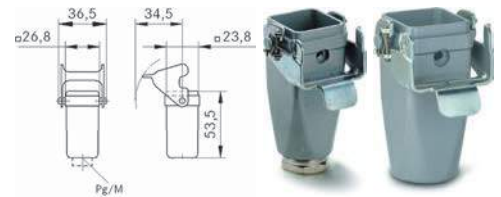
##### EPIC® H-A 3 AGSV Boden offen

- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST refer to page 788
- SKINTOP® ST-M refer to page 712
- EPIC® Protective cover H-A refer to page 660



**EPIC® H-A 3 MTGVB**

Innovative metal and plastic housing design



**EPIC® H-A 3 TGVB**

Innovative metal and plastic housing design



**i Info**

- Lightweight chemically resistant plastic housing

**Benefits**

- Housing in plastic or metal version. For power supply in the smallest possible space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

- Cable coupler hood
- 1 lever
- Straight cable entry
- Versions with / without cable gland

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
 ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
**EPIC® H-A 3 MTGVB**  
 Housing: powder-coated zinc die-casting, grey  
 Lever: zinc-plated steel

**EPIC® H-A 3 TGVB**  
 Housing: grey thermoplastic, black  
 Lever: zinc-plated steel

**IP** Protection rating  
 IP 65 (latched)

**DIN VDE** VDE-tested  
 Certified production control: VDE-REG. no.: B437  
 UL-tested: UL File Number: E75770

**Temperature range**  
 -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Material	Colour	Cable gland	Cable clamping range	Dimensions incl. cable gland	Pieces / PU
<b>H-A housing: cable coupler hood (straight cable entry)</b>									
10512900	H-A 3 MTgvb		11	Zinc die-casting	grey				10
10429500	H-A 3 MTgvb		11	Zinc die-casting	grey	yes	6.5 - 12.0	60	10
19512900	H-A 3 MTgvb M20	20		Zinc die-casting	grey				10
<b>EPIC® H-A 3 TGVB</b>									
10429200	H-A 3 Tgvb		11	Thermoplastic	black				10
10429000	H-A 3 Tgvb		11	Thermoplastic	grey				10
10620300	H-A 3 Tgvb		11	Thermoplastic	black	yes	6.5 - 12.0	65	10
10429100	H-A 3 Tgvb		11	Thermoplastic	grey	yes	6.5 - 12.0	65	10
19429200	H-A 3 Tgvb M20	20		Thermoplastic	black				10
19429000	H-A 3 Tgvb M20	20		Thermoplastic	grey				10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**EPIC® H-A 3 MTGVB**

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724

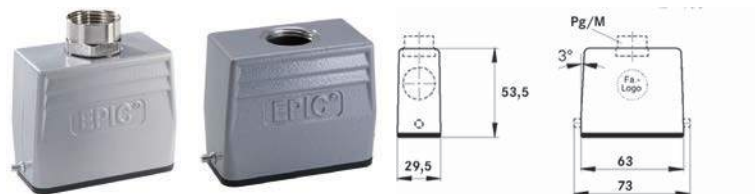
**EPIC® H-A 3 TGVB**

- EPIC® Protective cover H-A 3 refer to page 660
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724



### EPIC® H-A 10 TG

These connectors are attractive because of their compact housing.



**Info**

- Non-slip ridges for comfortable disconnecting

### EPIC® H-A 10 TGH

These connectors are attractive because of their compact housing.



**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

#### Benefits

- Small and space-saving for narrow available space

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 10 TG

- Hood, low version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

##### EPIC® H-A 10 TGH

- Hood, high version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: hood (straight cable entry, bolts for single lever)</b>					
10446000	H-A 10 TG 13,5		13,5	yes	5
10446100	H-A 10 TG 16		16	yes	5
19446000	H-A 10 TG M20	20			5
19446100	H-A 10 TG M25	25			5
<b>H-A housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70460200	H-A 10 TGH 16		16	yes	5
70460400	H-A 10 TGH 21		21	yes	5
79460200	H-A 10 TGH M20	20			5
79460400	H-A 10 TGH M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660

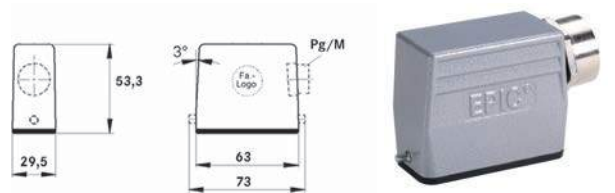


EPIC® H-A 10 TS

These connectors are attractive because of their compact housing.

**Info**

- Non-slip ridges for comfortable disconnecting



EPIC® H-A 10 TSH

These connectors are attractive because of their compact housing.

**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring



**Benefits**

- Small and space-saving for narrow available space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 10 TS**

- Hood, low version
- Bolts for single lever
- Side cable entry
- Versions with neck

**EPIC® H-A 10 TSH**

- Hood, high version
- Bolts for single lever
- Side cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: hood (side cable entry, bolts for single lever)</b>					
10445000	H-A 10 TS 16		16	yes	5
10445500	H-A 10 TS 21		21	yes	5
19445000	H-A 10 TS M20	20		yes	5
19445500	H-A 10 TS M25	25		yes	5
<b>H-A housing: hood (side cable entry, bolts for single lever, high version)</b>					
70462200	H-A 10 TSH 16		16	yes	5
70462400	H-A 10 TSH 21		21	yes	5
79462200	H-A 10 TSH M20	20			5
79462400	H-A 10 TSH M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

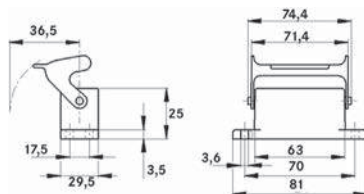
- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660





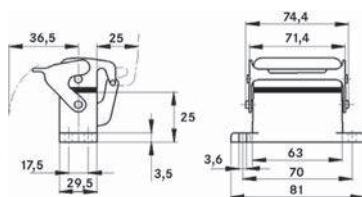
### EPIC® H-A 10 AG-LB

These connectors are attractive because of their compact housing.



### EPIC® H-A 10 AD-LB

These connectors are attractive because of their compact housing.



**Info**

- Metal lid with sturdy hinge

#### Benefits

- Small and space-saving for narrow available space

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 10 AG-LB

- Panel-mount base
- Single lever
- Included: flat gasket

##### EPIC® H-A 10 AD-LB

- Panel-mount base
- Single lever
- Metal cover
- Included: flat gasket

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Pieces / PU
<b>H-A housing: panel-mount base (single lever)</b>		
10442000	H-A 10 AG-LB	5
<b>H-A housing: panel-mount base (cover, single lever)</b>		
70444000	H-A 10 AD-LB	5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

##### EPIC® H-A 10 AG-LB

- EPIC® Protective cover H-A refer to page 660

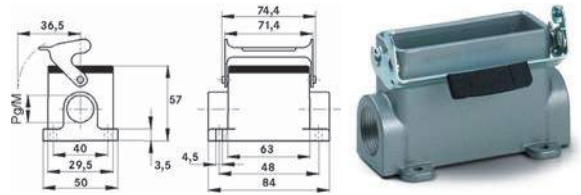
##### EPIC® H-A 10 AD-LB

- EPIC® Protective cover H-A refer to page 660



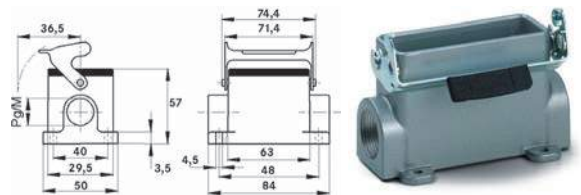
**EPIC® H-A 10 SGR-LB**

These connectors are attractive because of their compact housing.



**EPIC® H-A 10 SGRL-LB**

These connectors are attractive because of their compact housing.



**Info**

- For easy introduction of two cables

**Benefits**

- Small and space-saving for narrow available space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 10 SGR-LB**

- Surface-mount base
- Single lever
- 1 cable entry

**EPIC® H-A 10 SGRL-LB**

- Surface-mount base
- Single lever
- 2 cable entries

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-A housing: surface-mount base (1 cable entry, single lever)</b>				
10448100	H-A 10 SGR-LB 16		16	5
10448000	H-A 10 SGR-LB 21		21	5
19448100	H-A 10 SGR-LB M20	20		5
19448000	H-A 10 SGR-LB M25	25		5
<b>H-A housing: surface-mount base (2 cable entries, single lever)</b>				
10450100	H-A 10 SGRL-LB 16		16	5
19450100	H-A 10 SGRL-LB M20	20		5

Photographs are not to scale and do not represent detailed images of the respective products.

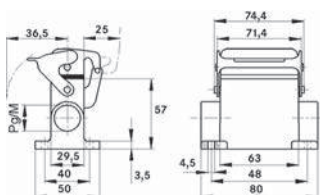
**Accessories**

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660



### EPIC® H-A 10 SDR-LB

These connectors are attractive because of their compact housing.

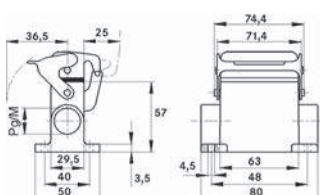


**Info**

- Metal lid with sturdy hinge

### EPIC® H-A 10 SDRL-LB

These connectors are attractive because of their compact housing.



**Info**

- Metal lid with sturdy hinge
- For easy introduction of two cables

#### Benefits

- Small and space-saving for narrow available space

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 10 SDR-LB

- Surface-mount base
- Single lever
- 1 cable entry
- Metal cover

##### EPIC® H-A 10 SDRL-LB

- Surface-mount base
- Single lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-A housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
70455200	H-A 10 SDR-LB 16		16	5
70455400	H-A 10 SDR-LB 21		21	5
79455200	H-A 10 SDR-LB M20	20		5
79455400	H-A 10 SDR-LB M25	25		5
<b>H-A housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
70456200	H-A 10 SDRL-LB 16		16	5
70456400	H-A 10 SDRL-LB 21		21	5
79456200	H-A 10 SDRL-LB M20	20		5
79456400	H-A 10 SDRL-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660



**EPIC® H-A 10 TBF-LB**

These connectors are attractive because of their compact housing.



**EPIC® H-A 10 TBFH-LB**

These connectors are attractive because of their compact housing.



**Info**

- More interior space for wiring

**Benefits**

- Small and space-saving for narrow available space

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 10 TBF-LB**

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-A 10 TBFH-LB**

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: cable coupler hood (straight cable entry, single lever)</b>					
10439000	H-A 10 TBF-LB 13,5		13,5	yes	5
70450000	H-A 10 TBF-LB 16		16	yes	5
19439000	H-A 10 TBF-LB M20	20			5
79450000	H-A 10 TBF-LB M25	25			5
<b>H-A housing: cable coupler hood (straight cable entry, single lever, high version)</b>					
70450400	H-A 10 TBFH-LB 21		21	yes	5
79450400	H-A 10 TBFH-LB M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724



## EPIC® H-A 16 TG

These connectors are attractive because of their compact housing.



### Info

- Non-slip ridges for comfortable disconnecting

## EPIC® H-A 16 TGH

These connectors are attractive because of their compact housing.



### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

### Benefits

- Small and compact, for applications with high number of contacts

### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

### Product features

#### EPIC® H-A 16 TG

- Hood, low version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

#### EPIC® H-A 16 TGH

- Hood, high version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors



**Material**  
Housing: powder-coated aluminium alloy, grey  
Sealing: NBR



**Protection rating**  
IP 65 (latched)



Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: hood (straight cable entry, bolts for single lever)</b>					
10565000	H-A 16 TG 16		16	yes	5
10565300	H-A 16 TG 21		21	yes	5
19565000	H-A 16 TG M20	20			5
19565300	H-A 16 TG M25	25			5
<b>H-A housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70490200	H-A 16 TGH 16		16	yes	5
70490400	H-A 16 TGH 21		21	yes	5
79490200	H-A 16 TGH M20	20			5
79490400	H-A 16 TGH M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660

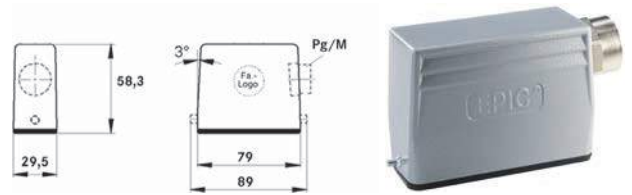


**EPIC® H-A 16 TS**

These connectors are attractive because of their compact housing.

**Info**

- Non-slip ridges for comfortable disconnecting



**EPIC® H-A 16 TSH**

These connectors are attractive because of their compact housing.

**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring



**Benefits**

- Small and compact, for applications with high number of contacts

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 16 TS**

- Hood, low version
- Bolts for single lever
- Side cable entry
- Versions with neck

**EPIC® H-A 16 TSH**

- Hood, high version
- Bolts for single lever
- Side cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material**  
Housing: powder-coated aluminium alloy, grey  
Sealing: NBR
- IP** Protection rating  
IP 65 (latched)
- DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: hood (side cable entry, bolts for single lever)</b>					
10564000	H-A 16 TS 16		16	yes	5
10564500	H-A 16 TS 21		21	yes	5
19564000	H-A 16 TS M20	20		yes	5
19564500	H-A 16 TS M25	25		yes	5
<b>H-A housing: hood (side cable entry, bolts for single lever, high version)</b>					
70492200	H-A 16 TSH 16		16	yes	5
70492400	H-A 16 TSH 21		21	yes	5
79492200	H-A 16 TSH M20	20			5
79492400	H-A 16 TSH M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

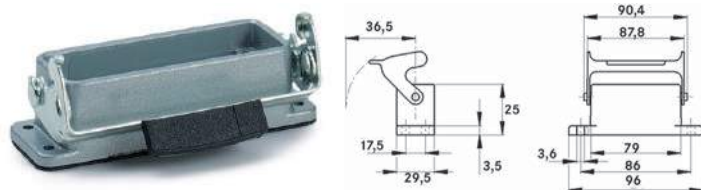
**Accessories**

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660



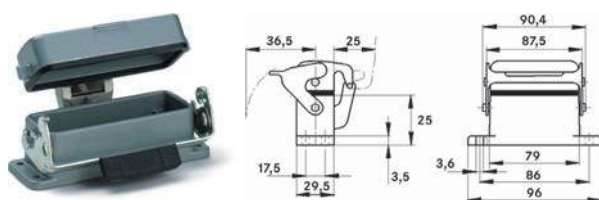
### EPIC® H-A 16 AG-LB

These connectors are attractive because of their compact housing.



### EPIC® H-A 16 AD-LB

These connectors are attractive because of their compact housing.



#### Info

- Metal lid with sturdy hinge

#### Benefits

- Small and compact, for applications with high number of contacts

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 16 AG-LB

- Panel-mount base
- Single lever
- Included: flat gasket

##### EPIC® H-A 16 AD-LB

- Panel-mount base
- Single lever
- Metal cover
- Included: flat gasket

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors



**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR



**Protection rating**  
IP 65 (latched)



Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	Pieces / PU
<b>H-A housing: panel-mount base (single lever)</b>		
10462000	H-A 16 AG-LB	5
<b>H-A housing: panel-mount base (cover, single lever)</b>		
70474000	H-A 16 AD-LB	5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

##### EPIC® H-A 16 AG-LB

- EPIC® Flat gaskets for housings H-A and H-B refer to page 659
- EPIC® Protective cover H-A refer to page 660

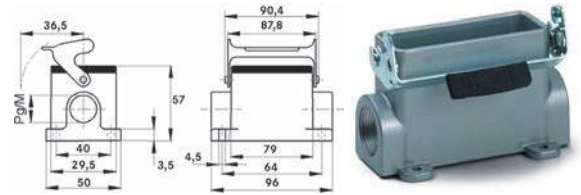
##### EPIC® H-A 16 AD-LB

- EPIC® Flat gaskets for housings H-A and H-B refer to page 659



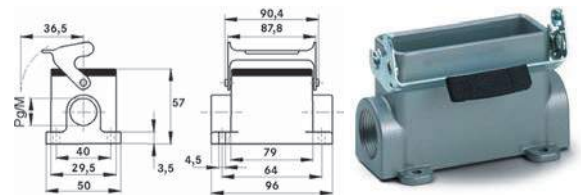
**EPIC® H-A 16 SGR-LB**

These connectors are attractive because of their compact housing.



**EPIC® H-A 16 SGRL-LB**

These connectors are attractive because of their compact housing.



**Info**

- For easy introduction of two cables

**Benefits**

- Small and compact, for applications with high number of contacts

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 16 SGR-LB**

- Surface-mount base
- Single lever
- 1 cable entry

**EPIC® H-A 16 SGRL-LB**

- Surface-mount base
- Single lever
- 2 cable entries

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-A housing: surface-mount base (1 cable entry, single lever)</b>				
10567100	H-A 16 SGR-LB 16		16	5
10567000	H-A 16 SGR-LB 21		21	5
19567100	H-A 16 SGR-LB M20	20		5
19567000	H-A 16 SGR-LB M25	25		5
<b>H-A housing: surface-mount base (2 cable entries, single lever)</b>				
10568100	H-A 16 SGRL-LB 16		16	5
10568000	H-A 16 SGRL-LB 21		21	5
19568100	H-A 16 SGRL-LB M20	20		5
19568000	H-A 16 SGRL-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

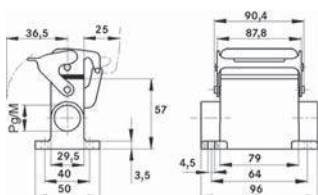
- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660





### EPIC® H-A 16 SDR-LB

These connectors are attractive because of their compact housing.

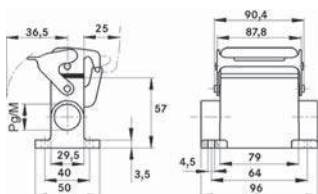


**Info**

- Metal lid with sturdy hinge

### EPIC® H-A 16 SDRL-LB

These connectors are attractive because of their compact housing.



**Info**

- Metal lid with sturdy hinge
- For easy introduction of two cables

#### Benefits

- Small and compact, for applications with high number of contacts

#### Application range

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

#### Product features

##### EPIC® H-A 16 SDR-LB

- Surface-mount base
- Single lever
- 1 cable entry
- Metal cover

##### EPIC® H-A 16 SDRL-LB

- Surface-mount base
- Single lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	M	PG	Pieces / PU
<b>H-A housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
70485200	H-A 16 SDR-LB 16		16	5
70485400	H-A 16 SDR-LB 21		21	5
79485200	H-A 16 SDR-LB M20	20		5
79485400	H-A 16 SDR-LB M25	25		5
<b>H-A housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
70486200	H-A 16 SDRL-LB 16		16	5
70486400	H-A 16 SDRL-LB 21		21	5
79486400	H-A 16 SDRL-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

##### EPIC® H-A 16 SDR-LB

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724

##### EPIC® H-A 16 SDRL-LB

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724



**EPIC® H-A 16 TBF-LB**

These connectors are attractive because of their compact housing.



**EPIC® H-A 16 TBFH-LB**

These connectors are attractive because of their compact housing.



**Info**

- More interior space for wiring

**Benefits**

- Small and compact, for applications with high number of contacts

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

**Product features**

**EPIC® H-A 16 TBF-LB**

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-A 16 TBFH-LB**

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-A housing: cable coupler hood (straight cable entry, single lever)</b>					
10563000	H-A 16 TBF-LB 16		16	yes	5
19563000	H-A 16 TBF-LB M20	20			5
19563200	H-A 16 TBF-LB M25	25			5
<b>H-A housing: cable coupler hood (straight cable entry, single lever, high version)</b>					
70480200	H-A 16 TBFH-LB 16		16	yes	5
70480400	H-A 16 TBFH-LB 21		21	yes	5
79480200	H-A 16 TBFH-LB M20	20			5
79480400	H-A 16 TBFH-LB M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

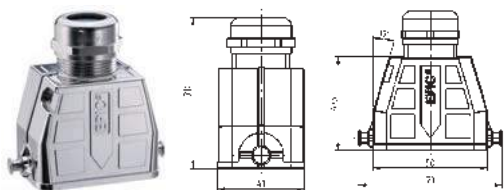
**Accessories**

- SKINTOP® for industrial connectors
- SKINTOP® MS refer to page 792
- SKINTOP® MS-M refer to page 724
- SKINTOP® MSR refer to page 792
- SKINTOP® MSR-M refer to page 724
- EPIC® Protective cover H-A refer to page 660



### EPIC® ULTRA H-B 6 TG LB

Housing H-B ULTRA: for higher functional reliability

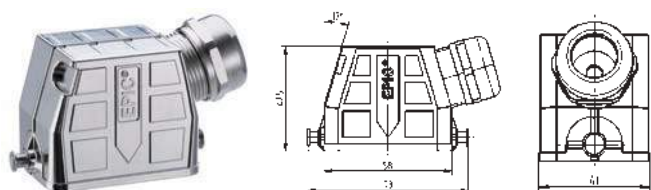


**Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland

### EPIC® ULTRA H-B 6 TS LB

Housing H-B ULTRA: for higher functional reliability



**Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland

#### Benefits

- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- Faster than any other comparable system
- High mechanical resistance

#### Application range

- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Construction machinery
- Electric motor manufacturing

#### Product features

- Housings with the BRUSH addition come with BRUSH cable screen contacting
- Pluggable with standard housings
- Corrosion-resistant according to DIN EN 6988
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Lever and bolts: stainless steel  
Sealing: NBR  
Cable gland  
Body: nickel-plated brass  
Insert: PA  
Seal: special elastomer

**IP** **Protection rating**  
IP 65

**Temperature range**  
-40°C to +100°C

Article number	Article description	Clamping range in mm	Minimum Ø above braiding (mm)	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for single lever)</b>				
70250200	ULTRA H-B 6 TG-LB 6-13	6 - 13		1
70250201	ULTRA H-B 6 TG-LB 9-17	9 - 17		1
70250202	ULTRA H-B 6 TG-LB 9-17 BRUSH	9 - 17	6	1
<b>H-B housing: hood (side cable entry, bolts for single lever)</b>				
70250203	ULTRA H-B 6 TS-LB 6-13	6 - 13		1
70250204	ULTRA H-B 6 TS-LB 9-17	9 - 17		1
70250205	ULTRA H-B 6 TS-LB 9-17 BRUSH	9 - 17	6	1

Photographs are not to scale and do not represent detailed images of the respective products.

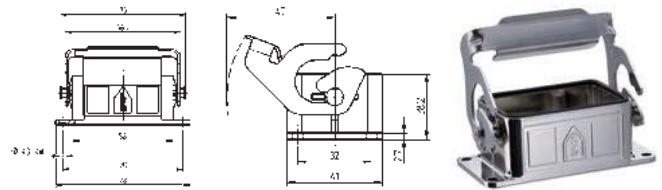


**EPIC® ULTRA H-B 6 AG LB**

Housing H-B ULTRA: for higher functional reliability

**i Info**

- EMC protection
- Corrosion-resistant

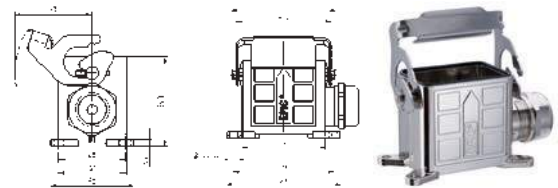


**EPIC® ULTRA H-B 6 SGR LB**

Housing H-B ULTRA: for higher functional reliability

**i Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland



**Benefits**

- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- Faster than any other comparable system
- High mechanical resistance

**Application range**

- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Construction machinery
- Electric motor manufacturing

**Product features**

- Housings with the BRUSH addition come with BRUSH cable screen contacting
- Pluggable with standard housings
- Corrosion-resistant according to DIN EN 6988
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Lever and bolts: stainless steel  
Sealing: NBR  
Cable gland  
Body: nickel-plated brass  
Insert: PA  
Seal: special elastomer

**IP** **Protection rating**  
IP 65

**Temperature range**  
-40°C to +100°C

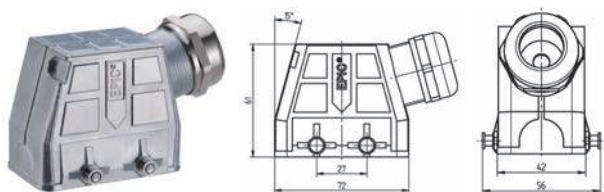
Article number	Article description	Clamping range in mm	Minimum Ø above braiding (mm)	Pieces / PU
<b>H-B housing: panel-mount base (single lever)</b>				
70250206	ULTRA H-B 6 AG LB			1
<b>H-B housing: surface-mount base (1 cable entry, single lever)</b>				
70250207	ULTRA H-B 6 SGR LB 6-13	6 - 13		1
70250208	ULTRA H-B 6 SGR LB 9-17	9 - 17		1
70250209	ULTRA H-B 6 SGR LB 9-17 BRUSH	9 - 17	6	1

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® ULTRA H-B 10 TS QB

Housing H-B ULTRA: for higher functional reliability

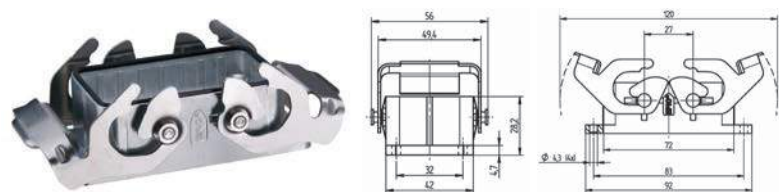


**Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland

### EPIC® ULTRA H-B 10 AG QB

Housing H-B ULTRA: for higher functional reliability



**Info**

- EMC protection
- Corrosion-resistant

#### Benefits

- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- Faster than any other comparable system
- High mechanical resistance

#### Application range

- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Construction machinery
- Electric motor manufacturing

#### Product features

- Housings with the BRUSH addition come with BRUSH cable screen contacting
- Pluggable with standard housings
- Corrosion-resistant according to DIN EN 6988
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Lever and bolts: stainless steel  
Sealing: NBR  
Cable gland  
Body: nickel-plated brass  
Insert: PA  
Seal: special elastomer

**IP** **Protection rating**  
IP 68

**Temperature range**  
-40°C to +100°C

Article number	Article description	Clamping range in mm	Minimum Ø above braiding (mm)	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>				
70250210	ULTRA H-B 10 TS QB 7-15	7 - 15		1
70250211	ULTRA H-B 10 TS QB 11-21	11 - 21		1
70250212	ULTRA H-B 10 TS QB 11-21 BRUSH	11 - 21	8	1
<b>H-B housing: panel-mount base (double lever)</b>				
70250213	ULTRA H-B 10 AG QB			1

Photographs are not to scale and do not represent detailed images of the respective products.

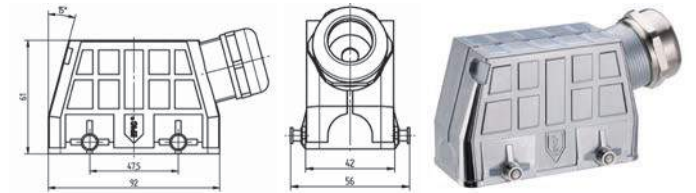


**EPIC® ULTRA H-B 16 TS QB**

Housing H-B ULTRA: for higher functional reliability

**Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland

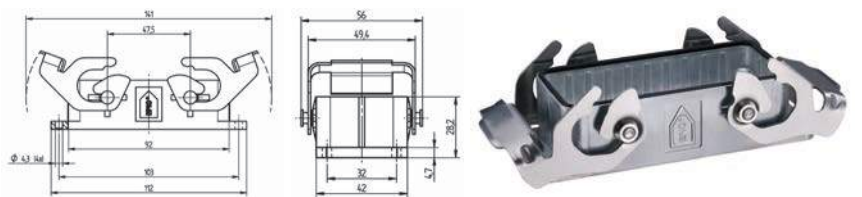


**EPIC® ULTRA H-B 16 AG QB**

Housing H-B ULTRA: for higher functional reliability

**Info**

- EMC protection
- Corrosion-resistant



**Benefits**

- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- Faster than any other comparable system
- High mechanical resistance

**Application range**

- Construction machinery
- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Electric motor manufacturing

**Product features**

- Housings with the BRUSH addition come with BRUSH cable screen contacting
- Pluggable with standard housings
- Corrosion-resistant according to DIN EN 6988
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Lever and bolts: stainless steel  
Sealing: NBR  
Cable gland  
Body: nickel-plated brass  
Insert: PA  
Seal: special elastomer

**IP** **Protection rating**  
IP 68

**Temperature range**  
-40°C to +100°C

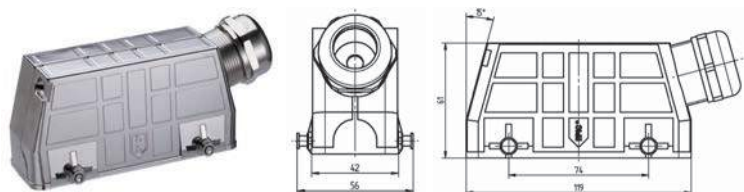
Article number	Article description	Clamping range in mm	Minimum Ø above braiding (mm)	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>				
70250214	ULTRA H-B 16 TS QB 7-15	7 - 15		1
70250215	ULTRA H-B 16 TS QB 11-21	11 - 21		1
70250216	ULTRA H-B 16 TS QB 11-21 BRUSH	11 - 21	8	1
<b>H-B housing: panel-mount base (double lever)</b>				
70250217	ULTRA H-B 16 AG QB			1

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® ULTRA H-B 24 TS QB

Housing H-B ULTRA: for higher functional reliability

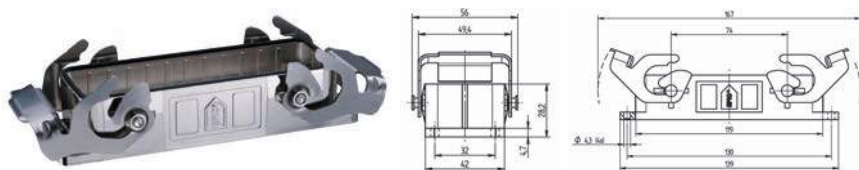


**Info**

- EMC protection
- Corrosion-resistant
- SKINTOP® integrated cable gland

### EPIC® ULTRA H-B 24 AG QB

Housing H-B ULTRA: for higher functional reliability



**Info**

- EMC protection
- Corrosion-resistant

#### Benefits

- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- Faster than any other comparable system
- High mechanical resistance

#### Application range

- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Construction machinery
- Electric motor manufacturing

#### Product features

- Housings with the BRUSH addition come with BRUSH cable screen contacting
- Pluggable with standard housings
- Corrosion-resistant according to DIN EN 6988
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Lever and bolts: stainless steel  
Sealing: NBR  
Cable gland  
Body: nickel-plated brass  
Insert: PA  
Seal: special elastomer

**IP** **Protection rating**  
IP 65

**Temperature range**  
-40°C to +100°C

Article number	Article description	Clamping range in mm	Minimum Ø above braiding (mm)	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>				
70250219	ULTRA H-B 24 TS QB 7-15	7 - 15		1
70250220	ULTRA H-B 24 TS QB 11-21	11 - 21		1
70250221	ULTRA H-B 24 TS QB 11-21 BRUSH	11 - 21	8	1
<b>H-B housing: panel-mount base (double lever)</b>				
70250222	ULTRA H-B 24 AG QB			1

Photographs are not to scale and do not represent detailed images of the respective products.



**i Info**

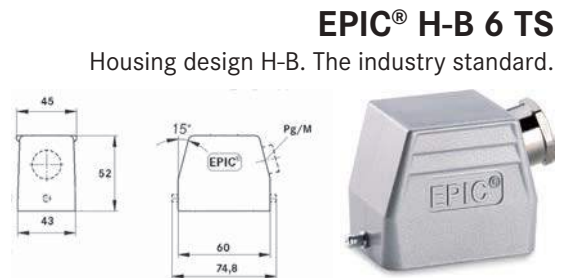
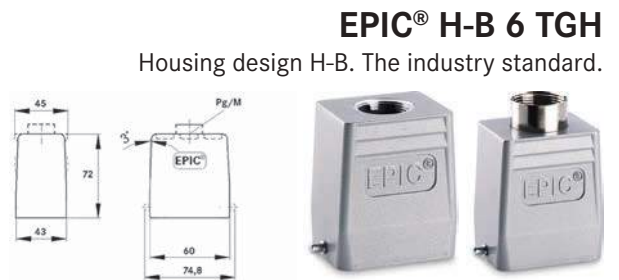
- Non-slip ridges for comfortable disconnecting

**i Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

**i Info**

- Non-slip ridges for comfortable disconnecting



**Benefits**

- The smallest housing out of the H-B series. For inserts with high electrical properties

**Application range**

- Plant engineering
- Control engineering
- Plastics industry

**Product features**

**EPIC® H-B 6 TG**

- Hood, low version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 6 TGH**

- Hood, high version
- Bolts for single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 6 TS**

- Hood, low version
- Bolts for single lever
- Side cable entry
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for single lever)</b>					
10011000	H-B 6 TG 13,5		13,5	yes	10
10021000	H-B 6 TG 16		16	yes	10
19011000	H-B 6 TG M20	20			10
19021000	H-B 6 TG M25	25			10
<b>H-B housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70020200	H-B 6 TGH 21		21	yes	10
70020400	H-B 6 TGH 29		29	yes	10
79020200	H-B 6 TGH M25	25			10
79020400	H-B 6 TGH M32	32			10
<b>H-B housing: hood (side cable entry, bolts for single lever)</b>					
10012000	H-B 6 TS 13,5		13,5	yes	10
10022000	H-B 6 TS 16		16	yes	10
19012000	H-B 6 TS M20	20		yes	10
19022000	H-B 6 TS M25	25		yes	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install





## EPIC® H-B 6 TSH

Housing design H-B. The industry standard.

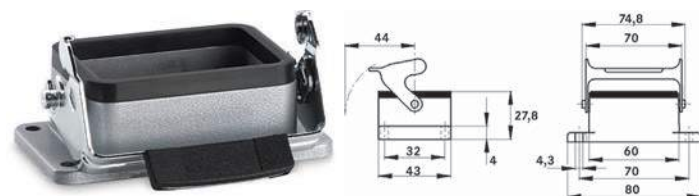


### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

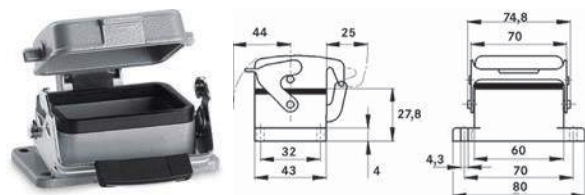
## EPIC® H-B 6 AG-LB

Housing design H-B. The industry standard.



## EPIC® H-B 6 AD-LB

Housing design H-B. The industry standard.



### Info

- Metal lid with sturdy hinge

### Benefits

- The smallest housing out of the H-B series. For inserts with high electrical properties

### Application range

- Plant engineering
- Control engineering
- Plastics industry

### Product features

- Hood, high version
- Bolts for single lever
- Side cable entry
- Versions with / without neck

### EPIC® H-B 6 AG-LB

- Panel-mount base
- Single lever
- Included: flat gasket

### EPIC® H-B 6 AD-LB

- Panel-mount base
- Single lever
- Metal cover
- Included: flat gasket

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for single lever, high version)</b>					
70022200	H-B 6 TSH 21		21	yes	10
70022400	H-B 6 TSH 29		29	yes	10
79022200	H-B 6 TSH M25	25			10
79022400	H-B 6 TSH M32	32			10
<b>H-B housing: panel-mount base (single lever)</b>					
10003000	H-B 6 AG-LB				10
<b>H-B housing: panel-mount base (cover, single lever)</b>					
10004000	H-B 6 AD-LB				10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

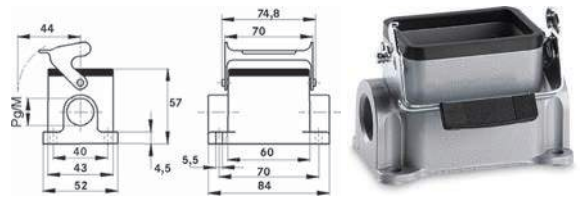
#### EPIC® H-B 6 TSH

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



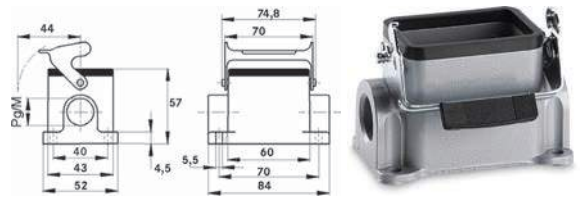
**EPIC® H-B 6 SGR-LB**

Housing design H-B. The industry standard.



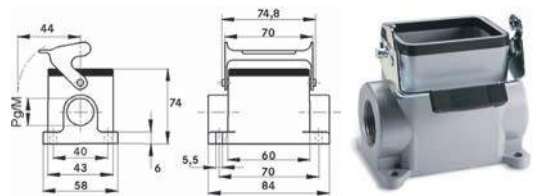
**EPIC® H-B 6 SGRL-LB**

Housing design H-B. The industry standard.



**EPIC® H-B 6 SGRH-LB**

Housing design H-B. The industry standard.



**i Info**

- For easy introduction of two cables

**i Info**

- More interior space for wiring

**Benefits**

- The smallest housing out of the H-B series. For inserts with high electrical properties

**Application range**

- Plant engineering
- Control engineering
- Plastics industry

**Product features**

**EPIC® H-B 6 SGR-LB**

- Surface-mount base, low version
- Single lever
- 1 cable entry

**EPIC® H-B 6 SGRL-LB**

- Surface-mount base, low version
- Single lever
- 2 cable entries

**EPIC® H-B 6 SGRH-LB**

- Surface-mount base, high version
- Single lever
- 1 cable entry

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever)</b>				
10005000	H-B 6 SGR 16		16	10
19005000	H-B 6 SGR M20	20		10
79005600	H-B 6 SGR M25	25		10
<b>H-B housing: surface-mount base (2 cable entries, single lever)</b>				
10006000	H-B 6 SGRL 16		16	10
19006000	H-B 6 SGRL M20	20		10
79006600	H-B 6 SGRL M25	25		10
<b>H-B housing: surface-mount base (1 cable entry, single lever, high version)</b>				
70005200	H-B 6 SGRH-LB 21		21	10
70005400	H-B 6 SGRH-LB 29		29	10
79005200	H-B 6 SGRH-LB M25	25		10
79005400	H-B 6 SGRH-LB M32	32		10

Photographs are not to scale and do not represent detailed images of the respective products.

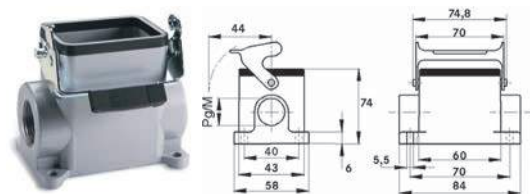
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 6 SGRLH-LB

Housing design H-B. The industry standard.

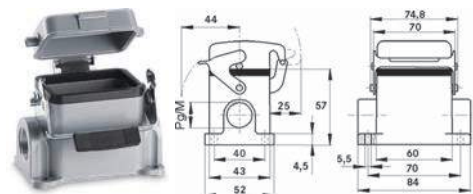


**Info**

- More interior space for wiring
- For easy introduction of two cables

### EPIC® H-B 6 SDR-LB

Housing design H-B. The industry standard.

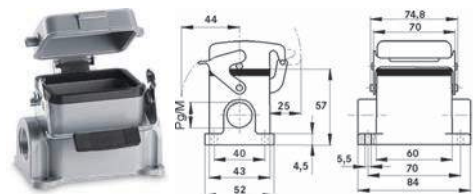


**Info**

- Metal lid with sturdy hinge

### EPIC® H-B 6 SDRL-LB

Housing design H-B. The industry standard.



**Info**

- Metal lid with sturdy hinge
- Metal lid with sturdy hinge

#### Benefits

- The smallest housing out of the H-B series. For inserts with high electrical properties

#### Application range

- Plant engineering
- Control engineering
- Plastics industry

#### Product features

##### EPIC® H-B 6 SGRLH-LB

- Surface-mount base, high version
- Single lever
- 2 cable entries

##### EPIC® H-B 6 SDR-LB

- Surface-mount base, low version
- Single lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 6 SDRL-LB

- Surface-mount base, low version
- Single lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (2 cable entries, single lever, high version)</b>				
70006200	H-B 6 SGRLH 21		21	10
79006200	H-B 6 SGRLH M25	25		10
79006400	H-B 6 SGRLH M32	32		10
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
10007000	H-B 6 SDR 16		16	10
19007000	H-B 6 SDR M20	20		10
79015600	H-B 6 SDR M25	25		10
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
10009000	H-B 6 SDRL-LB 16		16	10
19009000	H-B 6 SDRL-LB M20	20		10
79016600	H-B 6 SDRL-LB M25	25		10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- More interior space for wiring
- Metal lid with sturdy hinge

**i Info**

- More interior space for wiring
- Metal lid with sturdy hinge
- For easy introduction of two cables

**Benefits**

- The smallest housing out of the H-B series. For inserts with high electrical properties

**Application range**

- Plant engineering
- Control engineering
- Plastics industry

**Product features**

**EPIC® H-B 6 SDRH-LB**

- Surface-mount base, high version
- Single lever
- 1 cable entry
- Metal cover

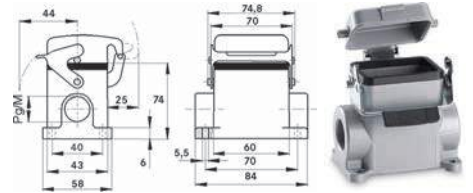
**EPIC® H-B 6 SDRLH-LB**

- Surface-mount base, high version
- Single lever
- 2 cable entries
- Metal cover

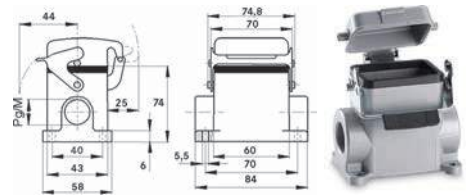
**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**EPIC® H-B 6 SDRH-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 6 SDRLH-LB**  
Housing design H-B. The industry standard.



**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever, high version)</b>				
70015200	H-B 6 SDRH-LB 21		21	10
79015200	H-B 6 SDRH-LB M25	25		10
79015400	H-B 6 SDRH-LB M32	32		10
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever, high version)</b>				
70016200	H-B 6 SDRLH-LB 21		21	10
79016200	H-B 6 SDRLH-LB M25	25		10
79016400	H-B 6 SDRLH-LB M32	32		10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



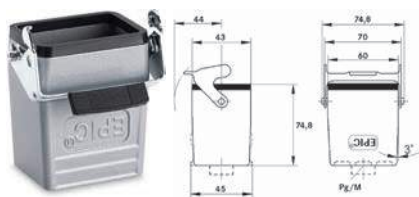
## EPIC® H-B 6 TBF-LB

Housing design H-B. The industry standard.



## EPIC® H-B 6 TBFH-LB

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring

### Benefits

- The smallest housing out of the H-B series. For inserts with high electrical properties

### Application range

- Plant engineering
- Control engineering
- Plastics industry

### Product features

#### EPIC® H-B 6 TBF-LB

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

#### EPIC® H-B 6 TBFH-LB

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever)</b>					
10014000	H-B 6 TBF 13,5		13.5	yes	10
10024000	H-B 6 TBF 16		16	yes	10
19014000	H-B 6 TBF M20	20			10
19024000	H-B 6 TBF M25	25			10
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever, high version)</b>					
70010200	H-B 6 TBFH 21		21	yes	10
70010400	H-B 6 TBFH 29		29	yes	10
79010200	H-B 6 TBFH M25	25			10

Photographs are not to scale and do not represent detailed images of the respective products.

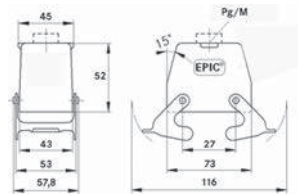
### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

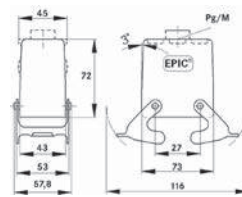


**EPIC® H-B 10 TGB**  
Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

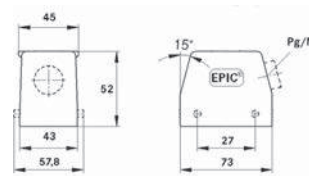


**EPIC® H-B 10 TGBH**  
Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting



**EPIC® H-B 10 TS**  
Housing design H-B. The industry standard.



**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 TGB**

- Hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 10 TGBH**

- Hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 10 TS**

- Hood, low version
- Bolts for double lever
- Side cable entry
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, double lever)</b>					
10041000	H-B 10 TGB 16		16	yes	10
19041000	H-B 10 TGB M20	20			10
79055700	H-B 10 TGB M25	25			10
<b>H-B housing: hood (straight cable entry, double lever, high version)</b>					
70055200	H-B 10 TGBH 21		21	yes	10
70055400	H-B 10 TGBH 29		29	yes	10
79055200	H-B 10 TGBH M25	25			10
79055400	H-B 10 TGBH M32	32			10
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>					
10042000	H-B 10 TS 16		16	yes	10
10042100	H-B 10 TS 21		21	yes	10
19042000	H-B 10 TS M20	20		yes	10
19042100	H-B 10 TS M25	25		yes	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 10 TG-RO

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting

### EPIC® H-B 10 TGH-RO

Housing design H-B. The industry standard.

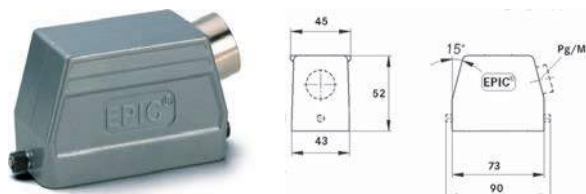


**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

### EPIC® H-B 10 TS-RO

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting

#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 TG-RO

- Hood, low version
- Reels for single lever
- Versions with / without neck

##### EPIC® H-B 10 TGH-RO

- Hood, high version
- Reels for single lever
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 10 TS-RO

- Hood, low version
- Reels for single lever
- Side cable entry
- Versions with neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for single lever)</b>					
10040900	H-B 10 TG-RO 16		16	yes	10
10040700	H-B 10 TG-RO 21		21	yes	10
19040900	H-B 10 TG-RO M20	20			10
19040700	H-B 10 TG-RO M25	25			10
<b>H-B housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70044200	H-B 10 TGH-RO 21		21	yes	10
70044400	H-B 10 TGH-RO 29		29	yes	10
79044200	H-B 10 TGH-RO M25	25			10
79044400	H-B 10 TGH-RO M32	32			10
<b>H-B housing: hood (side cable entry, bolts for single lever)</b>					
10042900	H-B 10 TS-RO 16		16	yes	10
10042800	H-B 10 TS-RO 21		21	yes	10
19042900	H-B 10 TS-RO M20	20		yes	10
19042800	H-B 10 TS-RO M25	25		yes	10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

**i Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

**i Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

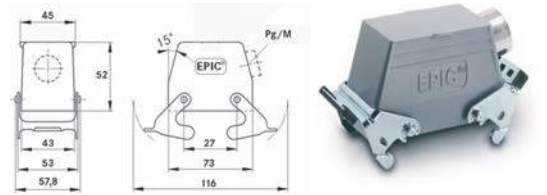
**EPIC® H-B 10 TSH**

Housing design H-B. The industry standard.



**EPIC® H-B 10 TSB**

Housing design H-B. The industry standard.



**EPIC® H-B 10 TSBH**

Housing design H-B. The industry standard.



**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 TSH**

- Hood, high version
- Bolts for double lever
- Side cable entry
- Versions with / without neck

**EPIC® H-B 10 TSB**

- Hood, low version
- Dual levers
- Side cable entry
- Versions with neck

**EPIC® H-B 10 TSBH**

- Hood, high version
- Dual levers
- Side cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever, high version)</b>					
70052400	H-B 10 TSH 21		21	yes	10
70052600	H-B 10 TSH 29		29	yes	10
79052400	H-B 10 TSH M25	25			10
79052600	H-B 10 TSH M32	32			10
<b>H-B housing: hood (side cable entry, double lever)</b>					
10045000	H-B 10 TSB 16		16	yes	10
19045000	H-B 10 TSB M20	20		yes	10
79057700	H-B 10 TSB M25	25		yes	10
<b>H-B housing: hood (side cable entry, double lever, high version)</b>					
70057200	H-B 10 TSBH 21		21	yes	10
70057400	H-B 10 TSBH 29		29	yes	10
79057200	H-B 10 TSBH M25	25			10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install





### EPIC® H-B 10 TSH-RO

Housing design H-B. The industry standard.



### EPIC® H-B 10 TG

Housing design H-B. The industry standard.



### EPIC® H-B 10 TGH

Housing design H-B. The industry standard.



#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 TSH-RO

- Hood, high version
- Reels for single lever
- Side cable entry
- Versions with / without neck

##### EPIC® H-B 10 TG

- Hood, low version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 10 TGH

- Hood, high version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

#### Info

- Non-slip ridges for comfortable disconnecting

#### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring
- For connection with counterpart with integrated cover

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for single lever, high version)</b>					
70054200	H-B 10 TSH-RO 21		21	yes	10
70054400	H-B 10 TSH-RO 29		29	yes	10
79054200	H-B 10 TSH-RO M25	25			10
79054400	H-B 10 TSH-RO M32	32			10
<b>H-B housing: hood (straight cable entry, bolts for double lever)</b>					
10040000	H-B 10 TG 16		16	yes	10
10040100	H-B 10 TG 21		21	yes	10
19040000	H-B 10 TG M20	20			10
19040100	H-B 10 TG M25	25			10
<b>H-B housing: hood (straight cable entry, bolts for double lever, high version)</b>					
70050400	H-B 10 TGH 21		21	yes	10
70050600	H-B 10 TGH 29		29	yes	10
79050400	H-B 10 TGH M25	25			10
79050600	H-B 10 TGH M32	32			10

Photographs are not to scale and do not represent detailed images of the respective products.

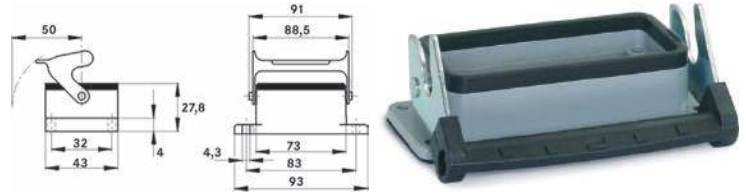
#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

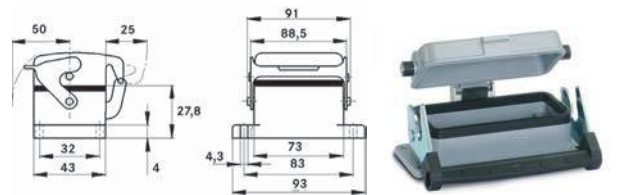


**EPIC® H-B 10 AG-LB**

Housing design H-B. The industry standard.

**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

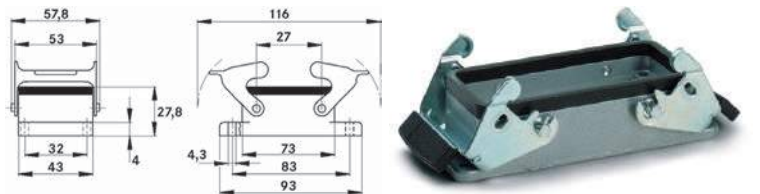


**EPIC® H-B 10 AD-LB**

Housing design H-B. The industry standard.

**i Info**

- Double lever version with 2 levers for increased safety

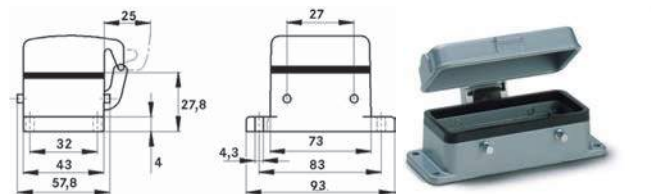


**EPIC® H-B 10 AG**

Housing design H-B. The industry standard.

**i Info**

- Metal lid with sturdy hinge



**EPIC® H-B 10 AD-BO**

Housing design H-B. The industry standard.

**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 AG-LB**

- Panel-mount base
- Single lever
- Included: flat gasket

**EPIC® H-B 10 AD-LB**

- Metal cover
- Panel-mount base
- Single lever
- Included: flat gasket

**EPIC® H-B 10 AG**

- Panel-mount base
- Dual levers
- Included: flat gasket

**EPIC® H-B 10 AD-BO**

- Panel-mount base
- Bolts for double lever
- Metal cover
- Included: flat gasket

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

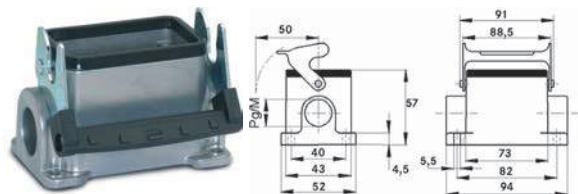
Article number	Article description	Pieces / PU
<b>H-B housing: panel-mount base (single lever)</b>		
10032900	H-B 10 AG-LB	10
<b>H-B housing: panel-mount base (cover, single lever)</b>		
10033900	H-B 10 AD-LB	10
<b>H-B housing: panel-mount base (double lever)</b>		
10032000	H-B 10 AG	10
<b>H-B housing: panel-mount base (cover, bolts for double lever)</b>		
10033000	H-B 10 AD-BO	10

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-B 10 SGR-LB

Housing design H-B. The industry standard.

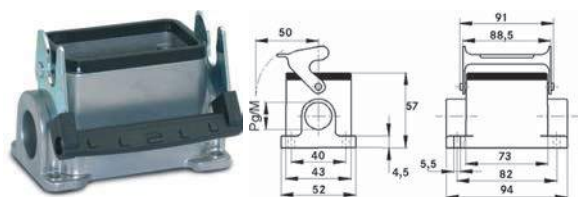


#### Info

- Single Lever version for quick locking and simple unlocking with lifting aid

### EPIC® H-B 10 SGRL-LB

Housing design H-B. The industry standard.



#### Info

- Single Lever version for quick locking and simple unlocking with lifting aid

#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 SGR-LB

- Surface-mount base, low version
- Single lever
- 1 cable entry

##### EPIC® H-B 10 SGRL-LB

- Surface-mount base, low version
- Single lever
- 2 cable entries

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever)</b>				
10034900	H-B 10 SGR-LB 16		16	10
10034700	H-B 10 SGR-LB 21		21	10
19034900	H-B 10 SGR-LB M20	20		10
19034700	H-B 10 SGR-LB M25	25		10
<b>H-B housing: surface-mount base (2 cable entries, single lever)</b>				
10035900	H-B 10 SGRL-LB 16		16	10
19035900	H-B 10 SGRL-LB M20	20		10
79061600	H-B 10 SGRL-LB M25	25		10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

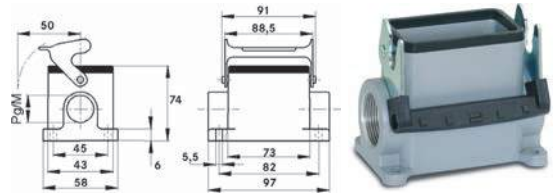
- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

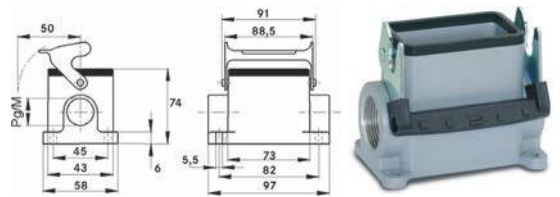
**EPIC® H-B 10 SGRH-LB**

Housing design H-B. The industry standard.



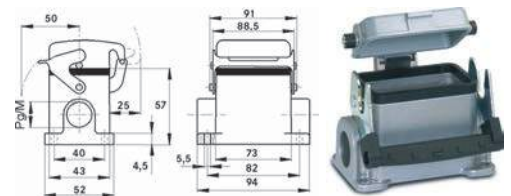
**EPIC® H-B 10 SGRLH-LB**

Housing design H-B. The industry standard.



**EPIC® H-B 10 SDR-LB**

Housing design H-B. The industry standard.



**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 SGRH-LB**

- Surface-mount base, high version
- Single lever
- 1 cable entry

**EPIC® H-B 10 SGRLH-LB**

- Surface-mount base, high version
- Single lever
- 2 cable entries

**EPIC® H-B 10 SDR-LB**

- Surface-mount base, low version
- Single lever
- 1 cable entry
- Metal cover

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever, high version)</b>				
70060200	H-B 10 SGRH-LB 21		21	10
70060400	H-B 10 SGRH-LB 29		29	10
79060200	H-B 10 SGRH-LB M25	25		10
79060400	H-B 10 SGRH-LB M32	32		10
<b>H-B housing: surface-mount base (2 cable entries, single lever, high version)</b>				
70061200	H-B 10 SGRLH-LB 21		21	10
70061400	H-B 10 SGRLH-LB 29		29	10
79061200	H-B 10 SGRLH-LB M25	25		10
79061400	H-B 10 SGRLH-LB M32	32		10
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
10036900	H-B 10 SDR-LB 16		16	10
19036900	H-B 10 SDR-LB M20	20		10
79064600	H-B 10 SDR-LB M25	25		10

Photographs are not to scale and do not represent detailed images of the respective products.

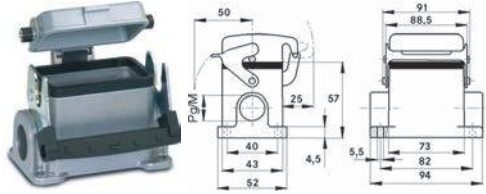
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 10 SDRL-LB

Housing design H-B. The industry standard.

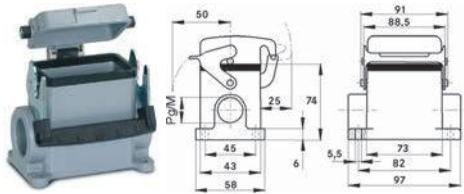


**Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

### EPIC® H-B 10 SDRH-LB

Housing design H-B. The industry standard.

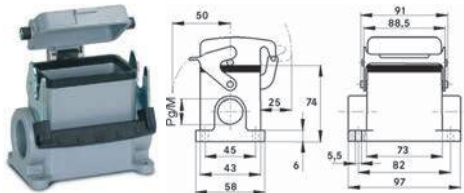


**Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

### EPIC® H-B 10 SDRLH-LB

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Metal lid with sturdy hinge
- For easy introduction of two cables

#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 SDRL-LB

- Surface-mount base, low version
- Single lever
- 2 cable entries
- Metal cover

##### EPIC® H-B 10 SDRH-LB

- Surface-mount base, high version
- Single lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 10 SDRLH-LB

- Surface-mount base, high version
- Single lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
10038900	H-B 10 SDRL-LB 16		16	10
19038900	H-B 10 SDRL-LB M20	20		10
79065600	H-B 10 SDRL-LB M25	25		10
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever, high version)</b>				
70064200	H-B 10 SDRH-LB 21		21	5
70064400	H-B 10 SDRH-LB 29		29	5
79064200	H-B 10 SDRH-LB M25	25		5
79064400	H-B 10 SDRH-LB M32	32		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever, high version)</b>				
70065200	H-B 10 SDRLH-LB 21		21	5
70065400	H-B 10 SDRLH-LB 29		29	5
79065200	H-B 10 SDRLH-LB M25	25		5
79065400	H-B 10 SDRLH-LB M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install

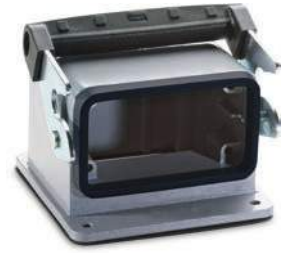
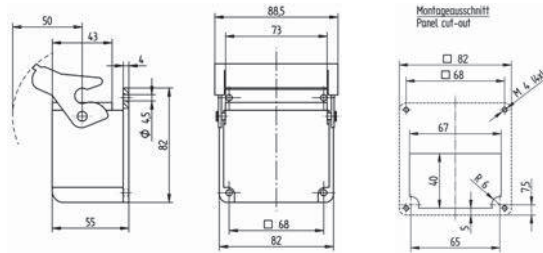


EPIC® H-B 10 AGS-LB

Housing design H-B. The industry standard.

**Info**

- Housing for motor termination
- Single Lever version for quick locking and simple unlocking with lifting aid



**Benefits**

- Small angle housing for drives and control cabinets with single lever

**Application range**

- Plant engineering
- Drive systems
- Light & sound technology
- Plastics industry

**Product features**

- Panel-mount base
- Single lever
- Angled version
- Included: flat gasket

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating  
IP 65 (latched)
- DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

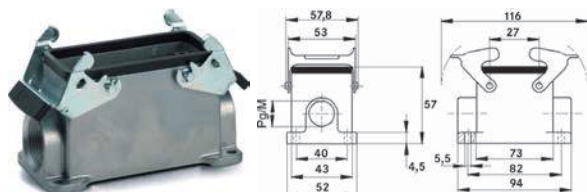
Article number	Article description	Pieces / PU
<b>H-B housing: panel-mount base (angled, single lever)</b>		
44423026	H-B 10 AGS-LB	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® H-B 10 SGR

Housing design H-B. The industry standard.

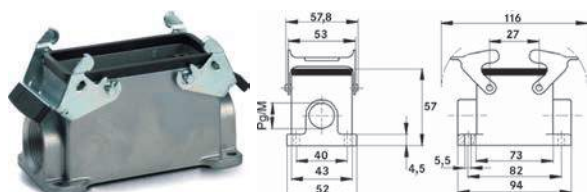


**Info**

- Double lever version with 2 levers for increased safety

### EPIC® H-B 10 SGRL

Housing design H-B. The industry standard.

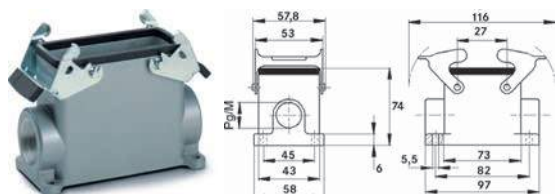


**Info**

- Double lever version with 2 levers for increased safety
- For easy introduction of two cables

### EPIC® H-B 10 SGRH

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For easy introduction of two cables

#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 SGR

- Surface-mount base, low version
- Dual levers
- 1 cable entry

##### EPIC® H-B 10 SGRL

- Surface-mount base, low version
- Dual levers
- 2 cable entries

##### EPIC® H-B 10 SGRH

- Surface-mount base, high version
- Dual levers
- 1 cable entry

#### Suitable inserts

- Refer to Selection Table A 10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, double lever)</b>				
10034000	H-B 10 SGR 16		16	10
19034000	H-B 10 SGR M20	20		10
19034100	H-B 10 SGR M25	25		10
<b>H-B housing: surface-mount base (2 cable entries, double lever)</b>				
10035000	H-B 10 SGRL 16		16	10
19035000	H-B 10 SGRL M20	20		10
19035100	H-B 10 SGRL M25	25		10
<b>H-B housing: surface-mount base (1 cable entry, double lever, high version)</b>				
70035200	H-B 10 SGRH 21		21	10
70035400	H-B 10 SGRH 29		29	10
79035200	H-B 10 SGRH M25	25		10
79035400	H-B 10 SGRH M32	32		10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety

**i Info**

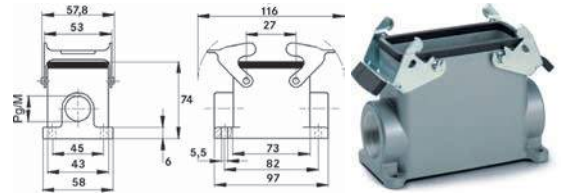
- Metal lid with sturdy hinge

**i Info**

- Metal lid with sturdy hinge
- For easy introduction of two cables

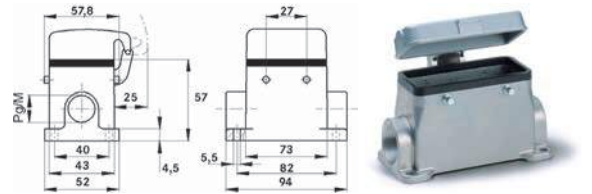
**EPIC® H-B 10 SGRLH**

Housing design H-B. The industry standard.



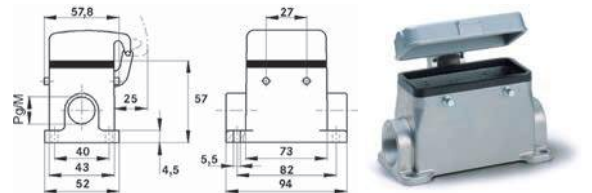
**EPIC® H-B 10 SDR-BO**

Housing design H-B. The industry standard.



**EPIC® H-B 10 SDRL-BO**

Housing design H-B. The industry standard.



**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 SGRLH**

- Surface-mount base, high version
- Dual levers
- 2 cable entries

**EPIC® H-B 10 SDR-BO**

- Surface-mount base, low version
- Bolts for double lever
- 1 cable entry
- Metal cover

**EPIC® H-B 10 SDRL-BO**

- Surface-mount base, low version
- Bolts for double lever
- 2 cable entries
- Metal cover

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (2 cable entries, double lever, high version)</b>				
70036200	H-B 10 SGRLH 21		21	10
70036400	H-B 10 SGRLH 29		29	10
79036200	H-B 10 SGRLH M25	25		10
79036400	H-B 10 SGRLH M32	32		10
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever)</b>				
10036000	H-B 10 SDR-BO 16		16	10
19036000	H-B 10 SDR-BO M20	20		10
19036100	H-B 10 SDR-BO M25	25		10
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever)</b>				
10038000	H-B 10 SDRL-BO 16		16	10
19038000	H-B 10 SDRL-BO M20	20		10
79046600	H-B 10 SDRL-BO M25	25		10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

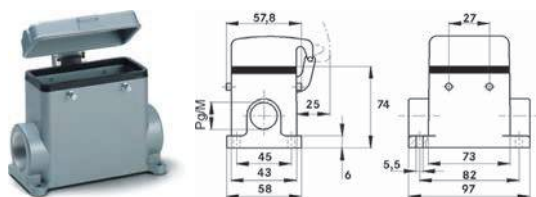
- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install





### EPIC® H-B 10 SDRH-BO

Housing design H-B. The industry standard.

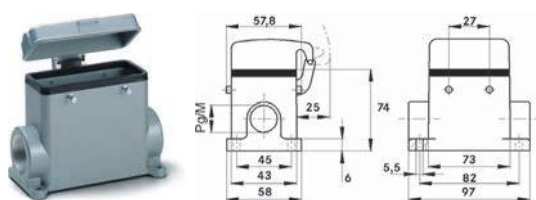


**Info**

- More interior space for wiring
- Metal lid with sturdy hinge

### EPIC® H-B 10 SDRLH-BO

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For easy introduction of two cables

#### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 10 SDRH-BO

- Surface-mount base, high version
- Bolts for double lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 10 SDRLH-BO

- Surface-mount base, high version
- Bolts for double lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever, high version)</b>				
70045200	H-B 10 SDRH-BO 21		21	5
70045400	H-B 10 SDRH-BO 29		29	5
79045200	H-B 10 SDRH-BO M25	25		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever, high version)</b>				
70046200	H-B 10 SDRLH-BO 21		21	5
79046200	H-B 10 SDRLH-BO M25	25		5
79046400	H-B 10 SDRLH-BO M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- Double lever version with 2 levers for increased safety



**EPIC® H-B 10 TBF-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 10 TBFH-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 10 TBF**  
Housing design H-B. The industry standard.

**Benefits**

- The smallest housing with single and double lever. The right housing is available for every application

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 10 TBF-LB**

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 10 TBFH-LB**

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 10 TBF**

- Cable coupler hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever)</b>					
10046900	H-B 10 TBF-LB 16		16	yes	10
70042200	H-B 10 TBF-LB 21		21	yes	10
19046900	H-B 10 TBF-LB M20	20			10
79042200	H-B 10 TBF-LB M25	25			10
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever, high version)</b>					
70042400	H-B 10 TBFH-LB 21		21	yes	10
70042600	H-B 10 TBFH-LB 29		29	yes	10
79042400	H-B 10 TBFH-LB M25	25			10
79042600	H-B 10 TBFH-LB M32	32			10
<b>H-B housing: cable coupler hood (straight cable entry, double lever)</b>					
10046000	H-B 10 TBF 16		16	yes	10
70040200	H-B 10 TBF 21		21	yes	10
19046000	H-B 10 TBF M20	20			10
79040200	H-B 10 TBF M25	25			10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



## EPIC® H-B 10 TBFH

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety

### Benefits

- The smallest housing with single and double lever. The right housing is available for every application

### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

### Product features

- Cable coupler hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

### Suitable inserts

- Refer to Selection Table A 10 to select the required inserts and housings

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (straight cable entry, double lever, high version)</b>					
70040400	H-B 10 TBFH 21		21	yes	10
70040600	H-B 10 TBFH 29		29	yes	10
79040400	H-B 10 TBFH M25	25			10
79040600	H-B 10 TBFH M32	32			10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Double lever version with 2 levers for increased safety
- Metal lid with sturdy hinge

**i Info**

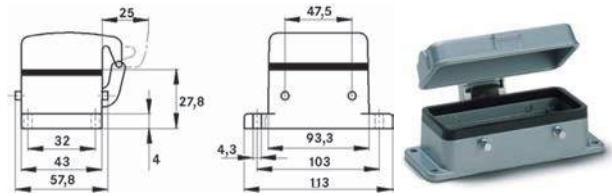
- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- For easy introduction of two cables

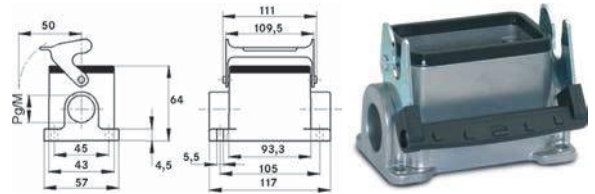
**EPIC® H-B 16 AD-BO**

Housing design H-B. The industry standard.



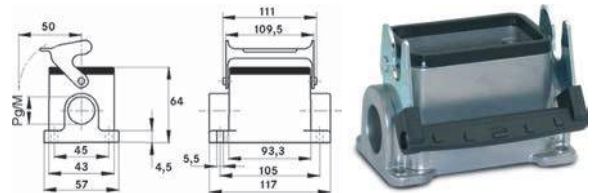
**EPIC® H-B 16 SGR-LB**

Housing design H-B. The industry standard.



**EPIC® H-B 16 SGRL-LB**

Housing design H-B. The industry standard.



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

- EPIC® H-B 16 AD-BO
- Panel-mount base
- Bolts for double lever
- Metal cover
- Included: flat gasket

**EPIC® H-B 16 SGR-LB**

- Surface-mount base, low version
- Single lever
- 1 cable entry

**EPIC® H-B 16 SGRL-LB**

- Surface-mount base, low version
- Single lever
- 2 cable entries

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** **Protection rating** IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: panel-mount base (cover, bolts for double lever)</b>				
10073000	H-B 16 AD-BO			5
<b>H-B housing: surface-mount base (1 cable entry, single lever)</b>				
10074900	H-B 16 SGR-LB 21		21	5
19074900	H-B 16 SGR-LB M25	25		5
<b>H-B housing: surface-mount base (2 cable entries, single lever)</b>				
10075900	H-B 16 SGRL-LB 21		21	5
19075900	H-B 16 SGRL-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**EPIC® H-B 16 SGR-LB**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install

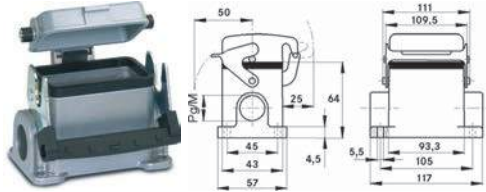
**EPIC® H-B 16 SGRL-LB**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



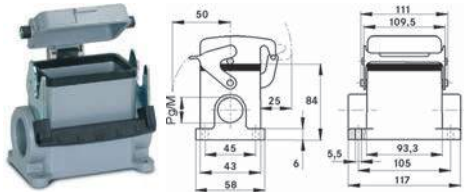
### EPIC® H-B 16 SDRL-LB

Housing design H-B. The industry standard.



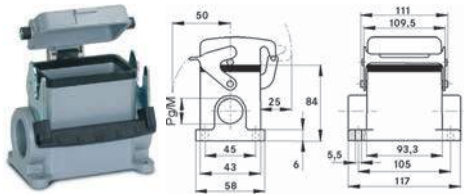
### EPIC® H-B 16 SDRH-LB

Housing design H-B. The industry standard.



### EPIC® H-B 16 SDRLH-LB

Housing design H-B. The industry standard.



#### Benefits

- The housing standard. Wide choice for all applications

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 16 SDRL-LB

- Surface-mount base, low version
- Single lever
- 2 cable entries
- Metal cover

##### EPIC® H-B 16 SDRH-LB

- Surface-mount base, high version
- Single lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 16 SDRLH-LB

- Surface-mount base, high version
- Single lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid

#### Info

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid
- More interior space for wiring

#### Info

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
10078900	H-B 16 SDRL-LB 21		21	5
19078900	H-B 16 SDRL-LB M25	25		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever, high version)</b>				
70114200	H-B 16 SDRH-LB 21		21	5
70114400	H-B 16 SDRH-LB 29		29	5
79114200	H-B 16 SDRH-LB M25	25		5
79114400	H-B 16 SDRH-LB M32	32		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever, high version)</b>				
70115200	H-B 16 SDRLH-LB 21		21	5
70115400	H-B 16 SDRLH-LB 29		29	5
79115200	H-B 16 SDRLH-LB M25	25		5
79115400	H-B 16 SDRLH-LB M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid
- More interior space for wiring

**i Info**

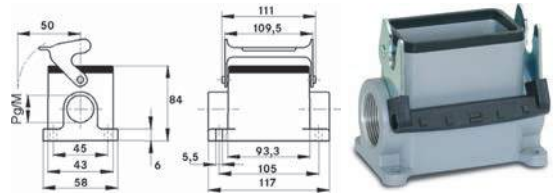
- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid
- For easy introduction of two cables

**i Info**

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid

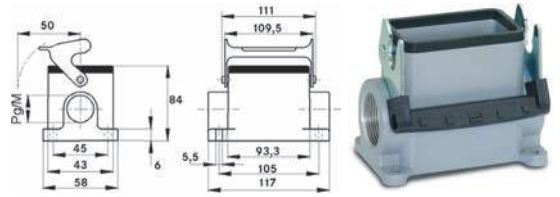
**EPIC® H-B 16 SGRH-LB**

Housing design H-B. The industry standard.



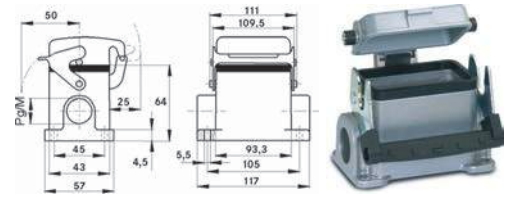
**EPIC® H-B 16 SGRLH-LB**

Housing design H-B. The industry standard.



**EPIC® H-B 16 SDR-LB**

Housing design H-B. The industry standard.



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 16 SGRH-LB**

- Surface-mount base, high version
- Single lever
- 1 cable entry

**EPIC® H-B 16 SGRLH-LB**

- Surface-mount base, high version
- Single lever
- 2 cable entries

**EPIC® H-B 16 SDR-LB**

- Surface-mount base, low version
- Single lever
- 1 cable entry
- Metal cover

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever, high version)</b>				
70110200	H-B 16 SGRH-LB 21		21	5
70110400	H-B 16 SGRH-LB 29		29	5
79110200	H-B 16 SGRH-LB M25	25		5
79110400	H-B 16 SGRH-LB M32	32		5
<b>H-B housing: surface-mount base (2 cable entries, single lever, high version)</b>				
70111200	H-B 16 SGRLH-LB 21		21	5
70111400	H-B 16 SGRLH-LB 29		29	5
79111200	H-B 16 SGRLH-LB M25	25		5
79111400	H-B 16 SGRLH-LB M32	32		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
10076900	H-B 16 SDR-LB 21		21	5
19076900	H-B 16 SDR-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

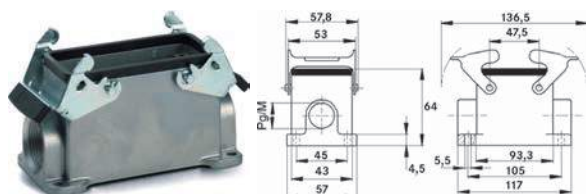
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 16 SGR

Housing design H-B. The industry standard.

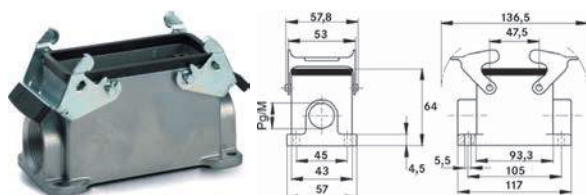


**Info**

- Double lever version with 2 levers for increased safety

### EPIC® H-B 16 SGRL

Housing design H-B. The industry standard.

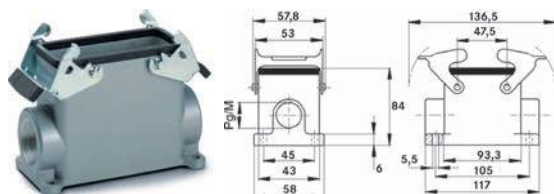


**Info**

- Double lever version with 2 levers for increased safety
- For easy introduction of two cables

### EPIC® H-B 16 SGRH

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety

#### Benefits

- The housing standard. Wide choice for all applications

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 16 SGR

- Surface-mount base, low version
- Dual levers
- 1 cable entry

##### EPIC® H-B 16 SGRL

- Surface-mount base, low version
- Dual levers
- 2 cable entries

##### EPIC® H-B 16 SGRH

- Surface-mount base, high version
- Dual levers
- 1 cable entry

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, double lever)</b>				
10074000	H-B 16 SGR 21		21	5
19074000	H-B 16 SGR M25	25		5
<b>H-B housing: surface-mount base (2 cable entries, double lever)</b>				
10075000	H-B 16 SGRL 21		21	5
19075000	H-B 16 SGRL M25	25		5
<b>H-B housing: surface-mount base (1 cable entry, double lever, high version)</b>				
70085200	H-B 16 SGRH 21		21	5
70085400	H-B 16 SGRH 29		29	5
79085200	H-B 16 SGRH M25	25		5
79085400	H-B 16 SGRH M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

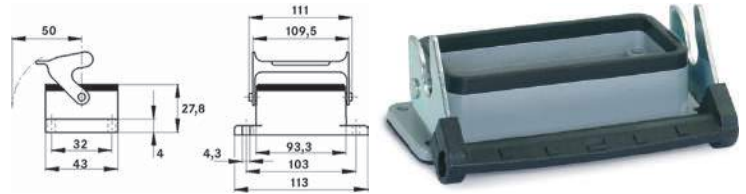
#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



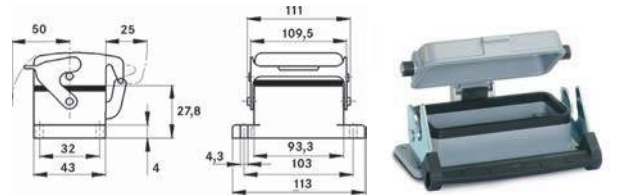
**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid



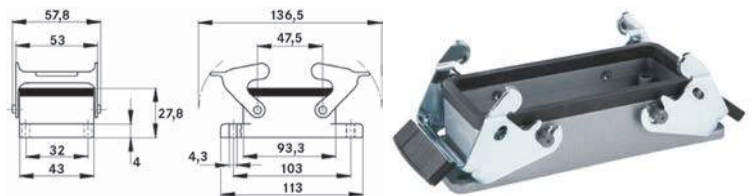
**i Info**

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid



**i Info**

- Double lever version with 2 levers for increased safety



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

- EPIC® H-B 16 AG-LB**
- Panel-mount base
  - Single lever
  - Included: flat gasket

**EPIC® H-B 16 AD-LB**

- Panel-mount base
- Single lever
- Metal cover
- Included: flat gasket

**EPIC® H-B 16 AG**

- Panel-mount base
- Dual levers
- Included: flat gasket

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** **Protection rating** IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	Pieces / PU
<b>H-B housing: panel-mount base (single lever)</b>		
10072900	H-B 16 AG-LB	5
<b>H-B housing: panel-mount base (cover, single lever)</b>		
10073900	H-B 16 AD-LB	5
<b>H-B housing: panel-mount base (double lever)</b>		
10072000	H-B 16 AG	5

Photographs are not to scale and do not represent detailed images of the respective products.





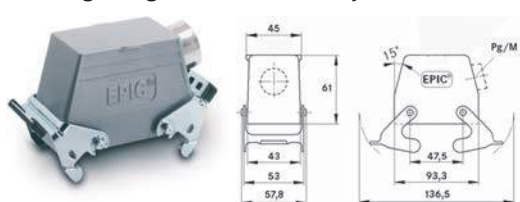
### EPIC® H-B 16 TSH

Housing design H-B. The industry standard.



### EPIC® H-B 16 TSB

Housing design H-B. The industry standard.



### EPIC® H-B 16 TSBH

Housing design H-B. The industry standard.



#### Benefits

- The housing standard. Wide choice for all applications

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 16 TSH

- Hood, high version
- Bolts for double lever
- Side cable entry
- Versions with / without neck

##### EPIC® H-B 16 TSB

- Hood, low version
- Dual levers
- Side cable entry
- Versions with neck

##### EPIC® H-B 16 TSBH

- Hood, high version
- Dual levers
- Side cable entry
- Versions with / without neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

#### Info

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

#### Info

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever, high version)</b>					
70102200	H-B 16 TSH 21		21	yes	5
70102400	H-B 16 TSH 29		29	yes	5
79102200	H-B 16 TSH M25	25			5
79102400	H-B 16 TSH M32	32			5
79102800	H-B 16 TSH M40	40			5
<b>H-B housing: hood (side cable entry, double lever)</b>					
10083000	H-B 16 TSB 21		21	yes	5
19083000	H-B 16 TSB M25	25		yes	5
<b>H-B housing: hood (side cable entry, double lever, high version)</b>					
70107200	H-B 16 TSBH 21		21	yes	5
70107400	H-B 16 TSBH 29		29	yes	5
79107200	H-B 16 TSBH M25	25			5
79107400	H-B 16 TSBH M32	32			5

Photographs are not to scale and do not represent detailed images of the respective products.

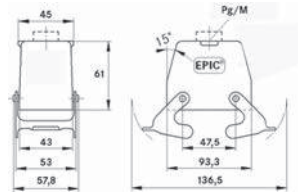
#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

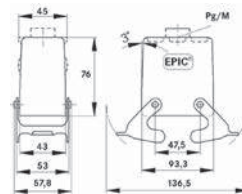


**EPIC® H-B 16 TGB**  
Housing design H-B. The industry standard.



**i Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

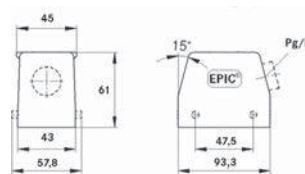


**EPIC® H-B 16 TGBH**  
Housing design H-B. The industry standard.



**i Info**

- Non-slip ridges for comfortable disconnecting



**EPIC® H-B 16 TS**  
Housing design H-B. The industry standard.



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 16 TGB**

- Hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 16 TGBH**

- Hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 16 TS**

- Hood, low version
- Bolts for double lever
- Side cable entry
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, double lever)</b>					
10081000	H-B 16 TGB 21		21	yes	5
19081000	H-B 16 TGB M25	25			5
<b>H-B housing: hood (straight cable entry, double lever, high version)</b>					
70105200	H-B 16TGBH 21		21	yes	5
70105400	H-B 16TGBH 29		29	yes	5
79105200	H-B 16TGBH M25	25			5
79105400	H-B 16TGBH M32	32			5
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>					
10082000	H-B 16 TS 21		21	yes	5
10092000	H-B 16 TS 29		29	yes	5
19082000	H-B 16 TS M25	25		yes	5
19092000	H-B 16 TS M32	32		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



## EPIC® H-B 16 TGH

Housing design H-B. The industry standard.



### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

## EPIC® H-B 16 TGH 2X

Housing design H-B. The industry standard.



### Info

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring
- For easy introduction of two cables

### Benefits

- The housing standard. Wide choice for all applications

### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

### Product features

#### EPIC® H-B 16 TGH

- Hood, high version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

#### EPIC® H-B 16 TGH 2X

- Hood, high version
- Bolts for double lever
- 2 straight cable entries
- Versions without neck

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for double lever, high version)</b>					
70100200	H-B 16 TGH 21		21	yes	5
70100400	H-B 16 TGH 29		29	yes	5
79100200	H-B 16 TGH M25	25			5
79100400	H-B 16 TGH M32	32			5
79100800	H-B 16 TGH M40	40			5
<b>H-B housing: hood (2 straight cable entries, bolts for double lever, high version)</b>					
44422018	H-B 16 TGH 2XM25	2 x 25			5
79128600	H-B 16 TGH 2XM32	2 x 32			5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

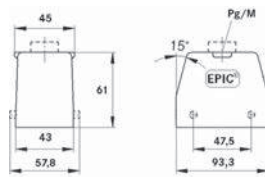
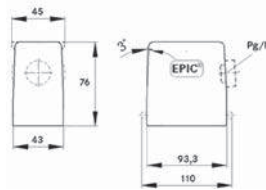
- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

**i Info**

- Non-slip ridges for comfortable disconnecting

**i Info**

- Non-slip ridges for comfortable disconnecting
- For easy introduction of two cables



**EPIC® H-B 16 TG**  
Housing design H-B. The industry standard.



**EPIC® H-B 16 TG 2X**  
Housing design H-B. The industry standard.



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 16 TSH-RO**

- Hood, high version
- Reels for single lever
- Side cable entry
- Versions with / without neck

**EPIC® H-B 16 TG**

- Hood, low version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 16 TG 2X**

- Hood, low version
- Bolts for double lever
- 2 straight cable entries
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for single lever, high version)</b>					
70104200	H-B 16 TSH-RO 21		21	yes	5
70104400	H-B 16 TSH-RO 29		29	yes	5
79104200	H-B 16 TSH-RO M25	25			5
79104400	H-B 16 TSH-RO M32	32			5
79104800	H-B 16 TSH-RO M40	40			5
<b>H-B housing: hood (straight cable entry, bolts for double lever)</b>					
10080000	H-B 16 TG 21		21	yes	5
10090000	H-B 16 TG 29		29	yes	5
19080000	H-B 16 TG M25	25			5
19090000	H-B 16 TG M32	32			5
<b>H-B housing: hood (2 straight cable entries, bolts for double lever)</b>					
19080500	H-B 16 TG 2XM25	2 x 25		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 16 TG-RO

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting

### EPIC® H-B 16 TGH-RO

Housing design H-B. The industry standard.

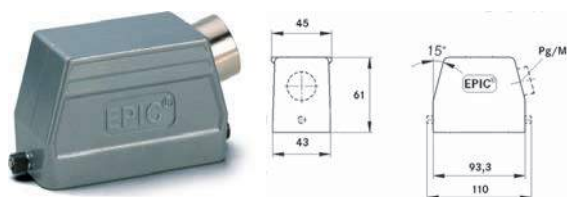


**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

### EPIC® H-B 16 TS-RO

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting

#### Benefits

- The housing standard. Wide choice for all applications

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 16 TG-RO

- Hood, low version
- Reels for single lever
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 16 TGH-RO

- Hood, high version
- Reels for single lever
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 16 TS-RO

- Hood, low version
- Reels for single lever
- Side cable entry
- Versions with neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for single lever)</b>					
10080900	H-B 16 TG-RO 21		21	yes	5
19080900	H-B 16 TG-RO M25	25			5
<b>H-B housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70094200	H-B 16 TGH-RO 21		21	yes	5
70094400	H-B 16 TGH-RO 29		29	yes	5
79094200	H-B 16 TGH-RO M25	25			5
79094400	H-B 16 TGH-RO M32	32			5
79094600	H-B 16 TGH-RO M40	40			5
<b>H-B housing: hood (side cable entry, bolts for single lever)</b>					
10082900	H-B 16 TS-RO 21		21	yes	5
10092900	H-B 16 TS-RO 29		29	yes	5
19082900	H-B 16 TS-RO M25	25		yes	5
19092900	H-B 16 TS-RO M32	32		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety
- For easy introduction of two cables

**Info**

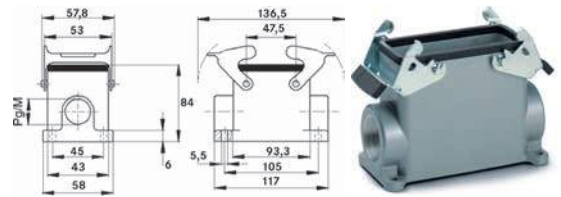
- Metal lid with sturdy hinge

**Info**

- Metal lid with sturdy hinge
- For easy introduction of two cables

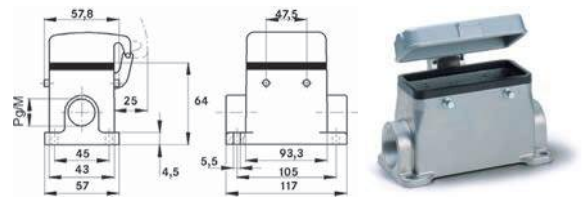
**EPIC® H-B 16 SGRLH**

Housing design H-B. The industry standard.



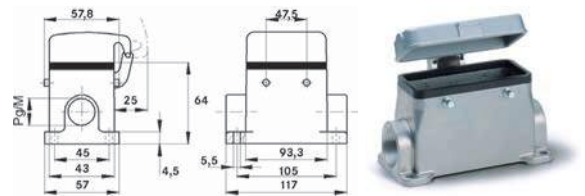
**EPIC® H-B 16 SDR-BO**

Housing design H-B. The industry standard.



**EPIC® H-B 16 SDRL-BO**

Housing design H-B. The industry standard.



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

- EPIC® H-B 16 SGRLH
  - Surface-mount base, high version
  - Dual levers
  - 2 cable entries

**EPIC® H-B 16 SDR-BO**

- Surface-mount base, low version
- Bolts for double lever
- 1 cable entry
- Metal cover

**EPIC® H-B 16 SDRL-BO**

- Surface-mount base, low version
- Bolts for double lever
- 2 cable entries
- Metal cover

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (2 cable entries, double lever, high version)</b>				
70086200	H-B 16 SGRLH 21		21	5
70086400	H-B 16 SGRLH 29		29	5
79086200	H-B 16 SGRLH M25	25		5
79086400	H-B 16 SGRLH M32	32		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever)</b>				
10076000	H-B 16 SDR-BO 21		21	5
19076000	H-B 16 SDR-BO M25	25		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever)</b>				
70096000	H-B 16 SDRL-BO 21		21	5
79096000	H-B 16 SDRL-BO M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

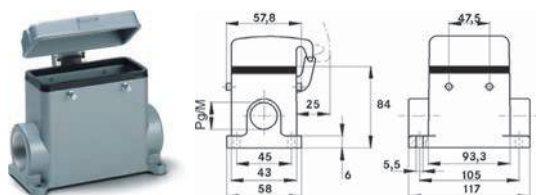
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 16 SDRH-BO

Housing design H-B. The industry standard.

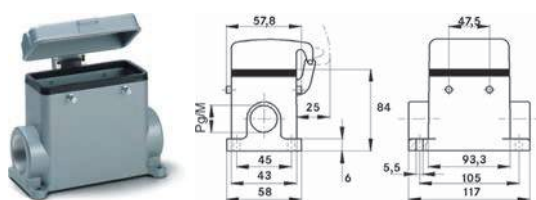


**Info**

- More interior space for wiring
- Metal lid with sturdy hinge

### EPIC® H-B 16 SDRLH-BO

Housing design H-B. The industry standard.



**Info**

- More interior space for wiring
- Metal lid with sturdy hinge
- For easy introduction of two cables

#### Benefits

- The housing standard. Wide choice for all applications

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 16 SDRH-BO

- Surface-mount base, high version
- Bolts for double lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 16 SDRLH-BO

- Surface-mount base, high version
- Bolts for double lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever, high version)</b>				
70095200	H-B 16 SDRH-BO 21		21	5
70095400	H-B 16 SDRH-BO 29		29	5
79095200	H-B 16 SDRH-BO M25	25		5
79095400	H-B 16 SDRH-BO M32	32		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever, high version)</b>				
70096200	H-B 16 SDRLH-BO 21		21	5
79096200	H-B 16 SDRLH-BO M25	25		5
79096400	H-B 16 SDRLH-BO M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- Double lever version with 2 levers for increased safety



**Benefits**

- The housing standard. Wide choice for all applications

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 16 TBF-LB**

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 16 TBFH-LB**

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 16 TBF**

- Cable coupler hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever)</b>					
10086900	H-B 16 TBF-LB 21		21	yes	5
19086900	H-B 16 TBF-LB 25	25			5
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever, high version)</b>					
70092200	H-B 16 TBFH-LB 21		21	yes	5
70092400	H-B 16 TBFH-LB 29		29	yes	5
79092200	H-B 16 TBFH-LB M25	25			5
79092400	H-B 16 TBFH-LB M32	32			5
<b>H-B housing: cable coupler hood (straight cable entry, double lever)</b>					
10086000	H-B 16 TBF 21		21	yes	5
19086000	H-B 16 TBF M25	25			5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

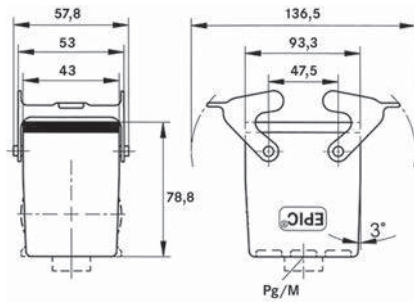
- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install





## EPIC® H-B 16 TBFH

Housing design H-B. The industry standard.



### Benefits

- The housing standard. Wide choice for all applications

### Application range

- Plant engineering
- Plastics industry
- Light & sound technology

### Product features

- Cable coupler hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Info

- More interior space for wiring
- Double lever version with 2 levers for increased safety

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40 °C to +100 °C,  
short-term up to +125 °C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (straight cable entry, double lever, high version)</b>					
70090200	H-B 16 TBFH 21		21	yes	5
70090400	H-B 16 TBFH 29		29	yes	5
79090200	H-B 16 TBFH M25	25			5
79090400	H-B 16 TBFH M32	32			5
79090401	H-B 16 TBFH 2xM32	2 x 32			5

Photographs are not to scale and do not represent detailed images of the respective products.

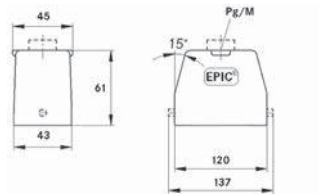
### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**Info**

- Non-slip ridges for comfortable disconnecting

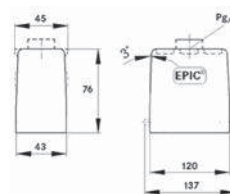


**EPIC® H-B 24 TG-RO**  
Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

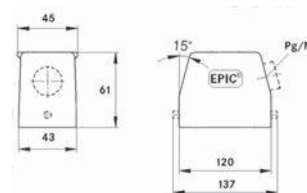


**EPIC® H-B 24 TGH-RO**  
Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting



**EPIC® H-B 24 TS-RO**  
Housing design H-B. The industry standard.



**Similar products**

**EPIC® H-B 24 TG-RO**

- Further products for two inserts in the internet. (H-B 32, H-B 48)

**Benefits**

- Ideal for many applications due to a wide range of housings and inserts

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 TG-RO**

- Hood, low version
- Reels for single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TGH-RO**

- Hood, high version
- Reels for single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TS-RO**

- Hood, low version
- Reels for single lever
- Side cable entry
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** **Protection rating**  
IP 65 (latched)
- DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770
- Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for single lever)</b>					
10121900	H-B 24 TG-RO 21		21	yes	5
10111900	H-B 24 TG-RO 29		29	yes	5
19121900	H-B 24 TG-RO M25	25			5
19111900	H-B 24 TG-RO M32	32			5
<b>H-B housing: hood (straight cable entry, bolts for single lever, high version)</b>					
70144400	H-B 24 TGH-RO 21		21	yes	5
70144600	H-B 24 TGH-RO 29		29	yes	5
79144400	H-B 24 TGH-RO M25	25			5
79144600	H-B 24 TGH-RO M32	32			5
79144800	H-B 24 TGH-RO M40	40			5
<b>H-B housing: hood (side cable entry, bolts for single lever)</b>					
10113900	H-B 24 TS-RO 21		21	yes	5
10123900	H-B 24 TS-RO 29		29	yes	5
19113900	H-B 24 TS-RO M25	25		yes	5
19123900	H-B 24 TS-RO M32	32		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

**EPIC® H-B 24 TG-RO**

- Further products for two inserts in the internet. (H-B 32, H-B 48)

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**EPIC® H-B 24 TSH-RO**

Housing design H-B. The industry standard.



**EPIC® H-B 24 TG**

Housing design H-B. The industry standard.



**EPIC® H-B 24 TG 2X**

Housing design H-B. The industry standard.



**Benefits**

- Ideal for many applications due to a wide range of housings and inserts

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

- EPIC® H-B 24 TSH-RO
  - Hood, high version
  - Reels for single lever
  - Side cable entry
  - Versions with / without neck

**EPIC® H-B 24 TG**

- Hood, low version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TG 2X**

- Hood, low version
- Bolts for double lever
- 2 straight cable entries
- Versions with neck

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

**Info**

- Non-slip ridges for comfortable disconnecting

**Info**

- Non-slip ridges for comfortable disconnecting
- For easy introduction of two cables

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for single lever, high version)</b>					
70154400	H-B 24 TSH-RO 21		21	yes	5
70154600	H-B 24 TSH-RO 29		29	yes	5
79154400	H-B 24 TSH-RO M25	25			5
79154600	H-B 24 TSH-RO M32	32			5
79154800	H-B 24 TSH-RO M40	40			5
<b>H-B housing: hood (straight cable entry, bolts for double lever)</b>					
10121000	H-B 24 TG 21		21	yes	5
10111000	H-B 24 TG 29		29	yes	5
19121000	H-B 24 TG M25	25			5
19111000	H-B 24 TG M32	32			5
<b>H-B housing: hood (2 straight cable entries, bolts for double lever)</b>					
44422019	H-B 24 TG 2XM25	2 x 25		yes	5
44422020	H-B 24 TG 2XM32	2 x 32		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

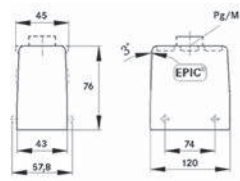
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

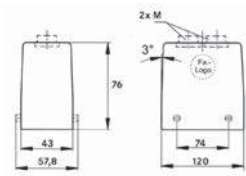


**EPIC® H-B 24 TGH**

Housing design H-B. The industry standard.

**i Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring
- For easy introduction of two cables



**EPIC® H-B 24 TGH 2X**

Housing design H-B. The industry standard.

**Benefits**

- Ideal for many applications due to a wide range of housings and inserts

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 TGH**

- Hood, high version
- Bolts for double lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TGH 2X**

- Hood, high version
- Bolts for double lever
- 2 straight cable entries
- Versions without neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, bolts for double lever, high version)</b>					
70150400	H-B 24 TGH 21		21	yes	5
70150600	H-B 24 TGH 29		29	yes	5
79150400	H-B 24 TGH M25	25			5
79150600	H-B 24 TGH M32	32			5
79150800	H-B 24 TGH M40	40			5
<b>H-B housing: hood (2 straight cable entries, bolts for double lever, high version)</b>					
44422021	H-B 24 TGH 2XM25	2 x 25			5
79178500	H-B 24 TGH 2XM32	2 x 32			5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



### EPIC® H-B 24 TGB

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

### EPIC® H-B 24 TGBH

Housing design H-B. The industry standard.

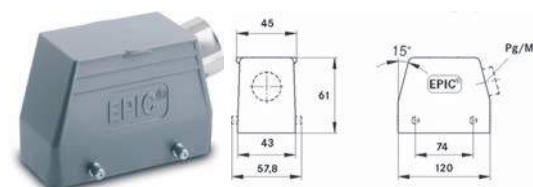


**Info**

- Non-slip ridges for comfortable disconnecting
- For connection with counterpart with integrated cover
- More interior space for wiring

### EPIC® H-B 24 TS

Housing design H-B. The industry standard.



**Info**

- Non-slip ridges for comfortable disconnecting

#### Benefits

- Ideal for many applications due to a wide range of housings and inserts

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 24 TGB

- Hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 24 TGBH

- Hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

##### EPIC® H-B 24 TS

- Hood, low version
- Bolts for double lever
- Side cable entry
- Versions with neck

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (straight cable entry, double lever)</b>					
10122000	H-B 24 TGB 21		21	yes	5
10112000	H-B 24 TGB 29		29	yes	5
19122000	H-B 24 TGB M25	25			5
19112000	H-B 24 TGB M32	32			5
<b>H-B housing: hood (straight cable entry, double lever, high version)</b>					
70155400	H-B 24 TGBH 21		21	yes	5
70155600	H-B 24 TGBH 29		29	yes	5
79155400	H-B 24 TGBH M25	25			5
79155600	H-B 24 TGBH M32	32			5
<b>H-B housing: hood (side cable entry, bolts for double lever)</b>					
10113000	H-B 24 TS 21		21	yes	5
10123000	H-B 24 TS 29		29	yes	5
19113000	H-B 24 TS M25	25		yes	5
19123000	H-B 24 TS M32	32		yes	5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Non-slip ridges for comfortable disconnecting
- More interior space for wiring

**i Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

**i Info**

- Non-slip ridges for comfortable disconnecting
- Double lever version with 2 levers for increased safety
- For connection with counterpart with integrated cover

**Benefits**

- Ideal for many applications due to a wide range of housings and inserts

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 TSH**

- Hood, high version
- Bolts for double lever
- Side cable entry
- Versions with / without neck

**EPIC® H-B 24 TSB**

- Hood, low version
- Dual levers
- Side cable entry
- Versions with neck

**EPIC® H-B 24 TSBH**

- Hood, high version
- Dual levers
- Side cable entry
- Versions with / without neck

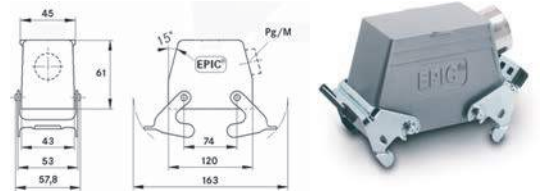
**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**EPIC® H-B 24 TSH**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 TSB**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 TSBH**  
Housing design H-B. The industry standard.



**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors
- Material** Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR
- IP** Protection rating IP 65 (latched)
- DIN VDE** Certified production control: VDE-REG. no.: B437  
UL-tested: UL File Number: E75770
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: hood (side cable entry, bolts for double lever, high version)</b>					
70152400	H-B 24 TSH 21		21	yes	5
70152600	H-B 24 TSH 29		29	yes	5
79152400	H-B 24 TSH M25	25			5
79152600	H-B 24 TSH M32	32			5
79152800	H-B 24 TSH M40	40			5
<b>H-B housing: hood (side cable entry, double lever)</b>					
10114000	H-B 24 TSB 21		21	yes	5
10124000	H-B 24 TSB 29		29	yes	5
19114000	H-B 24 TSB M25	25		yes	5
19124000	H-B 24 TSB M32	32		yes	5
<b>H-B housing: hood (side cable entry, double lever, high version)</b>					
70157400	H-B 24 TSBH 21		21	yes	5
70157600	H-B 24 TSBH 29		29	yes	5
79157400	H-B 24 TSBH M25	25			5
79157600	H-B 24 TSBH M32	32			5

Photographs are not to scale and do not represent detailed images of the respective products.

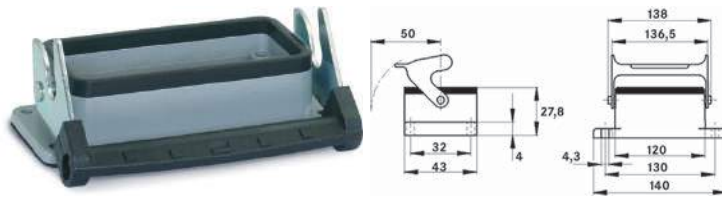
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



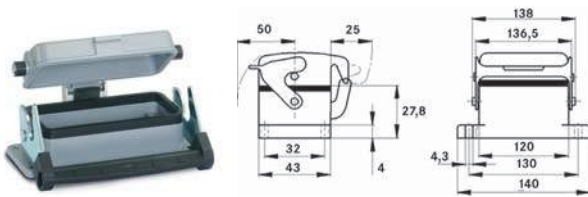
**EPIC® H-B 24 AG-LB**

Housing design H-B. The industry standard.



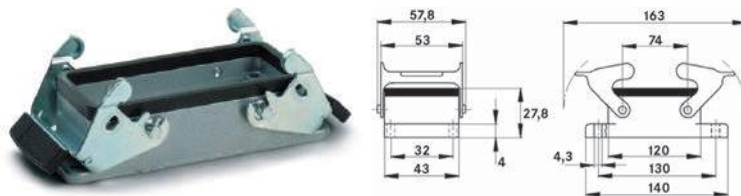
**EPIC® H-B 24 AD-LB**

Housing design H-B. The industry standard.



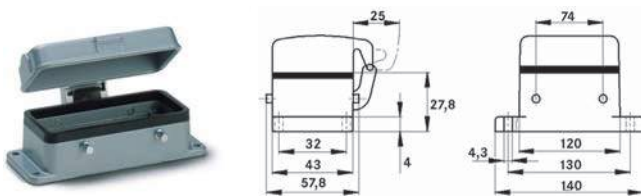
**EPIC® H-B 24 AG**

Housing design H-B. The industry standard.



**EPIC® H-B 24 AD-BO**

Housing design H-B. The industry standard.



**Benefits**

- Safe fixing with 4 screws

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 AG-LB**

- Panel-mount base
- Single lever
- Included: flat gasket

**EPIC® H-B 24 AD-LB**

- Panel-mount base
- Single lever
- Metal cover
- Included: flat gasket

**EPIC® H-B 24 AG**

- Panel-mount base
- Dual levers
- Included: flat gasket

**EPIC® H-B 24 AD-BO**

- Panel-mount base
- Bolts for double lever
- Metal cover
- Included: flat gasket

**Suitable inserts**

- Refer to Selection Table A10 to select the required inserts and housings

**Info**

- Universal, robust metal housings size H-B 24
- Single Lever version for quick locking and simple unlocking with lifting aid

**Info**

- Metal lid with sturdy hinge
- Single Lever version for quick locking and simple unlocking with lifting aid

**Info**

- Double lever version with 2 levers for increased safety

**Info**

- Metal lid with sturdy hinge
- Double lever version with 2 levers for increased safety

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

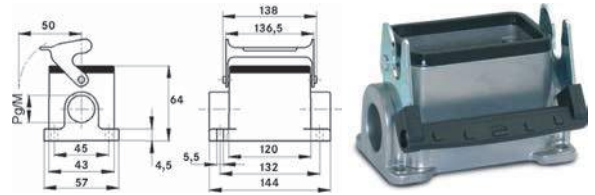
Article number	Article description	Pieces / PU
<b>H-B housing: panel-mount base (single lever)</b>		
10102900	H-B 24 AG-LB	5
<b>H-B housing: panel-mount base (cover, single lever)</b>		
10103900	H-B 24 AD-LB	5
<b>H-B housing: panel-mount base (double lever)</b>		
10102000	H-B 24 AG	5
<b>H-B housing: panel-mount base (cover, bolts for double lever)</b>		
10103000	H-B 24 AD-BO	5

Photographs are not to scale and do not represent detailed images of the respective products.



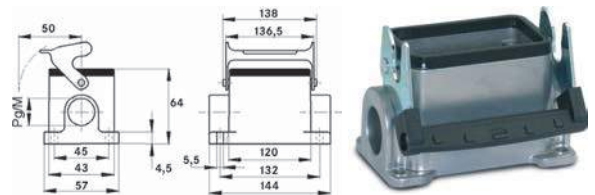
**EPIC® H-B 24 SGR-LB**

Housing design H-B. The industry standard.



**EPIC® H-B 24 SGRL-LB**

Housing design H-B. The industry standard.



**Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

**Info**

- For easy introduction of two cables
- Single Lever version for quick locking and simple unlocking with lifting aid

**Benefits**

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 SGR-LB**

- Surface-mount base, low version
- Single lever
- 1 cable entry

**EPIC® H-B 24 SGRL-LB**

- Surface-mount base, low version
- Single lever
- 2 cable entries

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever)</b>				
10104900	H-B 24 SGR-LB 21		21	5
19104900	H-B 24 SGR-LB M25	25		5
<b>H-B housing: surface-mount base (2 cable entries, single lever)</b>				
10105900	H-B 24 SGRL-LB 21		21	5
19105900	H-B 24 SGRL-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

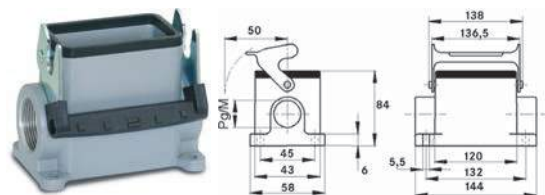
- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install





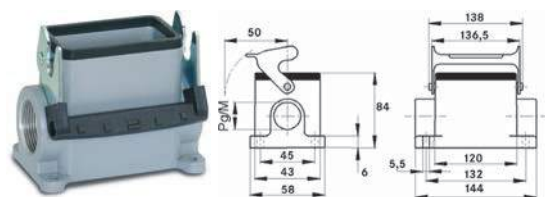
### EPIC® H-B 24 SGRH-LB

Housing design H-B. The industry standard.



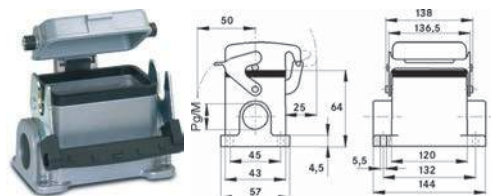
### EPIC® H-B 24 SGRLH-LB

Housing design H-B. The industry standard.



### EPIC® H-B 24 SDR-LB

Housing design H-B. The industry standard.



#### Benefits

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 24 SGRH-LB

- Surface-mount base, high version
- Single lever
- 1 cable entry

##### EPIC® H-B 24 SGRLH-LB

- Surface-mount base, high version
- Single lever
- 2 cable entries

##### EPIC® H-B 24 SDR-LB

- Surface-mount base, low version
- Single lever
- 1 cable entry
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid

#### Info

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid

#### Info

- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, single lever, high version)</b>				
70160200	H-B 24 SGRH-LB 21		21	5
70160400	H-B 24 SGRH-LB 29		29	5
79160200	H-B 24 SGRH-LB M25	25		5
79160400	H-B 24 SGRH-LB M32	32		5
<b>H-B housing: surface-mount base (2 cable entries, single lever, high version)</b>				
70161200	H-B 24 SGRLH-LB 21		21	5
70161400	H-B 24 SGRLH-LB 29		29	5
79161200	H-B 24 SGRLH-LB M25	25		5
79161400	H-B 24 SGRLH-LB M32	32		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever)</b>				
10107900	H-B 24 SDR-LB 21		21	5
19107900	H-B 24 SDR-LB M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- For easy introduction of two cables
- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

**i Info**

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

**i Info**

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid
- Metal lid with sturdy hinge

**Benefits**

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 SDRL-LB**

- Surface-mount base, low version
- Single lever
- 2 cable entries
- Metal cover

**EPIC® H-B 24 SDRH-LB**

- Surface-mount base, high version
- Single lever
- 1 cable entry
- Metal cover

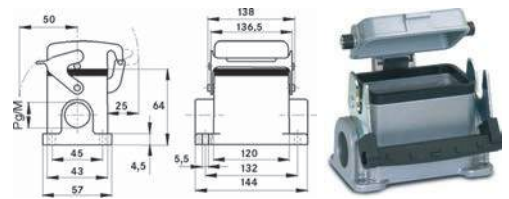
**EPIC® H-B 24 SDRLH-LB**

- Surface-mount base, high version
- Single lever
- 2 cable entries
- Metal cover

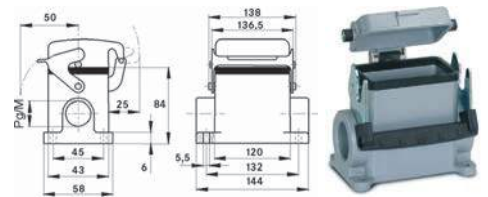
**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

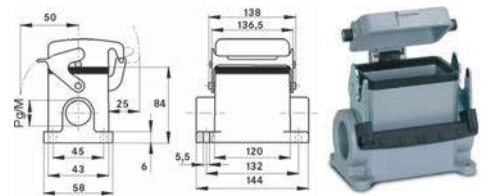
**EPIC® H-B 24 SDRL-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 SDRH-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 SDRLH-LB**  
Housing design H-B. The industry standard.



**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever)</b>				
10109900	H-B 24 SDRL-LB 21		21	5
19109900	H-B 24 SDRL-LB M25	25		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, single lever, high version)</b>				
70164200	H-B 24 SDRH-LB 21		21	5
70164400	H-B 24 SDRH-LB 29		29	5
79164200	H-B 24 SDRH-LB M25	25		5
79164400	H-B 24 SDRH-LB M32	32		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, single lever, high version)</b>				
70165200	H-B 24 SDRLH-LB 21		21	5
70165400	H-B 24 SDRLH-LB 29		29	5
79165200	H-B 24 SDRLH-LB M25	25		5
79165400	H-B 24 SDRLH-LB M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

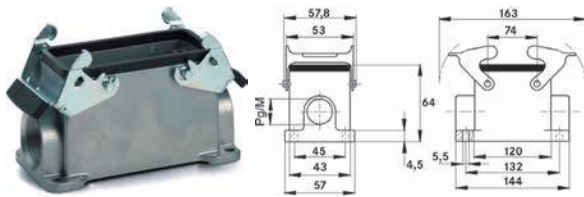
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



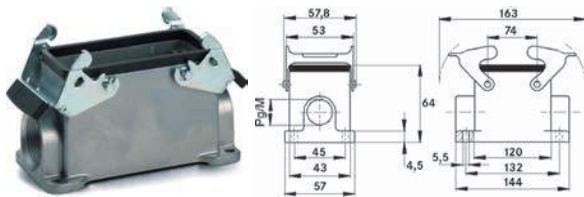
### EPIC® H-B 24 SGR

Housing design H-B. The industry standard.



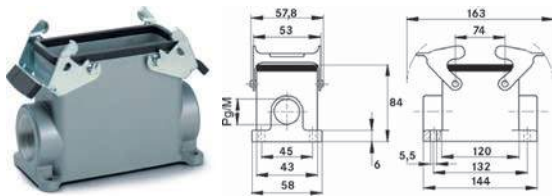
### EPIC® H-B 24 SGRL

Housing design H-B. The industry standard.



### EPIC® H-B 24 SGRH

Housing design H-B. The industry standard.



#### Benefits

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 24 SGR

- Surface-mount base, low version
- Dual levers
- 1 cable entry

##### EPIC® H-B 24 SGRL

- Surface-mount base, low version
- Dual levers
- 2 cable entries

##### EPIC® H-B 24 SGRH

- Surface-mount base, high version
- Dual levers
- 1 cable entry

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- Double lever version with 2 levers for increased safety

#### Info

- Double lever version with 2 levers for increased safety

#### Info

- Double lever version with 2 levers for increased safety

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (1 cable entry, double lever)</b>				
10104000	H-B 24 SGR 21		21	5
19104000	H-B 24 SGR M25	25		5
<b>H-B housing: surface-mount base (2 cable entries, double lever)</b>				
10105000	H-B 24 SGRL 21		21	5
19105000	H-B 24 SGRL M25	25		5
<b>H-B housing: surface-mount base (1 cable entry, double lever, high version)</b>				
70135200	H-B 24 SGRH 21		21	5
70135400	H-B 24 SGRH 29		29	5
79135200	H-B 24 SGRH M25	25		5
79135400	H-B 24 SGRH M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- More interior space for wiring
- Double lever version with 2 levers for increased safety

**i Info**

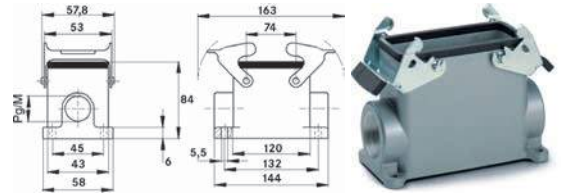
- Metal lid with sturdy hinge

**i Info**

- For easy introduction of two cables
- Metal lid with sturdy hinge

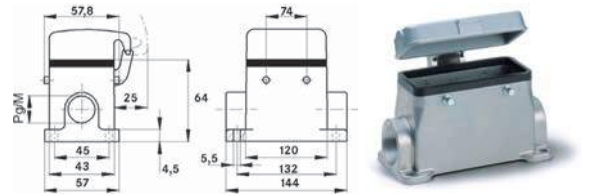
**EPIC® H-B 24 SGRLH**

Housing design H-B. The industry standard.



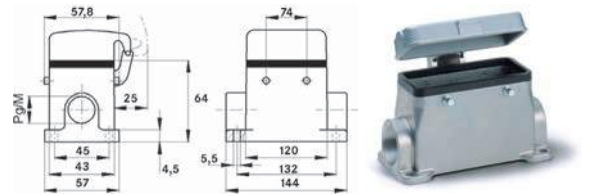
**EPIC® H-B 24 SDR-BO**

Housing design H-B. The industry standard.



**EPIC® H-B 24 SDRL-BO**

Housing design H-B. The industry standard.



**Benefits**

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 SGRLH**

- Surface-mount base, high version
- Dual levers
- 2 cable entries

**EPIC® H-B 24 SDR-BO**

- Surface-mount base, low version
- Bolts for double lever
- 1 cable entry
- Metal cover

**EPIC® H-B 24 SDRL-BO**

- Surface-mount base, low version
- Bolts for double lever
- 2 cable entries
- Metal cover

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (2 cable entries, double lever, high version)</b>				
70136200	H-B 24 SGRLH 21		21	5
70136400	H-B 24 SGRLH 29		29	5
79136200	H-B 24 SGRLH M25	25		5
79136400	H-B 24 SGRLH M32	32		5
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever)</b>				
10107000	H-B 24 SDR-BO 21		21	5
19107000	H-B 24 SDR-BO M25	25		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever)</b>				
10109000	H-B 24 SDRL-BO 21		21	5
19109000	H-B 24 SDRL-BO M25	25		5

Photographs are not to scale and do not represent detailed images of the respective products.

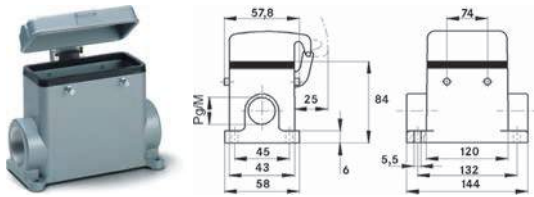
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



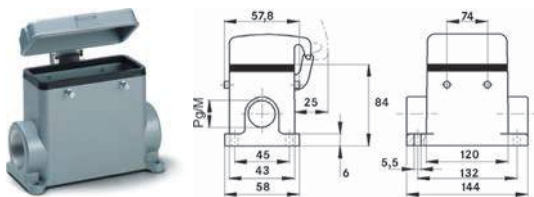
### EPIC® H-B 24 SDRH-BO

Housing design H-B. The industry standard.



### EPIC® H-B 24 SDRLH-BO

Housing design H-B. The industry standard.



#### Benefits

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

#### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

#### Product features

##### EPIC® H-B 24 SDRH-BO

- Surface-mount base, high version
- Bolts for double lever
- 1 cable entry
- Metal cover

##### EPIC® H-B 24 SDRLH-BO

- Surface-mount base, high version
- Bolts for double lever
- 2 cable entries
- Metal cover

#### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

#### Info

- More interior space for wiring
- Metal lid with sturdy hinge

#### Info

- More interior space for wiring
- For easy introduction of two cables
- Metal lid with sturdy hinge

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** **Protection rating**  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Pieces / PU
<b>H-B housing: surface-mount base (cover, 1 cable entry, bolts for double lever, high version)</b>				
70145200	H-B 24 SDRH-BO 21		21	5
70145400	H-B 24 SDRH-BO 29		29	5
79145400	H-B 24 SDRH-BO M32	32		5
<b>H-B housing: surface-mount base (cover, 2 cable entries, bolts for double lever, high version)</b>				
70146200	H-B 24 SDRLH-BO 21		21	5
70146400	H-B 24 SDRLH-BO 29		29	5
79146400	H-B 24 SDRLH-BO M32	32		5

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



**i Info**

- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- More interior space for wiring
- Single Lever version for quick locking and simple unlocking with lifting aid

**i Info**

- Double lever version with 2 levers for increased safety



**EPIC® H-B 24 TBF-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 TBFH-LB**  
Housing design H-B. The industry standard.



**EPIC® H-B 24 TBF**  
Housing design H-B. The industry standard.

**Benefits**

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

**Application range**

- Plant engineering
- Light & sound technology
- Plastics industry

**Product features**

**EPIC® H-B 24 TBF-LB**

- Cable coupler hood, low version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TBFH-LB**

- Cable coupler hood, high version
- Single lever
- Straight cable entry
- Versions with / without neck

**EPIC® H-B 24 TBF**

- Cable coupler hood, low version
- Dual levers
- Straight cable entry
- Versions with / without neck

**Suitable inserts**

- Refer to Selection Table A 10 to select the required inserts and housings

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR

**IP** Protection rating  
IP 65 (latched)

**DIN VDE** Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770

**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever)</b>					
10127900	H-B 24 TBF-LB 21		21	yes	5
10117900	H-B 24 TBF-LB 29		29	yes	5
19127900	H-B 24 TBF-LB M25	25			5
19117900	H-B 24 TBF-LB M32	32			5
<b>H-B housing: cable coupler hood (1 straight cable entry, single lever, high version)</b>					
70142400	H-B 24 TBFH-LB 21		21	yes	5
79142400	H-B 24 TBFH-LB M25	25			5
79142600	H-B 24 TBFH-LB M32	32			5
<b>H-B housing: cable coupler hood (straight cable entry, double lever)</b>					
10127000	H-B 24 TBF 21		21	yes	5
10117000	H-B 24 TBF 29		29	yes	5
19127000	H-B 24 TBF M25	25			5
19117000	H-B 24 TBF M32	32			5

Photographs are not to scale and do not represent detailed images of the respective products.

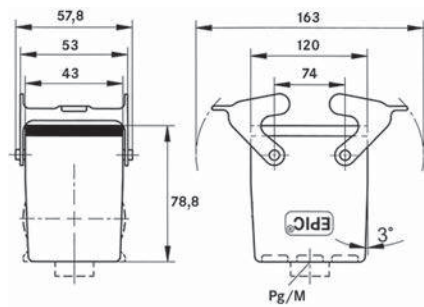
**Accessories**

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install



## EPIC® H-B 24 TBFH

Housing design H-B. The industry standard.



### Info

- More interior space for wiring
- Double lever version with 2 levers for increased safety

### Benefits

- Safe fixing with 4 screws
- Casted neck for easy assembly of the cable gland

### Application range

- Plant engineering
- Light & sound technology
- Plastics industry

### Product features

- Cable coupler hood, high version
- Dual levers
- Straight cable entry
- Versions with / without neck

### Suitable inserts

- Refer to Selection Table A10 to select the required inserts and housings

### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description:  
Housing for industrial connectors



**Material**  
Housing: powder-coated aluminium alloy, grey  
Lever: zinc-plated steel  
Sealing: NBR



**Protection rating**  
IP 65 (latched)



Certified production control:  
VDE-REG. no.: B437  
UL-tested:  
UL File Number: E75770



**Temperature range**  
-40°C to +100°C,  
short-term up to +125°C

Article number	Article description	M	PG	Neck	Pieces / PU
<b>H-B housing: cable coupler hood (straight cable entry, double lever, high version)</b>					
70140400	H-B 24 TBFH 21		21	yes	5
70140600	H-B 24 TBFH 29		29	yes	5
79140400	H-B 24 TBFH M25	25			5
79140600	H-B 24 TBFH M32	32			5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® MS-M
- SKINTOP® for industrial connectors
- Easy to install

EPIC® Flat gaskets for housings H-A and H-B



EPIC® Fixing screws




Application range

- Accessories for an effective use of EPIC® rectangular connectors

Product features

- EPIC® Flat gaskets for housings H-A and H-B**
- Flat gaskets as spare parts for panel-mount base
- EPIC® Fixing screws**
- Spare parts for fastening inserts in H-A 3 housings

Technical data

	ETIM 5.0 Class-ID: EC002636
	ETIM 5.0 Class-Description: Rectangular connector (industrial connector)

Article number	Article description	Pieces / PU
<b>Flat gasket for panel-mount base H-A</b>		
10607100	Flat gasket for panel-mount base H-A 3	10
10607200	Flat gasket for panel-mount base H-A 10	10
10607300	Flat gasket for panel-mount base H-A 16	10
10607600	Flat gasket for panel-mount base H-A 32	10
<b>Flat gasket for panel-mount base H-B</b>		
10051000	Flat gasket for panel-mount base H-B 6	10
10051200	Flat gasket for panel-mount base H-B 10	10
10051400	Flat gasket for panel-mount base H-B 16	10
10051600	Flat gasket for panel-mount base H-B 24	10
10052000	Flat gasket for panel-mount base H-B 32/H-A 48	10
<b>Fastening screws</b>		
44423017	Screw with O-ring for EPIC H-A 3/4, H-D7/8, H-Q 5	10
44423018	EPIC® STA Screw	10

Photographs are not to scale and do not represent detailed images of the respective products.

EPIC® Coding parts



Application range


- Accessories for an effective use of EPIC® rectangular connectors

Product features

- For rectangular connector inserts, the key pin replaces one or more fastening screws. This enables simple coding.
- In rectangular connector inserts, the guide pin replaces the fastening screws on one side and on the other side the guide socket

- replaces the screw. This enables a lot of coding possibilities. Also the connector gets a perfect guiding and prevents a skew mating.
- With these inserts, the H-A 3/H-A 4 Codepin is pressed into a socket contact. The corresponding pin contact is removed, meaning one electrical contact will be lost.

Technical data

	ETIM 5.0 Class-ID: EC002636
	ETIM 5.0 Class-Description: Rectangular connector (industrial connector)

Article number	Article description	Pieces / PU
<b>EPIC® H-A 3/4 Code pin</b>		
10451400	EPIC® H-A 3/4 Code pin (50)	50
<b>Key pin</b>		
10019000	EPIC® Key pin (50)	50
<b>Guide pin, guide socket</b>		
11281000	EPIC® Guide socket (50)	50
11280000	EPIC® Guide pin (50)	50
<b>EPIC® H-Q 12 Codepin</b>		
44424052	EPIC® H-Q 12 Key Pin (20)	20

Photographs are not to scale and do not represent detailed images of the respective products.





### EPIC® Protective cover H-A 3



### EPIC® Protective cover H-A



### EPIC® Protective cover H-B



#### Technical data

ETIM 5.0 Class-ID: EC002314  
 ETIM 5.0 Class-Description:  
 Cap for industrial connectors

#### Product features

##### EPIC® Protective cover H-A 3

- Protective cover made of thermoplastics and metal for H-A 3 housings
- Retaining cord with cable lug for attachment with screw on mounting base or wall
- Retaining cord with variable loop for attachment to the cable

##### EPIC® Protective cover H-A

- Retaining cord with cable lug for attachment with screw on mounting base or wall
- Retaining cord with variable loop for attachment to the cable
- Protective cover made of thermoplastics for H-A 10, H-A 16, H-A 32, H-A 48 housings

##### EPIC® Protective cover H-B

- Retaining cord with cable lug for attachment with screw on mounting base or wall
- Retaining cord with variable loop for attachment to the cable
- Protective cover made of thermoplastics for H-B 6, H-B 10, H-B 16, H-B 24, H-B 32 housings

Article number	Article description	Version	Bolts	Securing cord	Clamp	Material	Pieces / PU
<b>For H-A 3 panel-mount base, surface-mount base, cable coupler hood with male or female inserts</b>							
10513000	H-A 3 MDBF-S	for housing H-A 3 with male inserts	2	with cable lug		Metal	10
10513100	H-A 3 MDBF-B	for housing H-A 3 with female inserts	2	with cable lug		Metal	10
<b>For H-A 3 panel-mount base, surface-mount base, cable coupler hood with male inserts</b>							
10430000	H-A 3 KDB-S	for housing H-A 3 with male inserts	2			Plastic	10
10430400	H-A 3 KDBF-S	for housing H-A 3 with male inserts	2	with cable lug		Plastic	10
<b>For H-A 3 panel-mount base, surface-mount base, cable coupler hood with female inserts</b>							
10430300	H-A 3 KDB-B	for housing H-A 3 with female inserts	2			Plastic	10
10430100	H-A 3 KDBF-B	for housing H-A 3 with female inserts	2	with cable lug		Plastic	10
<b>with bolts for H-A 10-32 panel-mount base, surface-mount base, cable coupler hood</b>							
10457700	H-A 10 KDB	for housing H-A 10	2			Plastic	5
10469700	H-A 16 KDB	for housing H-A 16	2			Plastic	5
10481700	H-A 32 KDB	for housing H-A 32	4			Plastic	5
10457500	H-A 10 KDBF	for housing H-A 10	2	with cable lug		Plastic	5
10469500	H-A 16 KDBF	for housing H-A 16	2	with cable lug		Plastic	5
10481500	H-A 32 KDBF	for housing H-A 32	4	with cable lug		Plastic	10
<b>with lever for H-A 10-32 hoods</b>							
10457800	H-A 10 KDT	for H-A 10 hood			2 snap-in hooks	Plastic	5
10469800	H-A 16 KDT	for H-A 16 hood			2 snap-in hooks	Plastic	5
10481800	H-A 32 KDT	for H-A 32 hood			4 snap-in hooks	Plastic	5
10457600	H-A 10 KDTF	for H-A 10 hood		with loop	2 snap-in hooks	Plastic	5
10469600	H-A 16 KDTF	for H-A 16 hood		with loop	2 snap-in hooks	Plastic	5
10481600	H-A 32 KDT	for H-A 32 hood		with loop	4 snap-in hooks	Plastic	10
<b>with bolts for H-B 6-24 panel-mount base, surface-mount base, cable coupler hood</b>							
10015000	H-B 6 KDB	for housing H-B 6	2	with cable lug		Plastic	10
10047000	H-B 10 KDB	for housing H-B 10	4	with cable lug		Plastic	10
10087000	H-B 16 KDB	for housing H-B 16	4	with cable lug		Plastic	5
10118000	H-B 24 KDB	for housing H-B 24	4	with cable lug		Plastic	5
<b>with lever for H-B 6-24 hood with bolts</b>							
10016500	H-B 6 KDT	for H-B 6 hood		with loop	2 snap-in hooks	Plastic	10
10048500	H-B 10 KDT	for H-B 10 hood		with loop	4 snap-in hooks	Plastic	10
10088500	H-B 16 KDT	for H-B 16 hood		with loop	4 snap-in hooks	Plastic	5
10119500	H-B 24 KDT	for H-B 24 hood		with loop	4 snap-in hooks	Plastic	5
<b>with bolts for H-B 6-24 hoods with levers</b>							
10015100	H-B 6 KDBP	for H-B 6 hood	2	with loop		Plastic	10
10047100	H-B 10 KDBP	for H-B 10 hood	4	with loop		Plastic	10
10087100	H-B 16 KDBP	for H-B 16 hood	4	with loop		Plastic	10
10118100	H-B 24 KDBP	for H-B 24 hood	4	with loop		Plastic	5
<b>with bolts for H-B 10-32 panel-mount base, surface-mount base, cable coupler hood</b>							
10048700	H-B 10 KDBF	for housing H-B 10	2	with loop		Plastic	10
10088700	H-B 16 KDBF	for housing H-B 16	2	with loop		Plastic	10
10118700	H-B 24 KDBF	for housing H-B 24	2	with loop		Plastic	10
10118020	H-B 32 / H-A 48 KDBF	for housing H-B 32/H-A 48	4	with loop		Plastic	10
<b>with lever for H-B 10-24 hood with bolts</b>							
10048600	H-B 10 KDTF	for H-B 10 hood		with loop	2 snap-in hooks	Plastic	10
10088600	H-B 16 KDTF	for H-B 16 hood		with loop	2 snap-in hooks	Plastic	10
10118600	H-B 24 KDTF	for H-B 24 hood		with loop	2 snap-in hooks	Plastic	10

Photographs are not to scale and do not represent detailed images of the respective products.

**EPIC® Cover plates**



**EPIC® Adapter plates for 1 D-Sub insert**



**EPIC® Adapter plates for 2 D-Sub inserts**



**EPIC® Locking levers**



**Product features**

**EPIC® Cover plates**

- For coverage of panel cut-outs for panel-mount base housings type H-B

**EPIC® Adapter plates for 1 D-Sub insert**

- For use of D-Sub inserts in H-B housings

**EPIC® Adapter plates for 2 D-Sub inserts**

- For use of D-Sub inserts in H-B housings

**EPIC® Locking levers**

- Locking levers as spare parts for H-A and H-B housings

**Technical data**



ETIM 5.0 Class-ID: EC002636  
 ETIM 5.0 Class-Description:  
 Rectangular connector  
 (industrial connector)

Article number	Article description	Version	Material	Pieces / PU
<b>Cover plates for mounting cut-out H-B</b>				
10018920	H-B 6	for H-B 6 panel-mount base housing		10
10018921	H-B 10	for H-B 10 panel-mount base housing		10
10018922	H-B 16	for H-B 16 panel-mount base housing		10
10018923	H-B 24	for H-B 24 panel-mount base housing		10
<b>Adapter plates for 1 D-Sub insert</b>				
11764200	H-B 6 / M-D 9	for 1 x D-Sub 9-pin		10
11764202	H-B 6 / M-D 15	for 1 x D-Sub 15-pin		10
11764300	H-B 10 / M-D 25	for 1 x D-Sub 25-pin		10
11764400	H-B 16 / M-D 25	for 1 x D-Sub 25-pin		10
<b>Adapter plates for 2 D-Sub inserts</b>				
11764201	H-B 6 / 2xM-D 9	for 2 x D-Sub 9-pin		10
11764203	H-B 6 / 2xM-D 15	for 2 x D-Sub 15-pin		10
11764301	H-B 10 / 2xM-D 25	for 2 x D-Sub 25-pin		10
<b>Single and double levers for H-A and H-B housings</b>				
10458000	H-A 10 LB	single lever for H-A 10 housing	Steel	10
10468000	EPIC H-A 16 LB/H-B 32 QB	single lever for H-A 16 housing	Steel	10
10049000	H-B 10-24 QB	double lever for H-B 10 - 24 housing	Steel	10
10017000	H-B 6 LB	single lever for H-B 6 housing	Steel	10
10017100	H-B 6 LB-K	single lever for H-B 6 housing	Stainless steel	10
10049100	H-B 10-24 QB-K	double lever for H-B 10 - 24 housing	Stainless steel	10

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWER M 12 630V panel base

Circular connectors for servomotors and power supply



### Info

- Simply screw in given metric thread

### Benefits

- Standard M20 Version with screw contacts
- Small M16 Version with preharnessed wires
- High performance gold plated contacts

### Application range

- Power Supply for small devices
- For 1-phase cables or 3-phase without N

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector



**Rated voltage (V)**  
630 V

**Rated impulse voltage**  
6 kV



**Rated current (A)**  
12 A



**Degree of soiling**  
3

**Contact resistance**  
< 3 mOhm



**Number of contacts**  
3 + PE  
S-coded



**Termination methods**  
Screw termination: 0.75 - 1.5mm<sup>2</sup>  
with 0,2m PP-wire, 4x1.5mm<sup>2</sup>



**Protection rating**  
IP 67



**Cycle of mechanical operation**  
100



**Temperature range**  
-40 °C to +85 °C

Article number	Article description	Fastening type	Pieces / PU
<b>EPIC® POWER M12 630V panel base</b>			
44423144	Panel base with pin contacts	M20	1
44423145	Panel base with socket contacts	M20	1
44423146	Panel base with pin contacts	M16 (with wires 4xAWG16/0.2m)	1
44423147	Panel base with socket contacts	M16 (with wires 4xAWG16/0.2m)	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWER M 12 630V cable connector

Circular connectors for servomotors and power supply



### Info

- Smallest Power connector

### Benefits

- To terminate only screw driver is necessary
- Small and space-saving for narrow available space
- High performance gold plated contacts

### Application range

- Power Supply for small devices
- For 1-phase cables or 3-phase without N

### Technical data



ETIM 5.0 Class-ID: EC002062  
ETIM 5.0 Class-Description: Sensor-actuator connector



**Rated voltage (V)**  
630 V

**Rated impulse voltage**  
6 kV



**Rated current (A)**  
12 A



**Degree of soiling**  
3

**Contact resistance**  
< 3 mOhm



**Number of contacts**  
3 + PE  
S-coded



**Termination methods**  
Screw termination: 0.75 - 1.5mm<sup>2</sup>



**Protection rating**  
IP 67



**Cycle of mechanical operation**  
100



**Temperature range**  
-40 °C to +85 °C

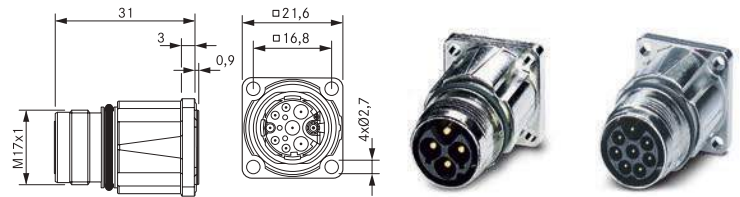
Article number	Article description	Clamping range in mm	Pieces / PU
<b>EPIC® POWER M12 630V cable connector</b>			
44423140	Cable coupler with pin contacts	8 - 10	1
44423141	Cable connector with socket contacts	8 - 10	1
44423142	Cable coupler with pin contacts, angled	8 - 10	1
44423143	Cable connector with socket contacts, angled	8 - 10	1

Photographs are not to scale and do not represent detailed images of the respective products.



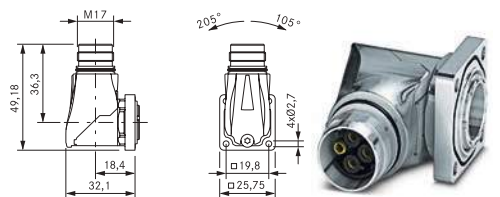
**EPIC® POWER M17 A1**

Circular connectors for servomotors and power supply



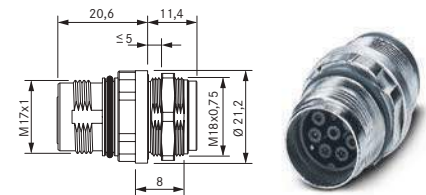
**EPIC® POWER M17 A3**

Circular connectors for servomotors and power supply



**EPIC® POWER M17 G4**

Circular connectors for servomotors and power supply



**Info**

- High Power with smallest space requirements

**Info**

- Rotateable with 310° cable outlet

**Info**

- For installation in existing hole

**Suitable contacts:**

- EPIC® M17 Contacts Page 668
- The contacts have to be ordered separately

**Benefits**

- Version with less contacts for higher current
- Compact design: small space requirements
- EMC protection

**Application range**

- Servo drives and servo assemblies
- Plant engineering, machinery manufacturing

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC002635 <b>ETIM 5.0 Class-Description:</b> Circular connector (industrial connector)		<b>Number of contacts</b> 3+PE, 5+PE, 6+PE, 7+PE, 3+PE+5 Contacts:3+PE(2mm), 5+PE(1mm), 6+PE(1mm), 7+PE(1mm), 3+PE+5(1mm/0.6mm)
	<b>Rated voltage (V)</b> 630V: 2mm and 1mm contacts 60V: 0,6mm contacts		<b>Termination methods</b> Crimp: 3+PE: 0.5-2.5mm <sup>2</sup> , 5+PE/6+PE/7+PE: 0.06-1mm <sup>2</sup> , 3+P+5: 0.06-1/0.06-0.5mm <sup>2</sup>
	<b>Rated impulse voltage</b> 6KV: 2mm and 1mm contacts 1.5KV: 0.6mm contacts		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated current (A)</b> 3+PE: 20A, 5+PE/6+PE/7+PE:14A, 3+PE+5:14A/3,6A		<b>Protection rating</b> IP 67
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 100
	<b>Contacts</b> Gold-plated brass		<b>Temperature range</b> -40°C to +125°C

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>Type M17 A1, front wall mounting</b>				
44423075	EPIC® M17 female	Ø 2.7 mm (4x)	3+PE	5
44423070	EPIC® M17 male	Ø 2.7 mm (4x)	3+PE	5
44423076	EPIC® M17 female	Ø 2.7 mm (4x)	5+PE	5
44423071	EPIC® M17 male	Ø 2.7 mm (4x)	5+PE	5
44423077	EPIC® M17 female	Ø 2.7 mm (4x)	6+PE	5
44423072	EPIC® M17 male	Ø 2.7 mm (4x)	6+PE	5
44423078	EPIC® M17 female	Ø 2.7 mm (4x)	7+PE	5

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
44423073	EPIC® M17 male	Ø 2.7 mm (4x)	7+PE	5
44423079	EPIC® M17 female	Ø 2.7 mm (4x)	3+PE+5	5
44423074	EPIC® M17 male	Ø 2.7 mm (4x)	3+PE+5	5
<b>Type M17 A3, angled and rotateable</b>				
44423085	EPIC® M17 female	Ø 2.7 mm (4x)	3+PE	5
44423080	EPIC® M17 male	Ø 2.7 mm (4x)	3+PE	5
44423086	EPIC® M17 female	Ø 2.7 mm (4x)	5+PE	5
44423081	EPIC® M17 male	Ø 2.7 mm (4x)	5+PE	5
44423087	EPIC® M17 female	Ø 2.7 mm (4x)	6+PE	5
44423082	EPIC® M17 male	Ø 2.7 mm (4x)	6+PE	5
44423088	EPIC® M17 female	Ø 2.7 mm (4x)	7+PE	5
44423083	EPIC® M17 male	Ø 2.7 mm (4x)	7+PE	5
44423089	EPIC® M17 female	Ø 2.7 mm (4x)	3+PE+5	5
44423084	EPIC® M17 male	Ø 2.7 mm (4x)	3+PE+5	5
<b>Type M17 G4, front wall mounting</b>				
44423095	EPIC® M17 female	M18x0,75 (with counternut)	3+PE	5
44423090	EPIC® M17 male	M18x0,75 (with counternut)	3+PE	5
44423098	EPIC® M17 female	M18x0,75 (with counternut)	3+PE+5	5
44423093	EPIC® M17 male	M18x0,75 (with counternut)	3+PE+5	5
44423099	EPIC® M17 female	M18x0,75 (with counternut)	5+PE	5
44423094	EPIC® M17 male	M18x0,75 (with counternut)	5+PE	5
44423096	EPIC® M17 female	M18x0,75 (with counternut)	6+PE	5
44423092	EPIC® M17 male	M18x0,75 (with counternut)	7+PE	5
44423091	EPIC® M17 male	M18x0,75 (with counternut)	6+PE	5
44423097	EPIC® M17 female	M18x0,75 (with counternut)	7+PE	5

Photographs are not to scale and do not represent detailed images of the respective products.



**Info**

- High Power with smallest space requirements

**Suitable contacts:**

- EPIC® M17 Contacts Page 668
- The contacts have to be ordered separately

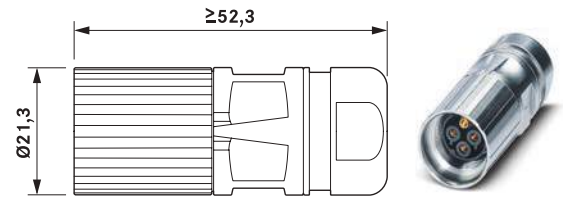
**Benefits**

- Compact design: small space requirements
- Version with less contacts for higher current
- EMC protection

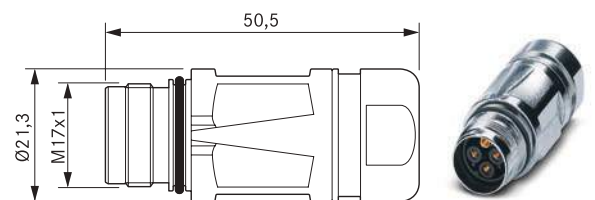
**Application range**

- Servo drives and servo assemblies
- Plant engineering, machinery manufacturing

**EPIC® POWER M17 D6**  
Circular connectors for servomotors and power supply



**EPIC® POWER M17 F6**  
Circular connectors for servomotors and power supply



**Technical data**

<b>ETIM 5.0 Class-ID:</b> EC002635 <b>ETIM 5.0 Class-Description:</b> Circular connector (industrial connector)	<b>Number of contacts</b> 3+PE, 5+PE, 6+PE, 7+PE, 3+PE+5 Contacts: 3+PE(2mm), 5+PE(1mm), 6+PE(1mm), 7+PE(1mm), 3+PE+5(1mm/0.6mm)
<b>Rated voltage (V)</b> 630V: 2mm and 1mm contacts 60V: 0,6mm contacts	<b>Termination methods</b> Crimp: 3+PE: 0.5-2.5mm <sup>2</sup> , 5+PE/6+PE/7+PE: 0.06-1mm <sup>2</sup> , 3+P+5: 0.06-1/0.06-0.5mm <sup>2</sup>
<b>Rated current (A)</b> 3+PE: 20A, 5+PE/6+PE/7+PE: 14A, 3+PE+5: 14A/3,6A	<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
<b>Degree of soiling</b> 3	<b>Protection rating</b> IP 67
<b>Contacts</b> Gold-plated brass	<b>Cycle of mechanical operation</b> 100
	<b>Temperature range</b> -40°C to +125°C

Article number	Article description	Clamping range in mm	Pin configuration	Pieces / PU
<b>Type M17 D6, cable connector</b>				
44423050	EPIC® M17 female	3.5 - 11	3+PE	5
44423055	EPIC® M17 male	3.5 - 11	3+PE	5
44423051	EPIC® M17 female	3.5 - 11	5+PE	5
44423056	EPIC® M17 male	3.5 - 11	5+PE	5
44423052	EPIC® M17 female	3.5 - 11	6+PE	5
44423057	EPIC® M17 male	3.5 - 11	6+PE	5
44423053	EPIC® M17 female	3.5 - 11	7+PE	5
44423058	EPIC® M17 male	3.5 - 11	7+PE	5
44423054	EPIC® M17 female	3.5 - 11	3+PE+5	5
44423059	EPIC® M17 male	3.5 - 11	3+PE+5	5
<b>Type M17 F6, cable coupler</b>				
44423065	EPIC® M17 female	3.5 - 11	3+PE	5
44423060	EPIC® M17 male	3.5 - 11	3+PE	5
44423066	EPIC® M17 female	3.5 - 11	5+PE	5
44423061	EPIC® M17 male	3.5 - 11	5+PE	5
44423067	EPIC® M17 female	3.5 - 11	6+PE	5
44423062	EPIC® M17 male	3.5 - 11	6+PE	5
44423068	EPIC® M17 female	3.5 - 11	7+PE	5
44423063	EPIC® M17 male	3.5 - 11	7+PE	5
44423069	EPIC® M17 female	3.5 - 11	3+PE+5	5
44423064	EPIC® M17 male	3.5 - 11	3+PE+5	5

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® SIGNAL M17 A1

Circular connectors for servomotors and power supply



**Info**

- Connector for shielded data cables

### EPIC® SIGNAL M17 A3

Circular connectors for servomotors and power supply



**Info**

- Rotateable with 310° cable outlet

### EPIC® SIGNAL M17 G4

Circular connectors for servomotors and power supply



**Info**

- For installation in existing hole

**Suitable contacts:**

- EPIC® M17 Contacts Page 668
- The contacts have to be ordered separately

**Benefits**

- Compact design: small space requirements
- EMC protection

**Application range**

- Feedback / signal cables

**Technical data**

	ETIM 5.0 Class-ID: EC002635 ETIM 5.0 Class-Description: Circular connector (industrial connector)		<b>Termination methods</b> Crimp termination: 0.06 - 0.56 mm <sup>2</sup> (0,6mm contacts) Crimp termination: 0.06 - 1.0 mm <sup>2</sup> (1mm contacts)
	<b>Rated voltage (V)</b> 60 V		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated impulse voltage</b> 1.5 kV		<b>Protection rating</b> IP 67
	<b>Rated current (A)</b> 3.6 A		<b>Cycle of mechanical operation</b> 100
	<b>Degree of soiling</b> 3		<b>Temperature range</b> -40°C to +125°C
	<b>Contacts</b> Gold-plated brass		
	<b>Number of contacts</b> Contacts: 8(1mm), 17(0.6mm)		

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>EPIC® SIGNAL M17 A1</b>				
44423110	EPIC® M17 female	Ø 2.7 mm (4x)	8	5
44423108	EPIC® M17 male	Ø 2.7 mm (4x)	8	5
<b>Type M17 A1, front wall mounting</b>				
44423111	EPIC® M17 female	Ø 2.7 mm (4x)	17	5
44423109	EPIC® M17 male	Ø 2.7 mm (4x)	17	5
<b>Type M17 A3, angled and rotateable</b>				
44423114	EPIC® M17 female	Ø 2.7 mm (4x)	8	5
44423112	EPIC® M17 male	Ø 2.7 mm (4x)	8	5
44423115	EPIC® M17 female	Ø 2.7 mm (4x)	17	5
44423113	EPIC® M17 male	Ø 2.7 mm (4x)	17	5
<b>Type M17 G4, front wall mounting</b>				
44423118	EPIC® M17 female	M 18x0,75 (with counternut)	8	5
44423116	EPIC® M17 male	M 18x0,75 (with counternut)	8	5
44423119	EPIC® M17 female	M 18x0,75 (with counternut)	17	5
44423117	EPIC® M17 male	M 18x0,75 (with counternut)	17	5

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® SIGNAL M17 D6**

Circular connectors for servomotors and power supply



**EPIC® SIGNAL M17 F6**

Circular connectors for servomotors and power supply



**Info**

- Connector for shielded data cables

**Suitable contacts:**

- EPIC® M17 Contacts Page 668
- The contacts have to be ordered separately












**Benefits**

- Compact design: small space requirements
- EMC protection

**Application range**

- Feedback / signal cables

**Technical data**

<p> <b>ETIM 5.0 Class-ID:</b> EC002635  <b>ETIM 5.0 Class-Description:</b> Circular connector (industrial connector)</p> <p> <b>Rated voltage (V)</b> 60 V</p> <p><b>Rated impulse voltage</b> 1.5 kV</p> <p> <b>Rated current (A)</b> 3.6 A</p> <p> <b>Degree of soiling</b> 3</p> <p> <b>Contacts</b> Gold-plated brass</p> <p> <b>Number of contacts</b> Contacts: 8(1mm), 17(0.6mm)</p>	<p> <b>Termination methods</b> Crimp termination: 0.06 - 0.56 mm<sup>2</sup> (0,6mm contacts) Crimp termination: 0.06 - 1.0 mm<sup>2</sup> (1mm contacts)</p> <p> <b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM</p> <p> <b>Protection rating</b> IP 67</p> <p> <b>Cycle of mechanical operation</b> 100</p> <p> <b>Temperature range</b> -40°C to +125°C</p>
--	---

Article number	Article description	Clamping range in mm	Pin configuration	Pieces / PU
<b>Type M17 D6, cable connector</b>				
44423100	EPIC® M17 female	3.5 - 11	8	5
44423102	EPIC® M17 male	3.5 - 11	8	5
44423101	EPIC® M17 female	3.5 - 11	17	5
44423103	EPIC® M17 male	3.5 - 11	17	5
<b>Type M17 F6, cable coupler</b>				
44423106	EPIC® M17 female	3.5 - 11	8	5
44423104	EPIC® M17 male	3.5 - 11	8	5
44423107	EPIC® M17 female	3.5 - 11	17	5
44423105	EPIC® M17 male	3.5 - 11	17	5

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® M17 Contacts

Contacts, tools, accessories for circular connectors



## EPIC® M17 Tools

Contacts, tools, accessories for circular connectors



### Technical data



ETIM 5.0 Class-ID: EC002635  
ETIM 5.0 Class-Description: Circular connector (industrial connector)

Article number	Article description	Version	Pieces / PU
<b>0.6mm contacts female</b>			
44423125	M17 BCM 0,6mm 0,06-0,25	0.06-0.25mm <sup>2</sup>	10
44423126	M17 BCM 0.6mm 0.06-0.34	0.06-0.34mm <sup>2</sup>	10
44423127	M17 BCM 0,6mm 0,34-0,5	0.34-0.5mm <sup>2</sup>	10
<b>1mm contacts female</b>			
44423122	M17 BCM 1mm 0,06-0,25	0.06-0.25mm <sup>2</sup>	10
44423123	M17 BCM 1mm 0.34-0.5	0.34-0.5mm <sup>2</sup>	10
44423124	M17 BCM 1mm 0,5-1,0	0.5-1.0mm <sup>2</sup>	10
<b>2mm contacts female</b>			
44423120	M17 BCM 2mm 0,25-1,0	0.25-1.0mm <sup>2</sup>	10
44423121	M17 BCM 2mm 1,0-2,5	1.0-2.5mm <sup>2</sup>	10
<b>0.6mm contacts male</b>			
44423133	M17 SCM 0,6mm 0,06-0,25	0.06-0.25mm <sup>2</sup>	10
44423134	M17 SCM 0,6mm 0,06-0,34	0.06-0.34mm <sup>2</sup>	10
44423135	M17 SCM 0,6mm 0,34-0,5	0.34-0.5mm <sup>2</sup>	10
<b>1mm contacts male</b>			
44423130	M17 SCM 1mm 0,06-0,25	0.06-0.25mm <sup>2</sup>	10
44423131	M17 SCM 1mm 0,34-0,5	0.34-0.5mm <sup>2</sup>	10
44423132	M17 SCM 1mm 0,5-1,0		10
<b>2mm contacts male</b>			
44423128	M17 SCM 2mm 0,25-1,0	0.25-1.0mm <sup>2</sup>	10
44423129	M17 SCM 2mm 1,0-2,5	1.0-2.5mm <sup>2</sup>	10
<b>Crimping tool</b>			
44423136	Crimpzange with Locator for EPIC® M17	for EPIC® M17 POWER and SIGNAL	1

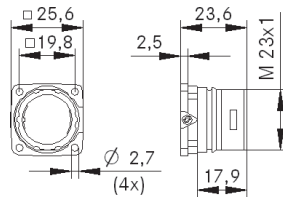
Photographs are not to scale and do not represent detailed images of the respective products.



ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

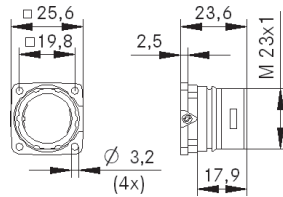
**Info**

- Colour coding for easy connecting



**EPIC® SIGNAL M23 A1 D3.2**

Circular connectors for Servo Cables and encoders

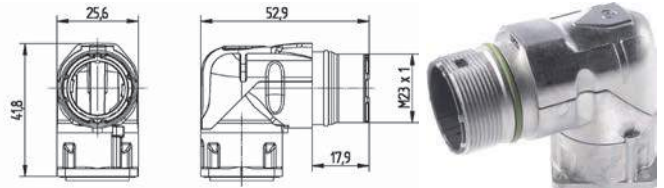


**EPIC® SIGNAL M23 A3**

Circular connectors for Servo Cables and encoders

**Info**

- Rotateable with clearly defined adjustment positions



**Benefits**

**EPIC® SIGNAL M23 A1**

- Safe fixing with 4 screws
- Permanent vibration protection

**EPIC® SIGNAL M23 A1 D3.2**

- Housings are very flexible - cable connectors with wide clamping range, receptacle housings for assembling the inserts from the front and rear
- Permanent vibration protection

**EPIC® SIGNAL M23 A3**

- Housings are very flexible - cable connectors with wide clamping range, receptacle housings for assembling the inserts from the front and rear
- Permanent vibration protection

**Application range**

- Plant engineering
- Servo drives and servo assemblies
- Measurement and control technology

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Sealing: FPM

**IP** **Protection rating**  
**EPIC® SIGNAL M23 A1**  
IP68 (10h / 1m)  
**EPIC® SIGNAL M23 A1 D3.2**  
IP68 (10h / 1m)  
**EPIC® SIGNAL M23 A3**  
IP 65

**DIN VDE** **VDE-tested**  
Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137

**Temperature range**  
-25°C up to +125°C

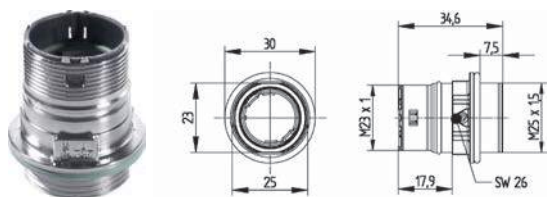
Article number	Article	Coding	Fastening type	Pieces / PU
<b>Type M23 A1 panel-mount box, front wall mounting</b>				
72004000	M23 A1	black (N)	Ø 2.7 mm (4x)	5
72004010	M23 A1	black (N)	Ø 2.7 mm (4x)	20
72004200	M23 A1	red (+20°)	Ø 2.7 mm (4x)	5
72004210	M23 A1	red (+20°)	Ø 2.7 mm (4x)	20
72004100	M23 A1	blue (-20°)	Ø 2.7 mm (4x)	5
72004110	M23 A1	blue (-20°)	Ø 2.7 mm (4x)	20
<b>Type M23 A1 D3.2 panel-mount box, front wall mounting</b>				
44420018	M23 A1 D3,2	black (N)	Ø 3.2 mm (4x)	5
44420017	M23 A1 D3,2	black (N)	Ø 3.2 mm (4x)	20
44420020	M23 A1 D3,2	red (+20°)	Ø 3.2 mm (4x)	5
44420019	M23 A1 D3,2	red (+20°)	Ø 3.2 mm (4x)	20
44420016	M23 A1 D3,2	blue (-20°)	Ø 3.2 mm (4x)	5
44420015	M23 A1 D3,2	blue (-20°)	Ø 3.2 mm (4x)	20
<b>Type M23 A3 panel-mount connector, angled, rotatable, front wall mounting</b>				
24420055	M23 A3	black (N)	Ø 2.7 mm (4x)	5
24420054	M23 A3	black (N)	Ø 2.7 mm (4x)	20

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SIGNAL M23 G4

Circular connectors for Servo Cables and encoders

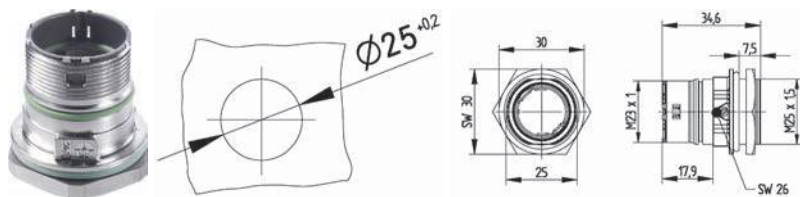


### Info

- For mounting in existing M25 threads or boreholes

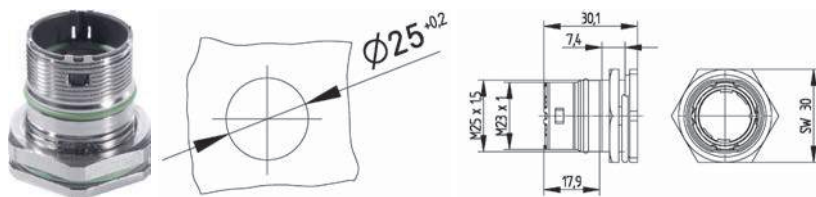
## EPIC® SIGNAL M23 G5

Circular connectors for Servo Cables and encoders



## EPIC® SIGNAL M23 G6

Circular connectors for Servo Cables and encoders



### Benefits

- Fast and easy assembly
- Only one M25 bore hole necessary

### Application range

- Plant engineering
- Servo drives and servo assemblies
- Measurement and control technology

### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors



### VDE-tested

Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137



### Material

Housing: nickel-plated zinc die-casting  
Sealing: FPM



### Protection rating

IP68 (10h / 1m)



### Temperature range

-25°C up to +125°C

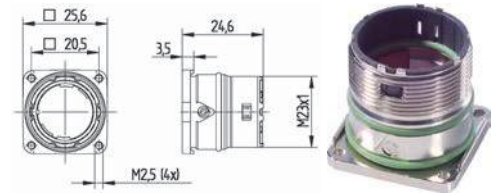
Article number	Article	Coding	Fastening type	Pieces / PU
<b>Type M23 G4 panel-mount box, front wall mounting</b>				
44420032	M23 G4	black (N)	M25 x 1.5	5
44420031	M23 G4	black (N)	M25 x 1.5	20
44420033	M23 G4	red (+20°)	M25 x 1.5	20
44420030	M23 G4	blue (-20°)	M25 x 1.5	5
44420029	M23 G4	blue (-20°)	M25 x 1.5	20
<b>Type M23 G5 panel-mount box, front wall mounting</b>				
44420046	M23 G5	black (N)	M25 x 1.5 (with nut)	5
44420045	M23 G5	black (N)	M25 x 1.5 (with nut)	20
44420048	M23 G5	red (+20°)	M25 x 1.5 (with nut)	5
44420047	M23 G5	red (+20°)	M25 x 1.5 (with nut)	20
44420044	M23 G5	blue (-20°)	M25 x 1.5 (with nut)	5
44420043	M23 G5	blue (-20°)	M25 x 1.5 (with nut)	20
<b>Type M23 G6 panel-mount box, rear wall mounting</b>				
44420071	M23 G6	black (N)	M25 x 1.5 (with nut)	5
44420073	M23 G6	black (N)	M25 x 1.5 (with nut)	20

Photographs are not to scale and do not represent detailed images of the respective products.

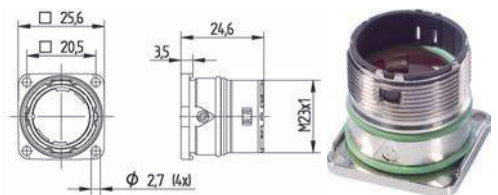


**Info**

- Housing for mounting at inner side to save space outside of device



**EPIC® SIGNAL M23 B2**  
Circular connectors for Servo Cables and encoders



**Benefits**

**EPIC® SIGNAL M23 B1**

- Defined stop position when mounting at device prevents uncontrolled pressing of sealing
- Harnessed insulation body can easily inserted from back side in already mounted housing

**EPIC® SIGNAL M23 B2**

- Housings are very flexible - cable connectors with wide clamping range, receptacle housings for assembling the inserts from the front and rear
- Harnessed insulation body can easily inserted from back side in already mounted housing

**Application range**

- Plant engineering
- Servo drives and servo assemblies
- Measurement and control technology

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Sealing: FPM

**IP** **Protection rating**  
IP68 (10h / 1m)

**DIN VDE** **VDE-tested**  
Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137

**Temperature range**  
-25°C up to +125°C

Article number	Article	Coding	Fastening type	Pieces / PU
<b>Type M23 B1 panel-mount box, rear wall mounting</b>				
44420024	M23 B1	black (N)	M2.5 (4x)	5
44420023	M23 B1	black (N)	M2.5 (4x)	20
44420026	M23 B1	red (+20°)	M2.5 (4x)	5
44420025	M23 B1	red (+20°)	M2.5 (4x)	20
44420022	M23 B1	blue (-20°)	M2.5 (4x)	5
44420021	M23 B1	blue (-20°)	M2.5 (4x)	20
<b>Type M23 B2 panel-mount box, rear wall mounting</b>				
44420050	M23 B2	black (N)	Ø 2.7 mm (4x)	5
44420051	M23 B2	black (N)	Ø 2.7 mm (4x)	20
44420035	M23 B2	red (+20°)	Ø 2.7 mm (4x)	5
44420049	M23 B2	red (+20°)	Ø 2.7 mm (4x)	20
44420052	M23 B2	blue (-20°)	Ø 2.7 mm (4x)	5
44420053	M23 B2	blue (-20°)	Ø 2.7 mm (4x)	20

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® SIGNAL M23 D6

Circular connectors for Servo Cables and encoders



**Info**

- Robust metal connector with integrated EMC cable gland

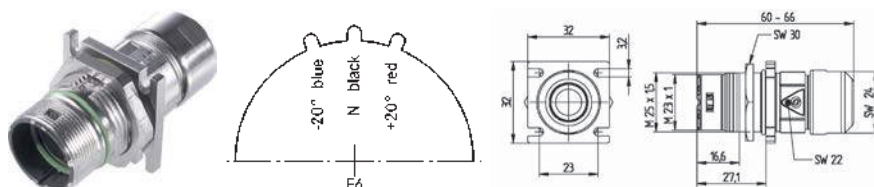
### EPIC® SIGNAL M23 F6

Circular connectors for Servo Cables and encoders



### EPIC® SIGNAL M23 F7

Circular connectors for Servo Cables and encoders



**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

**Material**  
Housing: nickel-plated zinc die-casting  
Sealing: FPM

**IP** **Protection rating**  
IP68 (10h / 1m)

**DIN VDE** **VDE-tested**  
Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137

**Temperature range**  
-25°C up to +125°C

**Benefits**

- Low-resistance screen contact, optimum EMC protection
- Use of high quality materials for increased reliability

**Application range**

- Plant engineering
- Servo drives and servo assemblies
- Measurement and control technology

Article number	Article	Coding	Cable clamping range	Fastening type	Pieces / PU
<b>Type M23 D6 cable connector</b>					
44420037	M23 D6	black (N)	7.0 - 13.5		5
72044030	M23 D6	black (N)	7.0 - 10.0		5
72044020	M23 D6	black (N)	7.0 - 10.0		20
72044000	M23 D6	black (N)	9.5 - 13.5		5
72044010	M23 D6	black (N)	9.5 - 13.5		20
44420038	M23 D6	red (+20°)	7.0 - 13.5		5
72044230	M23 D6	red (+20°)	7.0 - 10.0		5
72044220	M23 D6	red (+20°)	7.0 - 10.0		20
72044200	M23 D6	red (+20°)	9.5 - 13.5		5
72044210	M23 D6	red (+20°)	9.5 - 13.5		20
44420036	M23 D6	blue (-20°)	7.0 - 13.5		5
72044130	M23 D6	blue (-20°)	7.0 - 10.0		5
72044120	M23 D6	blue (-20°)	7.0 - 10.0		20
72044100	M23 D6	blue (-20°)	9.5 - 13.5		5
72044110	M23 D6	blue (-20°)	9.5 - 13.5		20
<b>Type M23 F6 coupling connector</b>					
44420040	M23 F6	black (N)	7.0 - 13.5		5
72064030	M23 F6	black (N)	7.0 - 10.0		5
72064020	M23 F6	black (N)	7.0 - 10.0		20
72064000	M23 F6	black (N)	9.5 - 13.5		5
72064010	M23 F6	black (N)	9.5 - 13.5		20
44420041	M23 F6	red (+20°)	7.0 - 13.5		5
72064230	M23 F6	red (+20°)	7.0 - 10.0		5
72064220	M23 F6	red (+20°)	7.0 - 10.0		20
72064200	M23 F6	red (+20°)	9.5 - 13.5		5
72064210	M23 F6	red (+20°)	9.5 - 13.5		20
44420039	M23 F6	blue (-20°)	7.0 - 13.5		5
72064130	M23 F6	blue (-20°)	7.0 - 10.0		5
72064120	M23 F6	blue (-20°)	7.0 - 10.0		20
72064100	M23 F6	blue (-20°)	9.5 - 13.5		5
<b>Type M23 F7 panel-mount connector, front/rear wall mounting</b>					
44420009	M23 F7	black (N)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420010	M23 F7	black (N)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20
44420011	M23 F7	black (N)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420012	M23 F7	black (N)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20
44420001	M23 F7	red (+20°)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420002	M23 F7	red (+20°)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20
44420003	M23 F7	red (+20°)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420004	M23 F7	red (+20°)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20
44420005	M23 F7	blue (-20°)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420006	M23 F7	blue (-20°)	7.0 - 10.0	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20
44420007	M23 F7	blue (-20°)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5
44420008	M23 F7	blue (-20°)	9.5 - 13.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	20

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**EPIC® SIGNAL M23 Inserts 6 pole**

Inserts for M23 circular connectors



**EPIC® SIGNAL M23 Inserts 7 pole**

Inserts for M23 circular connectors



**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors
- Rated voltage (V)**  
according to IEC 61984: 150 V
- Rated impulse voltage**  
4 kV
- Rated current (A)**  
18 A
- Degree of soiling**  
3
- Contact resistance**  
< 4 mOhm
- Contacts**  
Gold-plated brass
- Number of contacts**  
EPIC® SIGNAL M23 Inserts 6 pole  
6  
EPIC® SIGNAL M23 Inserts 7 pole  
7
- Termination methods**  
Crimp termination: 1.0 - 2.5 mm<sup>2</sup>  
Solder termination: up to 2.5 mm<sup>2</sup>
- Cycle of mechanical operation**  
100
- VDE-tested**  
Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137
- Temperature range**  
-25°C up to +125°C

**Suitable housing**

- EPIC® SIGNAL M23 A1 Page 669
- EPIC® SIGNAL M23 A1 D3.2 Page 669
- EPIC® SIGNAL M23 A3 Page 669
- EPIC® SIGNAL M23 G4 Page 670
- EPIC® SIGNAL M23 G5 Page 670
- EPIC® SIGNAL M23 G6 Page 670
- EPIC® SIGNAL M23 B1 Page 671
- EPIC® SIGNAL M23 B2 Page 671
- EPIC® SIGNAL M23 O1
- EPIC® SIGNAL M23 D6 Page 672
- EPIC® SIGNAL M23 F6 Page 672
- EPIC® SIGNAL M23 F7 Page 672
- All inserts fit into all housings

**Suitable contacts:**

- EPIC® SIGNAL M23 Contacts male Page 678
- EPIC® SIGNAL M23 Contacts female Page 678
- Use 2 mm contacts

**Benefits**

- Universal further processing of the M23 inserts through different packaging units. Fully assembled with suitable solder contacts or unpopulated for individual assembly with crimp or solder contacts

**Application range**

- Plant engineering
- Measurement and control technology
- Apparatus construction

Article number	Article description	Inserts	Contacts included	Pin configuration	Pieces / PU
<b>6-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73002760	P-part	without contacts		6	5
73002761	P-part	without contacts		6	20
73002762	P-part	+ male contacts, solder	6	6	5
73002763	P-part	+ male contacts, solder	6	6	20
73002764	P-part	+ female contacts, solder	6	6	5
73002765	P-part	+ female contacts, solder	6	6	20
<b>6-pin inserts, E-part = rotation to the right (clockwise)</b>					
73002766	E-Part	without contacts		6	5
73002767	E-Part	without contacts		6	20
73002768	E-Part	+ male contacts, solder	6	6	5
73002769	E-Part	+ male contacts, solder	6	6	20
73002770	E-Part	+ female contacts, solder	6	6	5
73002771	E-Part	+ female contacts, solder	6	6	20
<b>7-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
44420148	P-part	without contacts		7	5
44420149	P-part	without contacts		7	20
44420150	P-part	+ male contacts, solder	7	7	5
44420151	P-part	+ male contacts, solder	7	7	20
44420152	P-part	+ female contacts, solder	7	7	5
44420153	P-part	+ female contacts, solder	7	7	20
<b>7-pin inserts, E-part = rotation to the right (clockwise)</b>					
44420154	E-Part	without contacts		7	5
44420155	E-Part	without contacts		7	20
44420156	E-Part	+ male contacts, solder	7	7	5
44420157	E-Part	+ male contacts, solder	7	7	20
44420158	E-Part	+ female contacts, solder	7	7	5
44420159	E-Part	+ female contacts, solder	7	7	20

The inserts are suitable for both male and female contacts. For a complete connection, you will need one P-component and one E-component. P-component = left turning (anticlockwise), E-component = right turning (clockwise)  
Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SIGNAL M23 Inserts 8+1 pole

Inserts for M23 circular connectors



## EPIC® SIGNAL M23 Inserts 9 pole

Inserts for M23 circular connectors



### Suitable housing

- EPIC® SIGNAL M23 A1 Page 669
- EPIC® SIGNAL M23 A1 D3.2 Page 669
- EPIC® SIGNAL M23 A3 Page 669
- EPIC® SIGNAL M23 G4 Page 670
- EPIC® SIGNAL M23 G5 Page 670
- EPIC® SIGNAL M23 G6 Page 670
- EPIC® SIGNAL M23 B1 Page 671
- EPIC® SIGNAL M23 B2 Page 671
- EPIC® SIGNAL M23 O1
- EPIC® SIGNAL M23 D6 Page 672
- EPIC® SIGNAL M23 F6 Page 672
- EPIC® SIGNAL M23 F7 Page 672
- All inserts fit into all housings

### Suitable contacts:

- EPIC® SIGNAL M23 Contacts male Page 678
- EPIC® SIGNAL M23 Contacts female Page 678

### EPIC® SIGNAL M23 Inserts 8+1 pole

- 8+1: 8\*1 mm contact, 1\*2 mm contact

### EPIC® SIGNAL M23 Inserts 9 pole

- 9: 9\*1 mm contact

### Benefits

- Universal further processing of the M23 inserts through different packaging units. Fully assembled with suitable solder contacts or unpopulated for individual assembly with crimp or solder contacts

### Application range

- Plant engineering
- Measurement and control technology
- Apparatus construction

### Technical data



ETIM 5.0 Class-ID: EC000438  
ETIM 5.0 Class-Description: Contact insert for industrial connectors



**Rated voltage (V)**  
according to IEC 61984: 150 V

**Rated impulse voltage**  
EPIC® SIGNAL M23 Inserts 8+1 pole  
2.5 kV  
EPIC® SIGNAL M23 Inserts 9 pole  
1.5 kV



**Rated current (A)**  
EPIC® SIGNAL M23 Inserts 8+1 pole  
20 A (2 mm contact)  
7 A (1 mm contacts)  
EPIC® SIGNAL M23 Inserts 9 pole  
7 A



**Degree of soiling**  
3

**Contact resistance**  
< 4 mOhm



**Contacts**  
Gold-plated brass



**Number of contacts**  
EPIC® SIGNAL M23 Inserts 8+1 pole  
8 + 1  
EPIC® SIGNAL M23 Inserts 9 pole  
9



**Termination methods**  
EPIC® SIGNAL M23 Inserts 8+1 pole  
Crimp termination: 0.14 - 1.0 mm<sup>2</sup>  
(1.0 - 2.5 mm<sup>2</sup> for 2-mm contact)  
Solder termination: up to 1.0 mm<sup>2</sup>  
(up to 2.5 mm<sup>2</sup> for 2-mm contact)  
EPIC® SIGNAL M23 Inserts 9 pole  
Crimp termination: 0.14 - 1.0 mm<sup>2</sup>  
Solder termination: up to 1.0 mm<sup>2</sup>



**Cycle of mechanical operation**  
100



**VDE-tested**  
Certified production control:  
VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed)  
UL File Number: E249137



**Temperature range**  
-25°C up to +125°C

Article number	Article description	Inserts	Contacts included	Pin configuration	Pieces / PU
<b>8+1-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73002736	P-part	without contacts		8+1	5
73002737	P-part	without contacts		8+1	20
73002738	P-part	+ male contacts, solder	9	8+1	5
73002739	P-part	+ male contacts, solder	9	8+1	20
73002740	P-part	+ female contacts, solder	9	8+1	5
73002741	P-part	+ female contacts, solder	9	8+1	20
<b>8+1-pin inserts, E-part = rotation to the right (clockwise)</b>					
73002742	E-Part	without contacts		8+1	5
73002743	E-Part	without contacts		8+1	20
73002744	E-Part	+ male contacts, solder	9	8+1	5
73002745	E-Part	+ male contacts, solder	9	8+1	20
73002746	E-Part	+ female contacts, solder	9	8+1	5
73002747	E-Part	+ female contacts, solder	9	8+1	20
<b>9-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73002724	P-part	Unpopulated		9	5
73002725	P-part	Unpopulated		9	20
73002726	P-part	+ male contacts, solder	9	9	5
73002727	P-part	+ male contacts, solder	9	9	20
73002728	P-part	+ female contacts, solder	9	9	5
73002729	P-part	+ female contacts, solder	9	9	20
<b>9-pin inserts, E-part = rotation to the right (clockwise)</b>					
73002730	E-Part	Unpopulated		9	5
73002731	E-Part	Unpopulated		9	20
73002732	E-Part	+ male contacts, solder	9	9	5
73002733	E-Part	+ male contacts, solder	9	9	20
73002734	E-Part	+ female contacts, solder	9	9	5
73002735	E-Part	+ female contacts, solder	9	9	20

The inserts are suitable for both male and female contacts. For a complete connection, you will need one P-component and one E-component. P-component = left turning (anticlockwise), E-component = right turning (clockwise)  
Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® SIGNAL M23 Inserts 12 pole

Inserts for M23 circular connectors



### EPIC® SIGNAL M23 Inserts 16 pole

Inserts for M23 circular connectors



#### Suitable housing

- EPIC® SIGNAL M23 A1 Page 669
- EPIC® SIGNAL M23 A1 D3.2 Page 669
- EPIC® SIGNAL M23 A3 Page 669
- EPIC® SIGNAL M23 G4 Page 670
- EPIC® SIGNAL M23 G5 Page 670
- EPIC® SIGNAL M23 G6 Page 670
- EPIC® SIGNAL M23 B1 Page 671
- EPIC® SIGNAL M23 B2 Page 671
- EPIC® SIGNAL M23 O1
- EPIC® SIGNAL M23 D6 Page 672
- EPIC® SIGNAL M23 F6 Page 672
- EPIC® SIGNAL M23 F7 Page 672
- All inserts fit into all housings

#### Suitable contacts:

- EPIC® SIGNAL M23 Contacts male Page 678
- EPIC® SIGNAL M23 Contacts female Page 678

#### Benefits

- Universal further processing of the M23 inserts through different packaging units. Fully assembled with suitable solder contacts or unpopulated for individual assembly with crimp or solder contacts

#### Application range

- Plant engineering
- Measurement and control technology
- Apparatus construction

Technical data	
	ETIM 5.0 Class-ID: EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors
	<b>Rated voltage (V)</b> according to IEC 61984: 100 V
	<b>Rated impulse voltage</b> 1.5 kV
	<b>Rated current (A)</b> 7 A
	<b>Degree of soiling</b> 3
	<b>Contact resistance</b> < 4 mOhm
	<b>Contacts</b> Gold-plated brass
	<b>Number of contacts</b> EPIC® SIGNAL M23 Inserts 12 pole 12 EPIC® SIGNAL M23 Inserts 16 pole 16
	<b>Termination methods</b> Crimp termination: 0.14 - 1.0 mm <sup>2</sup> Solder termination: up to 1.0 mm <sup>2</sup>
	<b>Cycle of mechanical operation</b> 100
	<b>VDE-tested</b> Certified production control: VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed) UL File Number: E249137
	<b>Temperature range</b> -25°C up to +125°C

Article number	Article description	Inserts	Contacts included	Pin configuration	Pieces / PU
<b>12-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73002712	P-part	Unpopulated		12	5
73002713	P-part	Unpopulated		12	20
73002714	P-part	+ male contacts, solder	12	12	5
73002715	P-part	+ male contacts, solder	12	12	20
73002716	P-part	+ female contacts, solder	12	12	5
73002717	P-part	+ female contacts, solder	12	12	20
<b>12-pin inserts, E-part = rotation to the right (clockwise)</b>					
73002718	E-Part	Unpopulated		12	5
73002719	E-Part	Unpopulated		12	20
73002720	E-Part	+ male contacts, solder	12	12	5
73002721	E-Part	+ male contacts, solder	12	12	20
73002722	E-Part	+ female contacts, solder	12	12	5
73002723	E-Part	+ female contacts, solder	12	12	20
<b>16-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73002700	P-part	Unpopulated		16	5
73002701	P-part	Unpopulated		16	20
73002702	P-part	+ male contacts, solder	16	16	5
73002703	P-part	+ male contacts, solder	16	16	20
73002704	P-part	+ female contacts, solder	16	16	5
73002705	P-part	+ female contacts, solder	16	16	20
<b>16-pin inserts, E-part = rotation to the right (clockwise)</b>					
73002706	E-Part	Unpopulated		16	5
73002707	E-Part	Unpopulated		16	20
73002708	E-Part	+ male contacts, solder	16	16	5
73002709	E-Part	+ male contacts, solder	16	16	20
73002710	E-Part	+ female contacts, solder	16	16	5
73002711	E-Part	+ female contacts, solder	16	16	20

The inserts are suitable for both male and female contacts. For a complete connection, you will need one P-component and one E-component. P-component = left turning (anticlockwise), E-component = right turning (clockwise)  
Photographs are not to scale and do not represent detailed images of the respective products.





## EPIC® SIGNAL M23 Inserts 17 pole

Inserts for M23 circular connectors



### Suitable housing

- EPIC® SIGNAL M23 A1 Page 669
- EPIC® SIGNAL M23 A1 D3.2 Page 669
- EPIC® SIGNAL M23 A3 Page 669
- EPIC® SIGNAL M23 G4 Page 670
- EPIC® SIGNAL M23 G5 Page 670
- EPIC® SIGNAL M23 G6 Page 670
- EPIC® SIGNAL M23 B1 Page 671
- EPIC® SIGNAL M23 B2 Page 671
- EPIC® SIGNAL M23 O1
- EPIC® SIGNAL M23 D6 Page 672
- EPIC® SIGNAL M23 F6 Page 672
- EPIC® SIGNAL M23 F7 Page 672
- All inserts fit into all housings

### Suitable contacts:

- EPIC® SIGNAL M23 Contacts male Page 678
- EPIC® SIGNAL M23 Contacts female Page 678

### Benefits

- Universal further processing of the M23 inserts through different packaging units. Fully assembled with suitable solder contacts or unpopulated for individual assembly with crimp or solder contacts

### Application range

- Plant engineering
- Measurement and control technology
- Apparatus construction

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000438 <b>ETIM 5.0 Class-Description:</b> Contact insert for industrial connectors		<b>Number of contacts</b> 17
	<b>Rated voltage (V)</b> according to IEC 61984: 50 V		<b>Termination methods</b> Crimp termination: 0.14 - 1.0 mm <sup>2</sup> Solder termination: up to 1.0 mm <sup>2</sup>
	<b>Rated impulse voltage</b> 0,8 kV		<b>Cycle of mechanical operation</b> 100
	<b>Rated current (A)</b> 7 A		<b>VDE-tested</b> Certified production control: VDE-REG. no. C24 (according to EN 61984, SELV according to DIN VDE 0100-410 has to be guaranteed) UL File Number: E249137
	<b>Degree of soiling</b> 3		<b>Temperature range</b> -25°C up to +125°C
	<b>Contact resistance</b> < 4 mOhm		
	<b>Contacts</b> Gold-plated brass		

Article number	Article description	Inserts	Contacts included	Pin configuration	Pieces / PU
<b>17-pin inserts, P-part = rotation to the left (anticlockwise)</b>					
73008000	P-part	Unpopulated		17	5
73008010	P-part	Unpopulated		17	20
73028000	P-part	+ male contacts, solder	17	17	5
73028010	P-part	+ male contacts, solder	17	17	20
73018000	P-part	+ female contacts, solder	17	17	5
73018010	P-part	+ female contacts, solder	17	17	20
<b>17-pin inserts, E-part = rotation to the right (clockwise)</b>					
73008500	E-Part	Unpopulated		17	5
73008510	E-Part	Unpopulated		17	20
73028500	E-Part	+ male contacts, solder	17	17	5
73028510	E-Part	+ male contacts, solder	17	17	20
73018500	E-Part	+ female contacts, solder	17	17	5
73018510	E-Part	+ female contacts, solder	17	17	20

The inserts are suitable for both male and female contacts. For a complete connection, you will need one P-component and one E-component. P-component = left turning (anticlockwise), E-component = right turning (clockwise)  
Photographs are not to scale and do not represent detailed images of the respective products.



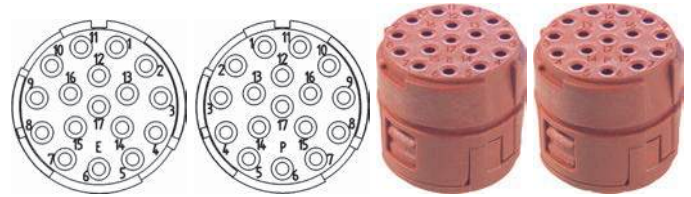
## EPIC® SIGNAL M23 Inserts 12 pole D-Sub

Inserts for M23 circular connectors



## EPIC® SIGNAL M23 Inserts 17 pole D-Sub

Inserts for M23 circular connectors



### Info

- For D-Sub ribbon contacts
- For automated production with crimping machine

### Info

- For D-Sub ribbon contacts
- For automated production with crimping machine

### Suitable housing

- EPIC® SIGNAL M23 A1 Page 669
- EPIC® SIGNAL M23 A1 D3.2 Page 669
- EPIC® SIGNAL M23 A3 Page 669
- EPIC® SIGNAL M23 G4 Page 670
- EPIC® SIGNAL M23 G5 Page 670
- EPIC® SIGNAL M23 G6 Page 670
- EPIC® SIGNAL M23 B1 Page 671
- EPIC® SIGNAL M23 B2 Page 671
- EPIC® SIGNAL M23 O1
- EPIC® SIGNAL M23 D6 Page 672
- EPIC® SIGNAL M23 F6 Page 672
- EPIC® SIGNAL M23 F7 Page 672

### Suitable contacts:

- EPIC® M-D 1.0 D-Sub stamped contacts-on-reel Page 577

### Benefits

- Efficient assembling due to the use of D-Sub contacts-on-reel

### Application range

- Plant engineering
- Measurement and control technology
- Apparatus construction

### Technical data

<p> <b>ETIM 5.0 Class-ID:</b> EC000438 ETIM 5.0 Class-Description: Contact insert for industrial connectors</p> <p> <b>Rated voltage (V)</b> EPIC® SIGNAL M23 Inserts 12 pole D-Sub according to IEC 61984: 100 V EPIC® SIGNAL M23 Inserts 17 pole D-Sub according to IEC 61984: 50 V</p> <p><b>Rated impulse voltage</b> EPIC® SIGNAL M23 Inserts 12 pole D-Sub 1.5 kV EPIC® SIGNAL M23 Inserts 17 pole D-Sub 0,8 kV</p> <p> <b>Rated current (A)</b> 4 A</p>	<p> <b>Degree of soiling</b> 3</p> <p><b>Contact resistance</b> &lt; 4 mOhm</p> <p> <b>Contacts</b> Partly gold-plated brass</p> <p> <b>Number of contacts</b> EPIC® SIGNAL M23 Inserts 12 pole D-Sub 12 EPIC® SIGNAL M23 Inserts 17 pole D-Sub 17</p> <p> <b>Termination methods</b> Crimp termination: 0.08 - 0.56 mm<sup>2</sup></p> <p> <b>Cycle of mechanical operation</b> 50</p> <p> <b>Temperature range</b> -25°C up to +125°C</p>
--	---

Article number	Article description	Inserts	Pin configuration	Pieces / PU
<b>12-pin inserts, E-part = rotation to the right (clockwise)</b>				
44420120	E-Part	Unpopulated, for male D-Sub crimp-contacts on reel	12	5
44420121	E-Part	Unpopulated, for male D-Sub crimp-contacts on reel	12	20
44420122	E-Part	Unpopulated, for female D-Sub crimp-contacts on reel	12	5
44420123	E-Part	Unpopulated, for female D-Sub crimp-contacts on reel	12	20
<b>12-pin inserts, P-part = rotation to the left (anticlockwise)</b>				
44420124	P-part	Unpopulated, for male D-Sub crimp-contacts on reel	12	5
44420125	P-part	Unpopulated, for male D-Sub crimp-contacts on reel	12	20
44420126	P-part	Unpopulated, for female D-Sub crimp-contacts on reel	12	5
44420127	P-part	Unpopulated, for female D-Sub crimp-contacts on reel	12	20
<b>17-pin inserts, E-part = rotation to the right (clockwise)</b>				
44420128	E-Part	Unpopulated, for male D-Sub crimp-contacts on reel	17	5
44420129	E-Part	Unpopulated, for male D-Sub crimp-contacts on reel	17	20
44420130	E-Part	Unpopulated, for female D-Sub crimp-contacts on reel	17	5
44420131	E-Part	Unpopulated, for female D-Sub crimp-contacts on reel	17	20
<b>17-pin inserts, P-part = rotation to the left (anticlockwise)</b>				
44420132	P-part	Unpopulated, for male D-Sub crimp-contacts on reel	17	5
44420133	P-part	Unpopulated, for male D-Sub crimp-contacts on reel	17	20
44420134	P-part	Unpopulated, for female D-Sub crimp-contacts on reel	17	5
44420135	P-part	Unpopulated, for female D-Sub crimp-contacts on reel	17	20

The inserts are suitable for both male and female contacts. For a complete connection, you will need one P-component and one E-component. P-component = left turning (anticlockwise), E-component = right turning (clockwise)  
Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® SIGNAL M23 Contacts male

Contacts, tools, accessories for circular connectors M23



**Info**

- All contacts are high quality gold plated
- Contacts are designed for wide crimping range, therefore low number of variants
- Contacts in solder or crimp version available

### EPIC® SIGNAL M23 Contacts female

Contacts, tools, accessories for circular connectors M23



**Info**

- All contacts are high quality gold plated
- Contacts are designed for wide crimping range, therefore low number of variants
- Contacts in solder or crimp version available

Article number	Article designation	Version	For design	Pieces / PU
<b>1mm contacts male</b>				
72400001	EPIC® M23 SCEM 1 mm AU 0,14 - 1,0 (10)	1 mm male crimp	M23 inserts (not D-Sub)	10
72400000	EPIC® M23 SCEM 1 mm AU 0,14 - 1,0 (100)	1 mm male crimp	M23 inserts (not D-Sub)	100
72402001	EPIC® M23 SLEM 1 mm AU 1.0 (10)	1 mm male solder	M23 inserts (not D-Sub)	10
72402000	EPIC® M23 SLEM 1 mm AU 1.0 (100)	1 mm male solder	M23 inserts (not D-Sub)	100
<b>2mm contacts male</b>				
72401000	EPIC® M23 SCEM 2 mm AU 1,0 - 2,5 (100)	2 mm male crimp	M23 inserts (not D-Sub)	100
72403100	EPIC® M23 SLEM 2 mm AU (10)	2 mm male solder	M23 inserts (not D-Sub)	10
72403000	EPIC® M23 SLEM 2 mm AU (100)	2 mm male solder	M23 inserts (not D-Sub)	100
<b>1mm contacts female</b>				
74020601	EPIC® M23 BCEMS 1 mm AU 0.14 - 1.0 (10)	1 mm female slot 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	10
74200600	EPIC® M23 BCEMS 1 mm AU 0.14 - 1.0 (100)	1 mm female slot 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	100
72402601	EPIC® M23 BLEMS 1 mm 1.0 AU (10)	1 mm female slot solder	M23 inserts (not D-Sub)	10
72402600	EPIC® M23 BLEMS 1 mm 1.0 AU (100)	1 mm female slot solder	M23 inserts (not D-Sub)	100
74034500	LS1 D BCEMS 1 mm AU 0.14 - 1.0 (100)	1 mm female hyperboloid 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	100
74034501	LS1 D BCEMS 1 mm AU 0.14 - 1.0 (10)	1 mm female hyperboloid 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	10
<b>2mm contacts female</b>				
72401601	EPIC® M23 BCEMS 2 mm AU 1,0 - 2,5 (10)	2 mm female crimp	M23 inserts (not D-Sub)	10
72401600	EPIC® M23 BCEMS 2 mm AU 1,0 - 2,5 (100)	2 mm female crimp	M23 inserts (not D-Sub)	100
72404100	EPIC® M23 BLEMS 2 mm AU 1,0 - 2,5 (10)	2 mm female solder	M23 inserts (not D-Sub)	10
72404000	EPIC® M23 BLEMS 2 mm AU 1,0 - 2,5 (100)	2 mm female solder	M23 inserts (not D-Sub)	100

Photographs are not to scale and do not represent detailed images of the respective products.

### EPIC® SIGNAL M23 Tools

Contacts, tools, accessories for circular connectors M23



**i Info**

- Universal 4-indent crimping tool
- Revolver Locator for quick changes in processing other contacts

Article number	Article description	Inserts	Pieces / PU
<b>Tools</b>			
11148000	Crimping tool	In tool case, without locator	1
11148001	4-mandrel digital crimping tool	In tool case, without locator	1
11148002	Crimping machine	Pneumatic for 5 - 10 bar, locator not included	1
11148300	Locator for EPIC® CIRCON		1
44420078	M23 removal tool for inserts	For housing type A, B, G	1

Photographs are not to scale and do not represent detailed images of the respective products.

### EPIC® SIGNAL M23 Accessories

Contacts, tools, accessories for circular connectors M23

**i Info**

- Simple protective cover as transport protection
- Metall screw cap for safe covering
- SYLVIN® adapter for mounting a cable conduit or an additional cable gland



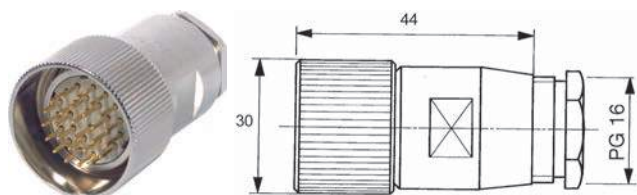
Article number	Article description	Inserts	Pieces / PU
<b>EPIC® SIGNAL M23 Accessories</b>			
75007810	M23-LS1 A, B, F, G protective cap	Plastic cap for A1, B1, B2, F6, F7, G4, G5, G6	20
75007710	M23 / LS1 D protective cap	Plastic cap for D6, A6	20
75018010	M23 A, B protective cap, plastic cord with cable lug	Metal cap for A1, A3, B1, B2	20
75018110	M23 A, B protective cap, plastic cord with cable lug	Metal cap for A1, A3, B1, B2	20
75018410	M23 D screw cap, plastic cord with loop	Metal screw cap for D	20
55001312	SILVYN ADAPTER M23/M20x1,5	For all integrated M23 cable glands	1

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® SIGNAL R 3.0 D PG 16

Circular connectors with solder termination, 21-pin and 26-pin

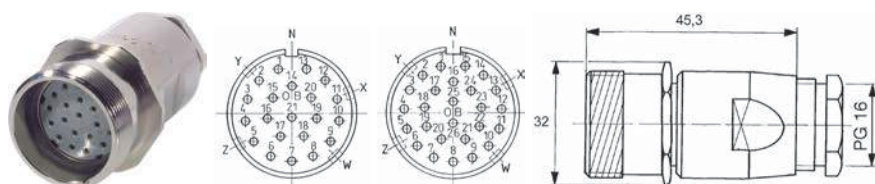


**Info**

- Compact and reliable connector for multicore signal cables

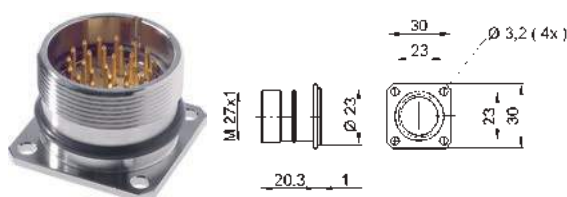
### EPIC® SIGNAL R 3.0 F PG 16

Circular connectors with solder termination, 21-pin and 26-pin



### EPIC® SIGNAL R 3.0 A

Circular connectors with solder termination, 21-pin and 26-pin



#### Benefits

- Highest contact density at small space requirements
- Connector in solder version for easy maintenance

#### Application range

- Machine and equipment manufacturing
- Measurement and control technology

#### Technical data

- ETIM** ETIM 5.0 Class-ID: EC001322  
ETIM 5.0 Class-Description: Round socket/plug for high currents
- Rated voltage (V)** 24V AC / 60VDC
- Rated impulse voltage** 1.5 kV
- Rated current (A)** 7.5 A
- Contact resistance** < 3 mOhm
- Contacts** Copper alloy, gold-plated
- Number of contacts** 21-pin / 26-pin

- Termination methods** Solder termination: up to 1.0 mm<sup>2</sup>
- Material** Housing: nickel-plated copper alloy  
Insert: thermoplastic  
Sealing: neoprene
- IP** **Protection rating** IP 67 (maximum, dependant on cable gland used)
- Cycle of mechanical operation** 500
- Temperature range** -40°C to +100°C, short-term up to +125°C

Article number	Article	Version	Contacts	Pin configuration	Coding	Cable clamping range	Fastening type	Pieces / PU
<b>R 3.0 D PG 16</b>								
00009045	SIGNAL R 3.0 D	male	1 - 21	E-Part	N	6.5 - 16.0		5
00008899	SIGNAL R 3.0 D	male	1 - 26	E-Part	N	6.5 - 16.0		5
00008749	SIGNAL R 3.0 D	female	1 - 21	P-Part	N	6.5 - 16.0		5
00008829	SIGNAL R 3.0 D	female	1 - 26	P-Part	N	6.5 - 16.0		5
<b>R 3.0 F PG 16</b>								
00008854	SIGNAL R 3.0 F	male	1 - 21	E-Part	N	6.5 - 16.0		5
00008822	SIGNAL R 3.0 F	male	1 - 26	E-Part	N	6.5 - 16.0		5
00008779	SIGNAL R 3.0 F	female	1 - 21	P-Part	N	6.5 - 16.0		5
00008979	SIGNAL R 3.0 F	female	1 - 26	P-Part	N	6.5 - 16.0		5
<b>R 3.0 A</b>								
00008747	SIGNAL R 3.0 A	male	1 - 21	E-Part	N		Ø 3.2 mm (4x)	5
00008825	SIGNAL R 3.0 A	male	1 - 26	E-Part	N		Ø 3.2 mm (4x)	5
00008867	SIGNAL R 3.0 A	female	1 - 21	P-Part	N		Ø 3.2 mm (4x)	5
00008746	SIGNAL R 3.0 A	female	1 - 26	P-Part	N		Ø 3.2 mm (4x)	5

The housing is available with male or female inserts. The contact photographs are not to scale and do not represent detailed images of the respective products.

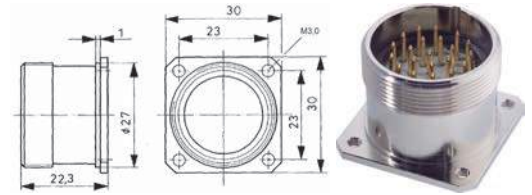


**Info**

- Compact and reliable connector for multicore signal cables

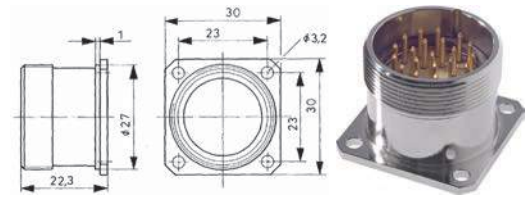
**EPIC® SIGNAL R 3.0 B1**

Circular connectors with solder termination, 21-pin and 26-pin



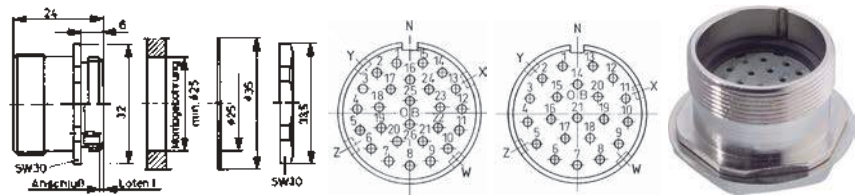
**EPIC® SIGNAL R 3.0 B2**

Circular connectors with solder termination, 21-pin and 26-pin



**EPIC® SIGNAL R 3.0 G1**

Circular connectors with solder termination, 21-pin and 26-pin



**Benefits**

- Highest contact density at small space requirements
- Connector in solder version for easy maintenance

**Application range**

- Machine and equipment manufacturing
- Measurement and control technology

**Technical data**

	ETIM 5.0 Class-ID: EC001322 ETIM 5.0 Class-Description: Round socket/plug for high currents		<b>Termination methods</b> Solder termination: up to 1.0 mm <sup>2</sup>
	<b>Rated voltage (V)</b> 24V AC / 60VDC		<b>Material</b> Housing: nickel-plated copper alloy Insert: thermoplastic Sealing: neoprene
	<b>Rated impulse voltage</b> 1.5 kV		<b>Protection rating</b> IP 67 (maximum, dependant on cable gland used)
	<b>Rated current (A)</b> 7.5 A		<b>Cycle of mechanical operation</b> 500
	<b>Contact resistance</b> < 3 mOhm		<b>Temperature range</b> -40°C to +100°C, short-term up to +125°C
	<b>Contacts</b> Copper alloy, gold-plated		
	<b>Number of contacts</b> 21-pin / 26-pin		

Article number	Article	Version	Contacts	Pin configuration	Coding	Fastening type	Pieces / PU
<b>R 3.0 B1</b>							
00009082	SIGNAL R 3.0 B1	male	1 - 21	E-Part	N	M3 (4x)	5
00009135	SIGNAL R 3.0 B1	female	1 - 21	P-Part	N	M3 (4x)	5
00008978	SIGNAL R 3.0 B1	female	1 - 26	P-Part	N	M3 (4x)	5
<b>R 3.0 B2</b>							
00008939	SIGNAL R 3.0 B2	male	1 - 26	E-Part	N	Ø 3.2 mm (4x)	5
00009470	SIGNAL R 3.0 B2	female	1 - 26	P-Part	N	Ø 3.2 mm (4x)	5
<b>R 3.0 G1</b>							
00009371	ZYLIN R 3.0 G1	male	1 - 21	E-Part	N	Ø 25 mm (1x)	5
00009894	ZYLIN R 3.0 G1	male	1 - 26	E-Part	N	Ø 25 mm (1x)	5
00009057	ZYLIN R 3.0 G1	female	1 - 21	P-Part	N	Ø 25 mm (1x)	5
00009005	ZYLIN R 3.0 G1	female	1 - 26	P-Part	N	Ø 25 mm (1x)	5

The housing is available with male or female inserts. The contact photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® SIGNAL R 3.0 Tools

Contacts, tools, accessories for circular connectors



## EPIC® SIGNAL R 3.0 Accessories

Contacts, tools, accessories for circular connectors



### Technical data



**EPIC® SIGNAL R 3.0 Tools**

ETIM 5.0 Class-ID: EC000168

ETIM 5.0 Class-Description: Crimp tool  
cable lugs, cable end sleeves, screen  
connection

**EPIC® SIGNAL R 3.0 Accessories**

ETIM 5.0 Class-ID: EC001322

ETIM 5.0 Class-Description: Round  
socket/plug for high currents

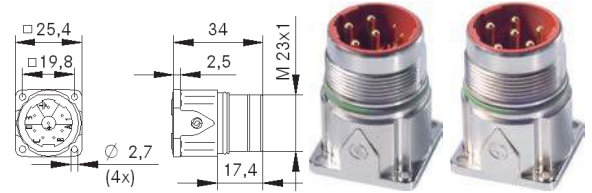
Article number	Article designation	For design	Pieces / PU
<b>EPIC® SIGNAL R 3.0 Tools</b>			
50200800	R3.0 assembly/disassembly tool	for type D, F	1
<b>Flat gasket</b>			
50201203	R3.0 A flat gasket	for type A1	5
50202203	R3.0 B flat gasket	for type B	5
<b>Metal cap</b>			
50201120	R3.0 A metal screw-cap	for type A1	5

Photographs are not to scale and do not represent detailed images of the respective products.



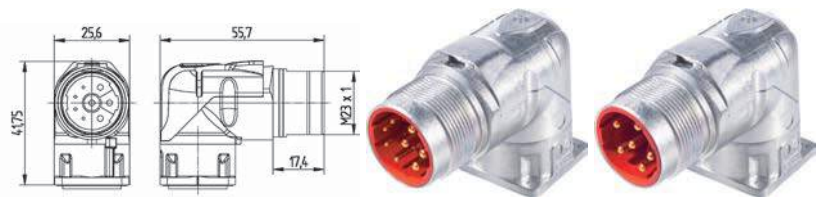
**EPIC® POWER LS1 A1**

Circular connectors for servomotors and power supply



**EPIC® POWER LS1 A3**

Circular connectors for servomotors and power supply



**Info**

- Rotateable with clearly defined adjustment positions

**Suitable contacts:**

- EPIC® POWER LS1 Contacts male Page 687
- PU = 5 pieces: the contacts are included. 2 mm contact crimp range is 0.5 - 2.5 mm².
- PU = 20 pieces: the contacts must be ordered separately

**Benefits**

- High power at smallest installation space, Optimal solution for electric motors
- EMC-optimised design
- Safety use in field environment by high protection class

**Application range**

- Plant engineering
- Servo drives and servo assemblies

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC001322 <b>ETIM 5.0 Class-Description:</b> Round socket/plug for high currents		<b>Termination methods</b> Crimp termination: 0.5 - 2.5 mm² (2 mm contacts) Crimp termination: 0.14 - 1.0 mm² (1 mm contacts)
	<b>Rated voltage (V)</b> 630 V (2 mm contacts) 250 V (1 mm contacts)		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated impulse voltage</b> 6 kV (2 mm contacts) 4 kV (1 mm contacts)		<b>Protection rating</b> <b>EPIC® POWER LS1 A1</b> IP68 (10h / 1m) <b>EPIC® POWER LS1 A3</b> IP 65
	<b>Rated current (A)</b> 26A/3+PE+4, 25A/5+PE (2mm contacts) 7 A (1 mm contacts)		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> <b>EPIC® POWER LS1 A1</b> Certified production control: VDE-REG. no. B25
	<b>Contact resistance</b> < 4 mOhm		<b>Temperature range</b> -25°C up to +125°C
	<b>Contacts</b> Gold-plated brass		
	<b>Number of contacts</b> 3+PE+4(2mm/ 1mm) 5+PE(2mm)		

Article number	Article description	Contacts included	Fastening type	Pin configuration	Pieces / PU
<b>Type LS1 A1, front wall mounting, 6-pin, for male contacts</b>					
76003000	LS1 A1	6	Ø 2.7 mm (4x)	5+PE	5
76003510	LS1 A1		Ø 2.7 mm (4x)	5+PE	20
<b>Type LS1 A1, front wall mounting, 8-pin, for male contacts</b>					
76004000	LS1 A1	8	Ø 2.7 mm (4x)	3+PE+4	5
76004510	LS1 A1		Ø 2.7 mm (4x)	3+PE+4	20
<b>Type LS1 A3, angled, rotatable, 6-pin, for male contacts</b>					
24420058	LS1 A3	6	Ø 2.7 mm (4x)	5+PE	5
24420059	LS1 A3		Ø 2.7 mm (4x)	5+PE	20
<b>Type LS1 A3, angled, rotatable, 8-pin, for male contacts</b>					
24420056	LS1 A3	8	Ø 2.7 mm (4x)	3+PE+4	5
24420057	LS1 A3		Ø 2.7 mm (4x)	3+PE+4	20

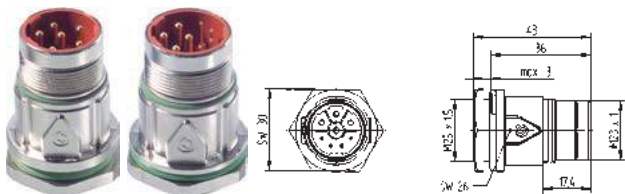
Photographs are not to scale and do not represent detailed images of the respective products.





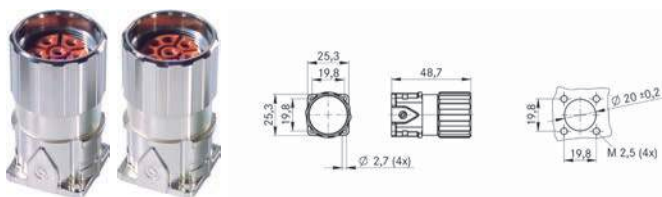
## EPIC® POWER LS1 G5

Circular connectors for servomotors and power supply



## EPIC® POWER LS1 A6

Circular connectors for servomotors and power supply



**Info**

- Allows a electrical disconnecting point directly at power source

### Suitable contacts:

#### EPIC® POWER LS1 G5

- EPIC® POWER LS1 Contacts male  
Page 687

#### EPIC® POWER LS1 A6

- EPIC® POWER LS1 Contacts male  
Page 687
- PU = 5 pieces: the contacts are included.  
2 mm contact crimp range is 0.5 - 2.5 mm².
- PU = 20 pieces: the contacts must be ordered separately

### Benefits

- High power at smallest installation space, Optimal solution for electric motors
- EMC-optimised design
- Safety use in field environment by high protection class

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001322  
ETIM 5.0 Class-Description: Round socket/plug for high currents

**Rated voltage (V)**  
630 V (2 mm contacts)  
250 V (1 mm contacts)

**Rated impulse voltage**  
6 kV (2 mm contacts)  
4 kV (1 mm contacts)

**Rated current (A)**  
26A/3+PE+4, 25A/5+PE  
(2mm contacts)  
7 A (1 mm contacts)

**Degree of soiling**  
3

**Contact resistance**  
< 4 mOhm

**Contacts**  
Gold-plated brass

**Number of contacts**  
3+PE+4(2mm/ 1mm)  
5+PE(2mm)

**Termination methods**  
Crimp termination: 0.5 - 2.5 mm²  
(2 mm contacts)  
Crimp termination: 0.14 - 1.0 mm²  
(1 mm contacts)

**Material**  
Housing: nickel-plated zinc die-casting,  
nickel-plated brass  
Insert: PA,  
Seal: FPM

**Protection rating**  
IP68 (10h / 1m)

**Cycle of mechanical operation**  
500

**VDE-tested**  
Certified production control:  
VDE-REG. no. B25

**Temperature range**  
-25°C up to +125°C

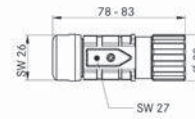
Article number	Article description	Contacts included	Fastening type	Pin configuration	Pieces / PU
<b>Type LS1 G5, front wall mounting, 6-pin, for male contacts</b>					
76153000	LS1 G5	6	M25 x 1.5 (with nut)	5+PE	5
76153510	LS1 G5		M25 x 1.5 (with nut)	5+PE	20
<b>Type LS1 G5, front wall mouning, 8-pin, for male contacts</b>					
76154000	LS1 G5	8	M25 x 1.5 (with nut)	3+PE+4	5
76154510	LS1 G5		M25 x 1.5 (with nut)	3+PE+4	20
<b>Type LS1 A6, front wall mounting, 6-pin, for female contacts</b>					
76083000	LS1 A6	6	Ø 2.7 mm (4x)	5+PE	5
76083510	LS1 A6		Ø 2.7 mm (4x)	5+PE	20
<b>Type LS1 A6, front wall mounting, 8-pin, for female contacts</b>					
76084000	LS1 A6	8	Ø 2.7 mm (4x)	3+PE+4	5

Photographs are not to scale and do not represent detailed images of the respective products.



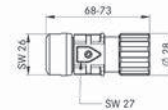
**EPIC® POWER LS1 D6**

Circular connectors for servomotors and power supply



**EPIC® POWER LS1 D6 (short)**

Circular connectors for servomotors and power supply



**Info**

- Reduced length for cables which are easy to assemble

**Suitable contacts:**

- EPIC® POWER LS1 Contacts female Page 687
- PU = 5 pieces: the contacts are included. 2 mm contact crimp range is 0.5 - 2.5 mm<sup>2</sup>.
- PU = 20 pieces: the contacts must be ordered separately

**Benefits**

- High power at smallest installation space, Optimal solution for electric motors
- EMC-optimised design
- Safety use in field environment by high protection class

**Application range**

- Plant engineering
- Servo drives and servo assemblies

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC001322 <b>ETIM 5.0 Class-Description:</b> Round socket/plug for high currents		<b>Number of contacts</b> 3+PE+4(2mm/1mm) 5+PE(2mm)
	<b>Rated voltage (V)</b> 630 V (2 mm contacts) 250 V (1 mm contacts)		<b>Termination methods</b> Crimp termination: 0.5 - 4.0 mm <sup>2</sup> (2 mm contacts) Crimp termination: 0.14 - 1.0 mm <sup>2</sup> (1 mm contacts)
	<b>Rated impulse voltage</b> 6 kV (2 mm contacts) 4 kV (1 mm contacts)		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated current (A)</b> 26A/3+PE+4, 25A/5+PE (2mm contacts) 7 A (1 mm contacts)		<b>Protection rating</b> IP68 (10h / 1m)
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 500
	<b>Contact resistance</b> < 4 mOhm		<b>VDE-tested</b> Certified production control: VDE-REG. no. B25
	<b>Contacts</b> Gold-plated brass		<b>Temperature range</b> -25°C up to +125°C

Article number	Article description	Contacts included	Clamping range in mm	Pin configuration	Pieces / PU
<b>Type LS1 D6, cable connector, 6-pin, for female contacts</b>					
73000004	LS1 D6	6	8.5 - 11	5+PE	5
73000006	LS1 D6		8.5 - 11	5+PE	20
73000005	LS1 D6	6	10.5 - 15.5	5+PE	5
73000007	LS1 D6		10.5 - 15.5	5+PE	20
76123000	LS1 D6	6	7.5 - 15.5	5+PE	5
76123510	LS1 D6		7.5 - 15.5	5+PE	20
44420091	LS1 D6 with 2mm contact for 4mm <sup>2</sup> termination	6	14 - 17	5+PE	5
44420090	LS1 D6		14 - 17	5+PE	20
<b>Type LS1 D6, cable connector, 8-pin, for female contacts</b>					
73000000	LS1 D6	8	8.5 - 11	3+PE+4	5
73000002	LS1 D6		8.5 - 11	3+PE+4	20
73000001	LS1 D6	8	10.5 - 15.5	3+PE+4	5
73000003	LS1 D6		10.5 - 15.5	3+PE+4	20
76124000	LS1 D6	8	7.5 - 15.5	3+PE+4	5
76124510	LS1 D6		7.5 - 15.5	3+PE+4	20
44420089	LS1 D6 with 2mm contact for 4mm <sup>2</sup> termination	8	14 - 17	3+PE+4	5
44420088	LS1 D6		14 - 17	3+PE+4	20
<b>Type LS1 D6 short, cable connector, 6-pin, for female contacts</b>					
73000028	LS1 D6	6	8.5 - 11	5+PE	5
73000030	LS1 D6		8.5 - 11	5+PE	20
73000029	LS1 D6	6	10.5 - 15.5	5+PE	5
73000031	LS1 D6		10.5 - 15.5	5+PE	20
76123100	LS1 D6	6	7.5 - 15.5	5+PE	5
76123610	LS1 D6		7.5 - 15.5	5+PE	20
<b>Type LS1 D6 short, cable connector, 8-pin, for female contacts</b>					
73000024	LS1 D6	8	8.5 - 11	3+PE+4	5
73000026	LS1 D6		8.5 - 11	3+PE+4	20
73000025	LS1 D6	8	10.5 - 15.5	3+PE+4	5
73000027	LS1 D6		10.5 - 15.5	3+PE+4	20
76124100	LS1 D6	8	7.5 - 15.5	3+PE+4	5
76124610	LS1 D6		7.5 - 15.5	3+PE+4	20

Photographs are not to scale and do not represent detailed images of the respective products.



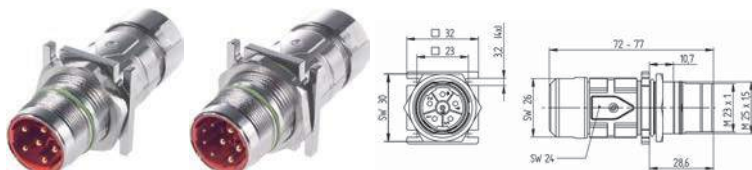
### EPIC® POWER LS1 F6

Circular connectors for servomotors and power supply



### EPIC® POWER LS1 F7

Circular connectors for servomotors and power supply



**Info**

- For fast and safe wall mounting of a cable extension

**Suitable contacts:**

- EPIC® POWER LS1 Contacts male Page 687
- PU = 5 pieces: the contacts are included. 2 mm contact crimp range is 0.5 - 2.5 mm².
- PU = 20 pieces: the contacts must be ordered separately

**Benefits**

- High power at smallest installation space, Optimal solution for electric motors
- EMC-optimised design
- Safety use in field environment by high protection class

**Application range**

- Plant engineering
- Servo drives and servo assemblies

**Technical data**

	ETIM 5.0 Class-ID: EC001322 ETIM 5.0 Class-Description: Round socket/plug for high currents		<b>Termination methods</b> Crimp termination: 0.5 - 4.0 mm² (2 mm contacts) Crimp termination: 0.14 - 1.0 mm² (1 mm contacts)
	<b>Rated voltage (V)</b> 630 V (2 mm contacts) 250 V (1 mm contacts)		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated impulse voltage</b> 6 kV (2 mm contacts) 4 kV (1 mm contacts)		<b>Protection rating</b> IP68 (10h / 1m)
	<b>Rated current (A)</b> 26A/3+PE+4, 25A/5+PE (2mm contacts) 7 A (1 mm contacts)		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> EPIC® POWER LS1 F6 Certified production control: VDE-REG. no. B25
	<b>Contact resistance</b> < 4 mOhm		<b>Temperature range</b> -25 °C up to +125 °C
	<b>Contacts</b> Gold-plated brass		
	<b>Number of contacts</b> 3+PE+4(2mm/1mm) 5+PE(2mm)		

Article number	Article description	Contacts included	Clamping range in mm	Fastening type	Pin configuration	Pieces / PU
<b>Type LS1 F6, cable coupler, 6-pin, for male contacts</b>						
73000012	LS1 F6	6	8.5 - 11		5+PE	5
73000014	LS1 F6		8.5 - 11		5+PE	20
73000013	LS1 F6	6	10.5 - 15.5		5+PE	5
73000015	LS1 F6		10.5 - 15.5		5+PE	20
76133000	LS1 F6	6	7.5 - 15.5		5+PE	5
76133510	LS1 F6		7.5 - 15.5		5+PE	20
44420095	LS1 F6 with 2mm contact for 4mm² termination	6	14 - 17		5+PE	5
44420094	LS1 F6		14 - 17		5+PE	20
<b>Type LS1 F6, cable coupler, 8-pin, for male contacts</b>						
73000008	LS1 F6	8	8.5 - 11		3+PE+4	5
73000010	LS1 F6		8.5 - 11		3+PE+4	20
73000009	LS1 F6	8	10.5 - 15.5		3+PE+4	5
73000011	LS1 F6		10.5 - 15.5		3+PE+4	20
76134000	LS1 F6	8	7.5 - 15.5		3+PE+4	5
76134510	LS1 F6		7.5 - 15.5		3+PE+4	20
44420093	LS1 F6 with 2mm contact for 4mm² termination	8	14 - 17		3+PE+4	5
44420092	LS1 F6		14 - 17		3+PE+4	20
<b>Type LS1 F7, cable coupler with mounting flange, 6-pin, for male contacts</b>						
73000020	LS1 F7	6	8.5 - 11	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5+PE	5
73000021	LS1 F7	6	10.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5+PE	5
73000023	LS1 F7		10.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5+PE	20
76143000	LS1 F7	6	7.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	5+PE	5
<b>Type LS1 F7, 8-pin, for male contacts</b>						
73000016	LS1 F7	8	8.5 - 11	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	3+PE+4	5
73000017	LS1 F7		10.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	3+PE+4	5
76144000	LS1 F7	8	7.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	3+PE+4	5
76144510	LS1 F7		7.5 - 15.5	Ø 3.2 mm (4x), M25 x 1.5 (with nut)	3+PE+4	20

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



**EPIC® POWER LS1 Contacts male**

Contacts, tools, accessories for circular connectors



**i Info**

- All contacts are high quality gold plated
- Contacts are designed for wide crimping range, therefore low number of variants
- Only available as crimp version due to the high mechanical stress in servo applications

**EPIC® POWER LS1 Contacts female**

Contacts, tools, accessories for circular connectors



**i Info**

- All contacts are high quality gold plated
- Contacts are designed for wide crimping range, therefore low number of variants
- Only available as crimp version due to the high mechanical stress in servo applications

Article number	Article designation	Version	For design	Pieces / PU
<b>1mm contacts male</b>				
74033001	LS1 A SCEM 1 mm AU 0.14 - 1.0 (10)	1 mm male 0.14 - 1.0 mm <sup>2</sup>	LSI A1, A3, G5	10
74033000	LS1 A SCEM 1 mm AU 0.14 - 1.0 (100)	1 mm male 0.14 - 1.0 mm <sup>2</sup>	LSI A1, A3, G5	100
74034001	LS1 F SCEM 1 mm AU 0.14 - 1.0 (10)	1 mm male 0.14 - 1.0 mm <sup>2</sup>	LS1 F6, F7	10
74034000	LS1 F SCEM 1 mm AU 0.14 - 1.0 (100)	1 mm male 0.14 - 1.0 mm <sup>2</sup>	LS1 F6, F7	100
<b>2mm contacts male</b>				
74033101	LS1 A SCEM 2 mm AU 0.5 - 2.5 (10)	2 mm male 0.5 - 2.5 mm <sup>2</sup>	LSI A1, A3, G5	10
74033100	LS1 A SCEM 2 mm AU 0.5 - 2.5 (100)	2 mm male 0.5 - 2.5 mm <sup>2</sup>	LSI A1, A3, G5	100
74034101	LS1 F SCEM 2 mm AU 0.5 - 2.5 (10)	2 mm male 0.5 - 2.5 mm <sup>2</sup>	LS1 F6, F7	10
74034100	LS1 F SCEM 2 mm AU 0.5 - 2.5 (100)	2 mm male 0.5 - 2.5 mm <sup>2</sup>	LS1 F6, F7	100
44420103	LS1 F SCEM 2 mm AU 4,0 (100)	2 mm male 4.0 mm <sup>2</sup>	LS1 F6, F7	100
<b>1mm contacts female</b>				
74020601	EPIC® M23 BCEMS 1 mm AU 0.14 - 1.0 (10)	1 mm female slot 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	10
74200600	EPIC® M23 BCEMS 1 mm AU 0.14 - 1.0 (100)	1 mm female slot 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	100
74034501	LS1 D BCEMS 1 mm AU 0.14 - 1.0 (10)	1 mm female hyperboloid 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	10
74034500	LS1 D BCEMS 1 mm AU 0.14 - 1.0 (100)	1 mm female hyperboloid 0.14 - 1.0 mm <sup>2</sup>	per inserts M23 (not D-Sub), LS1 D6, A6	100
<b>2mm contacts female</b>				
44429371	LS1 D BCEMF 2 mm AU 0.5 - 2.5 (10)	2 mm female spring 0,5-2,5mm <sup>2</sup>	LS1 D6, A6	10
44429370	LS1 D BCEMF 2 mm AU 0.5 - 2.5 (100)	2 mm female spring 0,5-2,5mm <sup>2</sup>	LS1 D6, A6	100
44420104	LS1 D BCEMD 2 mm AU 4,0 (10)	2 mm female hyperboloid 4 mm <sup>2</sup>	LS1 D6	10
44420105	LS1 D BCEMD 2 mm AU 4,0 (100)	2 mm female hyperboloid 4 mm <sup>2</sup>	LS1 D6	100
44429001	EPIC CIRCON BCBG 2MM 1.0-2.5 (3000) RE	2 mm female crimp	LS1 D6, A6	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWER LS1 Tools

Contacts, tools, accessories for circular connectors



Article number	Article	Version	Pieces / PU
<b>Tools</b>			
11148000	Crimping tool	In tool case, without locator	1
11148001	4-mandrel digital crimping tool	In tool case, without locator	1
11148002	Crimping machine	Pneumatic for 5 - 10 bar, locator not included	1
11148300	Locator for EPIC® CIRCON		1
75017400	LS1 removal tool for 1 mm contacts	For housing type A, G	1
75017500	LS1 removal tool for 2 mm contacts	For housing type A, G	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWER LS1 Accessories

Contacts, tools, accessories for circular connectors



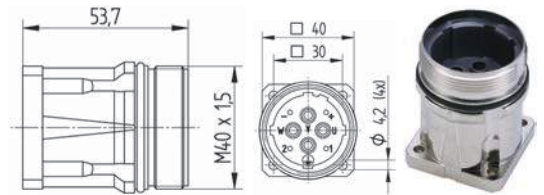
Article number	Article	Version	Pieces / PU
<b>EPIC® POWER LS1 Accessories</b>			
75007810	M23-LS1 A, B, F, G protective cap	Plastic cap for A1, B1, B2, F6, F7, G4, G5, G6	20
75007710	M23 / LS1 D protective cap	Plastic cap for D6, A6	20
75018010	M23 A, B protective cap, plastic cord with cable lug	Metal cap for A1, A3, B1, B2	20
75018310	LS1 A, G, F screw cap, plastic cord with loop	Metal cap for A1, A3, F6, F7, G4, G5	20
55001310	SILVYN Adapter LS1/M25x1,5	For integrated cable glands 8.5 - 11mm, 10.5 - 15.5mm	1

Photographs are not to scale and do not represent detailed images of the respective products.



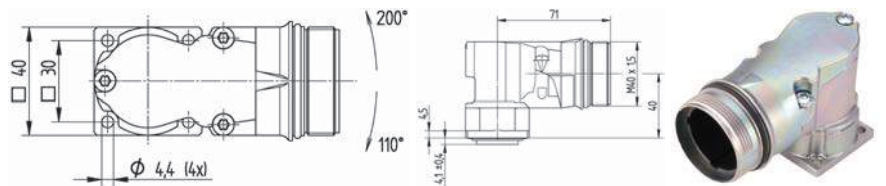
**EPIC® POWER LS1.5 A1**

Circular connectors for servomotors and power supply



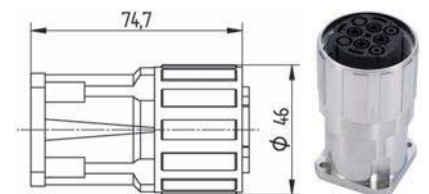
**EPIC® POWER LS1.5 A3**

Circular connectors for servomotors and power supply



**EPIC® POWER LS1.5 A6**

Circular connectors for servomotors and power supply



**Info**

- Rotateable with 310° cable outlet

**Suitable contacts:**

**EPIC® POWER LS1.5 A1**

- EPIC® POWER LS1.5 Contacts male  
Page 691

**EPIC® POWER LS1.5 A3**

- EPIC® POWER LS1.5 Contacts male  
Page 691

**EPIC® POWER LS1.5 A6**

- EPIC® POWER LS1.5 Contacts male  
Page 691
- The contacts have to be ordered separately

**Benefits**

- More power for servo motors
- Vibration-proof rugged design
- EMC version for cables with large cross-sections

**Application range**

- Plant engineering
- Servo drives and servo assemblies

**Suitable tools**

- EPIC® POWER LS1.5 Tools refer to page 691

**Technical data**

	ETIM 5.0 Class-ID: EC001322 ETIM 5.0 Class-Description: Round socket/plug for high currents		<b>Number of contacts</b> 3+PE+2(3.6mm/2mm) 3+PE+4(3.6mm/2mm)
	<b>Rated voltage (V)</b> 630 V (3.6 mm contacts) 250 V (2 mm contacts)		<b>Termination methods</b> Crimp termination: 0.75 - 10 mm² (3.6 mm contacts) Crimp termination: 0.14 - 4.0 mm² (2 mm contacts)
	<b>Rated impulse voltage</b> 6 kV (3.6 mm contacts) 4 kV (2 mm contacts)		<b>Material</b> Housing: nickel-plated zinc die-casting, nickel-plated brass Insert: PA, Seal: FPM
	<b>Rated current (A)</b> 70 A (3.6-mm contacts) at 25 °C 30 A (2-mm contacts) at 25 °C		<b>Protection rating</b> IP67
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 50
	<b>Contacts</b> Gold-plated brass		<b>Temperature range</b> -20 °C to +125 °C

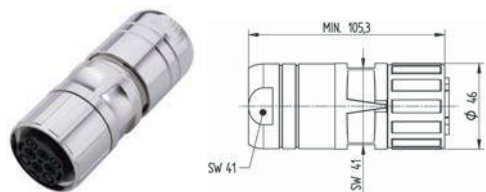
Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>Type LS1.5 A1 for male contacts</b>				
44429308	EPIC® POWER LS1.5 A1	Ø 4.2 mm (4x)	3+PE+2	1
44429309	EPIC® POWER LS1.5 A1	Ø 4.2 mm (4x)	3+PE+4	1
<b>Type LS1.5 A3 for male contacts</b>				
44429306	EPIC® POWER LS1.5 A3	Ø 4.2 mm (4x)	3+PE+2	1
44429307	EPIC® POWER LS1.5 A3	Ø 4.2 mm (4x)	3+PE+4	1
<b>Type LS1.5 A6 for female contacts</b>				
44429316	EPIC® POWER LS1.5 A6	Ø 4.2 mm (4x)	3+PE+2	1
44429317	EPIC® POWER LS1.5 A6	Ø 4.2 mm (4x)	3+PE+4	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWER LS1.5 D6

Circular connectors for servomotors and power supply

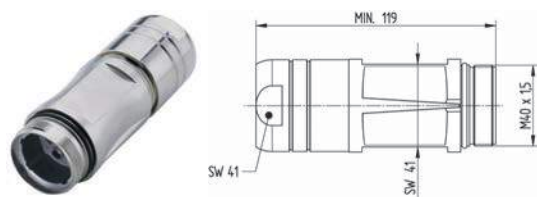


**Info**

- EMC protection

## EPIC® POWER LS1.5 F6

Circular connectors for servomotors and power supply



### Suitable contacts:

#### EPIC® POWER LS1.5 D6

- EPIC® POWER LS1.5 Contacts female  
Page 691

#### EPIC® POWER LS1.5 F6

- EPIC® POWER LS1.5 Contacts female  
Page 691
- The contacts have to be ordered separately

### Benefits

- More power for servo motors
- Vibration-proof rugged design
- EMC version for cables with large cross-sections

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Suitable tools

- EPIC® POWER LS1.5 Tools  
refer to page 691

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001322  
ETIM 5.0 Class-Description: Round socket/plug for high currents

**Rated voltage (V)**  
630 V (3.6 mm contacts)  
250 V (2 mm contacts)

**Rated impulse voltage**  
6 kV (3.6 mm contacts)  
4 kV (2 mm contacts)

**Rated current (A)**  
70 A (3.6-mm contacts) at 25 °C  
30 A (2-mm contacts) at 25 °C

**Degree of soiling**  
3

**Contacts**  
Gold-plated brass

**Number of contacts**  
3+PE+2(3.6mm/2mm)  
3+PE+4(3.6mm/2mm)

**Termination methods**  
Crimp termination: 0.75 - 10 mm<sup>2</sup>  
(3.6 mm contacts)  
Crimp termination: 0.14 - 4.0 mm<sup>2</sup>  
(2 mm contacts)

**Material**  
Housing: nickel-plated zinc die-casting,  
nickel-plated brass  
Insert: PA,  
Seal: FPM

**Protection rating**  
IP67

**Cycle of mechanical operation**  
50

**Temperature range**  
-20 °C to +125 °C

Article number	Article description	Clamping range in mm	Pin configuration	Pieces / PU
<b>Type LS1.5 D6 for female contacts</b>				
44429310	EPIC® POWER LS1.5 D6	9 - 14	3+PE+2	1
44429311	EPIC® POWER LS1.5 D6	14 - 20.5	3+PE+2	1
44429312	EPIC® POWER LS1.5 D6	20.5 - 26.5	3+PE+2	1
44429313	EPIC® POWER LS1.5 D6	9 - 14	3+PE+4	1
44429314	EPIC® POWER LS1.5 D6	14 - 20.5	3+PE+4	1
44429315	EPIC® POWER LS1.5 D6	20.5 - 26.5	3+PE+4	1
<b>Type LS1.5 F6 for male contacts</b>				
44429300	EPIC® POWER LS1.5 F6	9 - 14	3+PE+2	1
44429301	EPIC® POWER LS1.5 F6	14 - 20.5	3+PE+2	1
44429302	EPIC® POWER LS1.5 F6	20.5 - 26.5	3+PE+2	1
44429303	EPIC® POWER LS1.5 F6	9 - 14	3+PE+4	1
44429304	EPIC® POWER LS1.5 F6	14 - 20.5	3+PE+4	1
44429305	EPIC® POWER LS1.5 F6	20.5 - 26.5	3+PE+4	1

Photographs are not to scale and do not represent detailed images of the respective products.



**i Info**

- All contacts are high quality gold plated
- Only available as crimp version due to the high mechanical stress in servo applications

**i Info**

- All contacts are high quality gold plated
- Slotted contacts with external pressure spring

**i Info**

- Universal 4-indent crimping tool
- 2 different Crimping tool for contacts up to 6mm<sup>2</sup> and from 6mm<sup>2</sup>

**Technical data**

**ETIM** EPIC® POWER LS1.5 Contacts male  
 ETIM 5.0 Class-ID: EC001322  
 ETIM 5.0 Class-Description: Round socket/plug for high currents

**ETIM** EPIC® POWER LS1.5 Contacts female  
 ETIM 5.0 Class-ID: EC001322  
 ETIM 5.0 Class-Description: Round socket/plug for high currents

**ETIM** EPIC® POWER LS1.5 Tools  
 ETIM 5.0 Class-ID: EC000168  
 ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

**EPIC® POWER LS1.5 Contacts male**

Contacts, tools, accessories for circular connectors



**EPIC® POWER LS1.5 Contacts female**

Contacts, tools, accessories for circular connectors



**EPIC® POWER LS1.5 Tools**

Contacts, tools, accessories for circular connectors



**Suitable tools**

**EPIC® POWER LS1.5 Contacts female**

- Crimping tool for termination of 16 mm<sup>2</sup> wires are available upon request

Article number	Article designation	Description	Version	For design	Pieces / PU
<b>3.6 mm male contacts</b>					
44429334	LS1.5 A SCEM 3,6MM AU 0,75-1,5		3.6 mm male 0.75 - 1.5	for type A1, A3	10
44429335	LS1.5 A SCEM 3,6MM AU 1,0-2,5		3.6 mm male 1.0 - 2.5 mm <sup>2</sup>	for type A1, A3	10
44429336	LS1.5 A SCEM 3,6MM AU 1,5-4,0		3.6 mm male 1.5 - 4.0 mm <sup>2</sup>	for type A1, A3	10
44429337	LS1.5 A SCEM 3,6MM AU 4,0-6,0		3.6 mm male 4.0 - 6.0 mm <sup>2</sup>	for type A1, A3	10
44429338	LS1.5 A SCEM 3,6MM AU 6,0-10,0		3.6 mm male 6.0 - 10.0 mm <sup>2</sup>	for type A1, A3	10
44429326	LS1.5 F SCEM 3,6MM AU 1,0-2,5		3.6 mm male 1.0 - 2.5 mm <sup>2</sup>	for type F6	10
44429327	LS1.5 F SCEM 3,6MM AU 2,5-4,0		3.6 mm male 2.5 - 4.0 mm <sup>2</sup>	for type F6	10
44429328	LS1.5 F SCEM 3,6MM AU 4,0-6,0		3.6 mm male 4.0 - 6.0 mm <sup>2</sup>	for type F6	10
44429329	LS1.5 F SCEM 3,6MM AU 6,0-10,0		3.6 mm male 6.0 - 10.0 mm <sup>2</sup>	for type F6	10
<b>2 mm male contacts</b>					
44429339	LS1.5 A SCEM 2MM AU 0,14-0,25		2 mm male 0.14 - 0.25 mm <sup>2</sup>	for type A1, A3	10
44429340	LS1.5 A SCEM 2MM AU 0,25-1,0		2 mm male 0.25 - 1.0 mm <sup>2</sup>	for type A1, A3	10
44429341	LS1.5 A SCEM 2MM AU 0,75-1,5		2 mm male 0.75 - 1.5 mm <sup>2</sup>	for type A1, A3	10
44429342	LS1.5 A SCEM 2MM AU 1,0-2,5		2 mm male 1.0 - 2.5 mm <sup>2</sup>	for type A1, A3	10
44429343	LS1.5 A SCEM 2MM AU 4,0		2 mm male 2.5-4.0 mm <sup>2</sup>	for type A1, A3	10
44429330	LS1.5 F SCEM 2MM AU 0,25-1,0		2 mm male 0.25 - 1.0 mm <sup>2</sup>	for type F6	10
44429331	LS1.5 F SCEM 2MM AU 0,75-1,5		2 mm male 0.75 - 1.5 mm <sup>2</sup>	for type F6	10
44429332	LS1.5 F SCEM 2MM AU 1,0-2,5		2 mm male 1.0 - 2.5 mm <sup>2</sup>	for type F6	10
44429333	LS1.5 F SCEM 2MM AU 2,5-4,0		2 mm male 2.5-4.0 mm <sup>2</sup>	for type F6	10
<b>3.6 mm female contacts</b>					
44429318	LS1.5 D BCEM 3,6MM AU 1,0-2,5		3.6 mm female 1.0 - 2.5 mm <sup>2</sup>	for type D6, A6	10
44429319	LS1.5 D BCEM 3,6MM AU 2,5-4,0		3.6 mm female 2.5 - 4.0 mm <sup>2</sup>	for type D6, A6	10
44429320	LS1.5 D BCEM 3,6MM AU 4,0-6,0		3.6 mm female 4.0 - 6.0 mm <sup>2</sup>	for type D6, A6	10
44429321	LS1.5 D BCEM 3,6MM AU 6,0-10,0		3.6 mm female 6.0 - 10.0 mm <sup>2</sup>	for type D6, A6	10
<b>2 mm female contacts</b>					
44429322	LS1.5 D BCEM 2MM AU 0,25-1,0		2 mm female 0.25 - 1.0 mm <sup>2</sup>	for type D6, A6	10
44429323	LS1.5 D BCEM 2MM AU 0,75-1,5		2 mm female 0.75 - 1.5 mm <sup>2</sup>	for type D6, A6	10
44429324	LS1.5 D BCEM 2MM AU 1,0-2,5		2 mm female 1.0 - 2.5 mm <sup>2</sup>	for type D6, A6	10
44429325	LS1.5 D BCEM 2MM AU 4,0		2 mm female 4.0 mm <sup>2</sup>	for type D6, A6	10
<b>Crimping tool</b>					
44429367	LS1.5 CRIMPING TOOL 0.08 - 6.0	4-mandrel digital crimping tool including locator	0.14 - 6.0 mm <sup>2</sup>	for LS1.5, LS3	1
44429368	LS1.5 CRIMPING TOOL 6.0 - 10.0	4-mandrel digital crimping tool including locator	6.0 - 10.0 mm <sup>2</sup>	for LS1.5	1

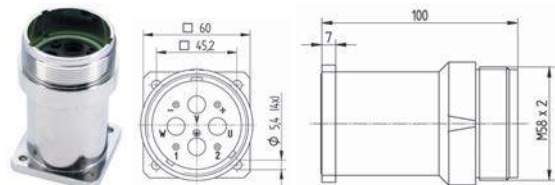
Photographs are not to scale and do not represent detailed images of the respective products.





## EPIC® POWER LS3 A1

Circular connectors for servomotors and power supply

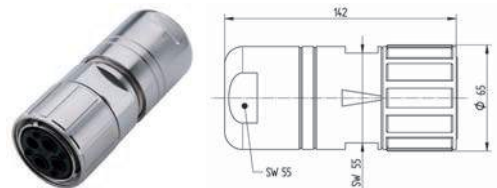


**Info**

- Robust power supply connector

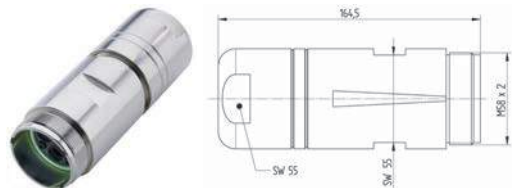
## EPIC® POWER LS3 D6

Circular connectors for servomotors and power supply



## EPIC® POWER LS3 F6

Circular connectors for servomotors and power supply



### Suitable contacts:

#### EPIC® POWER LS3 A1

- EPIC® POWER LS3 male contacts  
Page 693

#### EPIC® POWER LS3 D6

- EPIC® POWER LS3 male contacts  
Page 693

#### EPIC® POWER LS3 F6

- EPIC® POWER LS3 male contacts  
Page 693
- The contacts have to be ordered separately

### Benefits

- More power for servo motors
- Robust against mechanical impacts
- EMC protection

### Application range

- Plant engineering
- Servo drives and servo assemblies

### Suitable tools

- EPIC® POWER LS3 Tools refer to  
page 693

### Technical data

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Number of contacts</b> 3+PE+2(10mm/ 1.6mm) 3+PE+4(10mm/ 1.6mm)
	<b>Rated voltage (V)</b> 630 V (10 mm contacts) 250 V (1.6 mm contacts)		<b>Termination methods</b> Crimp termination 10 - 50 mm <sup>2</sup> (10 mm contacts) Crimp termination 0.75 - 1.5 mm <sup>2</sup> (1.6 mm contacts)
	<b>Rated impulse voltage</b> 6 kV (10 mm contacts) 4 kV (1.6 mm contacts)		<b>Material</b> Housing: anodised aluminium Insert: PA Seal: FPM
	<b>Rated current (A)</b> 150 A (10-mm contacts) at 25 °C 12 A (1.6-mm contacts) at 25 °C		<b>Protection rating</b> IP 67
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 50
	<b>Contacts</b> Silver-plated brass Gold-plated brass		<b>Temperature range</b> -20 °C - +120 °C

Article number	Article description	Clamping range in mm	Fastening type	Pin configuration	Pieces / PU
<b>Type LS3 A1 for male contacts</b>					
44429352	LS3 A1		Ø 4.2 mm (4x)	3+PE+2	1
44429353	LS3 A1		Ø 4.2 mm (4x)	3+PE+4	1
<b>Type LS3 D6 for female contacts</b>					
44429344	LS3 D6	17 - 25		3+PE+2	1
44429345	LS3 D6	25 - 36		3+PE+2	1
44429346	LS3 D6	17 - 25		3+PE+4	1
44429347	LS3 D6	25 - 36		3+PE+4	1
<b>Type LS3 F6 for male contacts</b>					
44429348	LS3 F6	17 - 25		3+PE+2	1
44429349	LS3 F6	25 - 36		3+PE+2	1
44429350	LS3 F6	17 - 25		3+PE+4	1
44429351	LS3 F6	25 - 36		3+PE+4	1

Photographs are not to scale and do not represent detailed images of the respective products.



### EPIC® POWER LS3 male contacts

Contacts, tools, accessories for circular connectors



### EPIC® POWER LS3 female contacts

Contacts, tools, accessories for circular connectors



### EPIC® POWER LS3 Tools

Contacts, tools, accessories for circular connectors



#### Info

- Only available as crimp version due to the high mechanical stress in servo applications
- Power contacts silver plated, signal contacts gold plated



#### Info

- Only available as crimp version due to the high mechanical stress in servo applications
- Power contacts silver plated, signal contacts gold plated



#### Info

- Complete tool set for all cable cross-sections
- Individual components available on request
- For the signal contacts crimping tool 44429339 is used

#### Technical data



**EPIC® POWER LS3 male contacts**  
 ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors  
**EPIC® POWER LS3 female contacts**  
 ETIM 5.0 Class-ID: EC000796  
 ETIM 5.0 Class-Description:  
 Contact for industrial connectors  
**EPIC® POWER LS3 Tools**  
 ETIM 5.0 Class-ID: EC000168  
 ETIM 5.0 Class-Description: Crimp tool  
 cable lugs, cable end sleeves, screen  
 connection

Article number	Article designation	Description	Version	For design	Pieces / PU
<b>EPIC® POWER LS3 male contacts</b>					
44429360	LS3 A, F SCEM 10MM AG 10		10 mm male 10 mm <sup>2</sup>	for type A1, F6	4
44429361	LS3 A, F SCEM 10MM AG 16		10 mm male 16 mm <sup>2</sup>	for type A1, F6	4
44429362	LS3 A, F SCEM 10MM AG 25		10 mm male 25 mm <sup>2</sup>	for type A1, F6	4
44429363	LS3 A, F SCEM 10MM AG 35		10 mm male 35 mm <sup>2</sup>	for type A1, F6	4
44429364	LS3 A, F SCEM 10MM AG 50		10 mm male 50 mm <sup>2</sup>	for type A1, F6	4
44429365	LS3 A, F SCEM 1.6MM AU 0.75-1.5		1.6 mm male 0.75 - 1.5 mm <sup>2</sup>	for type A1, F6	4
<b>EPIC® POWER LS3 female contacts</b>					
44429354	LS3 D BCEM 10MM AG 10		10 mm female 10 mm <sup>2</sup>	for type D6	4
44429355	LS3 D BCEM 10MM AG 16		10 mm female 16 mm <sup>2</sup>	for type D6	4
44429356	LS3 D BCEM 10MM AG 25		10 mm female 25 mm <sup>2</sup>	for type D6	4
44429357	LS3 D BCEM 10MM AG 35		10 mm female 35 mm <sup>2</sup>	for type D6	4
44429358	LS3 D BCEM 10MM AG 50		10 mm female 50 mm <sup>2</sup>	for type D6	4
44429359	LS3 D BCEM 1.6MM AU 0.75-1.5		1.6 mm female 0.75 - 1.5 mm <sup>2</sup>	for type D6	4
<b>Crimping tool</b>					
44429366	LS3 crimping tool 10.0 - 50.0	Electro-hydraulic crimping tool includes charging device, accumulator and crimping dies for 10 - 50 mm <sup>2</sup>	10.0 - 50.0 mm <sup>2</sup>	for LS3	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWERLOCK A1 S

Single-pin circular connector for mobile power distribution, electro motors and generators



## EPIC® POWERLOCK A6 S

Single-pin circular connector for mobile power distribution, electro motors and generators



**Info**

- Connector for unscreened single-core power cables

### Suitable contacts:

- EPIC® POWERLOCK Screw contacts Page 697
- Housing without contact, order contact separately

### Benefits

- Resistant to mechanical influences in harsh environmental conditions
- Connectors in harmonised colours according to European standards
- Every colour has a different coding to prevent incorrect plugging

### Application range

- For renewable energy plants e.g. wind power
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

### Product features

- Panel-mount base, straight entry, flat gasket included
- Contact fixing by contact retention pin, each pin can only be used once
- Housing without contact, order contact separately

### Technical data

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Termination methods</b> Screw termination: 50 - 120 mm <sup>2</sup>
	<b>Rated voltage (V)</b> 1000 V		<b>Material</b> Housing: PBT Contact retention pin: PA
	<b>Rated impulse voltage</b> 8 kV		<b>Protection rating</b> IP 67 (maximum, dependant on cable gland used) IP 20 (unmated)
	<b>Rated current (A)</b> Screw max. 400 A		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> VDE Reg. No. D42
	<b>Contacts</b> Screw termination: silver-plated brass		<b>Temperature range</b> -25°C up to +125°C
	<b>Number of contacts</b> 1		

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>Type POWERLOCK A1, panel-mount box, drain for contact with M12 threaded post</b>				
44420272	POWERLOCK A1 PE/GN	Ø 5.5 mm (4x)	PE, Green	1
44420273	POWERLOCK A1 N/BL	Ø 5.5 mm (4x)	N, Blue	1
44420274	POWERLOCK A1 L1/BN	Ø 5.5 mm (4x)	L1, Brown	1
44420275	POWERLOCK A1 L2/BK	Ø 5.5 mm (4x)	L2, Black	1
44420276	POWERLOCK A1 L3/GY	Ø 5.5 mm (4x)	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420320	POWERLOCK A1 L1/RD	Ø 5.5 mm (4x)	L1, Red	1
<b>Type POWERLOCK A6, panel-mount box, source for contact with M12 threaded post</b>				
44420277	POWERLOCK A6 PE/GN	Ø 5.5 mm (4x)	PE, Green	1
44420278	POWERLOCK A6 N/BL	Ø 5.5 mm (4x)	N, Blue	1
44420279	POWERLOCK A6 L1/BN	Ø 5.5 mm (4x)	L1, Brown	1
44420280	POWERLOCK A6 L2/BK	Ø 5.5 mm (4x)	L2, Black	1
44420281	POWERLOCK A6 L3/GY	Ø 5.5 mm (4x)	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420321	POWERLOCK A6 L1/RD	Ø 5.5 mm (4x)	L1, Red	1

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® POWERLOCK D6 S**

Single-pin circular connector for mobile power distribution, electro motors and generators



**EPIC® POWERLOCK F6 S**

Single-pin circular connector for mobile power distribution, electro motors and generators



**i Info**

- Connector for unscreened single-core power cables

**Suitable contacts:**

- EPIC® POWERLOCK Screw contacts Page 697
- Housing without contact, order contact separately

**Benefits**

- Resistant to mechanical influences in harsh environmental conditions
- Connectors in harmonised colours according to European standards
- Every colour has a different coding to prevent incorrect plugging

**Application range**

- For renewable energy plants e.g. wind power
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

**Product features**

- Straight connector with M40 thread
- Order SKINTOP® ST-M 40 or STR-M 40 separately
- Contact fixing by contact retention pin, each pin can only be used once
- Housing without contact, order contact separately

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC000437 <b>ETIM 5.0 Class-Description:</b> Housing for industrial connectors		<b>Termination methods</b> Screw termination: 50 - 120 mm <sup>2</sup>
	<b>Rated voltage (V)</b> 1000 V		<b>Material</b> Housing: PBT Contact retention pin: PA
	<b>Rated impulse voltage</b> 8 kV		<b>Protection rating</b> IP 67 (maximum, dependant on cable gland used) IP 20 (unmated)
	<b>Rated current (A)</b> Screw max. 400 A		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> VDE Reg. No. D42
	<b>Contacts</b> Screw termination: silver-plated brass		<b>Temperature range</b> -25°C up to +125°C
	<b>Number of contacts</b> 1		

Article number	Article description	M	Pin configuration	Pieces / PU
<b>Type POWERLOCK D6, cable connector, source for screw contact</b>				
44420267	POWERLOCK D6 PE/GN	40	PE, Green	1
44420268	POWERLOCK D6 N/BL	40	N, Blue	1
44420269	POWERLOCK D6 L1/BN	40	L1, Brown	1
44420270	POWERLOCK D6 L2/BK	40	L2, Black	1
44420271	POWERLOCK D6 L3/GY	40	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420305	POWERLOCK D6 L1/RD	40	L1, Red	1
<b>Type POWERLOCK F6, coupling connector, drain for screw contact</b>				
44420262	POWERLOCK F6 PE/GN	40	PE, Green	1
44420263	POWERLOCK F6 N/BL	40	N, Blue	1
44420264	POWERLOCK F6 L1/BN	40	L1, Brown	1
44420265	POWERLOCK F6 L2/BK	40	L2, Black	1
44420266	POWERLOCK F6 L3/GY	40	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420301	POWERLOCK F6 L1/RD	40	L1, Red	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® Standard



## POWERLOCK BOX S\*

Circular connectors for servomotors and power supply



**Info**

- Can be locked to prevent unauthorised disconnection

### Benefits

- Guarantees the correct sequence is followed when connecting and disconnecting a set of connectors (PE, N, L1, L2, L3)
- Every colour has a different coding to prevent incorrect plugging
- IP 20 finger-protected
- Integrated micro-switch that can be connected to circuit breaker or alarm circuit

### Application range

- Alternative energy installations
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

### Housings

- Sealed security lid is optional

### Product features

- Included: Contacts with M12 threaded post
- Cable connector for microswitch optional
- 19" housing with height unit 2HE/2U

### Technical data

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Number of contacts</b> 4 + PE
	<b>Rated voltage (V)</b> 1000 V		<b>Termination methods</b> Screw termination: 50 - 120 mm <sup>2</sup>
	<b>Rated current (A)</b> Screw max. 400 A		<b>Protection rating</b> IP 67
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 500
	<b>Contacts</b> Screw termination: silver-plated brass		<b>Temperature range</b> -20 °C ... +85 °C

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>POWERLOCK BOX A1, panel-mount base, drain with M12 threaded post</b>				
44420282	POWERLOCK BOX A1 S	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A1, panel-mount base with cover, drain with M12 threaded post</b>				
44420283	POWERLOCK BOX A1 SD	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A6, panel-mount base, source with M12 threaded post</b>				
44420286	POWERLOCK BOX A6 S	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A6, panel-mount base with cover, source with M12 threaded post</b>				
44420287	POWERLOCK BOX A6 SD	Ø 6.5 mm (4x)	4+PE	1

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Screw contacts

Contacts, tools, accessories for circular connectors



### Info

- Screw max. 400 A
- Do not plug with crimp-type (660 A)



### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

Article number	Article description	Version	Version	PU
<b>Drain - contact with M 12 threaded post for type POWERLOCK A1 S, contact retaining pin included</b>				
44420241	POWERLOCK SP M12	for type A1	Contact Drain, M12 Thread for cable lugs	1
<b>Source - contact with M 12 threaded post for type POWERLOCK A6 S, contact retaining pin included</b>				
44420242	POWERLOCK QP M12	for type A6	Lamella contact source, M12 thread for cable lug	1
<b>Source - screw contact for type POWERLOCK D6 S, contact retaining pin included</b>				
44420237	POWERLOCK QS 120	for type D6	120 mm <sup>2</sup>	1
<b>Drain - screw contact for type POWERLOCK F6 S, contact retaining pin included</b>				
44420232	POWERLOCK SS 120	for type F6	120 mm <sup>2</sup>	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Tools

Contacts, tools, accessories for circular connectors

### Technical data



ETIM 5.0 Class-ID: EC000149  
ETIM 5.0 Class-Description: Tool set



Article number	Article description	Version	PU
<b>Tools</b>			
44420243	POWERLOCK DISCONNECTION TOOL	for mated connection	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Accessories

Contacts, tools, accessories for circular connectors



Article number	Article	For design	Version	PU
<b>Protective caps</b>				
44420252	POWERLOCK PROTECTION CAP A1	for type A1	IP54	1
44420253	POWERLOCK PROTECTION CAP A6	for type A6	IP54	1
44420251	POWERLOCK PROTECTION CAP D6	for type D6	IP54	1
44420250	POWERLOCK PROTECTION CAP F6	for type F6	IP54	1
<b>Spare part: Contact retention pin</b>				
44420259	POWERLOCK RETENTION PIN A1, A6	for type A1, A6		1
44420255	POWERLOCK RETENTION PIN D6	for type D6		1
44420254	POWERLOCK RETENTION PIN F6	for type F6		1
<b>Conductor end sleeves for POWERLOCK screw contact</b>				
44420244	POWERLOCK WIRE SLEEVE 120	Spare part for POWERLOCK 120 SS/QS contact	120 mm <sup>2</sup>	1
44420245	POWERLOCK WIRE SLEEVE SET 95	Reduction set for POWERLOCK 120 SS/QS screw contact	95 mm <sup>2</sup>	1
44420246	POWERLOCK WIRE SLEEVE SET 70	Reduction set for POWERLOCK 120 SS/QS screw contact	70 mm <sup>2</sup>	1
44420247	POWERLOCK WIRE SLEEVE SET 50	Reduction set for POWERLOCK 120 SS/QS screw contact	50 mm <sup>2</sup>	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® POWERLOCK A1 C

Single-pin circular connector for mobile power distribution, electro motors and generators



## EPIC® POWERLOCK A6 C

Single-pin circular connector for mobile power distribution, electro motors and generators



**Info**

- Connector for unshielded single-core power cables

### Suitable contacts:

- EPIC® POWERLOCK Crimp contacts Page 701
- Housing without contact, order contact separately

### Benefits

- Resistant to mechanical influences in harsh environmental conditions
- Connectors in harmonised colours according to European standards
- Every colour has a different coding to prevent incorrect plugging

### Application range

- For renewable energy plants e.g. wind power
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

### Product features

- Panel-mount base, straight entry, flat gasket included
- Contact fixing by contact retention pin, each pin can only be used once
- Housing without contact, order contact separately

### Technical data

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Termination methods</b> Crimp termination: 35 - 240 mm <sup>2</sup>
	<b>Rated voltage (V)</b> 1000 V		<b>Material</b> Housing: PBT Contact retention pin: PA
	<b>Rated impulse voltage</b> 8 kV		<b>Protection rating</b> IP 67 (maximum, dependant on cable gland used) IP 20 (unmated)
	<b>Rated current (A)</b> Max. crimp 660 A		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> VDE Reg. No. D42
	<b>Contacts</b> Crimp termination: copper, silver-plated		<b>Temperature range</b> -25°C up to +125°C
	<b>Number of contacts</b> 1		

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>Type POWERLOCK A1, panel-mount box, drain for contact with M12 threaded post</b>				
44420221	POWERLOCK A1 PE/GN	Ø 5.5 mm (4x)	PE, Green	1
44420222	POWERLOCK A1 N/BL	Ø 5.5 mm (4x)	N, Blue	1
44420223	POWERLOCK A1 L1/BN	Ø 5.5 mm (4x)	L1, Brown	1
44420224	POWERLOCK A1 L2/BK	Ø 5.5 mm (4x)	L2, Black	1
44420225	POWERLOCK A1 L3/GY	Ø 5.5 mm (4x)	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420316	POWERLOCK A1 L1/RD	Ø 5.5 mm (4x)	L1, Red	1
<b>Type POWERLOCK A6, panel-mount box, source for contact with M12 threaded post</b>				
44420226	POWERLOCK A6 PE/GN	Ø 5.5 mm (4x)	PE, Green	1
44420227	POWERLOCK A6 N/BL	Ø 5.5 mm (4x)	N, Blue	1
44420228	POWERLOCK A6 L1/BN	Ø 5.5 mm (4x)	L1, Brown	1
44420229	POWERLOCK A6 L2/BK	Ø 5.5 mm (4x)	L2, Black	1
44420230	POWERLOCK A6 L3/GY	Ø 5.5 mm (4x)	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420317	POWERLOCK A6 L1/RD	Ø 5.5 mm (4x)	L1, Red	1

Photographs are not to scale and do not represent detailed images of the respective products.



**EPIC® POWERLOCK D6 C**

Single-pin circular connector for mobile power distribution, electro motors and generators



**EPIC® POWERLOCK F6 C**

Single-pin circular connector for mobile power distribution, electro motors and generators



**i Info**

- Connector for unscreened single-core power cables

**Suitable contacts:**

- EPIC® POWERLOCK Crimp contacts Page 701
- Housing without contact, order contact separately

**Benefits**

- Resistant to mechanical influences in harsh environmental conditions
- Connectors in harmonised colours according to European standards
- Every colour has a different coding to prevent incorrect plugging

**Application range**

- For renewable energy plants e.g. wind power
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

**Product features**

- Straight connector with M40 thread
- Order SKINTOP® ST-M 40 or STR-M 40 separately
- Contact fixing by contact retention pin, each pin can only be used once
- Housing without contact, order contact separately

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC000437 <b>ETIM 5.0 Class-Description:</b> Housing for industrial connectors		<b>Termination methods</b> Crimp termination: 35 - 240 mm <sup>2</sup>
	<b>Rated voltage (V)</b> 1000 V		<b>Material</b> Housing: PBT Contact retention pin: PA
	<b>Rated impulse voltage</b> 8 kV		<b>Protection rating</b> IP 67 (maximum, dependant on cable gland used) IP 20 (unmated)
	<b>Rated current (A)</b> Max. crimp 660 A		<b>Cycle of mechanical operation</b> 500
	<b>Degree of soiling</b> 3		<b>VDE-tested</b> VDE Reg. No. D42
	<b>Contacts</b> Crimp termination: copper, silver-plated		<b>Temperature range</b> -25°C up to +125°C
	<b>Number of contacts</b> 1		

Article number	Article description	M	Pin configuration	Pieces / PU
<b>Type POWERLOCK D6, cable connector, source for crimp contact</b>				
44420216	POWERLOCK D6 PE/GN	40	PE, Green	1
44420217	POWERLOCK D6 N/BL	40	N, Blue	1
44420218	POWERLOCK D6 L1/BN	40	L1, Brown	1
44420219	POWERLOCK D6 L2/BK	40	L2, Black	1
44420220	POWERLOCK D6 L3/GY	40	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420319	POWERLOCK D6 L1/RD	40	L1, Red	1
<b>Type POWERLOCK F6, coupling connector, drain for crimp contact</b>				
44420211	POWERLOCK F6 PE/GN	40	PE, Green	1
44420212	POWERLOCK F6 N/BL	40	N, Blue	1
44420213	POWERLOCK F6 L1/BN	40	L1, Brown	1
44420214	POWERLOCK F6 L2/BK	40	L2, Black	1
44420215	POWERLOCK F6 L3/GY	40	L3, Grey	1
<b>L1/red for direct current applications in conjunction with L2/black</b>				
44420318	POWERLOCK F6 L1/RD	40	L1, Red	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® Standard





## POWERLOCK BOX C\*

Circular connectors for servomotors and power supply



**Info**

- Can be locked to prevent unauthorised disconnection

### Benefits

- Guarantees the correct sequence is followed when connecting and disconnecting a set of connectors (PE, N, L1, L2, L3)
- Every colour has a different coding to prevent incorrect plugging
- IP 20 finger-protected
- Integrated micro-switch that can be connected to circuit breaker or alarm circuit

### Application range

- Alternative energy installations
- For mobile and stationary power distribution
- For the connection of motors, transformers and generators
- Light & sound technology

### Technical data

	ETIM 5.0 Class-ID: EC000437 ETIM 5.0 Class-Description: Housing for industrial connectors		<b>Number of contacts</b> 4 + PE
	<b>Rated voltage (V)</b> 1000 V		<b>Termination methods</b> Crimp termination: 35 - 240 mm <sup>2</sup>
	<b>Rated current (A)</b> Max. crimp 660 A		<b>Protection rating</b> IP 65 (latched)
	<b>Degree of soiling</b> 3		<b>Cycle of mechanical operation</b> 500
	<b>Contacts</b> Crimp termination: copper, silver-plated		<b>Temperature range</b> -25°C ... +85°C

### Housings

- Sealed security lid is optional

### Product features

- Included: Contacts with M12 threaded post
- Cable connector for microswitch optional
- 19" housing with height unit 2HE/2U

Article number	Article description	Fastening type	Pin configuration	Pieces / PU
<b>POWERLOCK BOX A1, panel-mount base, drain with M12 threaded post</b>				
44420288	POWERLOCK BOX A1 C	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A1, panel-mount base with cover, drain with M12 threaded post</b>				
44420289	POWERLOCK BOX A1 CD	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A6, panel-mount base, source with M12 threaded post</b>				
44420284	POWERLOCK BOX A6 C	Ø 6.5 mm (4x)	4+PE	1
<b>POWERLOCK BOX A6, panel-mount base with cover, source with M12 threaded post</b>				
44420285	POWERLOCK BOX A6 CD	Ø 6.5 mm (4x)	4+PE	1

\* Trade product, no Lapp product  
Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Accessories

Contacts, tools, accessories for circular connectors



**Technical data**

ETIM 5.0 Class-ID: EC002635  
ETIM 5.0 Class-Description: Circular connector (industrial connector)

Article number	Article	For design	Version	PU
<b>Protective caps</b>				
44420252	POWERLOCK PROTECTION CAP A1	for type A1	IP54	1
44420253	POWERLOCK PROTECTION CAP A6	for type A6	IP54	1
44420251	POWERLOCK PROTECTION CAP D6	for type D6	IP54	1
44420250	POWERLOCK PROTECTION CAP F6	for type F6	IP54	1
<b>Spare part: Contact retention pin</b>				
44420259	POWERLOCK RETENTION PIN A1, A6	for type A1, A6		1
44420255	POWERLOCK RETENTION PIN D6	for type D6		1
44420254	POWERLOCK RETENTION PIN F6	for type F6		1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Crimp contacts

Contacts, tools, accessories for circular connectors



### Info

- Max. crimp 660 A
- Do not plug with screw-type (400 A)



### Technical data



ETIM 5.0 Class-ID: EC000437  
ETIM 5.0 Class-Description: Housing for industrial connectors

Article number	Article description	Version	Version	PU
<b>Drain - contact with M 12 threaded post, for type POWERLOCK A1 C, contact retaining pin included</b>				
44420260	POWERLOCK SP M12		Contact Drain, M12 Thread for cable lugs	1
<b>Source - contact with M 12 threaded post for type POWERLOCK A6 C, contact retaining pin included</b>				
44420261	POWERLOCK QP M12		Lamella contact source, M12 thread for cable lug	1
<b>Source - crimp contact for type POWERLOCK D6 C, contact retaining pin included</b>				
44420290	POWERLOCK QCM 35	for type D6, A6	35 mm <sup>2</sup>	1
44420291	POWERLOCK QCM 50		50 mm <sup>2</sup>	1
44420292	POWERLOCK QCM 70		70 mm <sup>2</sup>	1
44420236	POWERLOCK QCM 95		95 mm <sup>2</sup>	1
44420238	POWERLOCK QCM 120		120 mm <sup>2</sup>	1
44420257	POWERLOCK QCM 150		150 mm <sup>2</sup>	1
44420239	POWERLOCK QCM 185		185 mm <sup>2</sup>	1
44420240	POWERLOCK QCM 240		240 mm <sup>2</sup>	1
<b>Drain - Crimp contact, for type POWERLOCK F6 C, contact retaining pin included</b>				
44420293	POWERLOCK SCM 35		35 mm <sup>2</sup>	1
44420294	POWERLOCK SCM 50		50 mm <sup>2</sup>	1
44420295	POWERLOCK SCM 70		70 mm <sup>2</sup>	1
44420231	POWERLOCK SCM 95		95 mm <sup>2</sup>	1
44420233	POWERLOCK SCM 120		120 mm <sup>2</sup>	1
44420256	POWERLOCK SCM 150		150 mm <sup>2</sup>	1
44420234	POWERLOCK SCM 185		185 mm <sup>2</sup>	1
44420235	POWERLOCK SCM 240		240 mm <sup>2</sup>	1

Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® POWERLOCK Tools

Contacts, tools, accessories for circular connectors

### Technical data



ETIM 5.0 Class-ID: EC000149  
ETIM 5.0 Class-Description: Tool set



Article number	Article description	Version	PU
<b>Tools</b>			
44420243	POWERLOCK DISCONNECTION TOOL	for mated connection	1
44420337	Crimping pliers		1
44420330	Crimping die for crimping pliers	50 mm <sup>2</sup>	1
44420331	Crimping die for crimping pliers	70 mm <sup>2</sup>	1
44420332	Crimping die for crimping pliers	95 mm <sup>2</sup>	1
44420333	Crimping die for crimping pliers	120 mm	1
44420334	Crimping die for crimping pliers	150 mm <sup>2</sup>	1
44420335	Crimping die for crimping pliers	185 mm <sup>2</sup>	1
44420336	Crimping die for crimping pliers	240 mm <sup>2</sup>	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SOLAR PL008

Pre-assembled solar cables for weatherproof cabling of photovoltaic systems



### Info

- Plastic junction box for ambient resistant cabling and connecting of photovoltaic systems

### Benefits

- Cable variations and 4 diodes version on request
- Cost-efficient plastic junction box
- Factory assembled and tested
- Traceability of every junction box ensured by barcode

### Application range

- Photovoltaic plants

### Product features

- Robust junction box for cabling of photovoltaic modules
- Version with 3 diodes for three-string modules
- PTFE membrane equalize the pressure balance and enables humidity to stay out of the junction box
- Assembled with EPIC® SOLAR 4 connector and ÖLFLEX® SOLAR cable 4mm<sup>2</sup>

### Technical data

	ETIM 5.0 Class-ID: EC002637 ETIM 5.0 Class-Description: Printed circuit board connector
	<b>Rated voltage (V)</b> 1000 V
	<b>Rated current (A)</b> 11 A
	<b>Protection rating</b> IP 65
	<b>Protection class</b> II
	<b>Temperature range</b> -40°C ... +105°C

Article number	Article description	PU
<b>EPIC® SOLAR PL008</b>		
44428214	EPIC® SOLAR PL008/3/11 4THIN 4/1	1

Photographs are not to scale and do not represent detailed images of the respective products.



EPIC® SOLAR 4 M

**Info**

- 4 mm connector system with double hook
- Field-mountable solar connector



EPIC® SOLAR 4 F

**Info**

- 4 mm connector system with double hook
- Field-mountable solar connector



**Benefits**

- Low contact-resistance for efficient power transmission
- Crimp connection for field mounting
- Suitable for various ÖLFLEX® SOLAR cables

**Application range**

- Photovoltaic plants
- Crystalline and thin-film constructions
- Solartracker

**Product features**

**EPIC® SOLAR 4 M**

- 4 mm connector system with double hook
- TÜV Rheinland certified
- Inclusive contacts

**EPIC® SOLAR 4 F**

- 4 mm connector system with double hook
- TÜV Rheinland certified
- UL pending
- Inclusive contacts

**Suitable cables**

- ÖLFLEX® SOLAR XLR-R Page 151
- ÖLFLEX® SOLAR XLR WP Page 153
- ÖLFLEX® SOLAR XLS-R Page 152
- ÖLFLEX® SOLAR XLR 1,5kV
- ÖLFLEX® SOLAR XLR 1,5kV WP
- ÖLFLEX® SOLAR XLc

**Suitable tools**

- EPIC® SOLAR TOOL
- For easier assembly of the plastic parts, use EPIC® SOLAR 4 Assembly Tool Set (2 pieces). Holder for insulation body, spanner for cap nut and pins for unlocking

**Suitable connectors**

**EPIC® SOLAR 4 F**

- EPIC® SOLAR 4 THIN
- EPIC® SOLAR 4 M Page 703
- EPIC® SOLAR 4Plus F

**Technical data**

	ETIM 5.0 Class-ID: EC002641 ETIM 5.0 Class-Description: Modular connector (industrial connector)
	<b>Rated voltage (V)</b> 1000 V AC/DC
	<b>Rated impulse voltage</b> 8 kV
	<b>Degree of soiling</b> 3
	<b>Contact resistance</b> < 0.5 mOhm
	<b>Protection rating</b> IP 67
	<b>Protection class</b> II
	<b>Temperature range</b> -40°C ... +105°C

Article number	Article designation	Cross-section (mm <sup>2</sup> )	Clamping range in mm	Rated current (A)	PU
<b>EPIC® SOLAR 4 male field-mountable, inclusive contacts</b>					
44428200	EPIC® SOLAR 4 M 2.5 mm <sup>2</sup>	2.5	4.8 - 6.0	22	100
44428201	EPIC® SOLAR 4 M 4mm <sup>2</sup> ... 6mm <sup>2</sup>	4 - 6	5.2 - 7.1	30	100
<b>EPIC® SOLAR 4 male contacts as spare part</b>					
44428217	EPIC® SOLAR 4 PIN M 2.5mm <sup>2</sup>	2.5			100
44428219	EPIC® SOLAR 4 PIN M 4mm <sup>2</sup> ... 6mm <sup>2</sup>	4 - 6			100
<b>EPIC® SOLAR 4 female field-mountable, inclusive contacts</b>					
44428203	EPIC® SOLAR 4 F 2.5 mm <sup>2</sup>	2.5	5.2 - 6.5	22	100
44428204	EPIC® SOLAR 4 F 4mm <sup>2</sup> ... 6mm <sup>2</sup>	4 - 6	5.0 - 7.2	30	100
<b>EPIC® SOLAR 4 female contacts without as spare part</b>					
44428218	EPIC® SOLAR 4 PIN F 2.5mm <sup>2</sup>	2.5			100
44428220	EPIC® SOLAR 4 PIN F 4mm <sup>2</sup> ... 6mm <sup>2</sup>	4 - 6			100
<b>EPIC® SOLAR 4 assembly tool</b>					
44428224	EPIC® SOLAR 4 Assembly Tool Set				1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® CRIMPTOOL

For inserts and modules of the EPIC® rectangular connectors



## EPIC® SOLAR TOOL CSC

Cutting, stripping and crimping with just one tool



**Info**

- Cutting, stripping and crimping with just one tool

## EPIC® SOLAR TOOL

3 cross section in one tool



**Info**

- 3 cross section in one tool

### Application range

#### EPIC® SOLAR TOOL CSC

- For crimping of the photovoltaic connector EPIC® SOLAR 4 in the field
- For EPIC® SOLAR 4 and MC4 suitable

#### EPIC® SOLAR TOOL

- For crimping of the photovoltaic connector EPIC® SOLAR 4 in the field
- For EPIC® SOLAR 4 and MC4 suitable

### Suitable cables

#### EPIC® SOLAR TOOL CSC

- ÖLFLEX® SOLAR XLR-R Page 151
- ÖLFLEX® SOLAR XLR WP Page 153
- ÖLFLEX® SOLAR XLS-R Page 152
- ÖLFLEX® SOLAR XLR 1,5kV
- ÖLFLEX® SOLAR XLR 1,5kV WP
- ÖLFLEX® SOLAR XLc

### Suitable connectors

#### EPIC® SOLAR TOOL CSC

- EPIC® SOLAR 4

#### EPIC® SOLAR TOOL

- EPIC® SOLAR 4

### Product features

#### EPIC® SOLAR TOOL CSC

- Multifunctional die for cutting, stripping and crimping with just one tool
- Locator for the safe and accurate positioning of the crimping contacts

#### EPIC® SOLAR TOOL

- Crimping die for the cable cross sections of 2.5mm<sup>2</sup>, 4mm<sup>2</sup> and 6mm<sup>2</sup>
- Locator for the safe and accurate positioning of the crimping contacts

Article number	Article description	Cross-section (min) in mm <sup>2</sup>	Cross-section (max) in mm <sup>2</sup>	PU
<b>Tools</b>				
11147000	Crimping tool			1
<b>Multi-functional die CSC</b>				
44428992	EPIC® SOLAR TOOL CSC DIE 4mm <sup>2</sup>		4	1
44428993	EPIC® SOLAR Tool CSC DIE 6mm <sup>2</sup>		6	1
44428994	EPIC® SOLAR TOOL LOC 4, 6mm <sup>2</sup>	4	6	1
<b>Crimping die</b>				
44428995	EPIC® SOLAR Tool DIE 2.5, 4, 6mm <sup>2</sup>	2.5	6	1
44428996	EPIC® SOLAR Tool LOC 2.5, 4, 6mm <sup>2</sup>	2.5	6	1

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SOLAR 4 Splitter

Pre-assembled solar cables for weatherproof cabling of photovoltaic systems

**i Info**

- 4 mm connector system with double hook
- Splitter for parallel connection of photovoltaic modules



### Benefits

- Splitter for parallel connection of PV-modules and strings
- Easy plug and play
- Fixing option for a clear installation with a Ø 5mm mounting hole

### Application range

- Photovoltaic plants
- Crystalline and thin-film constructions
- Solartracker

### Product features

- Mateable with EPIC® SOLAR 4 THIN, EPIC® SOLAR 4PLUS, EPIC® SOLAR 4
- Splitter MFF 1x connection male, 2x connection female
- Splitter MFF 1x connection female, 2x connection male

### Suitable connectors

- EPIC® SOLAR 4
- EPIC® SOLAR 4 THIN
- EPIC® SOLAR 4Plus
- EPIC® SOLAR 4 Built in socket

### Technical data

	ETIM 5.0 Class-ID: EC002314 ETIM 5.0 Class-Description: Cap for industrial connectors
	<b>Rated voltage (V)</b> 1000 V AC/DC
	<b>Rated impulse voltage</b> 8 kV
	<b>Rated current (A)</b> 30 A
	<b>Degree of soiling</b> 3
	<b>Protection rating</b> IP65/IP67
	<b>Cycle of mechanical operation</b> 100
	<b>Protection class</b> II
	<b>Temperature range</b> -40 °C ... +85 °C

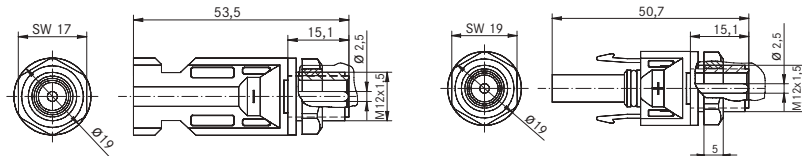
Article number	Article designation	PU
<b>EPIC® SOLAR 4 Splitter</b>		
44428226	EPIC® SOLAR 4 Splitter MFF	25
44428227	EPIC® SOLAR 4 Splitter FMM	25

Photographs are not to scale and do not represent detailed images of the respective products.



## EPIC® SOLAR 4 Built in socket

Pre-assembled solar cables for weatherproof cabling of photovoltaic systems



### Info

- 4 mm connector system with double hook
- Built in socket for use in inverters

### Benefits

- Built in fitting for inverters, PV string circuit breakers and fuse boxes

### Application range

- Photovoltaic plants
- Inverters
- PV string circuit breakers

### Product features

- PV panel connector to be screwed in directly or fastening with the included plastic locknut
- Internal plug connector diameter 2.5mm, flush connector pin
- Installation hole: drilling diameter 12mm
- Other types of connection on request

### Suitable connectors

- EPIC® SOLAR 4
- EPIC® SOLAR 4 THIN
- EPIC® SOLAR 4Plus
- EPIC® SOLAR 4 Splitter

### Technical data

ETIM 5.0 Class-ID: EC002640  
ETIM 5.0 Class-Description: I/O connector

**Rated voltage (V)**  
1000 V AC/DC

**Rated impulse voltage**  
8 kV

**Rated current (A)**  
30 A

**Degree of soiling**  
3

**Contact resistance**  
< 0.5 mOhm



**Protection rating**  
IP 67



**Cycle of mechanical operation**  
100

**Protection class**  
II



**Temperature range**  
-40°C ... +105°C

Article number	Article designation	PU
<b>EPIC® SOLAR 4 built in socket with counter nut</b>		
44428222	EPIC® SOLAR 4 AD M Pin 2.5	100
44428223	EPIC® SOLAR 4 AD F Pin 2.5	100

Photographs are not to scale and do not represent detailed images of the respective products.

# SKINTOP®

## Cable glands



Simply feed in the cable and twist. That's it. Our SKINTOP® cable glands provide secure connections in no time. The universal systems are simple but effective. They secure and centre the cable, hermetically seal it and guarantee optimum strain relief.

### **Application range**

- Industrial machinery and plant engineering
- Drive systems
- Measurement and control technology
- Renewable energies
- Wherever cables need to be fastened securely and quickly



**SKINTOP® metric plastic cable glands****SKINTOP® Standard**

SKINTOP® ST-M / SKINTOP® STR-M	712
SKINTOP® ST-M SORTIMO® T-BOXX	New 714

**SKINTOP® CLICK System**

SKINTOP® CLICK / SKINTOP® CLICK-R	New 715
SKINTOP® CLICK SORTIMO® T-BOXX	New 716

**SKINTOP® for photovoltaics**

SKINTOP® SOLAR / SKINTOP® SOLAR plus	717
--------------------------------------	-----

**SKINTOP® halogen-free**

SKINTOP® ST-HF-M	New 718
------------------	---------

**SKINTOP® bending protection**

SKINTOP® BS-M	719
SKINTOP® CLICK BS	New 720
SKINTOP® BT-M	721

**SKINTOP® explosion-proof**

SKINTOP® K-M ATEX plus / SKINTOP® KR-M ATEX plus	New 722
SKINTOP® K-M ATEX plus blue / SKINTOP® KR-M ATEX plus blue	New 723

**SKINTOP® metric nickel-plated brass cable glands****SKINTOP® MS-M**

SKINTOP® MS-M / SKINTOP® MSR-M	New 724
SKINTOP® MS-M-XL / SKINTOP® MSR-M-XL	725
SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL	726

**SKINTOP® COLD**

SKINTOP® COLD / SKINTOP® COLD-R	727
---------------------------------	-----

**SKINTOP® for industrial connectors**

SKINTOP® MS-IS-M	728
------------------	-----

**SKINTOP® explosion-proof**

SKINTOP® MS-M ATEX / SKINTOP® MSR-M ATEX	729
SKINTOP® MS-M ATEX BRUSH	New 730
SKINTOP® SDV-M ATEX / SKINTOP® SDVR-M ATEX	731

**SKINTOP® EMC/Earthing**

SKINTOP® MS-SC-M	732
SKINTOP® MS-M BRUSH	733
SKINTOP® BRUSH ADD-ON	734

**SKINTOP® cable glands stainless steel metric****SKINTOP® stainless steel cable glands**

SKINTOP® INOX / SKINTOP® INOX-R	New 735
SKINTOP® INOX SC / SKINTOP® INOX-R SC	New 736
SKINTOP® HYGIENIC / SKINTOP® HYGIENIC-R	New 737

**SKINTOP® metric cable gland accessories****SKINTOP® counter nuts**

SKINTOP® GMP-GL-M	738
SKINTOP® GMP-HF-M	739

**SKINTOP® multiple sealing inserts/dust protection**

SKINTOP® DIX-M	740
SKINTOP® DIX-M AUTOMATION	New 741
SKINTOP® DIX-DV / SKINTOP® SD-M / SKINTOP® DV-M	742

**SKINTOP® cable bushing systems****SKINTOP® cable bushing systems**

SKINTOP® CUBE	New 743
SKINTOP® CUBE SORTIMO® T-BOXX	New 744
SKINTOP® CUBE MULTI	New 745

**SKINDICHT® metric plastic or metal cable glands****SKINDICHT® standard metric cable gland**

SKINDICHT® SVRN-M / SKINDICHT® SVRE-M	746
SKINDICHT® SVRX	747

**SKINDICHT® flat cable glands**

SKINDICHT® SVFK-M	748
SKINDICHT® SVF-M	749

**SKINDICHT® strain relief/bending protection**

SKINDICHT® SKZ-M	750
SKINDICHT® SHZ-M	751
SKINDICHT® SR-M	752
SKINDICHT® SR-SV-M	753

**SKINDICHT® EMC/earthing**

SKINDICHT® SHVE-M	754
SKINDICHT® SRE-M	755

**SKINDICHT® special sealing cable glands**

SKINDICHT® SHV-M	756
SKINDICHT® SHV-M-VITON®	757
SKINDICHT® MINI	758
SKINDICHT® CN-M	759

**SKINDICHT® angle cable glands**

SKINDICHT® KW-M	760
SKINDICHT® RWV-M	760
SKINDICHT® RWV-M without E+D	761
SKINDICHT® SE-M	761
SKINDICHT® SE-M without E+D	762
SKINDICHT® SE-M 220/320	762

**SKINDICHT® metric cable gland accessories****SKINDICHT® counter nuts**

SKINDICHT® SM-M	763
SKINDICHT® SM-PE-M	763

**SKINDICHT® blind plugs**

SKINDICHT® BLK-M / SKINDICHT® BLK-GL-M	764
SKINTOP® CLICK BLK	New 765
SKINDICHT® BL-M	766
SKINDICHT® BL-M hexagonal	767
SKINDICHT® BL-M ATEX	767

**SKINDICHT® Pressure compensation element**

SKINDICHT® VENT STAINLESS STEEL	New 768
SKINDICHT® VENT PLASTIC	New 769

**SKINDICHT® reducers**

SKINDICHT® KU-M	770
SKINDICHT® MR-M	771
SKINDICHT® MR-M hexagonal	772
SKINDICHT® MR-M ATEX	773
SKINDICHT® EKU-M	773

**SKINDICHT® enlargers**

SKINDICHT® ME-M	774
SKINDICHT® ME-M ATEX	774

**SKINDICHT® Adapter**

SKINDICHT® MA-M/PG / SKINDICHT® MA-M/NPT	775
--	-----

**SKINDICHT® fittings**

SKINDICHT® ZS-M	776
SKINDICHT® ZSE-M	777

**SKINDICHT® compression screws, washers**

SKINDICHT® D-M	778
SKINDICHT® U-M/U-PG	778

**SKINDICHT® sealing rings/incised seals**

SKINDICHT® E-M	779
SKINDICHT® O-Ring Perbunan® metric	779
SKINDICHT® O-ring VITON® metric	780
SKINDICHT® JT PTFE metric	780

**SKINDICHT® ducts**

SKINDICHT® WN-M	781
SKINDICHT® DTN	781
SKINDICHT® LA	781

**SKINMATIC® mounting tools****SKINMATIC® metric mounting tools**

SKINMATIC® QUICK Set 1	New 782
SKINMATIC® MH Set	New 782
SKINMATIC® KB-M	783
SKINMATIC® SB-M	783
SKINMATIC® GB-M	783
SKINMATIC® RZ	783

**Cable glands - other thread types****SKINTOP® NPT polyamide cable glands**

SKINTOP® NPT	784
--------------	-----

**SKINTOP® NPT nickel-plated brass cable glands**

SKINTOP® MS NPT	785
SKINTOP® MS-SC NPT	786
SKINTOP® MS-NPT BRUSH	New 787

**SKINTOP® PG polyamide cable glands****Easy to install**

SKINTOP® ST / SKINTOP® STR	788
----------------------------	-----

**SKINTOP® bending protection**

SKINTOP® BS	790
SKINTOP® BT	791

**SKINTOP® PG nickel-plated brass cable glands****Easy to install**

SKINTOP® MS / SKINTOP® MSR	792
SKINTOP® MS-XL / SKINTOP® MSR-XL	793
SKINTOP® MS-SC	794

**SKINDICHT® plastic or metal PG cable glands**

**SKINDICHT® standard PG/DIN cable gland**

SKINDICHT® SVRN / SKINDICHT® SVRE 795

**SKINDICHT® flat cable glands**

SKINDICHT® SVFK 796

SKINDICHT® SVF 797

SKINDICHT® FL 798

**SKINDICHT® strain relief/bending protection**

SKINDICHT® SH 799

SKINDICHT® SHZ 800

SKINDICHT® SK 801

SKINDICHT® SKZ 802

SKINDICHT® SR 803

SKINDICHT® SR-SV 804

**SKINDICHT® EMC/earthing**

SKINDICHT® SHVE 805

SKINDICHT® SRE 806

**SKINDICHT® special sealing cable glands**

SKINDICHT® SHV 807

SKINDICHT® SHV VITON® 808

SKINDICHT® CN 809

**SKINDICHT® angle cable glands**

SKINDICHT® RWV 810

SKINDICHT® SE 811

**SKINDICHT® PG cable gland accessories**

**SKINTOP® counter nuts**

SKINTOP® GMP-GL 812

**SKINTOP® multiple sealing inserts/dust protection**

SKINTOP® DIX 813

SKINTOP® DIX-AUTOMATION 814

SKINTOP® DIX-DV / SKINTOP® SD / SKINTOP® DV 815

**SKINDICHT® counter nuts**

SKINDICHT® GMK 816

SKINDICHT® SM / SKINDICHT® SM-PE 817

**SKINDICHT® blind plugs**

SKINDICHT® BLK / BLK-GL 818

SKINDICHT® BL 819

**SKINDICHT® reducers**

SKINDICHT® KU, KUS, KUK 820

SKINDICHT® MR 821

**SKINDICHT® enlargers**

SKINDICHT® EKU 822

SKINDICHT® ME 822

**SKINDICHT® Adapter**

SKINDICHT® A-PG/M 823

SKINDICHT® MA-PG/M 824

**SKINDICHT® fittings**

SKINDICHT® ZS/ZS-XL 825

**SKINDICHT® dust protection**

SKINDICHT® STK 826

SKINDICHT® E 826

**SKINDICHT® sealing rings/incised seals**

SKINDICHT® EV 827

SKINDICHT® O-Ring Perbunan® PG 827

SKINDICHT® O-Ring VITON® PG 828

SKINDICHT® JT PTFE PG 829


**SKINDICHT® earthing sleeves**

SKINDICHT® EH 830

**SKINDICHT® anti-kink sleeves/sealing cones**

SKINDICHT® SHV cone seal 831

SKINDICHT® SNR 832

Characteristics 	Page	Protection class IP/NEMA	Connection thread metric	Connection thread PG	Connection thread NPT	For round cables	For flat cables	Metal	Plastic	Angle	Strain relief	Vibration protection	Antikink protection	Screen connection	Use for hazardous areas	Halogen free	Approvals
SKINTOP® ST-M/STR-M/ST(R) M ISO	712	68/69	●			●		●			●	●					cULus, cURus, TÜV, VDE, DNV-GL
SKINTOP® CLICK/CLICK-R	715	68				●		●			●	●					VDE, cULus, cURus, DNV-GL
SKINTOP® CLICK BS	720	68				●		●			●	●	●				VDE, cULus, cURus, DNV-GL
SKINTOP® COLD/COLD-R	727	68	●			●		●			●	●					VDE
SKINTOP® CUBE and CUBE MULTI	743/745	64/NEMA 12				●		●			●	●					
SKINTOP® ST and STR	788	68		●		●		●			●	●					cURus, cULus, TÜV
SKINTOP® ST (NPT) and STR (NPT)	784	68			●	●		●			●	●					cURus, cULus
SKINTOP® ST-HF-M	718	68	●			●		●			●	●			●		VDE
SKINTOP® SOLAR (plus)	717	68	●			●		●			●	●					cULus, cURus
SKINTOP® BS-M/BS M ISO	719	68	●			●		●			●	●	●				cULus, cURus, VDE, DNV-GL
SKINTOP® BS	790	68		●		●		●			●	●	●				cURus, cULus
SKINTOP® BS (NPT)	784	68			●	●		●			●	●	●				
SKINTOP® BT and BT-M	791/721	68	●	●		●		●			●	●	●				
SKINTOP® MS-M and MSR-M/ MS-M-XL and MSR-M-XL	724/725	68/69 NEMA 4x/6	●			●		●			●						cULus, cURus, VDE, DNV-GL
SKINTOP® MS and MSR	792	68		●		●		●			●						
SKINTOP® BS-M METAL	726	68/69	●			●		●			●	●	●				
SKINTOP® MS (NPT) and MSR (NPT)	785	68			●	●		●			●						cURus, cULus
SKINTOP® MS-IS-M	728	68	●			●		●			●						
SKINTOP® MS-SC-M	732	68	●			●		●			●			●			cULus, cURus, DNV-GL
SKINTOP® MS-M BRUSH/BRUSH plus	733	68/69	●			●		●			●			●			VDE, cULus, DNV-GL
SKINTOP® BRUSH ADD-ON	734	68	●			●		●			●			●			
SKINTOP® INOX	735	68/69	●			●		●			●						ECOLAB®
SKINTOP® HYGIENIC	737	68/69	●			●		●			●	●					ECOLAB®, EHEDG, FDA
SKINTOP® MS-SC/MS-SC NPT	794/786	68		●	●	●		●			●			●			
SKINTOP® MS-NPT BRUSH	787	68		●	●	●		●			●			●			cULus
SKINTOP® K-M ATEX plus/plus blue	722/723	68	●			●		●			●	●			●		DNV-GL, ATEX, IECEx, EAC
SKINTOP® KR-M ATEX plus/plus blue	722/723	68	●			●		●			●	●			●		DNV-GL, ATEX, IECEx, EAC
SKINTOP® MS-M ATEX/MS-M-XL ATEX	729	68	●			●		●			●			●			cULus, cURus, DNV-GL, ATEX, IECEx, EAC
SKINTOP® MSR-M ATEX	729	68	●			●		●			●			●			cULus, cURus, DNV-GL, ATEX, IECEx, EAC
SKINTOP® MS-M BRUSH ATEX/ SKINDICHT® SHVE-M ATEX	730	68	●			●		●			●			●	●		ATEX, DNV-GL, IECEx, EAC
SKINDICHT® MINI	758	68	●			●		●			●						
SKINDICHT® CN and CN-M	809/759	68	●	●		●		●			●						
SKINDICHT® SHV-M	756	68	●			●		●			●						
SKINDICHT® SHV	807	68	●	●		●		●			●						
SKINDICHT® SHV-M-Viton®	757	68	●			●		●			●						
SKINDICHT® SHV-Viton®	808	68	●	●		●		●			●						
SKINDICHT® SHVE-M	754	68	●			●		●			●			●			
SKINDICHT® SHVE	805	68	●	●		●		●			●			●	●		
SKINDICHT® SR-SV-M	753	65	●			●		●			●		●				
SKINDICHT® SR-SV	804	65	●			●		●			●		●				
SKINDICHT® FL	798	65				●	●				●						
SKINDICHT® SRE-M	755	65	●			●		●			●		●	●			
SKINDICHT® SRE	806	65	●	●		●		●			●		●	●			
SKINDICHT® SR-M	752	65	●			●		●			●		●				
SKINDICHT® SR	803	65	●			●		●			●		●				
SKINDICHT® KW-M	760	55	●			●		●	●	●							
SKINDICHT® SE and SE-M	811/761	55	●	●		●		●			●						
SKINDICHT® SE-M 220/320	762	55	●	●		●		●			●						
SKINDICHT® RWV-M	760	55	●			●		●			●						
SKINDICHT® RWV	810	55	●			●		●			●						
SKINDICHT® SKZ-M	750	55	●			●		●			●						
SKINDICHT® SKZ	802	55	●			●		●			●						
SKINDICHT® SHZ-M	751	55	●			●		●			●						
SKINDICHT® SHZ	800	55	●			●		●			●						
SKINDICHT® SVF and SVF-M	797/749	54	●	●		●	●				●						
SKINDICHT® SVFK	796	54	●			●	●				●						
SKINDICHT® SVRE-M	746	54	●			●		●			●						
SKINDICHT® SVRE	795	54	●			●		●			●						
SKINDICHT® SVRN-M	746	54	●			●		●			●						
SKINDICHT® SVRN	795	54	●			●		●			●						
SKINDICHT® SVRX-W	747	54	●			●		●			●						
SKINDICHT® SVRX-Z	747	54	●			●		●			●					●	
SKINDICHT® SK	801	20		●		●		●			●						
SKINDICHT® SH	799	20		●		●		●			●						

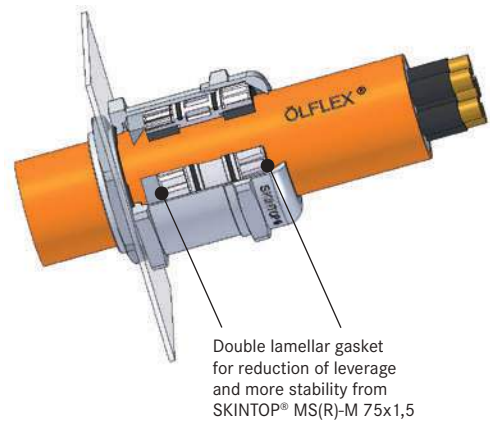
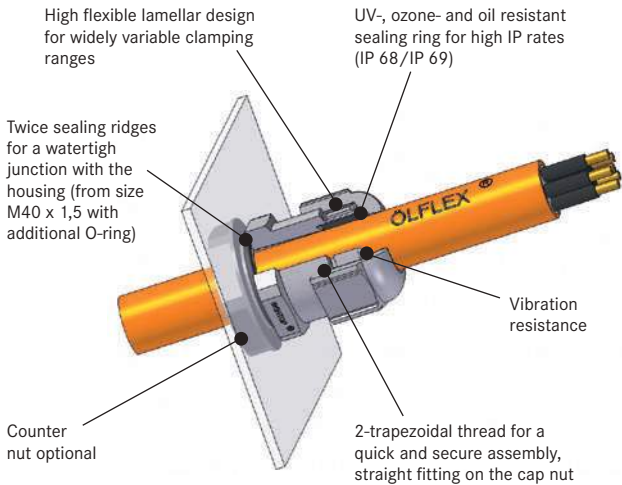
## SKINTOP® Single entry system

Secured by a single turn of the hand



With SKINTOP® you can fix the cable in an instant. Just feed it in, turn till tight – ready. So your cable is fixed, centered, hermetically sealed and completely strainrelieved with a turn of the hand. Either

way, with SKINTOP® you can achieve maximum reliability. To ensure that this remains so, SKINTOP® quality is continuously monitored. A quality which has brought us a great many international approvals.

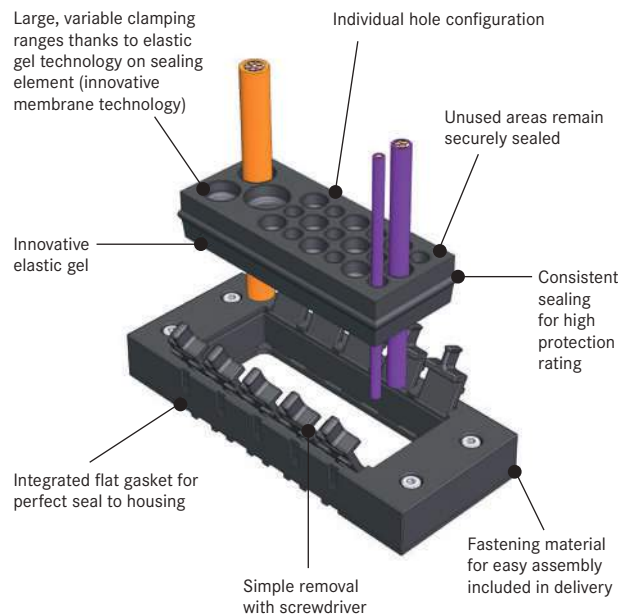
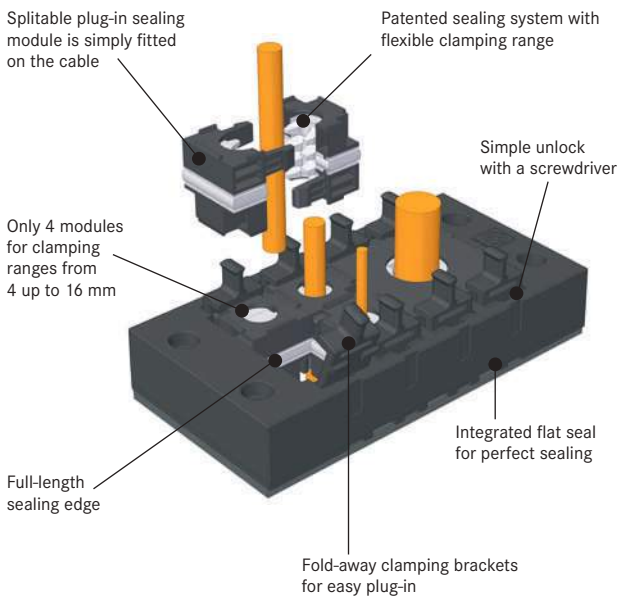


## SKINTOP® Multi cable entry systems

Modular system for harnessed cables

The multi-cable entry system SKINTOP® CUBE MULTI, with its elastic soft component, stands out thanks to its large, variable clamping

ranges, high packing density and the optimum strain relief. The gel adjusts perfectly to the surface contours of the cable.



SKINTOP® metric plastic cable glands • SKINTOP® Standard



## SKINTOP® ST-M / SKINTOP® STR-M



**Info**

- Now with IP69 approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!

### Benefits

#### SKINTOP® ST-M

- High oil-resistance for maximum reliability
- Permanent vibration protection
- Wide, variable clamping ranges
- Optimum strain relief
- Various accessories (e.g. multiple sealing inserts)

### Application range

#### SKINTOP® ST-M

- Used in areas where cables and wires need to be safely inserted into housings
- Machine and equipment manufacturing
- Photovoltaic
- Automation technology
- Offshore platforms, equipment and shipyards

#### SKINTOP® STR-M

- With reducing seal insert, to seal cables with smaller outer diameters.

### Norm references / Approvals

- UL File Nr. E79903
- GGVS: TÜ.EGG.020-95

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Refer to SKINTOP® metric accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M
- SKINTOP® ST(R) M ISO types have an extra-long connection thread
- SKINTOP® ST(R) M ISO versions with extra-long connection thread, see table, no DNV approval

### Suitable cables

- The following cables are recommended for IP 69 applications:
  - ÖLFLEX® ROBUST 200
  - H07RN8-F
  - H07RN-F

### Suitable tools

- SKINMATIC® QUICK Set 1 refer to page 782
- SKINMATIC® RZ refer to page 783
- SKINMATIC® MH Set refer to page 782

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
**SKINTOP® ST-M**  
Refer to Appendix T21 for the installation dimensions and torques  
Size M 40 x 1,5 up tp M 63 x 1,5 with O-ring  
**SKINTOP® STR-M**  
Refer to Appendix T21 for the installation dimensions and torques

**Colour delivered**  
Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant

**Material**  
Body: Polyamide  
Seal: CR

**Tests**  
GGVS: TÜ.EGG.020-95

**Protection rating**  
IP 68 - 5 bar  
IP 69

**Temperature range**  
Fixed: -40°C to +100°C  
Dynamic: -20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® ST-M silver grey</b>						
53111000	ST-M 12 x 1,5	3,5-7	15	30.0	8	100
53111010	ST-M 16 x 1,5	4,5-10	19	34.0	8	100
53111020	ST-M 20 x 1,5	7-13	25	37.0	9	100
53111030	ST-M 25 x 1,5	10-17	30	40.0	10	50
53111040	ST-M 32 x 1,5	11-21	36	47.0	10	25
53111050	ST-M 40 x 1,5	19-28	46	52.0	10	10
53111060	ST-M 50 x 1,5	27-35	55	62.0	12	5
53111070	ST-M 63 x 1,5	34-45	66	71.0	12	5
<b>SKINTOP® ST-M black</b>						
53111200	ST-M 12 x 1,5	3,5-7	15	30.0	8	100
53111210	ST-M 16 x 1,5	4,5-10	19	34.0	8	100
53111220	ST-M 20 x 1,5	7-13	25	37.0	9	100
53111230	ST-M 25 x 1,5	10-17	30	40.0	10	50
53111240	ST-M 32 x 1,5	11-21	36	47.0	10	25
53111250	ST-M 40 x 1,5	19-28	46	52.0	10	10
53111260	ST-M 50 x 1,5	27-35	55	62.0	12	5
53111270	ST-M 63 x 1,5	34-45	66	71.0	12	5
<b>SKINTOP® ST-M light grey</b>						
53111400	ST-M 12 x 1,5	3,5-7	15	30.0	8	100
53111410	ST-M 16 x 1,5	4,5-10	19	34.0	8	100
53111420	ST-M 20 x 1,5	7-13	25	37.0	9	100
53111430	ST-M 25 x 1,5	10-17	30	40.0	10	50
53111440	ST-M 32 x 1,5	11-21	36	47.0	10	25
53111450	ST-M 40 x 1,5	19-28	46	52.0	10	10
53111460	ST-M 50 x 1,5	27-35	55	62.0	12	5
53111470	ST-M 63 x 1,5	34-45	66	71.0	12	5

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® ST M ISO silver-grey (with long metric connecting thread)</b>						
53017010	ST M 16 x 1,5	3,5-8	19	40.0	12	100
53017030	ST M 20 x 1,5	5-12	24	45.0	13	100
53017040	ST M 25 x 1,5	9-14	27	47.0	13	50
<b>SKINTOP® ST M ISO black (with long metric connecting thread)</b>						
53010000	ST-M 12 x 1,5	3,5-7	15	36.7	15	100
53017210	ST M 16 x 1,5	3,5-8	19	40.0	12	100
53017230	ST M 20 x 1,5	5-12	24	45.0	13	100
53017240	ST M 25 x 1,5	9-14	27	47.0	13	50
<b>SKINTOP® STR-M silver grey</b>						
53111100	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111110	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111120	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111130	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111140	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111150	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111160	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111170	STR-M 63 x 1,5	28-39	66	71.0	12	5
<b>SKINTOP® STR-M black</b>						
53111300	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111310	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111320	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111330	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111340	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111350	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111360	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111370	STR-M 63 x 1,5	28-39	66	71.0	12	5
<b>SKINTOP® STR-M light grey</b>						
53111500	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111510	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111520	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111530	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111540	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111550	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111560	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111570	STR-M 63 x 1,5	28-39	66	71.0	12	5
<b>SKINTOP® STR M ISO silver-grey (with long metric connecting thread)</b>						
53017110	STR M 16 x 1,5	2-6	19	40.0	12	100
53017130	STR M 20 x 1,5	4-9	24	45.0	13	100
53017140	STR M 25 x 1,5	6-12	27	47.0	13	50
<b>SKINTOP® STR M ISO black (with long metric connecting thread)</b>						
53017310	STR M 16 x 1,5	2-6	19	40.0	12	100
53017330	STR M 20 x 1,5	4-9	24	45.0	13	100
53017340	STR M 25 x 1,5	6-12	27	47.0	13	50

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**SKINTOP® ST-M**

- SKINTOP® DIX-M refer to page 740
- SKINTOP® GMP-GL-M refer to page 738
- SKINTOP® DIX-M AUTOMATION refer to page 741
- SKINTOP® SDV-M ATEX refer to page 731
- SKINTOP® SD-M refer to page 742
- SKINTOP® DV-M refer to page 742

**SKINTOP® STR-M**

- SKINTOP® DIX-M refer to page 740
- SKINTOP® GMP-GL-M refer to page 738
- SKINTOP® DIX-M AUTOMATION refer to page 741

SKINTOP® metric plastic cable glands • SKINTOP® Standard



## SKINTOP® ST-M SORTIMO® T-BOXX



**Info**

- Optimal order in the practical SORTIMO® T-BOXX
- The brand for universal cable gland according to the principle: quickly fixed, centered and hermetically sealed

### Benefits

- High oil-resistance for maximum reliability
- Wide, variable clamping ranges
- Easy to install
- Permanent vibration protection
- Optimum strain relief

### Application range

- Control cabinet manufacturing
- Automation technology
- Measurement, control and electrical applications
- Air-conditioning technology

### Product features

- Optimal order in the practical SORTIMO® T-BOXX
- Small packaging unit, wide variety
- Light and robust, shock- and impact-resistant polypropylene case
- Two sturdy locks - ideal for mounting use e.g. building site

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- To refill standard packaging units are available

### Included

- Delivery in SORTIMO® T-BOXX
- Inclusive counter nuts SKINTOP® GMP-GL-M
- Assembly instructions
- 50 Pcs. SKINTOP® ST-M M12 Art.No. 53111400
- 50 Pcs. SKINTOP® ST-M M16 Art.No. 53111410
- 40 Pcs. SKINTOP® ST-M M20 Art.No. 53111420
- 25 Pcs. SKINTOP® ST-M M25 Art.No. 53111430
- 9 Pcs. SKINTOP® ST-M M32 Art.No. 53111440

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**Colour delivered**  
Light grey (RAL 7035)

**Material**  
Body: Polyamide  
Seal: CR

**Tests**  
GGVS: TÜ.EGG.020-95

**Protection rating**  
IP 68 - 5 bar  
IP 69

**Temperature range**  
Dynamic: -20°C to +100°C  
Fixed: -40°C to +100°C

Article number	Article designation / size	Pieces / PU
53110030	SKINTOP® ST-M SORTIMO® T-BOXX	1

Other colours are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**Info**

- The most innovative cable insertion system in the market for a fast and highly flexible assembly. Simply click in - turn to the left - turn to the right - finished. The result: fixed, centred, strain-relieved fitting and maximum protection class in a few seconds.

**SKINTOP® CLICK / SKINTOP® CLICK-R**



**Benefits**

- Fewer parts, counter nut no longer needed
- Save up to 70% of the time with the innovative CLICK system
- Simple, free assembly in any position
- Vibration protection
- No thread required

**Application range**

- SKINTOP® CLICK**
- Automation technology
  - Solar applications
  - Control cabinet manufacturing
  - Measurement, control and electrical applications
  - Air-conditioning technology

**SKINTOP® CLICK-R**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Norm references / Approvals**

- UL File Nr. E79903

**Included**

- Included: disassembly tool

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Colour delivered**  
Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant
- Material**  
Body: special polyamide  
Seal: special elastomer
- Protection rating**  
**SKINTOP® CLICK**  
IP 68 - 4 bar (M12)  
IP 68 - 5 bar (M16 - M32)
- Temperature range**  
Dynamic: -20°C to +100°C  
Fixed: -40°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	M (hole in mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Wall thickness, S (mm)	Pieces / PU
<b>SKINTOP® CLICK light grey</b>								
53112692	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112686	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112687	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112688	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112694	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK silver grey</b>								
53112921	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112876	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112877	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112878	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112922	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK black</b>								
53112923	CLICK 12	4.5 - 7	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112882	CLICK 16	5 - 9	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112883	CLICK 20	7 - 13	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112884	CLICK 25	9 - 17	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112924	CLICK 32	11 - 21	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK-R light grey</b>								
53112925	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112689	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112690	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112691	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112926	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK-R silver grey</b>								
53112927	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112879	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112880	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112881	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112928	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK-R black</b>								
53112929	CLICK-R 12	3.5 - 5	12.3 (-0.2)	15 / 18	40.0	8	1.0 - 4.0	50
53112885	CLICK-R 16	4 - 7	16.3 (-0.2)	19 / 22	42.0	8	1.0 - 4.0	50
53112886	CLICK-R 20	5 - 10	20.3 (-0.2)	25 / 27	45.5	8	1.0 - 4.0	25
53112887	CLICK-R 25	6 - 13	25.3 (-0.2)	30 / 34	48.5	8	1.0 - 4.0	25
53112931	CLICK-R 32	7 - 15	32.3 (-0.2)	36 / 40	55.0	8	1.0 - 4.0	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**SKINTOP® CLICK**

- SKINTOP® DIX-M refer to page 740
- SKINTOP® DIX-M AUTOMATION refer to page 741
- SKINTOP® SDV-M ATEX refer to page 731
- SKINTOP® SD-M refer to page 742
- SKINTOP® DV-M refer to page 742

**SKINTOP® CLICK-R**

- SKINTOP® DIX-M refer to page 740





## SKINTOP® CLICK SORTIMO® T-BOXX



**Info**

- The most innovative cable insertion system in the market for a fast and highly flexible assembly. Simply click in - turn to the left - turn to the right - finished. The result: fixed, centred, strain-relieved fitting and maximum protection class in a few seconds.
- Optimal order in the practical SORTIMO® T-BOXX

### Benefits

- Fewer parts, counter nut no longer needed
- Save up to 70% of the time with the innovative CLICK system
- Simple, free assembly in any position
- Vibration protection
- No thread required

### Application range

- Automation technology
- Solar applications
- Control cabinet manufacturing
- Air-conditioning technology
- Measurement, control and electrical applications

### Product features

- Optimal order in the practical SORTIMO® T-BOXX
- Small packaging unit, wide variety
- Light and robust, shock- and impact-resistant polypropylene case
- Two sturdy locks - ideal for mounting use e.g. building site

### Norm references / Approvals

- UL File Nr. E79903

### Note

- To refill standard packaging units are available

### Included

- Included in all sizes: disassembly tool
- Delivery in SORTIMO® T-BOXX
- Assembly instructions
- SKINTOP® CLICK M12 / 40 Piece (Part.No. 53112692)
- SKINTOP® CLICK M16 / 55 Piece (Part.No. 53112686)
- SKINTOP® CLICK M20 / 25 Piece (Part.No. 53112687)
- SKINTOP® CLICK M25 / 25 Piece (Part.No. 53112688)
- SKINTOP® CLICK M32 / 9 Piece (Part.No. 53112694)

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Colour delivered**  
Light grey (RAL 7035)
- Material**  
Body: special polyamide  
Seal: special elastomer
- Protection rating**  
IP 68 - 4 bar (M12)  
IP 68 - 5 bar (M16 - M32)
- Temperature range**  
Dynamic: -20°C to +100°C  
Fixed: -40°C to +100°C

Article number	Article designation / size	Pieces / PU
<b>SKINTOP® CLICK SORTIMO® T-BOXX</b>		
53112695	SKINTOP® CLICK SORTIMO® BOXX	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® CLICK refer to page 715

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

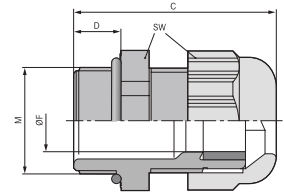


## SKINTOP® SOLAR / SKINTOP® SOLAR plus

SKINTOP® for photovoltaics

**Info**

- Cable gland for photovoltaic applications, based on EN 50262, EN 50548 and UL 1703.
- Extended temperature range



### Benefits

- UV and ozone-resistant
- UL 746 C - UL F1 outdoor use
- High strain relief
- Permanent vibration protection
- Extremely flame-retardant according to UL 94V-0 / 94-5VA

### Application range

- Photovoltaic plants and solar parks

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- SKINTOP® SOLAR plus**
- Counter nut to be used: SKINTOP® GMP-GL-M

### Suitable cables

- ÖLFLEX® SOLAR

### Suitable tools

- SKINMATIC® RZ
- SKINMATIC® QUICK SET 1

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**Colour delivered**  
RAL 9005 black/UV-resistant

**Material**  
**SKINTOP® SOLAR**  
Body: Polycarbonate  
Seal: CR  
**SKINTOP® SOLAR plus**  
Body: Polycarbonate  
Seal: Silicone  
O-Ring: Silicone

**Tests**  
Cold impact test according to UL 1703/UL 746 C

**Protection rating**  
IP 68 - 5 bar

**Temperature range**  
**SKINTOP® SOLAR**  
-40°C to +100°C  
**SKINTOP® SOLAR plus**  
-40°C to +125°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® SOLAR</b>						
53113300	SOLAR M12x1,5	3,5-7	15	36.0	15	100
53113310	SOLAR M16x1,5	7-9	19	34.0	8	100
<b>SKINTOP® SOLAR plus</b>						
53113321	SOLAR plus M12x1,5	3,5-7	15	36.0	15	100
53113331	SOLAR plus M16x1,5	7-9	19	34.0	8	100

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SKINTOP® SOLAR

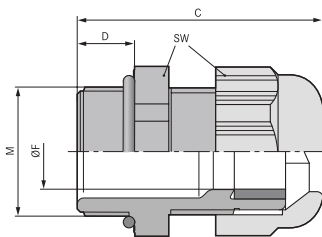
- SKINTOP® GMP-GL-M refer to page 738

SKINTOP® metric plastic cable glands • SKINTOP® halogen-free



## SKINTOP® ST-HF-M

SKINTOP® halogen-free



**Info**

- Cable gland for railway applications  
- Fire protection on railway vehicles  
Approval according to  
DIN EN 45545-2:2013

### Benefits

- Maximum reliability
- Extremely flame-retardant according to UL 94 V0
- Completely halogen-free (including sealing material)
- Self-extinguishing, no dripping
- Permanent vibration protection

### Application range

- When the protection of people and property is a priority.
- Public buildings
- Ventilation systems
- Tunnel construction
- Underground railways and trains

### Norm references / Approvals

- DIN EN 45545-2:2013

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**Colour delivered**  
Light grey (RAL 7035)

**Material**  
Polyamide UL 94V-0 - halogen-free  
Sealing ring: LSE 1 - halogen-free  
O-ring: LSE 1 - halogen-free

**Tests**  
Filament wire test  
EN 60695-2-1/1  
+960°C

**Protection rating**  
IP 68 - 5 bar

**Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® ST-HF-M</b>						
53111407	ST-HF-M 12 x 1,5	3,5-7	15	30.0	8	100
53111417	ST-HF-M 16 x 1,5	4,5-9	19	34.0	8	100
53111427	ST-HF-M 20 x 1,5	7-13	25	37.0	9	100
53111437	ST-HF-M 25 x 1,5	9-17	30	40.0	10	50
53111447	ST-HF-M 32 x 1,5	11-21	36	47.0	10	25
53111457	ST-HF-M 40 x 1,5	19-28	46	52.0	10	10
53111467	ST-HF-M 50 x 1,5	27-35	55	62.0	12	5
53111477	ST-HF-M 63 x 1,5	34-45	66	71.0	12	5

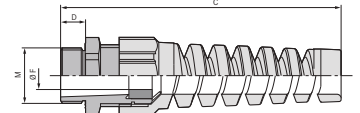
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® GMP-HF-M refer to page 739



SKINTOP® BS-M



**Benefits**

- Reliable bending and anti-kink protection
- Cable conservation
- Functional reliability
- To protect flexible cables

**Application range**

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Robotics industry
- Light and sound applications
- Moving machine parts

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Refer to SKINTOP® metric accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M
- Version with reducing insert to seal smaller cable cross-sections SKINTOP® BSR-M on request
- SKINTOP® BS M ISO versions with extra-long connection thread, see table, no DNV approval

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**On request**  
with reducing sealing ring

**Colour delivered**  
Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant

**Material**  
Body: Polyamide  
Seal: CR

**Protection rating**  
IP 68 - 5 bar

**Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® BS-M silver grey</b>						
53111600	BS-M 12x1,5	3,5-7	15	64.0	8	100
53111610	BS-M 16x1,5	4,5-10	19	86.0	8	100
53111620	BS-M 20x1,5	7-13	25	101.0	8	50
53111630	BS-M 25x1,5	9-17	30	125.0	9	25
53111640	BS-M 32x1,5	11-21	36	149.0	10	25
<b>SKINTOP® BS-M black</b>						
53111700	BS-M 12x1,5	3,5-7	15	64.0	8	100
53111710	BS-M 16x1,5	4,5-10	19	86.0	8	100
53111720	BS-M 20x1,5	7-13	25	101.0	8	50
53111730	BS-M 25x1,5	9-17	30	125.0	9	25
53111740	BS-M 32x1,5	11-21	36	149.0	10	25
<b>SKINTOP® BS-M light grey</b>						
53111800	BS-M 12x1,5	3,5-7	15	64.0	8	100
53111810	BS-M 16x1,5	4,5-10	19	86.0	8	100
53111820	BS-M 20x1,5	7-13	25	101.0	8	50
53111830	BS-M 25x1,5	9-17	30	125.0	9	25
53111840	BS-M 32x1,5	11-21	36	149.0	10	25
<b>SKINTOP® BS M ISO silver-grey (with long metric connecting thread)</b>						
53017610	BS M 16 x 1,5 ISO	3,5-8	19	77.5	12	100
53017630	BS M 20 x 1,5 ISO	5-12	24	102.0	13	50
53017640	BS M 25 x 1,5 ISO	9-14	27	114.5	13	50
<b>SKINTOP® BS M ISO black (with long metric connecting thread)</b>						
53017810	BS M 16 x 1,5 ISO	3,5-8	19	77.5	12	100
53017830	BS M 20 x 1,5 ISO	5-12	24	102.0	13	50
53017840	BS M 25 x 1,5 ISO	9-14	27	114.5	13	50

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

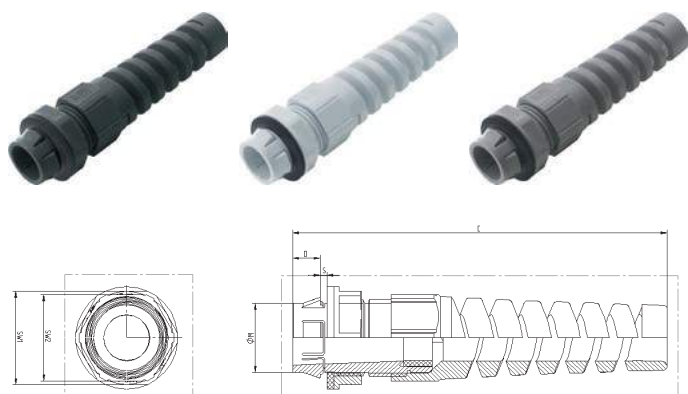
- SKINTOP® GMP-GL-M refer to page 738

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

SKINTOP® metric plastic cable glands • SKINTOP® bending protection



## SKINTOP® CLICK BS



**Info**

- The most innovative cable insertion system in the market for a fast and highly flexible assembly. Simply click in - turn to the left - turn to the right - finished. The result: fixed, centred, strain-relieved fitting and maximum protection class in a few seconds.

### Benefits

- Reliable bending protection for cable conservation and functional reliability
- Save up to 70% of the time with the innovative CLICK system
- No thread required
- To protect flexible cables
- Fewer parts, counter nut no longer needed

### Norm references / Approvals

- UL File Nr. E79903

### Included

- Included: disassembly tool

### Application range

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Robotics industry
- Moving machine parts
- Apparatus construction
- Light and sound applications

### Technical data

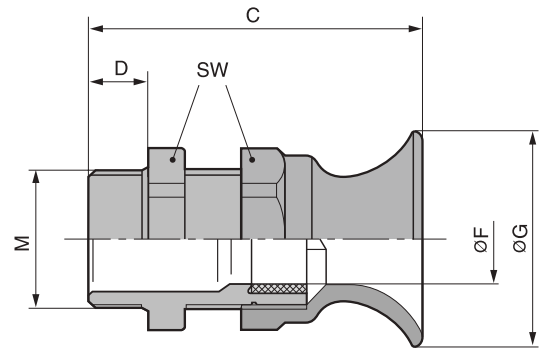
- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Colour delivered**  
Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant
- Material**  
Body: special polyamide  
Seal: special elastomer
- Protection rating**  
IP 68 - 4 bar (M12)  
IP 68 - 5 bar (M16 - M32)
- Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	M (hole in mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Wall thickness, S (mm)	Pieces / PU
<b>SKINTOP® CLICK BS light grey</b>								
53112932	CLICK BS 12	4,5-7	12.3 (-0.2)	18 / 15	74.0	8	1.0 - 4.0	50
53112888	CLICK BS 16	5-9	16.3 (-0.2)	22 / 19	94.0	8	1.0 - 4.0	50
53112889	CLICK BS 20	7-13	20.3 (-0.2)	27 / 25	108.0	8	1.0 - 4.0	25
53112890	CLICK BS 25	9-17	25.3 (-0.2)	32 / 30	127.0	8	1.0 - 4.0	25
53112933	CLICK BS 32	11-21	32.3 (-0.2)	40 / 36	155.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK BS silver grey</b>								
53112934	CLICK BS 12	4,5-7	12.3 (-0.2)	18 / 15	74.0	8	1.0 - 4.0	50
53112906	CLICK BS 16	5-9	16.3 (-0.2)	22 / 25	94.0	8	1.0 - 4.0	50
53112907	CLICK BS 20	7-13	20.3 (-0.2)	27 / 25	108.0	8	1.0 - 4.0	25
53112908	CLICK BS 25	9-17	25.3 (-0.2)	32 / 30	127.0	8	1.0 - 4.0	25
53112935	CLICK BS 32	11-21	32.3 (-0.2)	40 / 36	155.0	8	1.0 - 4.0	25
<b>SKINTOP® CLICK BS black</b>								
53112936	CLICK BS 12	4,5-7	12.3 (-0.2)	18 / 15	74.0	8	1.0 - 4.0	50
53112909	CLICK BS 16	5-9	16.3 (-0.2)	22 / 19	94.0	8	1.0 - 4.0	50
53112911	CLICK BS 20	7-13	20.3 (-0.2)	27 / 25	108.0	8	1.0 - 4.0	25
53112912	CLICK BS 25	9-17	25.3 (-0.2)	32 / 30	127.0	8	1.0 - 4.0	25
53112937	CLICK BS 32	11-21	32.3 (-0.2)	40 / 36	155.0	8	1.0 - 4.0	25

Photographs are not to scale and do not represent detailed images of the respective products.



SKINTOP® BT-M



**Benefits**

- Reliable bending and anti-kink protection
- Cable conservation
- Functional reliability
- To protect flexible cables

**Application range**

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Apparatus construction
- Light and sound applications
- Moving machine parts

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Refer to SKINTOP® PG accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Caution</b> Refer to Appendix T21 for the installation dimensions and torques
	<b>Certifications</b> Size M16 - cURus Size M20/M25 - cULus
	<b>Colour delivered</b> Silver grey (RAL 7001)
	<b>Material</b> Body: Polyamide Seal: CR
	<b>Protection rating</b> IP 68 - 5 bar
	<b>Temperature range</b> -20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® BT-M</b>						
53017420	16 x 1,5	3,5-8	19	45,0	12	100
53017430	20 x 1,5	5-12	24	54,0	13	50
53017440	25 x 1,5	9-14	27	57,0	13	50

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® GMP-GL-M refer to page 738

SKINTOP® metric plastic cable glands • SKINTOP® explosion-proof



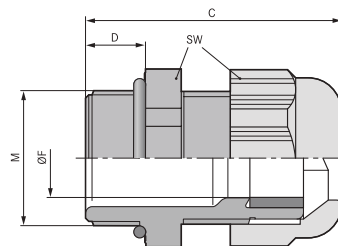
## SKINTOP® K-M ATEX plus / SKINTOP® KR-M ATEX plus



SKINTOP® K-M ATEX plus



SKINTOP® KR-M ATEX plus



### Benefits

#### SKINTOP® K-M ATEX plus

- High degree of protection
- Cold impact resistance
- High strain relief
- Wide, variable clamping ranges
- Permanent vibration protection

#### SKINTOP® KR-M ATEX plus

- For the benefits, refer to SKINTOP® K-M ATEX plus

### Application range

#### SKINTOP® K-M ATEX plus

- Devices, machines and apparatus of enhanced safety protection type “e”
- Equipment group II / Category 2G+1D
- For mobile applications in offshore and marine industries
- Chemical and petrochemical industry

#### SKINTOP® KR-M ATEX plus

- With reducing seal insert, to seal cables with smaller outer diameters.

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 Refer to the instruction leaflet for the installation dimensions and torques

**Certifications**  
 CE 0637 Ex II 2G  
 Ex eb IIC Ex II 1D  
 Ex ta IIIC  
 IECEx IBE 13.0027X

**Colour delivered**  
 RAL 9005 black/UV-resistant

**Material**  
 Body: special polyamide  
 Seal: special elastomer  
 O-ring: CR

**Tests**  
 DIN EN 60079-0  
 DIN EN 60079-7  
 DIN EN 60079-31

**Protection rating**  
 IP 68 - 10 bar

**Temperature range**  
 -20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread M	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® K-M ATEX plus</b>							
54115200	K-M 12 ATEX plus	3-5,5	12 x 1.5	15	26.5 - 30.0	8	50
54115210	K-M 16 ATEX plus	7-9	16 x 1.5	19	29.0 - 34.0	8	50
54115220	K-M 20 ATEX plus	7-13	20 x 1.5	25	34.0 - 37.0	9	50
54115230	K-M 25 ATEX plus	11-17	25 x 1.5	30	35.0 - 40.0	10	25
54115240	K-M 32 ATEX plus	12-21	32 x 1.5	36	39.0 - 47.0	10	25
54115250	K-M 40 ATEX plus	19-28	40 x 1.5	46	43.0 - 52.0	10	10
54115260	K-M 50 ATEX plus	27-35	50 x 1.5	55	54.0 - 62.0	12	5
54115270	K-M 63 ATEX plus	36-45	63 x 1.5	66	59.0 - 71.0	12	5
<b>SKINTOP® KR-M ATEX plus</b>							
54115205	KR-M 12 ATEX plus	2-4	12 x 1.5	15	26.5 - 30.0	8	50
54115215	KR-M 16 ATEX plus	4-6	16 x 1.5	19	29.0 - 34.0	8	50
54115225	KR-M 20 ATEX plus	5-10	20 x 1.5	25	34.0 - 37.0	9	50
54115235	KR-M 25 ATEX plus	6-13	25 x 1.5	30	35.0 - 40.0	10	25
54115245	KR-M 32 ATEX plus	9-15	32 x 1.5	36	39.0 - 47.0	10	25
54115255	KR-M 40 ATEX plus	16-23	40 x 1.5	46	43.0 - 52.0	10	10
54115265	KR-M 50 ATEX plus	22-29	50 x 1.5	55	54.0 - 62.0	12	5
54115275	KR-M 63 ATEX plus	29-39	63 x 1.5	66	59.0 - 71.0	12	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SKINTOP® K-M ATEX plus

- SKINTOP® SDV-M ATEX refer to page 731

#### SKINTOP® KR-M ATEX plus

- SKINTOP® SDV-M ATEX refer to page 731



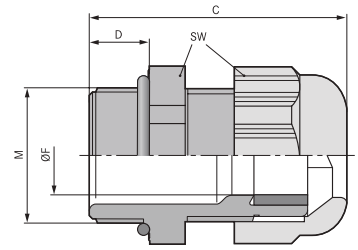
SKINTOP® K-M ATEX plus blue / SKINTOP® KR-M ATEX plus blue



SKINTOP® K-M ATEX plus blue



SKINTOP® KR-M ATEX plus blue



Benefits

SKINTOP® K-M ATEX plus blue

- High degree of protection
- Cold impact resistance
- High strain relief
- Wide, variable clamping ranges
- Permanent vibration protection

SKINTOP® KR-M ATEX plus blue

- For the benefits, refer to SKINTOP® K-M ATEX plus blue

Application range

SKINTOP® K-M ATEX plus blue

- Intrinsically safe circuits (class “i”) as well as in housings and devices that require class “e” safety.
- Equipment group II / Category 2G+1D
- For mobile applications in offshore and marine industries

SKINTOP® KR-M ATEX plus blue

- Chemical and petrochemical industry
- With reducing seal insert, to seal cables with smaller outer diameters.

Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

Technical data



Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland



Caution

Refer to the instruction leaflet for the installation dimensions and torques



Certifications

CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIC  
IECEx IBE 13.0027X



Colour delivered

Blue (RAL 5015)



Material

Body: special polyamide  
Seal: special elastomer  
O-ring: CR

Tests

DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31



Protection rating

IP 68 - 10 bar



Temperature range

-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread M	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® K-M ATEX plus blue</b>							
54115400	K-M 12 ATEX plus blue	3-5,5	12 x 1.5	15	26.5 - 30.0	8	50
54115410	K-M 16 ATEX plus blue	7-9	16 x 1.5	19	29.0 - 34.0	8	50
54115420	K-M 20 ATEX plus blue	7-13	20 x 1.5	25	34.0 - 37.0	9	50
54115430	K-M 25 ATEX plus blue	11-17	25 x 1.5	30	35.0 - 40.0	10	25
54115440	K-M 32 ATEX plus blue	12-21	32 x 1.5	36	39.0 - 47.0	10	25
54115450	K-M 40 ATEX plus blue	19-28	40 x 1.5	46	43.0 - 52.0	10	10
54115460	K-M 50 ATEX plus blue	27-35	50 x 1.5	55	54.0 - 62.0	12	5
54115470	K-M 63 ATEX plus blue	36-45	63 x 1.5	66	59.0 - 71.0	12	5
<b>SKINTOP® KR-M ATEX plus blue</b>							
54115405	KR-M 12 ATEX plus blue	2-4	12 x 1.5	15	26.5 - 30.0	8	50
54115415	KR-M 16 ATEX plus blue	4-6	16 x 1.5	19	29.0 - 34.0	8	50
54115425	KR-M 20 ATEX plus blue	5-10	20 x 1.5	25	34.0 - 37.0	9	50
54115435	KR-M 25 ATEX plus blue	6-13	25 x 1.5	30	35.0 - 40.0	10	25
54115445	KR-M 32 ATEX plus blue	9-15	32 x 1.5	36	39.0 - 47.0	10	25
54115455	KR-M 40 ATEX plus blue	16-23	40 x 1.5	46	43.0 - 52.0	10	10
54115465	KR-M 50 ATEX plus blue	22-29	50 x 1.5	55	54.0 - 62.0	12	5
54115475	KR-M 63 ATEX plus blue	29-39	63 x 1.5	66	59.0 - 71.0	12	5

Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

SKINTOP® K-M ATEX plus blau

- SKINTOP® SDV-M ATEX refer to page 731

SKINTOP® KR-M ATEX plus blau

- SKINTOP® SDV-M ATEX refer to page 731



SKINTOP® metric nickel-plated brass cable glands • SKINTOP® MS-M



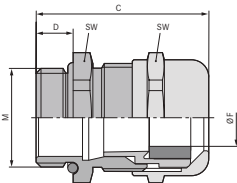
## SKINTOP® MS-M / SKINTOP® MSR-M



SKINTOP® MS-M



SKINTOP® MSR-M



**i Info**

- SKINTOP® MS-M sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters.
- Now with IP69 approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!

### Benefits

#### SKINTOP® MS-M

- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges
- For cable diameters up to 98 mm

### Application range

#### SKINTOP® MS-M

- In areas where mechanical and chemical stability are critical
- Chemical industry
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

#### SKINTOP® MSR-M

- With reducing seal insert, to seal cables with smaller outer diameters.

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

### Technical data

**ETIM** **Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Caution**  
Refer to Appendix T21 for the installation dimensions and torques

**DIN VDE** **Certifications**  
IP 69 approval from size M75 x 1.5 pending.  
UL, CSA, DNV and VDE approval for sizes M90 x 2 to M110 x 2 pending.

**Material**  
Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR

**IP** **Protection rating**  
IP 68  
IP 69 (M12 - M63)

**Temperature range**  
dynamic -25°C up to + 100°C  
Fixed: -40°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-M/SKINTOP® MSR-M</b>						
53112000	12 x 1,5	3-7	16	26.5	6.5	100
53112010	16 x 1,5	4,5-10	20	32.0	7	100
53112020	20 x 1,5	7-13	24	35.5	8	50
53112030	25 x 1,5	9-17	29	37.5	8	25
53112040	32 x 1,5	11-21	36	42.2	9	25
53112050	40 x 1,5	19-28	45	49.5	9	10
53112060	50 x 1,5	27-35	54	52.0	10	5
53112070	63 x 1,5	34-45	67	61.3	15	5
53112080	63 x 1,5 plus	44-55	75	65.5	15	5
53112510	75 x 1,5	58-68	95	105.0	15	1
53112512	90 x 2	66-78	115	136.0	20	1
53112514	110 x 2	86-98	135	154.0	25	1
<b>SKINTOP® MSR-M</b>						
53112100	12 x 1,5	1-5	16	26.5	6.5	100
53112110	16 x 1,5	2-7	20	32.0	7	100
53112120	20 x 1,5	5-10	24	35.5	8	50
53112130	25 x 1,5	6-13	29	37.5	8	25
53112140	32 x 1,5	7-15	36	42.2	9	25
53112150	40 x 1,5	15-23	45	49.5	9	10
53112160	50 x 1,5	22-29	54	52.0	10	5
53112170	63 x 1,5	28-39	67	61.3	15	5
53112511	75 x 1,5	53-63	95	105.0	15	1
53112515	110 x 2	76-88	135	154.0	25	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SKINTOP® MS-M

- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINMATIC® MH Set refer to page 782
- SKINTOP® DIX-M AUTOMATION refer to page 741
- SKINTOP® SDV-M ATEX refer to page 731
- SKINTOP® SD-M refer to page 742
- SKINTOP® DV-M refer to page 742

#### SKINTOP® MSR-M

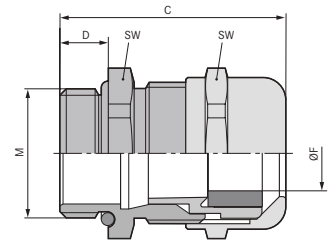
- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINMATIC® MH Set refer to page 782



ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



SKINTOP® MS-M-XL / SKINTOP® MSR-M-XL



**Benefits**

**SKINTOP® MS-M-XL**

- Especially for thick walls
- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

**SKINTOP® MSR-M-XL**

- For the benefits, refer to SKINTOP® MS-M-XL

**Application range**

**SKINTOP® MS-M-XL**

- With long connection thread for applications involving a thicker wall.

**SKINTOP® MSR-M-XL**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland



**Caution**

Refer to Appendix T21 for the installation dimensions and torques



**Material**

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



**Protection rating**

IP 68 - 10 bar  
IP 69



**Temperature range**

dynamic -25°C up to + 100°C  
Fixed: -40°C to +100°C

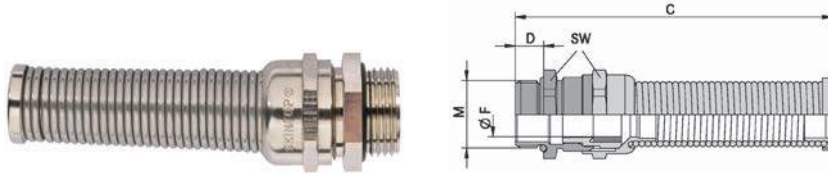
Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-M-XL</b>						
53112005	12 x 1,5	3-7	16	32.8	12	100
53112015	16 x 1,5	4,5-10	20	37.0	12	50
53112025	20 x 1,5	7-13	24	39.5	12	50
53112035	25 x 1,5	9-17	29	41.5	12	25
53112045	32 x 1,5	11-21	36	48.2	15	25
53112055	40 x 1,5	19-28	45	53.5	15	10
53112065	50 x 1,5	27-35	54	57.0	15	5
<b>SKINTOP® MSR-M-XL</b>						
53112105	12 x 1,5	1-5	16	32.8	12	100
53112115	16 x 1,5	2-7	20	37.0	12	50
53112125	20 x 1,5	5-10	24	39.5	12	50
53112135	25 x 1,5	6-13	29	41.5	12	25
53112145	32 x 1,5	7-15	36	48.2	15	25
53112155	40 x 1,5	15-23	45	53.5	15	10
53112165	50 x 1,5	22-29	54	57.0	15	5

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL



### Info

- Permanent bending protection under high mechanical stress

### Benefits

- High mechanical stability
- Long service life
- Optimum strain relief
- Wide, variable clamping ranges
- Maximum reliability

### Application range

- In areas where mechanical stability are critical
- Portable equipment
- Building sites
- Machine and equipment manufacturing
- Typical fields of application
  - Steel and glass works
  - Cement and ceramic works
  - Foundries
  - Shipbuilding industry
  - Furnace construction

### Norm references / Approvals

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Refer to Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR  
Spiral - springs made of stainless steel



#### Protection rating

IP 68 - 10 bar  
IP 69



#### Temperature range

dynamic -25°C up to + 100°C  
static -40°C up to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread length, D (mm)	SW wrench size mm	Overall length, C (mm)	Pieces / PU
<b>SKINTOP® BS-M METAL</b>						
53806759	12 x 1,5	3,5-7	6.5	16	65.0	25
53806760	16 x 1,5	4,5-10	7	20	79.0	25
53806761	20 x 1,5	7-13	8.5	24	95.0	25
53806762	25 x 1,5	9-17	8	29	109.0	25
<b>SKINTOP® BSR-M METAL</b>						
53806769	12 x 1,5	1-5	6.5	16	65.0	25
53806770	16 x 1,5	2-7	7	20	79.0	25
53806771	20 x 1,5	5-10	8.5	24	95.0	25
53806772	25 x 1,5	6-13	8	29	109.0	25

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

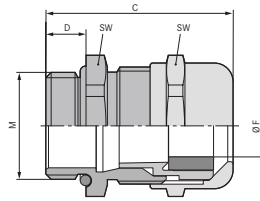
- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINMATIC® MH Set refer to page 782
- SKINTOP® DIX-M AUTOMATION refer to page 741



SKINTOP® COLD / SKINTOP® COLD-R

**Info**

- For extreme sub-zero temperatures



**Benefits**

**SKINTOP® COLD**

- High cold-resistance
- Cold impact resistance
- High mechanical stability
- Optimum strain relief
- Wide, variable clamping ranges

**SKINTOP® COLD-R**

- For the benefits, refer to SKINTOP® COLD

**Application range**

**SKINTOP® COLD**

- In areas where mechanical stability and high cold-resistance are critical
- Air-conditioning technology
- Freezing plants, cold storage
- Offshore sector
- Plant engineering

**SKINTOP® COLD-R**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland



**Caution**

Refer to Appendix T21 for the installation dimensions and torques



**Material**

Body: nickel-plated brass  
Insert: special polyamide  
Sealing ring: silicone  
O-ring: silicone



**Protection rating**

**SKINTOP® COLD**  
IP 68 - 10 bar (M12 - M20)  
IP 68 - 5 bar (M25 - M63)  
**SKINTOP® COLD-R**  
IP 68 - 5 bar (M25 - M63)



**Temperature range**

-70°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® COLD</b>						
53113500	12 x 1,5	3-7	16	26.5	6.5	100
53113510	16 x 1,5	4,5-10	20	32.0	7	100
53113520	20 x 1,5	7-13	24	35.5	8	50
53113530	25 x 1,5	9-17	29	37.5	8	25
53113540	32 x 1,5	11-21	36	42.2	9	25
53113550	40 x 1,5	19-28	45	49.5	9	10
53113560	50 x 1,5	27-35	54	52.0	10	5
53113570	63 x 1,5	34-45	67	61.3	15	5
<b>SKINTOP® COLD-R</b>						
53113600	12 x 1,5	1-5	16	26.5	6.5	100
53113610	16 x 1,5	2-7	20	32.0	7	100
53113620	20 x 1,5	5-10	24	35.5	8	50
53113630	25 x 1,5	6-13	29	37.5	8	25
53113640	32 x 1,5	7-15	36	42.2	9	25
53113650	40 x 1,5	15-23	45	49.5	9	10
53113660	50 x 1,5	22-29	54	52.0	10	5
53113670	63 x 1,5	28-39	67	61.3	15	5

Photographs are not to scale and do not represent detailed images of the respective products.

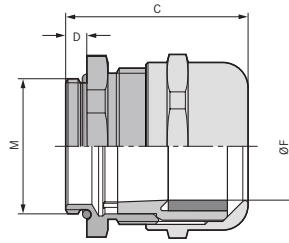
**Accessories**

**SKINTOP® COLD**

- SKINDICHT® SM-M refer to page 763



## SKINTOP® MS-IS-M



### Benefits

- Short connection thread for more space inside the industrial connectors
- Wide, variable clamping ranges
- Optimum strain relief

### Application range

- Specially designed for use on industrial connectors.

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- For suitable multiple seal inserts please see SKINTOP® DIX PG 21 (25 x 1.5) and DIX PG 29 (32 x 1.5)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Refer to Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



#### Protection rating

IP 68 - 5 bar



#### Temperature range

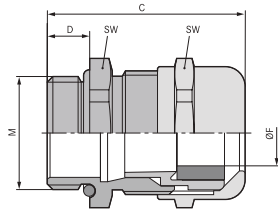
dynamic -25°C up to + 100°C  
static -40°C up to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-IS-M</b>						
53112780	25 x 1,5	11-18	30	37.0	5	25
53112790	32 x 1,5	16-25	40	43.0	5	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® MS-M ATEX / SKINTOP® MSR-M ATEX**



SKINTOP® MS-M ATEX



SKINTOP® MSR-M ATEX

**Benefits**

**SKINTOP® MS-M ATEX**

- Cold impact resistance
- High strain relief
- Wide, variable clamping ranges
- Anti-static
- Maximum reliability

**Application range**

**SKINTOP® MS-M ATEX**

- Devices, machines and apparatus of enhanced safety protection type “e”
- Equipment group II / Category 2G+1D
- For mobile applications in offshore and marine industries
- Chemical and petrochemical industry

**SKINTOP® MSR-M ATEX**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Product features**

**SKINTOP® MS-M ATEX**

- SKINTOP® MS-M-XL ATEX is similar to the SKINTOP® MS-M ATEX, but has an extended connection thread for thick walls

**Norm references / Approvals**

**SKINTOP® MS-M ATEX**

- UL File Nr. E79903

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

**SKINTOP® MS-M ATEX**

- Refer to SKINTOP® SDV-M ATEX for suitable accessories

**SKINTOP® MSR-M ATEX**

- Refer to SKINTOP® SDVR-M ATEX for suitable accessories

**Technical data**



**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Caution**  
Refer to the instruction leaflet for the installation dimensions and torques



**Certifications**  
CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIIC  
IECEx IBE 13.0026X



**Material**  
Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR

**Tests**  
DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31



**Protection rating**  
IP 68 - 10 bar



**Temperature range**  
-30°C to +90°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-M ATEX</b>						
53112700	12 x 1,5	3 - 7	16	26.5	6.5	100
53112710	16 x 1,5	4.5 - 10	20	33.0	7	100
53112720	20 x 1,5	7 - 13	24	37.0	8	50
53112730	25 x 1,5	9 - 17	29	38.5	8	25
53112740	32 x 1,5	11 - 21	36	45.5	9	25
53112750	40 x 1,5	19 - 28	45	48.0	9	10
53112760	50 x 1,5	26 - 35	54	55.5	10	5
53112770	63 x 1,5	34 - 45	67	67.0	15	5
53112779	63 x 1,5 plus	44 - 55	75	65.5	15	1
<b>SKINTOP® MS-M-XL ATEX</b>						
53112800	12 x 1,5	3 - 7	16	32.8	12	100
53112810	16 x 1,5	4.5 - 10	20	37.0	12	100
53112820	20 x 1,5	7 - 13	24	39.5	12	50
53112830	25 x 1,5	9 - 17	29	41.5	12	25
53112840	32 x 1,5	11 - 21	36	48.2	15	25
53112850	40 x 1,5	19 - 28	45	53.5	15	10
53112860	50 x 1,5	26 - 35	54	57.5	15	5
<b>SKINTOP® MSR-M ATEX</b>						
53112705	12 x 1,5	2 - 5	16	26.5	6.5	100
53112715	16 x 1,5	4 - 7	20	33.0	7	100
53112725	20 x 1,5	5 - 10	24	37.0	8	50
53112735	25 x 1,5	6 - 13	29	38.5	8	25
53112745	32 x 1,5	7 - 15	36	45.5	9	25
53112755	40 x 1,5	16 - 23	45	48.0	9	10
53112765	50 x 1,5	19 - 29	54	55.5	10	5
53112775	63 x 1,5	32 - 39	67	67.0	15	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**SKINTOP® MS-M ATEX**

- SKINTOP® SDV-M ATEX refer to page 731
- SKINDICHT® SM-M refer to page 763
- SKINDICHT® SM-PE-M refer to page 763

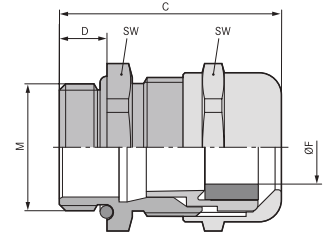
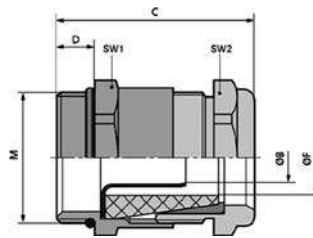
**SKINTOP® MSR-M ATEX**

- SKINTOP® SDV-M ATEX refer to page 731
- SKINDICHT® SM-M refer to page 763
- SKINDICHT® SM-PE-M refer to page 763

SKINTOP® metric nickel-plated brass cable glands • SKINTOP® explosion-proof



## SKINTOP® MS-M ATEX BRUSH



SKINTOP® SDV-M ATEX

SKINTOP® SDV-M ATEX

### Benefits

- Faster and less complicated assembling than any other system
- Optimum, low-resistance 360° screen contact
- Simple cable adjustment
- Easy to uninstall
- Anti-static, safe, and impact-resistant at cold temperatures

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Chemical and petrochemical industry
- Plant engineering
- Equipment group II / Category 2G+1D
- Devices, machines and apparatus of enhanced safety protection type "e"

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- SKINDICHT® SHVE-M 20 x 1.5 ATEX design with EMC earthing sleeve to cover smaller cable clamping ranges
- SKINDICHT® SHVE-M 20x1,5 ATEX is not IECEx certified

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Refer to the instruction leaflet for the installation dimensions and torques



#### Certifications

DNV for SKINDICHT® SHVE-M ATEX pending  
SKINDICHT® SHVE-M ATEX is not IECEx certified



#### Note

CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIC  
IECEx IBE 13.0026X



#### Material

SKINTOP® MS-M ATEX BRUSH  
Body: nickel plated brass  
Insert: special polyamide  
EMV-Brush: brass  
Seal: special elastomer  
O-Ring: special elastomer  
SKINDICHT® SHVE-M ATEX  
Body: nickel plated brass  
Earthing sleeve: brass  
Seal: special elastomer  
O-Ring: special elastomer

#### Tests

DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31



#### Protection rating

IP 68 - 10 bar



#### Temperature range

SKINTOP® MS-M ATEX BRUSH  
-30 °C to +90 °C  
SKINDICHT® SHVE-M ATEX  
-20 °C to +80 °C

Article number	Article designation / size	Outer Ø (mm), from - to	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHVE-M ATEX</b>						
52107102	20 x 1,5	6.9 - 8.9	5	22	6	10
<b>SKINTOP® MS-M ATEX BRUSH</b>						
52110023	25 x 1,5	9.0 - 17.0	6	29	8	10
52110024	32 x 1,5	11.0 - 21.0	8	36	9	5
52110025	40 x 1,5	19.0 - 28.0	10	45	9	5
52110026	50 x 1,5	27.0 - 35.0	14	54	10	5
52110027	63 x 1,5	34.0 - 45.0	20	67	15	1
52110028	63 x 1,5 plus	44.0 - 55.0	25	75	15	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763
- SKINDICHT® SM-PE-M refer to page 763



## SKINTOP® SDV-M ATEX / SKINTOP® SDVR-M ATEX



SKINTOP® SDV-M ATEX

### Benefits

- Permanent and secure sealing for areas with risks of explosion
- Easy to assemble
- High degree of protection

### Application range

#### SKINTOP® SDV-M ATEX

- SKINTOP® SDV-M is used together with SKINTOP® MS-M ATEX, MS-M ATEX BRUSH or SKINTOP® K-M ATEX plus (blue).

- Equipment group II / Category 2G+1D

#### SKINTOP® SDVR-M ATEX

- SKINTOP® SDVR-M is used together with SKINTOP® MSR-M ATEX or SKINTOP® KR-M ATEX plus (blue).

- Equipment group II / Category 2G+1D

### Note

#### SKINTOP® SDV-M ATEX

- Outside areas with a risk of explosion, also suitable for use in combination with SKINTOP® ST-M and SKINTOP® MS-M

#### SKINTOP® SDVR-M ATEX

- Outside areas with a risk of explosion, also suitable for use in combination with SKINTOP® STR-M and SKINTOP® MSR-M

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland



#### Caution

Refer to the instruction leaflet for the installation dimensions and torques



#### Material

CR



#### Protection rating

IP 68 - 10 bar



#### Temperature range

-30°C to +70°C  
Short-term: up to +90°C

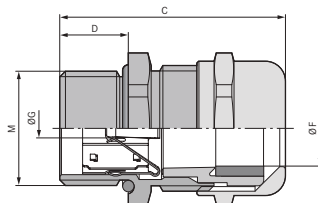
Article number	Article designation / size	Visible height (mm)	Pieces / PU
<b>SKINTOP® SDV-M ATEX</b>			
54113002	12 ATEX	SDV-M ATEX 3	50
54113012	16 ATEX	SDV-M ATEX 3	50
54113022	20 ATEX	SDV-M ATEX 3	50
54113032	25 ATEX	SDV-M ATEX 3	50
54113042	32 ATEX	SDV-M ATEX 4	25
54113052	40 ATEX	SDV-M ATEX 4	25
54113062	50 ATEX	SDV-M ATEX 4	10
54113072	63 ATEX	SDV-M ATEX 4	5
<b>SKINTOP® SDVR-M ATEX</b>			
54113013	16 ATEX	SDVR-M ATEX 4	50
54113023	20 ATEX	SDVR-M ATEX 5	50
54113033	25 ATEX	SDVR-M ATEX 5	50
54113043	32 ATEX	SDVR-M ATEX 5	25

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINTOP® MS-SC-M



### Benefits

- Suitable for cables with and without inner sheath
- Also suitable for continuing the cable screen to another connection
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Few operation steps, easy to assemble

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Telecommunication
- Industrial machinery and plant engineering
- Measurement and control technology
- Automation technology

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Refer to SKINTOP® metric accessories for suitable accessories
- As an alternative for thick-walled housings, we recommend SKINTOP® MS-SC-M-XL with long connection thread in the sizes M16 to M50

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 Refer to Appendix T21 for the installation dimensions and torques

**Material**  
 Body: nickel-plated brass  
 Insert: polyamide  
 Sealing ring: CR  
 O-ring: NBR

**IP Protection rating**  
 IP 68 - 10 bar

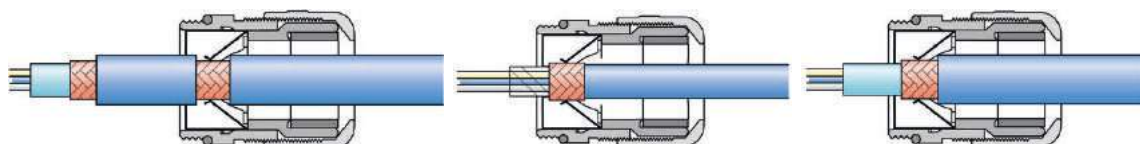
**Temperature range**  
 dynamic -25°C up to + 100°C  
 static -40°C up to +100°C

Article number	Article designation / size	Outer Ø (mm), from - to	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-SC-M</b>						
53112610	12 x 1,5	3.5 - 7.0	2	16	6.5	50
53112620	16 x 1,5	4.5 - 9.0	4	20	7	50
53112630	20 x 1,5	7.0 - 12.5	5	24	8	25
53112640	25 x 1,5	9.0 - 16.5	7.5	29	8	25
53112650	32 x 1,5	11.0 - 21.0	9	36	9	25
53112660	40 x 1,5	19.0 - 28.0	15	45	9	10
53112670	50 x 1,5	27.0 - 35.0	21	54	10	5
<b>SKINTOP® MS-SC-M-XL</b>						
53112625	16 x 1,5	4.5 - 9.0	4	20	12	50
53112635	20 x 1,5	7.0 - 12.5	5	24	12	25
53112645	25 x 1,5	9.0 - 16.5	7.5	29	12	25
53112655	32 x 1,5	11.0 - 21.0	9	36	15	25
53112665	40 x 1,5	19.0 - 28.0	15	45	15	10
53112675	50 x 1,5	27.0 - 35.0	21	54	15	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-PE-M refer to page 763





**SKINTOP® MS-M BRUSH**

**Benefits**

- Faster, easier screen contact
- Optimum, low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

**Application range**

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation systems
- High-power drives
- Frequency converters
- Conveyor and transport systems

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

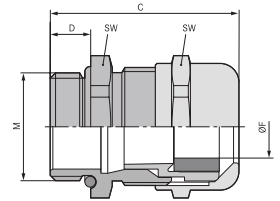
- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings

**Info**

- SKINTOP® MS-M BRUSH sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters.



**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
Refer to Appendix T21 for the installation dimensions and torques
- Certifications**  
DIN VDE VDE, UL, CSA, DNV approval for size M90 x 2 and 110 x 2 pending  
SKINTOP® MSR-M BRUSH 25 x 1,5 approvals pending
- Material**  
Body: nickel-plated brass  
EMC brush: brass  
Sealing ring: special elastomer  
O-ring: special elastomer
- Protection rating**  
IP 68 - 10 bar (M12 - M50)  
IP 68 - 5 bar (M63)  
IP 68 - 1 bar (M63 plus - M75)  
IP 69 (M12 - M63)
- Temperature range**  
dynamic -25°C up to + 100°C  
Fixed: -40°C to +100°C

Article number	Article designation / size	Outer Ø (mm), from - to	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-M BRUSH</b>						
53112676	25 x 1,5	9.0 - 17.0	6	29	8	10
53112677	32 x 1,5	11.0 - 21.0	8	36	9	5
53112678	40 x 1,5	19.0 - 28.0	10	45	9	5
53112679	50 x 1,5	27.0 - 35.0	14	54	10	5
53112680	63 x 1,5	34.0 - 45.0	20	67	15	1
53112681	63 x 1,5 plus	44.0 - 55.0	25	75	15	1
53112501	75 x 1,5	53.0 - 63.0	35	95	15	1
53112500	75 x 1,5 plus	58.0 - 68.0	35	95	15	1
53112503	90 x 2	66.0 - 78.0	45	115	20	1
53112505	110 x 2	76.0 - 88.0	55	135	25	1
53112504	110 x 2 plus	86.0 - 98.0	55	135	25	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-PE-M refer to page 763





## SKINTOP® BRUSH ADD-ON



### Benefits

- Optimum, low-resistance 360° screen contact
- Cutting edges cut through the insulating layer of the housing or switch cabinets, thus guaranteeing an optimum EMC contact
- Easy disassembling
- Visible, large-scale screen contact
- Uncomplicated and reliable

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- For EMC-contact at through bore-holes
- Control cabinet manufacturing
- Automation systems
- Conveyor and transport systems

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Info

- Innovative EMC add-on for SKINTOP® ST(R)-M polyamide cable glands.
- Worlds first patented active EMC lock-nut!

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
Refer to Appendix T21 for the installation dimensions and torques  
Apply SKINTOP® ST-M torques
- Certifications**  
UL pending
- Material**  
Body: nickel-plated brass  
EMC brush: brass
- Temperature range**  
Dynamic: -20°C to +100°C  
Depending on the combination of the used cable gland

Article number	Article designation / size	Minimum Ø above braiding (mm)	SW wrench size mm	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® BRUSH ADD-ON</b>					
54110839	M 12 x 1,5	4	24	10	25
54110840	M 16 x 1,5	5	24	10	25
54110841	M 20 x 1,5	5	24	10	10
54110842	M 25 x 1,5	5	30	10	10
54110843	M 32 x 1,5	8	39	12	10
54110844	M 40 x 1,5	10	47	12	5
54110845	M 50 x 1,5	14	56	12	5
54110846	M 63 x 1,5	14	63	12	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® BS-M refer to page 719
- SKINTOP® ST-M refer to page 712
- SKINTOP® STR-M refer to page 712
- SKINTOP® ST-HF-M refer to page 718
- SKINTOP® COLD refer to page 727
- SKINTOP® COLD-R refer to page 727





SKINTOP® INOX / SKINTOP® INOX-R

**Info**

- Stainless steel version with compact design
- For use in the **splash zone** in the food production



**Benefits**

- Corrosion-resistant
- Sea water-resistant
- Smooth surfaces - no edges
- Compact design
- Wide, variable clamping ranges

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Material**  
 Body: Stainless steel - V4A (1.4404 / 316L)  
 Insert: Polyamide  
 Sealing ring: Silicone  
 O-Ring: Silicone

**IP Protection rating**  
 IP 68 - 10 bar (M12 - M20)  
 IP 68 - 5 bar (M25 - M32)  
 IP 69

**Temperature range**  
 -40°C to +100°C

**Application range**

- Onshore and offshore applications
- Bottling plants and breweries
- Food industry (product-free zone, splash zone)

**Norm references / Approvals**

- ECOLAB®**  
 Industry standard in the field of professional cleaning and disinfection
- DIN EN 1672-2**  
 Guideline for the design of machinery
- DIN EN ISO 14 159**  
 Security of machinery Hygienic requirements for the design of machinery

Article number	Article designation / size	Clamping range ØF (mm)	Thread length, D (mm)	SW wrench size mm	Overall length, C (mm)	Pieces / PU
<b>SKINTOP® INOX</b>						
53806739	12x1,5	4-7	6.5	16	29.3	5
53806740	16x1,5	6-10	7	20	32.4	5
53806741	20x1,5	7-13	8	24	35.8	5
53806742	25x1,5	9-17	8	29	37.8	5
53806743	32x1,5	11-21	9	36	43.3	5
<b>SKINTOP® INOX-R</b>						
53806749	12x1,5	3-5	6.5	16	29.3	5
53806750	16x1,5	5-7	7	20	32.4	5
53806751	20x1,5	5-10	8	24	35.8	5
53806752	25x1,5	7-13	8	29	37.8	5
53806753	32x1,5	7-15	9	36	43.3	5

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SKINDICHT® CN-M refer to page 759
- SKINTOP® HYGIENIC

**Accessories**

- Suitable counter nut SKINDICHT® SM CrNi M



ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## SKINTOP® INOX SC / SKINTOP® INOX-R SC



**Info**

- Stainless steel version with compact design
- Optimum EMC protection

### Benefits

- Smooth surfaces - no edges
- Compact design
- Wide, variable clamping ranges
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Pharmaceutical industry
- Food industry (product-free zone, splash zone)
- Onshore and offshore applications
- Bottling plants and breweries

### Norm references / Approvals

- **DIN EN ISO 14 159**  
Security of machinery Hygienic requirements for the design of machinery
- **DIN EN 1672-2**  
Guideline for the design of machinery
- **ECOLAB®**  
Industry standard in the field of professional cleaning and disinfection

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- EMC counter nut, SKINDICHT® SM nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- For suitable accessories, refer to SKINTOP® metric accessories
- Size M 40x1,5 available on request

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Caution**  
Refer to the instruction leaflet for the installation dimensions and torques

**Material**  
Body: Stainless steel - V4A (1.4404 / 316L)  
Insert: Polyamide  
Sealing ring: Silicone  
O-Ring: Silicone

**Protection rating**  
IP 68 - 10 bar (M12 - M20)  
IP 68 - 5 bar (M25 - M32)  
IP 69

**Temperature range**  
-40°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread length, D (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® INOX SC</b>							
53806720	M 12 x 1,5	4-7	6,5	16	29,3	6,5	5
53806722	M 16 x 1,5	6-10	7	20	32,4	7	5
53806724	M 20 x 1,5	7-12,5	8	24	35,5	8	5
53806726	M 25 x 1,5	9-17	8	29	30,8	8	5
53806728	M 32 x 1,5	11-21	9	36	44,6	9	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SKINDICHT® CN-M refer to page 759
- SKINTOP® HYGIENIC

### Accessories

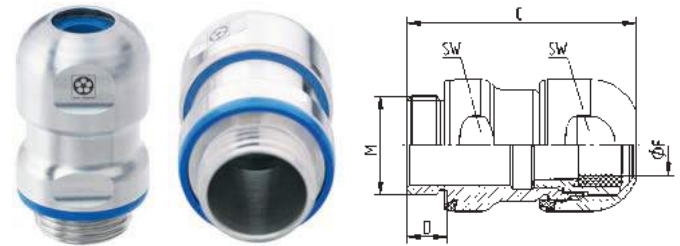
- Suitable counter nut SKINDICHT® SM CrNi M



SKINTOP® HYGIENIC / SKINTOP® HYGIENIC-R

**Info**

- Ideal for hygienic critical areas - resistant, edge-free, robust and reliable
- No gaps, voids or outer lying thread - so no risk of contamination of food machines, facilities or components.



**Benefits**

- Hygienic Design for ideal cleaning results
- Smooth surfaces and no edges prevent the accumulation of fluids and formation of micro-organisms

**Application range**

- Food machinery, equipment and components
- For use in **product zone**
- Pharmaceutical industry

**Norm references / Approvals**

- **EHEDG (TYPE EL Class I AUX)**  
Hygienic design for machinery and components
- **ECOLAB®**  
Industry standard in the field of professional cleaning and disinfection
- **FDA 21 CFR 177.2600**  
Special sealing element for food and beverage industry in North America
- **DIN EN 1672-2**  
Guideline for the design of machinery
- **DIN EN ISO 14 159**  
Security of machinery Hygienic requirements for the design of machinery

**Product Make-up**

- Material and shape provide an easy and safe cleaning
- By the blue coloring of the sealing material clearly distinguishable from foodstuffs
- One complete assembly is easily mounted from the outside
- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Other sizes are available upon request
- EMC version is available upon request
- Installation wrench for very high packing density on request

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Material**  
Body: Stainless steel - V4A (1.4404 / 316L)  
Insert: Polyamide  
Sealing material: Special Elastomer

**Protection rating**  
IP 68 - 10 bar  
IP 69

**Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread length, D (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® HYGIENIC</b>							
53105100	M 12 x 1,5	4-6	6,5	16	39,9	6,5	5
53105110	M 16 x 1,5	6,5-9	7	20	43,4	7	5
53105120	M 20 x 1,5	9-12	8	24	46,4	8	5
53105130	M 25 x 1,5	11,5-15,5	8	29	48,9	8	5
<b>SKINTOP® HYGIENIC-R</b>							
53105200	M 12 x 1,5	2-4,5	6,5	16	39,9	6,5	5
53105210	M 16 x 1,5	4,5-7	7	20	43,4	7	5
53105220	M 20 x 1,5	7-10	8	24	46,4	8	5
53105230	M 25 x 1,5	9-12,5	8	29	48,9	8	5

Other sizes are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SKINTOP® INOX / SKINTOP® INOX-R refer to page 735
- SKINTOP® INOX SC / SKINTOP® INOX-R SC refer to page 736

**Accessories**

- Suitable counter nut SKINDICHT® SM CrNi M





## SKINTOP® GMP-GL-M



### Benefits

- Glass fibre-reinforced for maximum mechanical stability
- Supporting surface for spanner means scratches on the housing are avoided

### Application range

- For locking SKINTOP® cable glands in boreholes without thread.

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- UL approval only when used with the UL-approved SKINTOP® polyamide cable glands
- Designed for use with metric SKINTOP® plastic cable glands

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### On request

Available without collar  
(without surface for assembling tool)



#### Colour delivered

Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant



#### Material

Polyamide, glass fibre-reinforced



#### Temperature range

Fixed: -40°C to +100°C  
Dynamic: -20°C to +100°C

Article number	Article designation / size	SW wrench size mm	Pieces / PU
<b>SKINTOP® GMP-GL-M silver grey</b>			
53119000	12 x 1,5	17	100
53119010	16 x 1,5	22	100
53119020	20 x 1,5	27	100
53119030	25 x 1,5	34	100
53119040	32 x 1,5	41	100
53119050	40 x 1,5	50	25
53119060	50 x 1,5	60	25
53119070	63 x 1,5	75	25
<b>SKINTOP® GMP-GL-M black</b>			
53119100	12 x 1,5	17	100
53119110	16 x 1,5	22	100
53119120	20 x 1,5	27	100
53119130	25 x 1,5	34	100
53119140	32 x 1,5	41	100
53119150	40 x 1,5	50	25
53119160	50 x 1,5	60	25
53119170	63 x 1,5	75	25
<b>SKINTOP® GMP-GL-M light grey</b>			
53119003	12 x 1,5	17	100
53119013	16 x 1,5	22	100
53119023	20 x 1,5	27	100
53119033	25 x 1,5	34	100
53119043	32 x 1,5	41	100
53119053	40 x 1,5	50	25
53119063	50 x 1,5	60	25
53119073	63 x 1,5	75	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® GMP-HF-M**



**i Info**

- Cable gland for railway applications  
- Fire protection on railway vehicles  
Approval according to  
DIN EN 45545-2:2013

**Benefits**

- Halogen-free
- Extremely flame-retardant according to UL 94 V0
- Self-extinguishing, no dripping

**Application range**

- For locking SKINTOP® cable glands in boreholes without thread.
- Airports
- Tunnel construction
- Underground railways
- Public buildings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Designed for use with SKINTOP® ST-HF-M

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Colour delivered**  
Light grey (RAL 7035)

**Material**  
Polyamide UL 94V-0 - halogen-free

**Temperature range**  
-20°C to +100°C

Article number	Article designation / size	SW wrench size mm	PU
<b>SKINTOP® GMP-HF-M</b>			
53119200	12 x 1,5	17	100
53119210	16 x 1,5	22	100
53119220	20 x 1,5	27	100
53119230	25 x 1,5	34	100
53119240	32 x 1,5	41	100
53119250	40 x 1,5	50	25
53119260	50 x 1,5	60	25
53119270	63 x 1,5	75	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® ST-HF-M refer to page 718





## SKINTOP® DIX-M

**Benefits**

- Easy insertion of several cables into one gland
- Higher packing density allows smaller part construction

**Application range**

- For use in SKINTOP® cable glands.
- A sealing ring with several holes is used in place of the inner sealing insert.

**Note**

- IP 68 can be achieved when all openings are closed and all bores are optimally occupied, i.e. when using cables with nominal diameter and/or SKINTOP® DIX-DV sealing plugs

**Product Make-up**

- SKINTOP® DIX-M VITON® is resistant to oil, water, alkaline solutions, acids, solvents etc.

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	<b>On request</b> Special shapes
	<b>Colour delivered</b> Black, RAL 9005
	<b>Material</b> NBR VITON®
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -40°C to +100°C

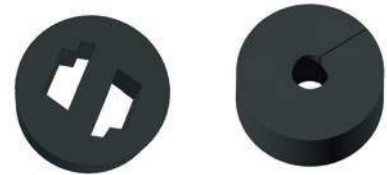
Article number	Article designation / size	Size M	Number of cables x cable Ø	Pieces / PU
<b>SKINTOP® DIX-M</b>				
53316220	16220	M 16	2 x 2.0	100
53316230	16230	M 16	2 x 3.0	100
53316240	16240	M 16	2 x 4.0	100
53316420	16420	M 16	4 x 2.0	100
53320250	20250	M 20	2 x 5.0	100
53320260	20260	M 20	2 x 6.0	100
53320340	20340	M 20	3 x 4.0	100
53320353	20353	M 20	3 x 5.3	100
53320440	20440	M 20	4 x 4.0	100
53320920	20920	M 20	9 x 2.0	100
53320430	20430	M 20	4 x 3.0	100
53325260	25260	M 25	2 x 6.0	50
53325250	25250	M 25	2 x 5.0	50
53325350	25350	M 25	3 x 5.0	50
53325360	25360	M 25	3 x 6.0	50
53325370	25370	M 25	3 x 7.0	50
53325450	25450	M 25	4 x 5.0	50
53325540	25540	M 25	5 x 4.0	50
53325640	25640	M 25	6 x 4.0	50
53332270	32270	M 32	2 x 7.0	50
53332280	32280	M 32	2 x 8.0	50
53332290	32290	M 32	2 x 9.0	50
53332370	32370	M 32	3 x 7.0	50
53332380	32380	M 32	3 x 8.0	50
53332460	32460	M 32	4 x 6.0	50
53332470	32470	M 32	4 x 7.0	50
53332560	32560	M 32	5 x 6.0	50
53332650	32650	M 32	6 x 5.0	50
53332840	32840	M 32	8 x 4.0	50
53332850	32850	M 32	8 x 5.0	50
53332940	32940	M 32	9 x 4.0	50
53340290	40290	M 40	2 x 9.0	25
53340310	40310	M 40	3 x 10.0	25
53340480	40480	M 40	4 x 8.0	25
53340490	40490	M 40	4 x 9.0	25
53340580	40580	M 40	5 x 8.0	25
53340590	40590	M 40	5 x 9.0	25
53340670	40670	M 40	6 x 7.0	25
53340860	40860	M 40	8 x 6.0	25
53340969	40969	M 40	9 x 6.9	25
53350118	50118	M 50	11 x 8.0	10
53350680	50680	M 50	6 x 8.0	10
53350780	50780	M 50	7 x 8.0	10
53350870	50870	M 50	8 x 7.0	10
53350147	50147	M 50	14 x 7.0	10
53350164	50164	M 50	16 x 4.0	10
53350166	50166	M 50	16 x 6.0	10
<b>SKINTOP® DIX-M VITON®</b>				
53420250	20250	M 20	2 x 5.0	100
53420260	20260	M 20	2 x 6.0	100
53440969	40969	M 40	9 x 6.9	25

Viton® is a registered trademark of DuPont de Nemours

Photographs are not to scale and do not represent detailed images of the respective products.



SKINTOP® DIX-M AUTOMATION



**Benefits**

- Optimal seal when using AS-I bus cables
- Easy insertion of pre-assembled cables (with fieldbus or RJ-45 connector)
- Strain relief

**Application range**

- These seals can be used instead of our standard seals in the SKINTOP® cable glands.
- Control cabinets
- Control panels
- Office applications
- Automation technology

**Note**

- IP 68 can be achieved if the hole is optimally occupied, i.e. when using standard AS-I bus cables

**Product Make-up**

- Precise cut for AS-I bus cables
- Seal with hole and cut for easy insertion of pre-assembled RJ45 network cables
- Seal with hole and cut for easy insertion of pre-assembled field bus cables
- Multiple seal inserts with holes and slits for easy insertion of pre-assembled cables

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	<b>Colour delivered</b> Black, RAL 9005
	<b>Material</b> NBR
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -40°C to +100°C

Article number	Article designation / size	Number of cables x cable Ø	Pieces / PU
<b>SKINTOP® DIX-M ASI</b>			
53611001	M 20	1 x AS-I	50
<b>SKINTOP® DIX-M ASI DUO</b>			
53611004	M 25	2 x AS-I	50
<b>SKINTOP® DIX-M RJ-45</b>			
53440980	M 25	1 x 5.4	50
<b>SKINTOP® DIX-M FIELDBUS</b>			
53440970	M 32	1 x 6.5	50
<b>SKINTOP® DIX-M CUT</b>			
53310444	M 40	3 x 10.0	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® CLICK refer to page 715
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-M refer to page 712
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726





## SKINTOP® DIX-DV / SKINTOP® SD-M / SKINTOP® DV-M



SKINTOP® DIX-DV



SKINTOP® SD-M



SKINTOP® DV-M

### Benefits

#### SKINTOP® DIX-DV

- Prevents water and dust penetrating into unused bore holes of SKINTOP® DIX-M multiple sealing inserts

#### SKINTOP® SD-M

- Prevents dust and dirt from getting into the housing

#### SKINTOP® DV-M

- Prevents humidity from seeping into the housing

### Application range

#### SKINTOP® DIX-DV

- For inserting into unoccupied holes of the SKINTOP® DIX-M multiple sealing inserts, to ensure protection class.

#### SKINTOP® SD-M

- This dust protector can be placed under the cap nut of below mentioned SKINDICHT® types and specified SKINTOP® cable glands.
- Preparations
- Protection of unused connection points

#### SKINTOP® DV-M

- These seals are placed into the sealing ring of the SKINTOP® cable glands.
- Preparations
- Protection of unused connection points

### Note

#### SKINTOP® DIX-DV

- When assembled professionally and properly, the protection class of IP 68 can be reached
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

#### SKINTOP® SD-M

- Easy to handle, without disassembly - push cable through
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

#### SKINTOP® DV-M

- When assembled professionally and properly, the protection class of IP 68 can be reached
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland



#### Colour delivered

**SKINTOP® DIX-DV**  
natural  
**SKINTOP® SD-M**  
Black  
**SKINTOP® DV-M**  
Black



#### Material

**SKINTOP® DIX-DV**  
Polyamide  
**SKINTOP® SD-M**  
PE foam  
**SKINTOP® DV-M**  
CR



#### Protection rating

**SKINTOP® DIX-DV**  
IP 54



#### Temperature range

**SKINTOP® DIX-DV**  
-40°C to +100°C  
**SKINTOP® SD-M**  
-70°C to +100°C  
**SKINTOP® DV-M**  
-30°C to +100°C

Article number	Article designation / size	Ø-F mm	Height (mm)	Pieces / PU
<b>SKINTOP® DIX-DV</b>				
53100003	DIX-DV 3 x 9	3.0	9	100
53100004	DIX-DV 4 x 9	4.0	9	100
53100005	DIX-DV 5 x 11	5.0	11	100
53100055	DIX-DV 5,5 x 11	5.5	11	100
53100006	DIX-DV 6 x 14	6.0	14	100
53100007	DIX-DV 7 x 14	7.0	14	100
53100008	DIX-DV 8 x 14	8.0	14	100
53100009	DIX-DV 9 x 14	9.0	14	100
<b>SKINTOP® SD-M</b>				
54113100	12	11.5	2	100
54113110	16	15.0	2	100
54113120	20	20.0	2	100
54113130	25	25.0	2	50
54113140	32	30.0	2	50
54113150	40	40.0	2	25
54113160	50	49.0	2	25
54113170	63	58.0	2	25
<b>SKINTOP® DV-M</b>				
54113000	12	7.2	7	500
54113010	16	10.0	8	500
54113020	20	13.2	8.4	250
54113030	25	17.2	9.5	250
54113040	32	21.2	12	250
54113050	40	28.2	14.5	100
54113060	50	35.8	18	100
54113070	63	45.6	20	50

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SKINTOP® DIX-DV

- SKINTOP® CLICK refer to page 715
- SKINTOP® DIX-M refer to page 740
- SKINTOP® MS-M refer to page 724
- SKINTOP® ST-M refer to page 712
- SKINTOP® BS-M METAL / SKINTOP® BSR-M METAL refer to page 726



SKINTOP® CUBE

**Info**

- Innovative multi-cable bushing system with variable clamping ranges for high flexibility in assembling.
- When disassembling, the frame can remain on the housing and the plug-in module remains securely on the cable.



**Benefits**

- Variable range of clamping force
- Vibration-safe module fixation
- Strain relief
- Oil resistance
- Simplified servicing due to easy assembling and disassembling

**Application range**

- For installation of harnessed cables
- Used in areas where cables and wires need to be safely inserted into housings
- Apparatus and switch cabinet construction
- Electronic installations
- Automation technology

**Norm references / Approvals**

- UL File Nr. E349737

**Product Make-up**

- The SKINTOP® CUBE system consists of the SKINTOP® CUBE FRAME and the clip modules SKINTOP® CUBE MODULE.
- For cut-outs for industrial connectors with standard defined boreholes.
- For cut-outs for 16-pin industrial connectors (36 x 86 mm)
- For cut-outs for 24-pin industrial connectors (36 x 112 mm)

**Note**

- SKINTOP® CUBE MODULE 20x20 BLIND can be used as a blind module and for clamping ranges 1 - 3 mm

**Included**

- SKINTOP® CUBE FRAME including mounting material

**Suitable tools**

- Kraftform Kompakt® 10

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000240  
 ETIM 5.0 Class-Description: Cable entry

**Material**  
 Frame: glass fibre-reinforced polyamide  
 Frame seal: CR  
 Clip module: special polypropylene  
 Clip module seal: LSE 2

**Protection rating**  
 IP 64

**Temperature range**  
 Dynamic: -20°C up to +80°C  
 Static: -40°C up to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. number of executions	Pieces / PU
<b>SKINTOP® CUBE Frame</b>				
52220000	SKINTOP® CUBE FRAME 16		8	1
52220001	SKINTOP® CUBE FRAME 24		10	1
<b>SKINTOP® CUBE clip modules</b>				
52220004	SKINTOP® CUBE MODULE 20x20 BLIND	1 - 3		5
52220002	SKINTOP® CUBE MODULE 20x20 SMALL	4 - 6		5
52220003	SKINTOP® CUBE MODULE 20x20 LARGE	6 - 9		5
52220040	SKINTOP® CUBE MODULE 20x20 AS-1 BUS			5
52220005	SKINTOP® CUBE MODULE 40x40 SMALL	9 - 12		5
52220006	SKINTOP® CUBE MODULE 40x40 LARGE	12 - 16		5
52220007	SKINTOP® CUBE MODULE 40x40 BLIND			5

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SKINTOP® CUBE MULTI refer to page 745

**Accessories**

- FLEXIMARK® LB-10 W





## SKINTOP® CUBE SORTIMO® T-BOXX



**Info**

- Innovative multi-cable bushing system with variable clamping ranges for high flexibility in assembling.
- When disassembling, the frame can remain on the housing and the plug-in module remains securely on the cable.
- Optimal order in the practical SORTIMO® T-BOXX

### Benefits

- Variable range of clamping force
- Vibration-safe module fixation
- Strain relief
- Oil resistance
- Simplified servicing due to easy assembling and disassembling

### Application range

- For installation of harnessed cables
- Used in areas where cables and wires need to be safely inserted into housings
- Apparatus and switch cabinet construction
- Electronic installations
- Automation technology

### Product features

- Optimal order in the practical SORTIMO® T-BOXX
- Small packaging unit, wide variety
- Light and robust, shock- and impact-resistant polypropylene case
- Two sturdy locks - ideal for mounting use e.g. building site

### Norm references / Approvals

- UL File Nr. E349737

### Product Make-up

- The SKINTOP® CUBE system consists of the SKINTOP® CUBE FRAME and the clip modules SKINTOP® CUBE MODULE.
- For cut-outs for 16-pin industrial connectors (36 x 86 mm)
- For cut-outs for 24-pin industrial connectors (36 x 112 mm)

### Included

- SKINTOP® CUBE FRAME including mounting material
- Delivery in SORTIMO® T-BOXX
- Assembly instructions
- Screwdriver
- SKINTOP® CUBE FRAME 16  
2 Pcs. (PN 52220000)
- SKINTOP® CUBE FRAME 24  
2 Pcs. (PN 52220001)
- SKINTOP® CUBE MODULE 20x20 BLIND  
5 Pcs. (PN 52220004)
- SKINTOP® CUBE MODULE 20x20 SMALL  
5 Pcs. (PN 52220002)
- SKINTOP® CUBE MODULE 20x20 LARGE  
5 Pcs. (PN 52220003)
- SKINTOP® CUBE MODULE 20x20 AS-I BUS  
5 Pcs. (PN 52220040)
- SKINTOP® CUBE MODULE 40x40 SMALL  
5 Pcs. (PN 52220005)
- SKINTOP® CUBE MODULE 40x40 LARGE  
5 Pcs. (PN 52220006)
- SKINTOP® CUBE MODULE 40x40 BLIND  
5 Pcs. (PN 52220007)

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000240  
ETIM 5.0 Class-Description:  
Cable entry

**Certifications**  
UL pending

**Material**  
Frame: glass fibre-reinforced polyamide  
Frame seal: CR  
Clip module: special polypropylene  
Clip module seal: LSE 2

**Protection rating**  
IP 64  
NEMA 12

**Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Pieces / PU
<b>SKINTOP® CUBE SORTIMO® T-BOXX</b>		
53110031	SKINTOP® CUBE SORTIMO® T-BOXX	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Kraftform Kompakt® 10
- FLEXIMARK® LB-10 W

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



SKINTOP® CUBE MULTI



**i Info**

- Push the cable through the gel membrane and connect directly
- Huge potential of savings through quick installation

**Benefits**

- Large, variable clamping ranges by elastic gel technology at the sealing element (innovative membrane technology)
- Easy installation by high packing density
- Optimum strain relief on the entire cable bundle
- Simplified servicing due to easy assembling and disassembling
- Not used holes remain securely sealed

**Application range**

- Used in areas where cables and wires need to be safely inserted into housings
- For installation of not harnessed cables and media hoses
- For cut-outs for 24-pin industrial connectors (36 x 112 mm)
- Apparatus and switch cabinet construction
- Automation technology

**Product features**

- SKINTOP® CUBE MULTI Version 1
- **Number of cable bushings -**  
9 x 3-6 mm clamping range  
9 x 6-9 mm clamping range  
2 x 9-13 mm clamping range  
1 x 13-16 mm clamping range
- SKINTOP® CUBE MULTI Version 2
- **Number of cable bushings -**  
23 x 5-8 mm clamping range

**Product Make-up**

- The system consists of SKINTOP® CUBE FRAME and a gel insert SKINTOP® CUBE MULTI.
- Removal of the gel insert by opening the holder

**Note**

- For better strain relief, the cable bundle can be fixed with help of a cable tie

**Included**

- SKINTOP® CUBE FRAME including mounting material

**Technical data**

**ETIM** **Classification**  
ETIM 5.0 Class-ID: EC000240  
ETIM 5.0 Class-Description: Cable entry system

**DIN VDE** **Certifications**  
UL pending

**i** **Note**  
Colour: black  
Individual hole configuration available on request

**Material**  
Frame: Glass fiber reinforced polyamide  
Frame seal: CR  
Gel insert: PC / Gel  
Fire behaviour according to UL 94V-2

**IP** **Protection rating**  
IP 65  
IP 66

**Temperature range**  
-30°C to +100°C

Article number	Article designation / size	Max. number of executions	Number of cables x clamping range	Pieces / PU
<b>SKINTOP® CUBE Frame</b>				
52220001	SKINTOP® CUBE FRAME 24			1
<b>SKINTOP® CUBE MULTI Gel-insert</b>				
52220050	SKINTOP® CUBE MULTI Version 1	21	9 x 3-6 mm; 9 x 6-9 mm; 2 x 9-13 mm; 1 x 13-16 mm	1
52220053	SKINTOP® CUBE MULTI Version 2	23	23 x 5-8 mm	1
<b>SKINTOP® CUBE MULTI Gel-insert incl. frame</b>				
52220056	SKINTOP® CUBE MULTI Version 1 incl. frame	21	9 x 3-6 mm; 9 x 6-9 mm; 2 x 9-13 mm; 1 x 13-16 mm	1
52220057	SKINTOP® CUBE MULTI Version 2 incl. frame	23	23 x 5-8 mm	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SKINTOP® CUBE

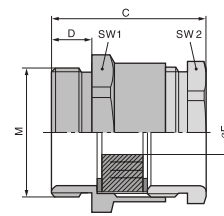
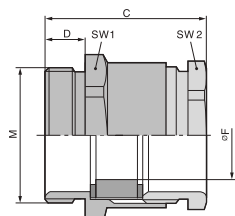
**Accessories**

- Kraftform Kompakt® 10
- FLEXIMARK® LB-10 W





## SKINDICHT® SVRN-M / SKINDICHT® SVRE-M



SKINDICHT® SVRN-M

SKINDICHT® SVRE-M

### Benefits

#### SKINDICHT® SVRN-M

- High mechanical stability
- Optimum strain relief

#### SKINDICHT® SVRE-M

- With incised sealing ring for adjustment to several cable diameters
- Fewer sizes need to be kept in stock

### Application range

#### SKINDICHT® SVRN-M

- Brass cable gland with hexagonal fitting, for fast assembly with a flat spanner.

#### SKINDICHT® SVRE-M

- Brass cable gland with hexagonal fitting and variable incised sealing ring.

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

#### SKINDICHT® SVRN-M

- Counter nut to be used: SKINDICHT® SM-M
- Example order identification: SVRN-M 12 / 7 / 5  
12 = Connection thread metric  
7 = Function thread PG  
5 = Clear width F

#### SKINDICHT® SVRE-M

- Refer to SKINDICHT® EV for additional accessories
- Counter nut to be used: SKINDICHT® SM-M

### Product Make-up

#### SKINDICHT® SVRN-M

- For connection thread M 50 x 1.5 and M 63 x 1.5, refer to SKINDICHT® SVRE-M

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

The installation dimensions can be found in appendix T21



#### On request

**SKINDICHT® SVRN-M**  
Available with long connection thread  
**SKINDICHT® SVRE-M**  
Available with long connection thread  
Available with VITON® incised ring



#### Material

**SKINDICHT® SVRN-M**  
Body: nickel-plated brass  
Sealing ring: CR/NBR  
**SKINDICHT® SVRE-M**  
Body: nickel-plated brass  
Incised seal: CR/NBR



#### Protection rating

**SKINDICHT® SVRN-M**  
IP 54



#### Temperature range

**SKINDICHT® SVRN-M**  
-20 °C to +100 °C  
**SKINDICHT® SVRE-M**  
-20 °C to +80 °C

Article number	Article designation / size	Incised sealing ring ØF (mm)	Max. internal Ø (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SVRN-M</b>									
52104800	12 x 1,5			7	14 / 13	20,6	5	5	100
52104810	12 x 1,5			7	14 / 13	20,6	5	6	100
52104820	12 x 1,5			7	14 / 13	20,6	5	7	100
52104830	16 x 1,5			9	18 / 15	21,6	5	7	100
52104840	16 x 1,5			9	18 / 15	21,6	5	8	100
52104850	16 x 1,5			9	18 / 15	21,6	5	9	100
52104860	20 x 1,5			11	22 / 18	23,6	6	10	50
52104870	20 x 1,5			11	22 / 18	23,6	6	11	50
52104890	20 x 1,5			13.5	22 / 20	25,6	6	12	50
52104900	20 x 1,5			16	24 / 22	26,6	6	13	50
52104910	20 x 1,5			16	24 / 22	26,6	6	14	50
52104920	25 x 1,5			21	30 / 28	29,6	7	18	50
52104930	32 x 1,5			29	40 / 37	32,6	8	27	50
52104940	40 x 1,5			36	50 / 47	37,6	8	34	20
<b>SKINDICHT® SVRE-M</b>									
52104980	16 x 1,5	5/8	10	9	18 / 15	21,6	5		100
52104990	20 x 1,5	7/10/12,5	12	11	22 / 18	23,6	6		50
52105000	20 x 1,5	7/10,5/13/16	14	13.5	22 / 20	25,6	6		50
52105010	20 x 1,5	8/10,5/13,5/16	15	16	24 / 22	26,6	6		50
52105002	25 x 1,5	11/15/18/20	20	21	30 / 28	29,6	7		50
52105003	32 x 1,5	19/23/27/31	27	29	40 / 37	32,6	8		50
52105004	40 x 1,5	25/28/31/35	34	36	50 / 47	37,6	8		20
52105005	50 x 1,5	35,5/39/42,5/46	43	42	57 / 54	42,6	9		5
52105006	63 x 1,5	40,5/44/47/50,5	48	48	66 / 60	45,1	10		5

Photographs are not to scale and do not represent detailed images of the respective products.  
Viton® is a registered trademark of DuPont de Nemours



**SKINDICHT® SVRX**



SKINDICHT® SVRE-M

SKINDICHT® SVRE-M

**Benefits**

- EMC version for cables with large cross-sections
- SKINDICHT® SVRX 105 x 2 for cable diameters up to 83 mm

**Application range**

- The cable gland is in accordance with DIN 89280, with round intermediate supports made from brass, plain.
- Shipbuilding
- Off-Shore
- High-power drives
- Wind power plants

**Note**

- EMC counter nuts (with claw) SKINDICHT® SM-PE / SVRX M24-M56 for painted, anodised or powder-coated housing on request
- For more EMC cable glands, refer to SKINTOP® MS-SC-M and MS-M BRUSH, and compatible counter nut SKINDICHT® SM-PE-M

**Product Make-up**

- Type "W" for cable without screen (figure 1)
- Type "Z" for cables with screen (figure 2)

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Certifications</b> DIN 89280
	<b>Material</b> Body: Blank brass Seal: EPDM
	<b>Protection rating</b> IP 56
	<b>Temperature range</b> -20°C to +80°C

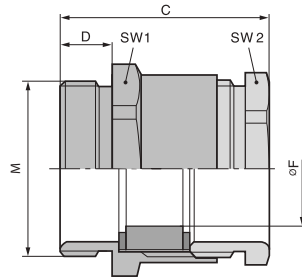
Article number	Article designation / size	Thread	SW wrench size mm	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SVRX - version W</b>					
52006460	SVRX 5635	M 56 x 2	55	32 - 35	1
52006470	SVRX 5638	M 56 x 2	55	35 - 38	1
52006480	SVRX 5641	M 56 x 2	55	38 - 41	1
52006490	SVRX 7244	M 72 x 2	70	41 - 44	1
52006500	SVRX 7248	M 72 x 2	70	44 - 48	1
52006510	SVRX 7252	M 72 x 2	70	48 - 52	1
52006520	SVRX 7256	M 72 x 2	70	52 - 56	1
52006530	SVRX 8066	M 80 x 2	85	62 - 66	1
52006540	SVRX 10573	M 105 x 2	104	68 - 73	1
52006550	SVRX 10572	M 105 x 2	104	78 - 83	1
52006564	SVRX 8059	M 80 x 2	85	56 - 59	1
<b>SKINDICHT® SVRX - version Z</b>					
52006345	SVRX 2412	M 24 x 1.5	24	10 - 12	1
52006355	SVRX 2414	M 24 x 1.5	24	12 - 14	1
52006365	SVRX 2416	M 24 x 1.5	24	14 - 16	1
52006375	SVRX 2417	M 24 x 1.5	24	16 - 17	1
52006425	SVRX 3626	M 36 x 2	36	24 - 26	1
52006465	SVRX 5635	M 56 x 2	55	32 - 35	1
52006475	SVRX 5638	M 56 x 2	55	35 - 38	1
52006485	SVRX 5641	M 56 x 2	55	38 - 41	1
52006495	SVRX 7244	M 72 x 2	70	41 - 44	1
52006505	SVRX 7248	M 72 x 2	70	44 - 48	1
52006515	SVRX 7252	M 72 x 2	70	48 - 52	1
52006565	SVRX 8059	M 80 x 2	85	56 - 59	1
52006535	SVRX 8066	M 80 x 2	85	62 - 66	1
52006545	SVRX 10573	M 105 x 2	104	68 - 73	1
<b>SKINDICHT® SM/SVRX Counter nuts</b>					
52006321	SM 24	M24	30		1
52006401	SM 36	M36	41		1
52006461	SM 56	M56	65		1
52006491	SM 72	M72	85		1
52006531	SM 80	M80	90		1
52006541	SM 105	M105	120		1

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® SVFK-M



### Benefits

- Economical type
- Lateral sealing lips fit automatically around various cable dimensions
- Cable-specific seal dimensions are no longer necessary
- Tolerance
- Large opening allows clamping of up to two flat cables

### Application range

- For inserting flat cables
- Conveyor systems
- Pumps
- Lifts
- Control cabinet manufacturing

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Counter nut to be used: SKINTOP® GMP-GL-M
- For suitable flat cables, refer to ÖLFLEX® LIFT F for indoor applications or ÖLFLEX® CRANE F for outdoor applications

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**Colour delivered**  
 Light grey (RAL 7035)

**Material**  
 Body: Polyamide  
 Special sealing insert: CR

**Protection rating**  
 IP 54

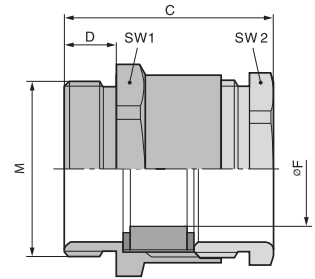
**Temperature range**  
 -30°C to +80°C

Article number	Article designation / size	Min./max. flat cable width	Min./max. cable thickness (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SVFK-M</b>							
52107900	SVFK-M 25 x 1,5	- / 15.0	-- 5.0	27 / 23	41.0	11	25
52107901	SVFK-M 32 x 1,5	10.0 / 21.0	3.0 - 8.0	36 / 30	39.0	10	25
52107902	SVFK-M 40 x 1,5	16.0 / 28.0	4.0 - 11.5	42 / 40	44.0	11	25
52107903	SVFK-M 50 x 1,5	26.0 / 35.0	4.0 - 11.5	53 / 50	50.5	11	5
52107904	SVFK-M 50 x 1,5	30.0 / 40.0	5.0 - 12.0	60 / 55	53.5	11	5
52107905	SVFK-M 63 x 1,5	36.0 / 45.0	5.0 - 12.0	65 / 60	54.5	11	5

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® SVF-M



**Benefits**

- Lateral sealing lips fit automatically around various cable dimensions
- Cable-specific seal dimensions are no longer necessary
- Large opening allows clamping of up to two flat cables
- Optimum strain relief
- Tolerance

**Application range**

- For inserting flat cables
- Control cabinet manufacturing
- Conveyor systems
- Pumps
- Lifts

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- For suitable flat cables, refer to ÖLFLEX® LIFT F for indoor applications or ÖLFLEX® CRANE F for outdoor applications
- Counter nut to be used: SKINDICHT® SM-M

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**Material**  
 Body: nickel-plated brass  
 Seal: CR

**Protection rating**  
 IP 54

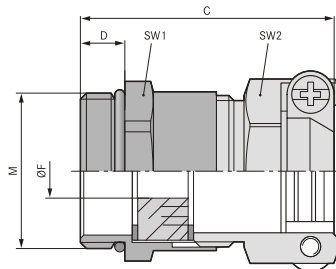
**Temperature range**  
 -30°C to +100°C

Article number	Article designation / size	Min./max. flat cable width	Min./max. cable thickness (mm)	Pieces / PU
<b>SKINDICHT® SVF-M</b>				
52107320	M 20/16	- / 15.0	- / 5	25
52107340	M 25/21	9.0 / 20.0	3 / 8	25
52107350	M 32/29	14.0 / 27.0	4 / 11	10
52107360	M 40/36	24.0 / 34.0	4 / 11	10
52107370	M 50/42	29.0 / 44.0	5 / 12	5
52107380	M 63/48	34.0 / 50.0	5 / 12	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® SKZ-M



### Benefits

- With incised sealing ring for adjustment to several cable diameters
- High strain relief
- High mechanical stability

### Application range

- Saddle clamp strain relief gland for harsh application conditions.
- Building sites
- Plant engineering
- Electric motor manufacturing

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- SKINDICHT® SHZ-M-XL is similar to the SKINDICHT® SHZ-M, but has an extended connection thread for thick walls
- Counter nut to be used: SKINDICHT® SM-M
- Example description: SKZ-M 16/9  
16 = connection thread  
9 = PG function thread

### Technical data

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Caution**  
The installation dimensions can be found in appendix T21

**Material**  
Body: nickel-plated brass  
Incised sealing ring: CR/NBR  
O-ring: NBR

**Protection rating**  
IP 55

**Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Ø-F mm	Max. fitting size for installation (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SKZ-M</b>								
52106800	16 x 1,5	5.0 - 8.0	24	9	18 / 17	29.0	5	50
52106810	20 x 1,5	7.0 - 12.0	27	11	22 / 20	30.0	6	50
52106820	20 x 1,5	11.0 - 13.0	30	13.5	22 / 22	33.5	6	25
52106830	20 x 1,5	13.0 - 15.0	33	16	24 / 24	34.5	6	25
52106840	25 x 1,5	16.0 - 19.3	42	21	30 / 30	41.0	7	25
52106850	32 x 1,5	19.0 - 27.0	58	29	40 / 41	46.0	8	10
<b>SKINDICHT® SKZ-M-XL</b>								
52106805	16 x 1,5	5.0 - 8.0	24	9	18 / 17	34.0	10	50
52106815	20 x 1,5	7.0 - 12.0	27	11	22 / 20	34.0	10	50
52106825	20 x 1,5	11.0 - 13.0	30	13.5	22 / 22	37.5	10	25
52106835	20 x 1,5	13.0 - 15.0	33	16	24 / 24	38.5	10	25
52106845	25 x 1,5	16.0 - 19.3	42	21	30 / 30	45.0	11	25
52106855	32 x 1,5	19.0 - 27.0	58	29	40 / 41	51.0	13	10

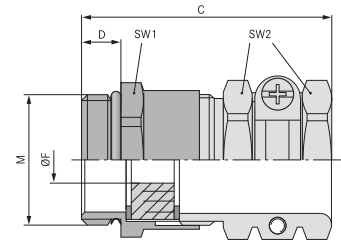
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® E refer to page 826
- SKINDICHT® EV refer to page 827



SKINDICHT® SHZ-M



**Benefits**

- With incised sealing ring for adjustment to several cable diameters
- High strain relief
- Robust
- For cables with large outer diameters

**Application range**

- Compact brass cable gland for reliable strain relief, solid, for large cable diameters.

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- SKINDICHT® SHZ-M-XL is similar to the SKINDICHT® SHZ-M, but has an extended connection thread for thick walls
- Counter nut to be used: SKINDICHT® SM-M
- Example description:  
SHZ-M 16/9  
16 = metric connection thread  
9 = PG function thread

**Technical data**

- ETIM**  
**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- Material**  
Body: nickel-plated brass  
Sealing ring: CR/NBR  
O-ring: NBR
- IP**  
**Protection rating**  
IP 55
- Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Ø-F mm	Max. fitting size for installation (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHZ-M</b>								
52106700	12 x 1,5	5.5 - 6.5	21	7	14 / 15	30.0	5	50
52106710	16 x 1,5	5.0 - 8.0	25	9	18 / 17	33.0	5	50
52106720	20 x 1,5	8.0 - 12.0	28	11	22 / 20	35.0	6	25
52106730	20 x 1,5	8.5 - 13.0	32	13.5	22 / 22	39.5	6	25
52106740	20 x 1,5	8.0 - 15.0	35	16	24 / 24	41.5	6	25
52106750	25 x 1,5	14.0 - 19.3	46	21	30 / 30	47.0	7	25
52106760	32 x 1,5	19.0 - 27.0	58	29	40 / 41	53.0	8	10
52106770	40 x 1,5	27.0 - 34.0	70	36	50 / 50	60.0	8	10
52106780	50 x 1,5	35.0 - 43.0	78	42	57 / 57	65.0	9	5
52106790	63 x 1,5	40.0 - 47.5	86	48	66 / 64	68.0	10	5
<b>SKINDICHT® SHZ-M-XL</b>								
52106705	12 x 1,5	5.5 - 6.5	21	7	14 / 15	35.0	10	50
52106715	16 x 1,5	5.0 - 8.0	25	9	18 / 17	38.0	10	50
52106725	20 x 1,5	8.0 - 12.0	28	11	22 / 20	39.0	10	25
52106735	20 x 1,5	8.5 - 13.0	32	13.5	22 / 22	43.5	10	25
52106745	20 x 1,5	9.0 - 14.5	35	16	24 / 24	45.5	10	25
52106755	25 x 1,5	14.0 - 19.3	46	21	30 / 30	51.0	11	25
52106765	32 x 1,5	19.0 - 27.0	58	29	40 / 41	58.0	13	10
52106775	40 x 1,5	27.0 - 34.0	70	36	50 / 50	67.0	13	10
52106785	50 x 1,5	35.0 - 43.0	78	42	57 / 57	70.0	14	5
52106795	63 x 1,5	40.0 - 47.5	86	48	66 / 64	73.0	14	5

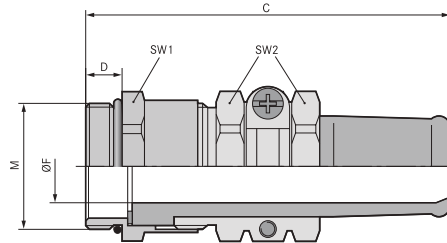
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® E refer to page 826
- SKINDICHT® EV refer to page 827



## SKINDICHT® SR-M



### Benefits

- Reliable bending and anti-kink protection
- High strain relief
- Robust
- For cables with large outer diameters
- High degree of protection

### Application range

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Portable equipment
- Building sites
- Moving machine parts

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Counter nut to be used: SKINDICHT® SM-M
- For EMC version, refer to SKINDICHT® SRE-M
- Example description:  
SR-M 12/7/5  
12 = metric connection thread  
7 = PG function thread  
5 = clear opening of seal

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- On request**  
Available with long connection thread
- Material**  
Metal parts: nickel-plated brass  
O-ring: NBR  
Anti-kink protection: CR/NBR
- Protection rating**  
IP 65
- Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SR-M</b>									
52106410	12 x 1,5	4 - 5	23	7	14 / 15	49.0	5	5	50
52106420	16 x 1,5	5.5 - 7	25	9	18 / 17	50.0	5	7	50
52106430	20 x 1,5	5.5 - 7	28	11	22 / 20	55.0	6	7	25
52106440	20 x 1,5	7.5 - 9	28	11	22 / 20	55.0	6	9	25
52106450	20 x 1,5	7.5 - 9	32	13.5	22 / 22	60.0	6	9	25
52106460	20 x 1,5	9 - 11	32	13.5	22 / 22	60.0	6	11	25
52106470	20 x 1,5	11 - 13	32	13.5	22 / 22	60.0	6	13	25
52106480	20 x 1,5	12 - 13	35	16	24 / 24	65.0	6	13	25
52106481	20 x 1,5	13 - 15	35	16	24 / 24	66.0	6	15	25
52106490	25 x 1,5	12.5 - 15	46	21	30 / 30	78.5	7	15	25
52106500	25 x 1,5	14 - 17	46	21	30 / 30	78.5	7	17	25
52106510	25 x 1,5	17 - 19	46	21	30 / 30	78.5	7	19	25
52106520	25 x 1,5	17 - 20	46	21	30 / 30	78.5	7	20	25
52106530	32 x 1,5	19 - 20	59	29	40 / 41	90.5	8	20	10
52106540	32 x 1,5	22 - 23	59	29	40 / 41	90.5	8	23	10
52106550	32 x 1,5	23 - 25	59	29	40 / 41	90.5	8	25	10
52106560	40 x 1,5	24 - 26	70	36	50 / 50	108.0	8	26	5
52106570	40 x 1,5	28 - 30	70	36	50 / 50	108.0	8	30	5
52106580	40 x 1,5	31 - 33	70	36	50 / 50	108.0	8	33	5
52106590	40 x 1,5	33 - 34.5	70	36	50 / 50	108.0	8	35	5
52106600	50 x 1,5	31 - 34.5	75	42	57 / 57	111.0	9	35	5
52106610	50 x 1,5	32 - 38	75	42	57 / 57	111.0	9	38	5
52106620	50 x 1,5	37 - 40	75	42	57 / 57	111.0	9	40	5
52106630	63 x 1,5	32 - 40	83	48	66 / 64	118.0	10	40	1
52106640	63 x 1,5	36 - 44	83	48	66 / 64	118.0	10	44	1

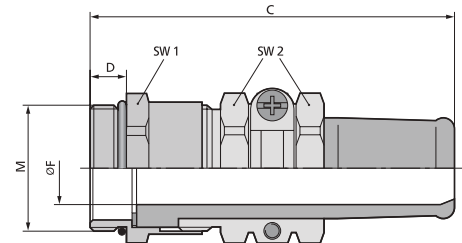
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763
- SKINDICHT® SNR refer to page 832



SKINDICHT® SR-SV-M



**Benefits**

- For high temperatures
- Resistant to oils, solvents, acids and chemicals
- Seawater-resistant
- High strain relief
- Robust

**Application range**

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Special cable gland with VITON® anti-kink sleeve. Our own reinforced acid-resistant VITON® receptacle does not show any effects of aging even after an extended period of use at a temperature of +165°C.
- Machine and turbine manufacturing
- Power plant engineering
- Laboratory

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Counter nut to be used: SKINDICHT® SM-M
- EMC version is available upon request
- Example description:  
SR-SV-M 20/11/7  
20 = metric connection thread  
11 = PG function thread  
7 = clear opening of seal

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- On request**  
Available with long connection thread
- Material**  
Body: nickel-plated brass  
O-ring: FKM  
Anti-kink protection: FKM
- Protection rating**  
IP 65
- Temperature range**  
-15°C to +165°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SR-SV-M</b>									
52105820	20 x 1,5	5,5 - 7	28	11	22 / 20	56,0	6	7	25
52105830	20 x 1,5	7,5 - 9	28	11	22 / 20	56,0	6	9	25
52105840	20 x 1,5	7,5 - 9	32	13,5	22 / 22	61,5	6	9	25
52105850	20 x 1,5	8,5 - 11	32	13,5	22 / 22	61,5	6	11	25
52105860	20 x 1,5	10,5 - 13	32	13,5	22 / 22	61,5	6	13	25
52105870	20 x 1,5	11 - 13	35	16	24 / 24	66,5	6	13	10
52105880	20 x 1,5	12 - 15	35	16	24 / 24	66,5	6	15	10
52105890	25 x 1,5	13,5 - 15	40	21	30 / 30	79,0	7	15	10
52105900	25 x 1,5	15,5 - 17	46	21	30 / 30	79,0	7	17	10
52105910	25 x 1,5	16,5 - 19	46	21	30 / 30	79,0	7	19	10

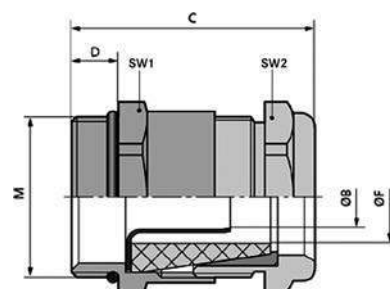
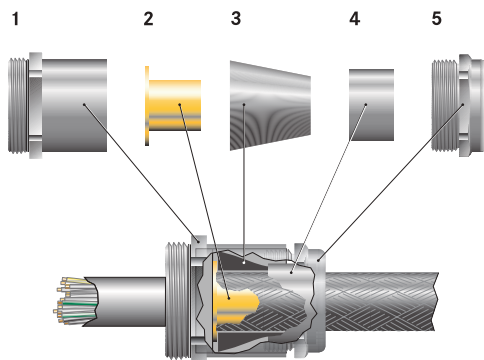
Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-M refer to page 763



## SKINDICHT® SHVE-M



### Benefits

- Optimum, low-resistance 360° screen contact
- High degree of protection
- High strain relief

### Application range

- Earthing gland, for applications where electrical interference fields can occur.
- Medical engineering
- Frequency converters
- Airports
- Measurement and control technology

### Product Make-up

- 1 fitting
- 2 earth sleeves
- 3 sealing cones
- 4 cone, brass
- 5 compression screws

### Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- For more EMC cable glands, refer to SKINTOP®, MS-SC-M and MS-M BRUSH, and compatible counter nut SKINDICHT® SM-PE-M
- Example order identification:  
SHVE-M 20 / 16 / 15 / 11  
20 = Connection thread metric  
16 = Function thread PG  
15 = Clear width of sealing cone  
11 = Clear width of earthing sleeve

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- Material**  
Body: nickel-plated brass  
Earthing sleeve: blank brass  
Sealing cone: CR  
O-ring: NBR
- Protection rating**  
IP 68 - 10 bar
- Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Function thread PG	Outer sheath clamping range ØF (mm)	Inner sheath clamping range (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening earthing sleeve ØB	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SHVE-M</b>										
52106860	16 x 1,5	9	4,5 - 5,8	2,2 - 3,11	18 / 17	26,5	5	3,2	6	25
52106870	16 x 1,5	9	4,5 - 6,8	2,2 - 3,23	18 / 17	26,5	5	3,2	7	25
52106880	16 x 1,5	9	5,5 - 5,8	2,6 - 3,17	18 / 17	26,5	5	3,6	6	25
52106890	16 x 1,5	9	5,5 - 6,8	2,6 - 3,67	18 / 17	26,5	5	3,6	7	25
52106910	20 x 1,5	11	3 - 6,8	3,5 - 4,52	22 / 20	31,0	6	4,5	7	25
52106920	20 x 1,5	11	6 - 8,8	3,5 - 4,45	22 / 20	31,0	6	4,5	9	25
52106930	20 x 1,5	13,5	6,5 - 8,8	3,5 - 5	22 / 22	32,0	6	5	9	25
52106940	20 x 1,5	13,5	6 - 8,8	4,5 - 5,95	22 / 22	32,0	6	6	9	25
52106950	20 x 1,5	13,5	8 - 10,8	5,5 - 6,92	22 / 22	32,0	6	7	11	25
52106960	20 x 1,5	16	8,5 - 10,8	6 - 7,93	24 / 24	34,5	6	8	11	25
52106970	20 x 1,5	16	10 - 12,8	7 - 9	24 / 24	34,5	6	9	13	25
52106980	20 x 1,5	16	10 - 12,8	8 - 10	24 / 24	34,5	6	10	13	25
52106990	20 x 1,5	16	12,5 - 14,8	9 - 11,03	24 / 24	34,5	6	11	15	25
52107000	25 x 1,5	21	13 - 15,8	10 - 12,15	30 / 30	39,0	7	12	16	25
52107010	25 x 1,5	21	13 - 15,8	11 - 13	30 / 30	39,0	7	13	16	25
52107020	25 x 1,5	21	15,5 - 17,8	12 - 14	30 / 30	39,0	7	14	18	25
52107030	25 x 1,5	21	15 - 17,8	13 - 15	30 / 30	39,0	7	15	18	25
52107040	25 x 1,5	21	17,5 - 19,8	14 - 16	30 / 30	39,0	7	16	20	25
52107050	32 x 1,5	29	19 - 21,8	15 - 17,02	40 / 40	45,5	8	17	22	10
52107060	32 x 1,5	29	18 - 23,8	16 - 18	40 / 40	45,5	8	18	22	10
52107070	32 x 1,5	29	20 - 23,8	17 - 19	40 / 40	45,5	8	19	24	10
52107080	32 x 1,5	29	23 - 25,8	17 - 19	40 / 40	45,5	8	19	26	10

Photographs are not to scale and do not represent detailed images of the respective products.

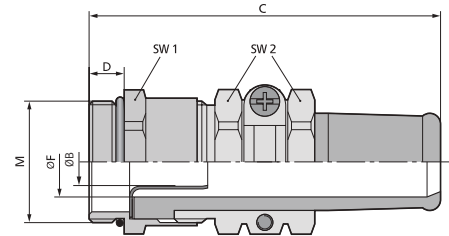
### Accessories

- SKINDICHT® SM-M refer to page 763
- SKINDICHT® SM-PE-M refer to page 763

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



**SKINDICHT® SRE-M**



**Benefits**

- Perfect seal with anti-kink protection
- Optimum, low-resistance 360° screen contact
- Cable-protecting strain relief
- Gentle cable clamping
- High degree of protection

**Application range**

- Earthing gland with additional anti-kink protection. For applications where electrical interference fields can occur.
- Moving machine parts
- Conveyor and transport systems
- Production lines
- Measurement and control technology

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Example description:  
SRE-M 20 / 13.5 / 9 / 6  
20 = connection thread  
13.5 = PG function thread  
9 = clear opening of anti-kink sleeve (F)  
6 = clear opening of earthing sleeve (B)

**Technical data**

**ETIM Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
The installation dimensions can be found in appendix T21

**On request**  
Available with long connection thread

**Material**  
Body: nickel-plated brass  
Earthing sleeve: plain brass  
Anti-kink sleeve: CR/NBR  
O-ring: NBR

**IP Protection rating**  
IP 65

**Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Function thread PG	Outer sheath clamping range ØF (mm)	Inner sheath clamping range (mm)	SW 1/SW 2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening earthing sleeve ØB	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SRE-M</b>										
52105600	20 x 1,5	13.5	7,5 - 9	4,5 - 6	22 / 22	59.5	6	6	9	25
52105610	20 x 1,5	13.5	9 - 11	5,5 - 7	22 / 22	59.5	6	7	11	25
52105620	20 x 1,5	16	11 - 13	7 - 9	24 / 24	64.5	6	9	13	25
52105630	20 x 1,5	16	11 - 13	8 - 10	24 / 24	64.5	6	10	13	25
52105640	20 x 1,5	16	13,5 - 15	9 - 11	24 / 24	64.5	6	11	15	25
52105650	25 x 1,5	21	13,5 - 15	10 - 12	30 / 30	78.0	7	12	15	25
52105660	25 x 1,5	21	15 - 17	12 - 14	30 / 30	78.0	7	14	17	25
52105670	25 x 1,5	21	17 - 19	13 - 15	30 / 30	78.0	7	15	19	25
52105680	25 x 1,5	21	18 - 20	14 - 16	30 / 30	78.0	7	16	20	25
52105690	32 x 1,5	29	18 - 20	15 - 17	40 / 40	90.0	8	17	20	10
52105700	32 x 1,5	29	21 - 23	17 - 19	40 / 40	90.0	8	19	23	10
52105710	40 x 1,5	36	23,5 - 26	20 - 22	50 / 50	108.0	8	22	26	5
52105720	40 x 1,5	36	27 - 30	22 - 24	50 / 50	108.0	8	24	30	5
52105730	40 x 1,5	36	30 - 33	26 - 28	50 / 50	108.0	8	28	33	5
52105740	40 x 1,5	36	32 - 35	28 - 30	50 / 50	108.0	8	30	35	5

Photographs are not to scale and do not represent detailed images of the respective products.

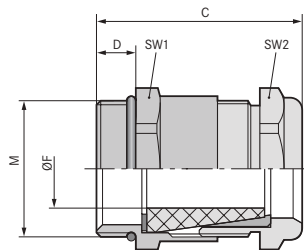
**Accessories**

- SKINDICHT® SM-PE-M refer to page 763
- SKINDICHT® SNR refer to page 832





## SKINDICHT® SHV-M



### Benefits

- Watertight
- Gentle cable clamping
- Robust
- High strain relief

### Application range

- Watertight cable gland with conical sealing element.
- Pumps
- Floater switches

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Suitable accessory: SKINDICHT® SHV sealing cones
- Example description:  
SHV-M 20 / 11 / 7  
20 = metric connection thread  
11 = PG function thread  
7 = clear opening of sealing cone

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

The installation dimensions can be found in appendix T21



#### Material

Body: nickel-plated brass  
Sealing cone: CR  
O-ring: NBR



#### Protection rating

IP 68 - 10 bar



#### Temperature range

-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Function thread PG	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening seal	Pieces / PU
<b>SKINDICHT® SHV-M</b>								
52105270	12 x 1,5	3 - 4,8	7	14 / 14	26.0	5	5	50
52105280	16 x 1,5	4,5 - 5,8	9	18 / 17	26.5	5	6	50
52105290	16 x 1,5	4,5 - 6,8	9	18 / 17	26.5	5	7	50
52105300	20 x 1,5	6 - 6,8	11	22 / 20	31.0	6	7	25
52105310	20 x 1,5	6,5 - 8,8	11	22 / 20	31.0	6	9	25
52105320	20 x 1,5	6,5 - 8,8	13.5	22 / 22	32.5	6	9	25
52105330	20 x 1,5	9 - 10,8	13.5	22 / 22	32.5	6	11	25
52105340	20 x 1,5	9 - 10,8	16	24 / 24	34.5	6	11	25
52105350	20 x 1,5	9,5 - 12,8	16	24 / 24	34.5	6	13	25
52105360	20 x 1,5	13 - 14,8	16	24 / 24	34.5	6	15	25
52105370	25 x 1,5	13,5 - 15,8	21	30 / 30	38.5	7	16	25
52105380	25 x 1,5	15 - 17,8	21	30 / 30	38.5	7	18	25
52105390	25 x 1,5	17,5 - 19,8	21	30 / 30	38.5	7	20	25
52105400	32 x 1,5	17,5 - 21,8	29	40 / 40	42.5	8	22	10
52105410	32 x 1,5	19 - 23,8	29	40 / 40	42.5	8	24	10
52105420	32 x 1,5	23 - 25,8	29	40 / 40	42.5	8	26	10

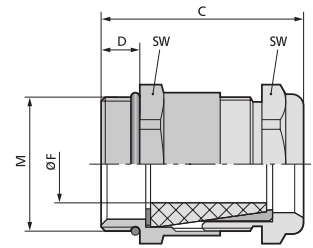
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763



SKINDICHT® SHV-M-VITON®



**Benefits**

- For high temperatures
- Resistant to oils, solvents, acids and chemicals
- Watertight
- High strain relief
- Robust

**Application range**

- Watertight and high temperature-resistant cable gland with special conical VITON® sealing element
- Brickworks
- Sewage treatment plants
- Car wash sites

**Product Make-up**

- 1 fitting
- 2 washers
- 3 VITON® sealing cone
- 4 brass cones
- 5 compression screws

**Note**

- Counter nut to be used: SKINDICHT® SM-M
- Example description:  
SHV-M-Viton® 20/11/7  
20 = metric connection thread  
11 = PG function thread  
7 = clear opening of sealing cone

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Caution**  
The installation dimensions can be found in appendix T21

**Material**  
Body: nickel-plated brass  
Sealing cone: FKM  
O-ring: FKM

**Protection rating**  
IP 68 - 10 bar

**Temperature range**  
-15°C to +200°C

Article number	Article designation / size	Clamping range ØF (mm)	Function thread PG	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Clear opening F (mm)	Pieces / PU
<b>SKINDICHT® SHV-M-VITON®</b>								
52105430	12 x 1,5	3,8 - 4,8	7	14 / 14	26,0	5	5	50
52105440	16 x 1,5	4,8 - 5,8	9	18 / 17	27,5	5	6	50
52105450	16 x 1,5	5,8 - 6,8	9	18 / 17	27,5	5	7	50
52105460	20 x 1,5	5,8 - 6,8	11	22 / 20	31,0	6	7	25
52105470	20 x 1,5	6,8 - 8,8	11	22 / 20	31,0	6	9	25
52105480	20 x 1,5	8,5 - 10,8	13,5	22 / 22	32,5	6	11	25
52105490	20 x 1,5	6,8 - 8,8	13,5	22 / 22	32,5	6	9	25
52105500	20 x 1,5	10,8 - 12,8	16	24 / 24	34,5	6	13	25
52105510	20 x 1,5	13,8 - 14,8	16	24 / 24	34,5	6	15	25
52105520	25 x 1,5	15,8 - 17,8	21	30 / 30	38,0	7	18	25
52105530	25 x 1,5	17,5 - 19,8	21	30 / 30	38,0	7	20	25
52105540	32 x 1,5	19,5 - 21,8	29	40 / 40	44,5	8	22	10

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.

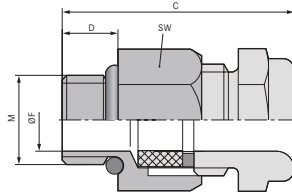
**Accessories**

- SKINDICHT® SM-M refer to page 763





## SKINDICHT® MINI



### Benefits

- High degree of protection
- For the smallest conductor sizes
- Low height
- Gentle cable clamping
- High packing density

### Application range

- For use wherever there is limited assembly space.
- Sensors
- Measuring technology

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Recommendation of torque wrench  
M 6 x 1 1,2 Nm  
M 8 x 1 1,5 Nm



#### Material

Body: nickel-plated brass  
Seal: CR/NBR



#### Protection rating

IP 68 - 5 bar



#### Temperature range

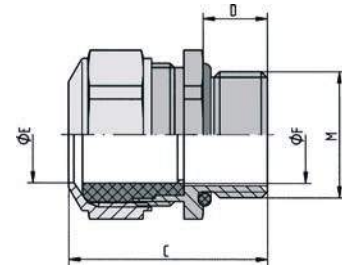
-20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® MINI</b>						
52001860	MINI 6 x 1	2 - 3	9	19.5	5	50
52001880	MINI 8 x 1	3,5 - 5,5	11	20.5	5	50
<b>SKINDICHT® MINI counter nut</b>						
52102998	MINI 6 x 1	-	10	11.0	2.5	50
52102997	MINI 8 x 1	-	12	13.5	2.5	50

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® CN-M**



**Benefits**

- For high temperatures
- Resistant to oils, solvents, acids and chemicals
- Seawater-resistant
- For high mechanical stress
- High corrosion-resistance

**Application range**

- Chromium nickel steel cable gland with VITON® seal, specially designed for use under tough conditions
- Pharmaceutical and petrochemical industry
- Offshore sector
- Wind power plants
- Brickworks

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Refer to the chart to find a suitable counter-nut for SKINDICHT® SM CrNi M

**Technical data**

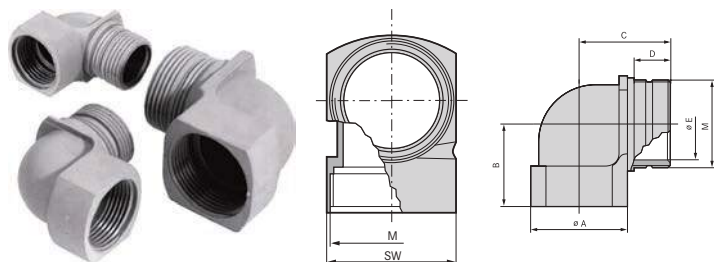
- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- Material**  
Body: chrome-nickel steel in accordance with DIN, material no. 1.4305  
Inner seal: FPM  
O-ring: FPM
- Protection rating**  
IP 68 - 5 bar
- Temperature range**  
-40°C to +200°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® CN-M</b>						
52032580	12 x 1,5/1	3,5 - 5	17	27.0	10	5
52032590	12 x 1,5/2	5 - 6,5	17	27.0	10	5
52032600	12 x 1,5/3	6,5 - 8	17	27.0	10	5
52032610	16 x 1,5	8 - 10,5	18	30.0	10	5
52032620	20 x 1,5	11 - 15	24	31.0	10	5
52032630	25 x 1,5	16 - 20,5	30	36.0	11	5
52032640	32 x 1,5	21 - 25,5	36	41.0	13	5
52032650	40 x 1,5	28,5 - 33	46	44.0	13	1
52032660	50 x 1,5	37 - 42	55	48.0	14	1
52032670	63 x 1,5	46 - 52	70	51.0	14	1
<b>SKINDICHT® SM CrNi M counter nuts</b>						
52032585	12 x 1,5	-	17	3.0	3	10
52032615	16 x 1,5	-	19	3.0	3	10
52032625	20 x 1,5	-	24	3.5	3.5	10
52032635	25 x 1,5	-	30	3.5	3.5	10
52032645	32 x 1,5	-	36	4.5	4.5	10
52032655	40 x 1,5	-	46	4.5	4.5	10
52032665	50 x 1,5	-	55	5.5	5.5	10
52032675	63 x 1,5	-	70	6.0	6	10

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® KW-M



### Benefits

- Space- and weight-saving application due to thin cable diameters
- Decrease in installation height

### Application range

- Angled glands are used in areas where cables have to run in parallel to the housing wall.
- Light and sound applications
- Control cabinet manufacturing

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Refer to SKINDICHT® O-ring Perbunan® for suitable O-rings
- SKINDICHT® KW-M can be combined with any cable gland, in particular with SKINTOP® ST-M
- Counter nut to be used: SKINTOP® GMP-GL-M
- In combination with SKINTOP® ST-M the degree of protection is IP 68 (acc. technical description)

### Technical data

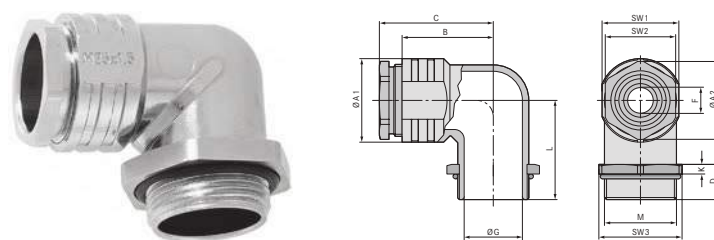
<b>ETIM</b>	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
<b>RAL</b>	<b>Colour delivered</b> Silver grey (RAL 7001)
<b>IP</b>	<b>Material</b> Polyamide, glass fibre-reinforced
<b>IP</b>	<b>Protection rating</b> IP 55
<b>Temperature</b>	<b>Temperature range</b> -20°C to +80°C

Article number	Article designation / size	A (mm)	B in mm	Ø E mm	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® KW-M</b>								
52106210	16 x 1,5	19	21.5	11	19	24.0	13	25
52106220	20 x 1,5	25	24.5	15	25	29.5	15	25
52106230	25 x 1,5	30	28	20	30	33.5	16	25
52106240	32 x 1,5	36	31.5	26	36	38.0	17	10

Perbunan® is a registered trademark of BAYER AG  
Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® RWV-M



### Benefits

- Strain relief
- Sealed by incised sealing ring
- Corrosion-resistant
- Decrease in installation height
- Seawater-resistant

### Application range

- Angled glands are used in areas where cables have to run in parallel to the housing wall.
- Electric motor manufacturing

- Machine and equipment manufacturing
- Plant engineering
- Light and sound applications

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Counter nut to be used: SKINDICHT® SM-M

### Technical data

<b>ETIM</b>	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
<b>Material</b>	Body: zinc die-casting, nickel-plated Compression screw and hexagon nut: nickel-plated brass Incised sealing ring: CR/NBR O-ring: NBR
<b>IP</b>	<b>Protection rating</b> IP 55
<b>Temperature</b>	<b>Temperature range</b> -20°C to +100°C

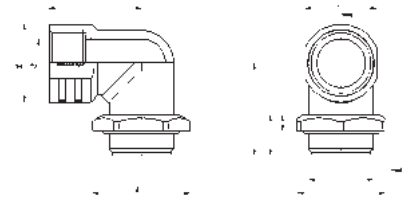
Article number	Article designation / size	Clamping range ØF (mm)	L	SW1	Ø A1	SW2	Ø A2	Ø G	Height (mm)	Overall length, C (mm)	Thread length, D (mm)	SW3	Pieces / PU
<b>SKINDICHT® RWV-M</b>													
52107800	12 x 1,5	5	20.5	14	16	12	13.2	8	5	26.1	11.5	17	25
52107810	16 x 1,5	9 - 3	23.5	18	20	16	17.6	12	5	28.6	11.5	22	25
52107820	20 x 1,5	13 - 4	28.5	22	24	20	22.2	15	5	35.1	12.5	27	25
52107830	25 x 1,5	17.5 - 8.5	31	27	29	25	27.5	20	5	38.1	13.5	32	10
52107840	32 x 1,5	25 - 16	33	34	36	32	35.2	27	5	44.6	13.5	41	10
52107850	40 x 1,5	32 - 23	43	42	45	40	43.5	35	5	53.1	15.5	46	5

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



SKINDICHT® RWV-M without E+D



**Benefits**

- Combination of different conduit glands is possible
- Space- and weight-saving application due to thin cable diameters
- Decrease in installation height
- Cable runs parallel to the housing wall
- Corrosion-resistant

**Application range**

- Angled glands are used in areas where cables have to run in parallel to the housing wall.
- Electric motor manufacturing
- Machine and equipment manufacturing
- Plant engineering
- Light and sound applications

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- The protection class is dependent on the combination with the various special glands. The minimum standard is IP 55.
- Counter nut to be used: SKINDICHT® SM-M
- Cable glands are not included in scope of delivery

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Material</b> Body: zinc die-casting Hexagon nut: nickel-plated brass O-ring: NBR
	<b>Protection rating</b> IP 55
	<b>Temperature range</b> -20°C to +100°C

Article number	Article designation / size	B in mm	Thread length, D (mm)	K	L	Ø G	SW1	Ø A1	SW2	Ø A2	Pieces / PU
<b>SKINDICHT® RWV-M without E+D</b>											
52107801	12 x 1,5	21	11.5	5	21	8	14	16	17	18.9	25
52107811	16 x 1,5	23	11.5	5	24	12	18	20	22	24.5	25
52107821	20 x 1,5	28.5	12.5	5	29	15	22	24	27	30.1	25
52107831	25 x 1,5	30	13.5	5	31	20	27	29	32	35.7	10
52107841	32 x 1,5	33.5	13.5	5	33	27	34	33.5	41	45.6	10
52107851	40 x 1,5	43	15.5	5	43	35	42	43	46	50.6	5

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® SE-M



**Benefits**

- Sealed by incised sealing ring
- Corrosion-resistant
- Easy to install
- Completely safe cable entry
- Low overall height

**Application range**

- For high mechanical stress
- When no connection thread is provided

**Product Make-up**

- M20 x 1.5 - M25 x 1.5 with 2 screw holes
- M32 x 1.5 with 4 screw holes
- With incised sealing ring

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Material</b> Body: zinc die-casting, grey, hammer tone finish Compression screw: nickel-plated brass Incised sealing ring: CR/NBR O-ring: NBR
	<b>Protection rating</b> IP 55
	<b>Temperature range</b> -20°C to +80°C

**Note**

- Drawing on request

Article number	Article designation / size	Incised sealing ring ØF (mm)	Overall height (mm)	SW wrench size mm	Overall length, C (mm)	Overall width (mm)	Pieces / PU
<b>SKINDICHT® SE-M</b>							
52108000	M 20 x 1,5	4/7/10/13	31	20	49.2	42	10
52108010	M 25 x 1,5	8.5/11.5/14.5/17.5	40	25	68.2	60	5
52108020	M 32 x 1,5	16/19/22/25	51.5	32	84.2	66	1

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® SE-M without E+D



### Benefits

- Combination of different conduit glands is possible
- Corrosion-resistant
- Easy to install
- Completely safe cable entry
- Low overall height

### Application range

- The flange angle gland can be combined with all glands (including O-ring) e.g. strain relief, bending protection and conduit glands
- For high mechanical stress
- When no connection thread is provided

### Product Make-up

- M20 x 1.5 - M25 x 1.5 with 2 screw holes
- M32 x 1.5 with 4 screw holes

### Note

- The protection class is dependent on the combination with the various special glands. The minimum standard is IP 55.
- Cable glands are not included in scope of delivery
- Drawing on request

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Material</b> Body: zinc die-casting, grey, hammer tone finish O-ring: NBR
	<b>Protection rating</b> IP 55
	<b>Temperature range</b> -20°C to +100°C

Article number	Article designation / size	Height (mm)	Overall width (mm)	Length (mm)	PU
<b>SKINDICHT® SE-M without E+D</b>					
52108001	20 x 1,5	31	42	42.0	10
52108011	25 x 1,5	40	60	60.0	5
52108021	32 x 1,5	51.5	66	76.0	1

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® SE-M 220/320



### Benefits

- Combination of various conduit glands is possible depending on the type
- Low overall height
- High stability
- Two or three separate cable outlets

### Application range

- For high mechanical stress
- When no connection thread is provided

### Note

- Type SKINDICHT® SE-M 220/320 without E+D is without incised sealing ring and without compression screw
- Type SKINDICHT® SE-M 220/320 without E+D can be combined with all cable glands (incl. O-ring) such as sealing, strain-relief, anti-kink, conduit-connecting or earthing glands

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Material</b> Body: zinc die-casting, hammer tone finish Compression screw: nickel-plated brass Incised sealing ring: CR/NBR Flat sealing ring: SBR
	<b>Protection rating</b> IP 55
	<b>Temperature range</b> -20°C to +80°C

- The protection class is dependent on the combination with the various special glands. The minimum standard is IP 55.
- Drawing on request

Article number	Article designation / size	Incised sealing ring ØF (mm)	Pieces / PU
<b>SKINDICHT® SE-M 220/320</b>			
52108040	2 x M20 x 1,5	2 x 4/7/10/13	1
52108050	3 x M20 x 1,5	3 x 4/7/10/13	1
<b>SKINDICHT® SE-M 220/320 without E+D</b>			
52108041	2 x M20 x 1,5		1
52108051	3 x M20 x 1,5		1

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® SM-M**



**Application range**

- Used when a gland has to be countered, or in through-holes on thin-walled housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000940  
ETIM 5.0 Class-Description:  
Locknut for cable screw gland
- Material**  
Nickel-plated brass
- Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Thickness (mm)	SW wrench size mm	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® SM-M</b>					
52103000	12 x 1,5	3.0	15	16.5	100
52103010	16 x 1,5	3.0	19	20.9	100
52103020	20 x 1,5	3.5	24	26.4	100
52103030	25 x 1,5	4.0	30	33.0	100
52103040	32 x 1,5	4.0	36	39.6	100
52103050	40 x 1,5	5.0	46	50.6	50
52103060	50 x 1,5	5.0	60	65.0	50
52103070	63 x 1,5	5.0	70	77.0	25
52103071	75 x 1,5	8.0	85	95.0	5
52103072	90 x 2	10.0	102	114.0	1
52103073	110 x 2	12.0	124	135.0	1

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® SM-PE-M**



**Benefits**

- Cutting edges cut through the insulating layer, thus guaranteeing an optimum EMC contact
- Suitable for all metric glands used in earthing and EMC applications

**Application range**

- For lacquered, anodised or powder-coated housings.

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000940  
ETIM 5.0 Class-Description:  
Locknut for cable screw gland
- Material**  
Nickel-plated brass
- Temperature range**  
-20°C to +100°C

Article number	Article designation / size	Thickness (mm)	SW wrench size mm	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® SM-PE-M</b>					
52103300	12 x 1,5	3.5	15	16.5	100
52103310	16 x 1,5	3.5	19	20.9	100
52103320	20 x 1,5	3.7	24	26.4	100
52103330	25 x 1,5	4.2	30	33.0	50
52103340	32 x 1,5	4.7	36	39.6	50
52103350	40 x 1,5	5.5	46	50.6	25
52103360	50 x 1,5	5.5	60	66.0	10
52103370	63 x 1,5	7.0	70	77.0	10
52103371	75 x 1,5	8.0	85	95.0	5
52103372	90 x 2	10.0	102	114.0	1
52103373	110 x 2	12.0	124	135.0	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® BLK-M / SKINDICHT® BLK-GL-M

**Benefits****SKINDICHT® BLK-M**

- For closing pre-threaded holes
- Cost-effective solution

**SKINDICHT® BLK-GL-M**

- For closing pre-threaded holes
- High stability due to glass fibre reinforcement

**Application range**

- Control cabinet manufacturing
- Distribution box
- Junction boxes

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note****SKINDICHT® BLK-M**

- Drawing on request

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland

**On request**

**SKINDICHT® BLK-M**  
BLK-M with O-ring,  
black RAL 9005

**Colour delivered**

**SKINDICHT® BLK-M**  
Light grey (RAL 7035)  
**SKINDICHT® BLK-GL-M**  
Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005)

**Material**

**SKINDICHT® BLK-M**  
Fire behaviour according to UL 94 HB  
Impact-resistant polystyrene  
**SKINDICHT® BLK-GL-M**  
Fire behaviour according to UL 94 HB  
Polyamide, glass fibre-reinforced

**Protection rating**

IP 54  
IP 68 (with O-Ring)

**Temperature range**

**SKINDICHT® BLK-M**  
-25 °C to +60 °C  
**SKINDICHT® BLK-GL-M**  
-40 °C to +100 °C

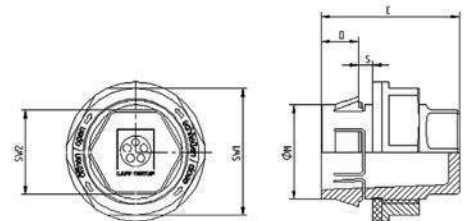
Article number	Article designation / size	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® BLK-M</b>			
52006600	12 x 1,5	6	100
52006610	16 x 1,5	6	100
52006620	20 x 1,5	6	100
52006630	25 x 1,5	8	100
52006640	32 x 1,5	8	50
52006650	40 x 1,5	8	25
52006660	50 x 1,5	10	25
52006670	63 x 1,5	12	25
<b>SKINDICHT® BLK-GL-M silver-grey</b>			
52006101	12 x 1,5	6	100
52006111	16 x 1,5	6	100
52006121	20 x 1,5	6	100
52006131	25 x 1,5	8	100
52006141	32 x 1,5	8	50
52006151	40 x 1,5	8	25
52006161	50 x 1,5	10	25
52006171	63 x 1,5	12	25
<b>SKINDICHT® BLK-GL-M light grey</b>			
52006100	12 x 1,5	6	100
52006110	16 x 1,5	6	100
52006120	20 x 1,5	6	100
52006130	25 x 1,5	8	100
52006140	32 x 1,5	8	50
52006150	40 x 1,5	8	25
52006160	50 x 1,5	10	25
52006170	63 x 1,5	12	25
<b>SKINDICHT® BLK-GL-M black</b>			
52006103	12 x 1,5	6	100
52006113	16 x 1,5	6	100
52006123	20 x 1,5	6	100
52006133	25 x 1,5	8	100
52006143	32 x 1,5	8	50
52006153	40 x 1,5	8	25
52006163	50 x 1,5	10	25
52006173	63 x 1,5	12	25

Article number	Article designation / size	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® BLK-GL-M silver-grey mounted with O-ring</b>			
52006109	12 x 1,5	6	100
52006119	16 x 1,5	6	100
52006129	20 x 1,5	6	100
52006139	25 x 1,5	8	100
52006149	32 x 1,5	8	50
52006159	40 x 1,5	8	25
52006169	50 x 1,5	10	25
52006179	63 x 1,5	12	25
<b>SKINDICHT® BLK-GL-M light grey mounted with O-ring</b>			
52006107	12 x 1,5	6	100
52006117	16 x 1,5	6	100
52006127	20 x 1,5	6	100
52006137	25 x 1,5	8	100
52006147	32 x 1,5	8	50
52006157	40 x 1,5	8	25
52006167	50 x 1,5	10	25
52006177	63 x 1,5	12	25
<b>SKINDICHT® BLK-GL-M black mounted with O-ring</b>			
52006106	12 x 1,5	6	100
52006116	16 x 1,5	6	100
52006126	20 x 1,5	6	100
52006136	25 x 1,5	8	100
52006146	32 x 1,5	8	50
52006156	40 x 1,5	8	25
52006166	50 x 1,5	10	25
52006176	63 x 1,5	12	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® CLICK BLK**



**Benefits**

- Save up to 70% of the time with the innovative CLICK system
- Simple, free assembly in any position
- Fewer parts, counter nut no longer needed
- No thread required

**Included**

- Included: disassembly tool

**Application range**

- Dummy plug with innovative CLICK system for fast installation in hard-to-reach locations. Perfect solution for closing pre-made bore holes that are no longer required.
- Control cabinet manufacturing
- Measurement, control and electrical applications
- Automation technology
- Plant engineering, machinery manufacturing

**Technical data**

- ETIM Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- RAL Colour delivered**  
Light grey (RAL 7035)
- Material**  
Body: special polyamide  
Seal: special elastomer
- IP Protection rating**  
IP 68 - 5 bar
- Temperature range**  
-20°C to +100°C

Article number	Article designation / size	M (hole in mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Wall thickness, S (mm)	Pieces / PU
<b>SKINTOP® CLICK BLK light grey</b>							
52109013	CLICK BLK 16	16.3 (-0.2)	14 / 22	28.5	8	1.0 - 4.0	50
52109014	CLICK BLK 20	20.3 (-0.2)	18 / 27	29.5	8	1.0 - 4.0	25
52109015	CLICK BLK 25	25.3 (-0.2)	22 / 14	30.5	8	1.0 - 4.0	25

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® BL-M



### Benefits

- For closing pre-threaded holes
- Assembling with screwdriver

### Application range

- Machine and equipment manufacturing
- Electric motor manufacturing

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Drawing on request

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland



#### On request

Fitted with FKM O-ring



#### Material

Body: nickel-plated brass  
Sea water-resistant



#### Protection rating

IP 54  
IP 68 (with O-Ring)



#### Temperature range

With O-ring: -30°C to +100°C  
Without O-ring: -60°C to +200°C

Article number	Article designation / size	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® BL-M</b>			
52103100	12 x 1,5	14.0	100
52103110	16 x 1,5	18.0	100
52103120	20 x 1,5	22.0	100
52103130	25 x 1,5	28.0	100
52103140	32 x 1,5	35.0	50
52103150	40 x 1,5	44.0	25
52103160	50 x 1,5	54.0	10
52103170	63 x 1,5	70.0	10
<b>SKINDICHT® BL-M with O-ring</b>			
52103105	12 x 1,5	14.0	100
52103115	16 x 1,5	18.0	100
52103125	20 x 1,5	22.0	100
52103135	25 x 1,5	28.0	100
52103145	32 x 1,5	35.0	50
52103155	40 x 1,5	44.0	25
52103165	50 x 1,5	54.0	10
52103175	63 x 1,5	70.0	10
52103190	75 x 1,5	80.0	1

Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- For closing pre-threaded holes
- High degree of protection

**Application range**

- Machine and equipment manufacturing
- Electric motor manufacturing

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Dummy plug made of chromium nickel steel on request

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland
- On request**  
VITON® O-ring  
-20 °C to +200 °C
- Material**  
Body: nickel-plated brass  
O-ring: NBR
- Protection rating**  
IP 68 - 5 bar
- Temperature range**  
-30°C to +100°C



Article number	Article designation / size	SW wrench size mm	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® BL-M hexagon</b>				
52103405	12 x 1,5	16	17.8	50
52103415	16 x 1,5	20	22.0	50
52103425	20 x 1,5	24	26.4	50
52103435	25 x 1,5	29	31.9	50
52103445	32 x 1,5	36	39.6	25
52103455	40 x 1,5	45	49.5	25
52103465	50 x 1,5	54	59.0	10
52103475	63 x 1,5	67	73.5	10

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- High degree of protection
- Cold impact resistance

**Application range**

- Equipment group II / Category 2G+1D
- Devices, machines and apparatus
- For mobile applications in offshore and marine industries
- Chemical and petrochemical industry

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland
- Certifications**  
DIN VDE CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIIC  
IECEx IBE 13.0029X
- Material**  
Body: nickel-plated brass  
O-ring: NBR
- Tests**  
DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31
- Protection rating**  
IP 68 - 10 bar
- Temperature range**  
-30°C to +90°C



Article number	Article designation / size	SW wrench size mm	Thread length, D (mm)	Outer Ø (mm)	PU
<b>SKINDICHT® BL-M ATEX</b>					
52103103	12 x 1,5	16	5	17.8	50
52103113	16 x 1,5	20	5	22.0	50
52103123	20 x 1,5	24	6	26.4	50
52103133	25 x 1,5	29	7	31.9	50
52103143	32 x 1,5	36	8	39.6	25
52103153	40 x 1,5	45	8	49.5	25
52103163	50 x 1,5	54	9	59.0	10
52103173	63 x 1,5	67	10	73.5	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® VENT STAINLESS STEEL



### Info

- Breathable pressure compensation element with membrane technology

### Benefits

- Ventilation system for housing
- Formation of condensation in electronic housings is prevented
- Pressure compensation elements guarantee a trouble-free and maintenance-free operation

### Application range

- Simple installation in devices (e.g. cabinet)
- Manufacturing of control cabinets and equipment
- Measuring technology

### Product features

- Closure element and a pressure equalization in one system
- Lower space requirement
- High air flow

### Norm references / Approvals

- Optionally approved acc. to UL 508 A

### Product Make-up

- Air flow rates: 100mbar=0.4 l/min - Standard version
- Air flow rates: 100mbar=2.4 l/min - UL version

### Note

- Refer to data sheet for more details
- Drawing on request

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**DIN VDE** **Certifications**  
Metric thread acc. to EN 60423

**i** **Note**  
Membrane: Acryl - copolymere

**Material**  
Stainless steel 303  
O-Ring - NBR

**IP** **Protection rating**  
IP 66  
IP 67 - 0,1 bar  
IP 68 - 1 bar (just standard type with flat sealing)

**Temperature range**  
Fixed: -40°C to +100°C

Article number	Article designation / size	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>Not certified version</b>				
51730204	SKINDICHT® VENT CN 12x1,5	21.0	10	10
<b>cURus certified version</b>				
51730205	SKINDICHT® VENT CN 12x,15 plus	21.0	10	10

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® VENT PLASTIC

**i Info**

- Breathable pressure compensation element with membrane technology



**Benefits**

- Ventilation system for housing
- Formation of condensation in electronic housings is prevented
- Pressure compensation elements guarantee a trouble-free and maintenance-free operation

**Application range**

- Simple installation in devices (e.g. cabinet)
- Manufacturing of control cabinets and equipment
- Measuring technology

**Product features**

- Closure element and a pressure equalization in one system
- Lower space requirement
- High air flow

**Norm references / Approvals**

- Optionally approved acc. to UL 508 A

**Product Make-up**

- Air flow rates: 100mbar=0,8l/min - Standard version
- Air flow rates: 100mbar=3,5l/min - UL version

**Note**

- Refer to data sheet for more details
- Drawing on request

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**DIN VDE** **Certifications**  
Metric thread acc. to EN 60423

**i Note**  
Membrane: Acryl - copolymere

**RAL** **Colour delivered**  
Light grey (RAL 7035)  
RAL 9005 black/UV-resistant

**Material**  
Polyamide 6 - Standard version / UL 94 V2  
Polyamide 66 - UL Version / UL 94 V0  
Flat sealing NBR - Standard version  
O-Ring NBR - UL version

**IP** **Protection rating**  
IP 66  
IP 67 - 0,1 bar  
IP 68 - 1 bar (just standard type with flat sealing)

**Temperature range**  
Fixed: -40°C to +100°C

Article number	Article designation / size	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>cURus certified version</b>				
51730201	SKINDICHT® VENT 12x1,5 BK plus	17.3	10	25
51730203	SKINDICHT® VENT 12x1,5 LGY plus	17.3	10	25
<b>Not certified version</b>				
51730200	SKINDICHT® VENT 12x1,5 BK	17.3	10	25
51730202	SKINDICHT® VENT 12x1,5 LGY	17.3	10	25

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® KU-M



### Benefits

- Enables the use of cable glands with smaller connection threads than the existing threaded holes

### Application range

- Machines
- Devices
- Housings

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Note

- Drawing on request

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Colour delivered

Light grey (RAL 7035)



#### Material

Polyamide, glass fibre-reinforced



#### Temperature range

-40°C to +100°C

Article number	Thread, male M1	Thread, female M2	SW wrench size mm	Pieces / PU
<b>SKINDICHT® KU-M light grey</b>				
52104505	16 x 1.5	12 x 1.5	22	100
52104470	20 x 1.5	12 x 1.5	24	100
52104504	20 x 1.5	16 x 1.5	24	100
52104472	25 x 1.5	12 x 1.5	29	100
52104473	25 x 1.5	16 x 1.5	29	100
52104474	25 x 1.5	20 x 1.5	29	100
52104475	32 x 1.5	12 x 1.5	36	50
52104476	32 x 1.5	16 x 1.5	36	50
52104477	32 x 1.5	20 x 1.5	36	50
52104478	32 x 1.5	25 x 1.5	36	50
52104479	40 x 1.5	16 x 1.5	46	50
52104480	40 x 1.5	20 x 1.5	46	50
52104481	40 x 1.5	25 x 1.5	46	25
52104482	40 x 1.5	32 x 1.5	46	25
52104483	50 x 1.5	20 x 1.5	55	5
52104484	50 x 1.5	25 x 1.5	55	5
52104485	50 x 1.5	32 x 1.5	55	5
52104486	50 x 1.5	40 x 1.5	55	5
52104487	63 x 1.5	25 x 1.5	68	5
52104488	63 x 1.5	32 x 1.5	68	5
52104489	63 x 1.5	40 x 1.5	68	5
52104469	63 x 1.5	50 x 1.5	68	5

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® MR-M**

**Benefits**

- Enables the use of cable glands with smaller connection threads than the existing threaded holes

**Application range**

- Machines
- Devices
- Housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- Drawing on request

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**On request**  
 Also available with pre-installed O-ring

**Material**  
 Nickel-plated brass

**Temperature range**  
 -60°C to +200°C



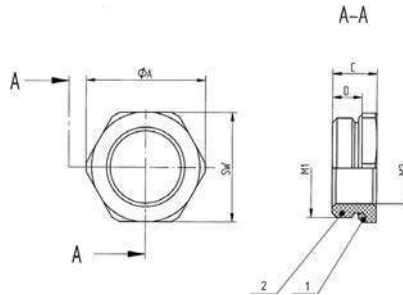
Article number	Thread, male M1	Thread, female M2	Overall length, C (mm)	Thread length, D (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® MR-M</b>						
52104310	16 x 1.5	12 x 1.5				100
52104311	20 x 1.5	12 x 1.5				100
52104312	20 x 1.5	16 x 1.5				100
52104313	25 x 1.5	16 x 1.5				50
52104314	25 x 1.5	20 x 1.5				50
52104315	32 x 1.5	20 x 1.5				50
52104316	32 x 1.5	25 x 1.5				50
52104317	40 x 1.5	25 x 1.5				25
52104318	40 x 1.5	32 x 1.5				25
52104319	50 x 1.5	32 x 1.5				25
52104320	50 x 1.5	40 x 1.5				10
52104321	63 x 1.5	40 x 1.5				10
52104322	63 x 1.5	50 x 1.5				10
<b>SKINDICHT® MR-M, blank brass</b>						
52006579	80 x 2	75 x 1.5	19.0	12	86.0	1
<b>SKINDICHT® MR-M, nickel-plated brass</b>						
52006575	72 x 2	63 x 1.5	19.0	12	78.0	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® MR-M hexagonal



### Benefits

- Enables the use of cable glands with smaller connection threads than the existing threaded holes
- With guide notch for O-ring
- Assembling with a wrench

### Application range

- Machines
- Devices
- Housings

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**On request**  
 VITON® O-ring  
 -20 °C to +200 °C

**Material**  
 Body: nickel-plated brass  
 O-ring: NBR

**Temperature range**  
 -30 °C to +100 °C

Article number	Thread, male M1	Thread, female M2	SW wrench size mm	Buiten ø (mm)	Overall length, C (mm)	Thread length, D (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® MR-M hexagon</b>								
52101965	16 x 1.5	12 x 1.5	18	20.2	8.5	5.5		50
52101966	20 x 1.5	16 x 1.5	22	24.4	9.0	6		50
52101967	25 x 1.5	16 x 1.5	28	31.2	10.0	6.5		50
52101968	25 x 1.5	20 x 1.5	28	31.2	10.0	6.5		50
52101969	32 x 1.5	16 x 1.5	36	40.0	11.5	8		25
52101972	32 x 1.5	20 x 1.5	36	40.0	11.5	8		25
52101973	32 x 1.5	25 x 1.5	36	40.0	11.5	8		25
52101974	40 x 1.5	25 x 1.5	43	47.5	12.5	8.5		10
52101975	40 x 1.5	32 x 1.5	43	47.5	12.5	8.5		10
52101976	50 x 1.5	40 x 1.5	54	58.0	14.0	10		5
52101977	63 x 1.5	50 x 1.5	67	74.0	14.0	9.5		5
52101979	75 x 1.5	63 x 1.5	80	90.0	17.0	11		1
<b>SKINDICHT® MR-M, blank brass, with hexagon</b>								
52006572	80 x 2	63 x 1.5	85		23.0	15	93.5	1

Viton® is a registered trademark of DuPont de Nemours  
 Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- Enables the use of cable glands with smaller connection threads than the existing threaded holes
- With guide notch for O-ring
- Assembling with a wrench

**Application range**

- Equipment group II / Category 2G+1D
- Devices, machines and apparatus
- For mobile applications in offshore and marine industries
- Chemical and petrochemical industry

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Certifications**  
 CE 0637 Ex II 2G  
 Ex eb IIC  
 Ex II 1D Ex ta IIIC  
 IECEx IBE 13.0028X  
 DIN EN 60079-0/DIN EN 60079-7  
 DIN EN 60079-31

**Material**  
 Body: nickel-plated brass  
 O-ring: NBR

**Temperature range**  
 -30°C to +90°C

**SKINDICHT® MR-M ATEX**



Article number	Thread, male M1	Thread, female M2	Overall height (mm)	Thread length, D (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® MR-M ATEX</b>						
52104570	16 x 1.5	12 x 1.5	10.5	5	19.0	50
52104571	20 x 1.5	16 x 1.5	13	6	24.5	50
52104572	25 x 1.5	20 x 1.5	15	7	30.1	25
52104573	32 x 1.5	25 x 1.5	16.5	8	37.2	25
52104574	40 x 1.5	32 x 1.5	16.5	8	45.6	10
52104575	50 x 1.5	40 x 1.5	19.5	10	55.3	5
52104576	63 x 1.5	50 x 1.5	18.5	8.5	71.3	5

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® ECU-M**

**Benefits**

- Enables the use of cable glands with larger connection threads than the existing threaded holes
- Assembling with a wrench
- Supporting surface for spanner means scratches on the housing are avoided

**Application range**

- Machines
- Devices
- Housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Colour delivered**  
 Light grey (RAL 7035)

**Material**  
 Polyamide, glass fibre-reinforced

**Temperature range**  
 -40°C to +100°C



Article number	Thread, male M1	Thread, female M2	SW wrench size mm	Pieces / PU
<b>SKINDICHT® ECU-M</b>				
52100300	12 x 1.5	16 x 1.5	20	100
52100301	16 x 1.5	20 x 1.5	24	100
52100302	20 x 1.5	25 x 1.5	29	100
52100303	25 x 1.5	32 x 1.5	36	50
52100304	32 x 1.5	40 x 1.5	46	25
52100305	40 x 1.5	50 x 1.5	55	10
52100306	50 x 1.5	63 x 1.5	68	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® ME-M



### Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes

### Application range

- Machines
- Devices
- Housings

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- On request**  
with O-ring fitted
- Material**  
Nickel-plated brass
- Temperature range**  
-60°C to +200°C

Article number	Thread, male M1	Thread, female M2	Pieces / PU
<b>SKINDICHT® ME-M</b>			
52104450	12 x 1.5	16 x 1.5	100
52104452	16 x 1.5	20 x 1.5	100
52104454	20 x 1.5	25 x 1.5	100
52104456	25 x 1.5	32 x 1.5	50
52104458	32 x 1.5	40 x 1.5	50
52104460	40 x 1.5	50 x 1.5	25
52104462	50 x 1.5	63 x 1.5	25
<b>SKINDICHT® ME-M hexagon</b>			
52104463	63 x 1.5	75 x 1.5	1

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® ME-M ATEX



### Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes
- With guide notch for O-ring
- Assembling with a wrench

### Application range

- Equipment group II / Category 2G+1D
- Devices, machines and apparatus
- For mobile applications in offshore and marine industries
- Chemical and petrochemical industry

### Product Make-up

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

### Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- Certifications**  
CE 0637 Ex II 2G  
Ex eb IIC  
Ex II 1D Ex ta IIIC  
IECEx IBE 13.0028X  
DIN EN 60079-0 DIN EN 60079-7  
DIN EN 60079-31
- Material**  
Body: nickel-plated brass  
O-ring: NBR
- Temperature range**  
-30°C to +90°C

Article number	Thread, male M1	Thread, female M2	Overall height (mm)	SW wrench size mm	Outer thread length (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® ME-M ATEX</b>							
52104580	12 x 1.5	16 x 1.5	17	18	5	20.0	50
52104581	16 x 1.5	20 x 1.5	20	22	6	24.0	50
52104582	20 x 1.5	25 x 1.5	22.5	27	6.5	30.0	50
52104583	25 x 1.5	32 x 1.5	21.5	34	6.5	37.7	25
52104584	32 x 1.5	40 x 1.5	23	42	7	46.0	25
52104585	40 x 1.5	50 x 1.5	26	54	8	59.0	25
52104586	50 x 1.5	63 x 1.5	32	67	9	73.0	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® MA-M/PG / SKINDICHT® MA-M/NPT**



SKINDICHT® MA-M/PG



SKINDICHT® MA-M/NPT

**Benefits**

**SKINDICHT® MA-M/PG**

- Enables the use of PG accessories in metric threads

**SKINDICHT® MA-M/NPT**

- Enables the use of NPT accessories in metric threads

**Application range**

**SKINDICHT® MA-M/PG**

- Adapter from a metric outer thread to a PG inner thread.
- Machines
- Devices
- Housings

**SKINDICHT® MA-M/NPT**

- Adapter from a metric outer thread to an NPT inner thread.
- Machines
- Devices
- Housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**On request**

with O-ring fitted



**Material**

Nickel-plated brass

Article number	Thread, male M1	Thread, female PG/NPT	Pieces / PU
<b>SKINDICHT® MA-M / PG</b>			
52104200	16 x 1.5	7	100
52104210	20 x 1.5	9	50
52104220	25 x 1.5	11	50
52104230	25 x 1.5	13,5	50
52104240	25 x 1.5	16	50
52104250	32 x 1.5	16	25
52104260	32 x 1.5	21	25
52104270	40 x 1.5	21	25
52104280	50 x 1.5	29	10
52104290	63 x 1.5	36	10
52104300	63 x 1.5	42	10
<b>SKINDICHT® MA-M / NPT</b>			
54020100	16 x 1.5	1/2	50
54020110	20 x 1.5	1/2	50
54020120	25 x 1.5	1/2	25
54020130	25 x 1.5	3/4	25
54020140	32 x 1.5	1/2	25
54020152	32 x 1.5	1	25
54020153	40 x 1.5	1 1/4	10

Photographs are not to scale and do not represent detailed images of the respective products.

**SKINDICHT® ZS-M****Benefits**

- Enables the use of PG accessories in metric threads
- Assembling with a wrench

**Application range**

- Hexagonal converter from a metric outer thread to a PG inner thread.
- Machines
- Devices
- Housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- SKINDICHT® ZS-M-XL offers a long metric connection thread

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland

**Material**

Nickel-plated brass

Article number	Thread, male M1	Thread, female PG/NPT	SW wrench size mm	Outer thread length (mm)	Pieces / PU
<b>SKINDICHT® ZS-M</b>					
52104330	12 x 1.5	7	14	5	100
52104340	16 x 1.5	9	18	5	100
52104010	16 x 1.5	11	20	5	100
52104360	20 x 1.5	11	22	6	100
52104370	20 x 1.5	13.5	22	6	100
52104380	20 x 1.5	16	24	6	50
52104400	25 x 1.5	21	30	7	50
52104410	32 x 1.5	29	40	8	25
52104420	40 x 1.5	36	50	8	10
52104430	50 x 1.5	42	57	9	10
52104440	63 x 1.5	48	66	10	10
<b>SKINDICHT® ZS-M-XL</b>					
52104335	12 x 1.5	7	14	10	100
52104345	16 x 1.5	9	18	10	100
52104365	20 x 1.5	11	22	10	100
52104375	20 x 1.5	13.5	22	10	100
52104385	20 x 1.5	16	24	10	50
52104405	25 x 1.5	21	30	11	50
52104415	32 x 1.5	29	40	13	25
52104425	40 x 1.5	36	50	13	10
52104435	50 x 1.5	42	57	14	10
52104445	63 x 1.5	48	66	14	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® ZSE-M**

**Benefits**

- Enables the use of PG accessories in metric threads
- Assembling with a wrench

**Application range**

- Hexagonal converter from a metric outer thread to a PG inner thread.
- Machines
- Devices
- Housings

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Note**

- SKINDICHT® ZSE-M-XL offers a long metric connection thread

**Product Make-up**

- These converters are used in our cable glands:
- SKINDICHT® SHV-M
- SKINDICHT® SHVE-M
- SKINDICHT® SRE-M
- SKINDICHT® SR-SV-M

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Material**

Body: nickel-plated brass



Article number	Thread, male M1	Thread, female PG/NPT	SW wrench size mm	Outer thread length (mm)	Pieces / PU
<b>SKINDICHT® ZSE-M</b>					
52106000	12 x 1.5	7	14	5	100
52106010	16 x 1.5	9	18	5	100
52106020	20 x 1.5	11	22	6	100
52106030	20 x 1.5	13.5	22	6	100
52106040	20 x 1.5	16	24	6	50
52104050	20 x 1.5	21	30	8	50
52106050	25 x 1.5	21	30	7	50
52106060	32 x 1.5	29	40	8	25
52106070	40 x 1.5	36	50	8	10
52106080	50 x 1.5	42	57	9	10
52106090	63 x 1.5	48	66	10	10
<b>SKINDICHT® ZSE-M-XL</b>					
52106005	12 x 1.5	7	14	10	100
52106015	16 x 1.5	9	18	10	100
52106025	20 x 1.5	11	22	13	100
52106035	20 x 1.5	13.5	22	13	100
52106045	20 x 1.5	16	24	13	50
52106055	25 x 1.5	21	30	13	50
52106065	32 x 1.5	29	40	13	25

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® D-M

**Application range**

- SKINDICHT® D-M compression screws with thread in accordance with EN 50262.

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000814  
ETIM 5.0 Class-Description:  
Threaded bush

**Material**

Nickel-plated brass

Article number	Article designation / size	SW wrench size mm	Pieces / PU
<b>SKINDICHT® D-M</b>			
52100600	12 x 1,5	12	100
52100601	16 x 1,5	16	100
52100602	20 x 1,5	20	100
52100603	25 x 1,5	25	50
52100604	32 x 1,5	32	25
52100605	40 x 1,5	40	25
52100606	50 x 1,5	50	10
52100607	63 x 1,5	65	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® U-M/U-PG

**Application range**

- For use between compression screw and adapter.

**Note**

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000098  
ETIM 5.0 Class-Description:  
Washer

**Material**

Steel, galvanized

Article number	Article designation / size	Outer Ø x inner Ø (mm)	Pieces / PU
<b>SKINDICHT® U-M</b>			
52100610	U-M 12	10.0 x 7.0	300
52100611	U-M 16	14.0 x 10.0	300
52100612	U-M 20	17.9 x 13.9	300
52100613	U-M 25	22.7 x 18.7	200
52100614	U-M 32	29.8 x 26.0	200
52100615	U-M 40	37.8 x 33.3	100
52100616	U-M 50	47.8 x 41.4	100
52100617	U-M 63	60.7 x 53.5	100

Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- One seal for several clamping ranges
- Rings can be individually adapted to various cable diameters

**Application range**

- Incised sealing ring for SKINDICHT® cable glands

**Note**

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Black
	<b>Material</b> CR
	<b>Temperature range</b> -20°C to +80°C



**SKINDICHT® E-M**

Article number	Article designation / size	Outer Ø x holes (mm)	Thickness (mm)	Pieces / PU
<b>SKINDICHT® E-M</b>				
52100620	E-M 12	10.00 x 5	5.0	250
52100621	E-M 16	13.80 x 3/6/9	5.5	250
52100622	E-M 20	17.60 x 4/7/10/13	6.0	250
52100623	E-M 25	22.60 x 8.5/11.5/14.5/17.5	7.5	100
52100624	E-M 32	29.60 x 16/19/22/25	9.5	100
52100625	E-M 40	37.60 x 23/26/29/32	12.0	50
52100626	E-M 50	47.60 x 30/33/36/39	14.0	50
52100627	E-M 63	60.60 x 36/39/42/45	14.0	50

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® O-Ring Perbunan® metric**

**Application range**

- For sealing the housing reliably to protect against oils, dust, and water at the connection thread of a gland or other similar parts

**Note**

- O-rings with thickness of 1.5 mm are recommended for optimum sealing of the converter SKINDICHT® ZSE-M12/16/20 x 1.5
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Black
	<b>Material</b> NBR Ozone and UV-resistant silicone-free
	<b>Temperature range</b> -30°C to +100°C



Article number	Article designation / size	Inner Ø (mm)	Cable thickness (mm)	Pieces / PU
<b>SKINDICHT® O-Ring Perbunan®</b>				
53102001	O M 12 x 1,5	9.0	1.5	100
53102000	O M 12 x 2,0	9.0	2	100
53102010	O M 16 x 2,0	13.0	2	100
53102021	O M 20 x 1,5	17.0	1.5	100
53102020	O M 20 x 2,0	17.0	2	100
53102030	O M 25 x 2,0	22.0	2	100
53102040	O M 32 x 2,0	28.0	2	50
53102050	O M 40 x 2,0	36.0	2	50
53102060	O M 50 x 2,0	46.0	2	25
53102070	O M 63 x 2,0	57.0	2	25

Perbunan® is a registered trademark of BAYER AG

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® O-ring VITON® metric



### Application range

- For sealing the housing reliably to protect against oils, acids, and chemicals at the connection thread of a gland or other similar parts under extreme conditions

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Green
	<b>Material</b> FKM
	<b>Temperature range</b> -20°C to +200°C

Article number	Article designation / size	Inner Ø (mm)	Cable thickness (mm)	Pieces / PU
<b>SKINDICHT® O-ring VITON® metric</b>				
52122000	OV M 12 x 2,0	9.0	2	100
52122001	OV M 12 x 1,5	9.0	1.5	100
52122010	OV M 16 x 2,0	13.0	2	100
52122020	OV M 20 x 2,0	17.0	2	100
52122021	OV M 20 x 1,5	17.0	1.5	100
52122030	OV M 25 x 2,0	22.0	2	100
52122040	OV M 32 x 2,0	28.0	2	50
52122050	OV M 40 x 2,0	36.0	2	50
52122060	OV M 50 x 2,0	46.0	2	25
52122070	OV M 63 x 2,0	57.0	2	25

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® JT PTFE metric



### Benefits

- Resistant to oil, water, alkaline solutions, acids, solvents, etc.
- Suitable for foodstuffs

### Application range

- PTFE sealing disks for SKINTOP® and SKINDICHT® cable glands

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> White
	<b>Material</b> PTFE
	<b>Temperature range</b> -120°C to +250°C Short-term: up to +300°C

Article number	Article designation / size	Inner Ø (mm)	Thickness (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® JT PTFE</b>					
53801030	JT M 12	12.1	2.0	16.6	100
53801040	JT M 16	16.1	2.0	21.1	100
53801050	JT M 20	20.1	2.0	27.5	100
53801060	JT M 25	25.1	3.0	33.4	50
53801070	JT M 32	32.1	3.0	40.3	50
53801080	JT M 40	40.2	3.0	51.5	25
53801090	JT M 50	50.2	3.0	61.6	25
53801100	JT M 63	63.2	3.0	73.9	25

Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- Pierceable membrane

**Application range**

- Easy cable feed-through wherever strain relief is not required.

**Product Make-up**

- Metric connection thread acc. to DIN EN 60423
- Basis for technical information EN 50262

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Colour delivered</b> Light grey (RAL 7035)
	<b>Material</b> PE
	<b>Protection rating</b> IP 54

**SKINDICHT® WN-M**



Article number	Article designation / size	Opening (mm)	SW wrench size mm	Thread length, D (mm)	Outer Ø (mm)	Pieces / PU
<b>SKINDICHT® WN-M</b>						
52020513	16 x 1,5	5 - 10	15	10	20.0	200
52020523	20 x 1,5	8 - 13.5	19	12	24.0	200
52020533	25 x 1,5	9 - 16	24	12	28.0	100
52020543	32 x 1,5	11 - 22	30	14	37.0	50
52020553	40 x 1,5	17 - 34	37	16	45.0	50
52020563	50 x 1,5	22 - 35	46	18	55.5	20
52020573	63 x 1,5	24 - 43	56	20	68.5	10

Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- Can be used as multiple-duct sleeve
- Strain relief

**Application range**

- Grommets for cables from 4 to 32 mm cable diameter.

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000879 ETIM 5.0 Class-Description: Feed through spout
	<b>Colour delivered</b> Black
	<b>Material</b> CR
	<b>Temperature range</b> -30°C to +100°C

**SKINDICHT® DTN**



Article number	Article designation / size	Clamping range ØF (mm)	Metal thickness (mm)	Hole in housing Ø (mm)	Sleeve inner Ø (mm)	Pieces / PU
<b>SKINDICHT® DTN</b>						
52105020	DTN 1	4 - 9	2.5	16	9	50
52105030	DTN 2	7 - 12	2.5	19	12	50
52105040	DTN 3	12 - 17.5	2.5	25	18	50
52105050	DTN 4	18 - 23	2.5	32	25	25
52105060	DTN 5	25 - 29	3.0	38	32	25

Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- Protection against sharp or angular housing walls
- Easy to assemble

**Application range**

- Housings
- Control cabinet manufacturing

**Note**

- Simply push the grommet into the hole until the groove engages.

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000879 ETIM 5.0 Class-Description: Feed through spout
	<b>Colour delivered</b> Black
	<b>Material</b> CR
	<b>Temperature range</b> -30°C to +90°C

**SKINDICHT® LA**



Article number	Article designation / size	Metal thickness (mm)	Sleeve outer Ø (mm)	Hole in housing Ø (mm)	Sleeve inner Ø (mm)	Pieces / PU
<b>SKINDICHT® LA</b>						
61713520	LA 3	1.5 - 2.0	10	7	3	100
61713530	LA 4	1.5 - 2.0	11	8	4	100
61713540	LA 5	1.5 - 2.0	11	7	5	100
61713550	LA 6	1.5 - 2.0	14	9	6	100
61713560	LA 7	1.5 - 2.0	16	12	7	100
61713570	LA 8	1.5 - 2.0	15	11	8	100
61713580	LA 9	1.5 - 2.0	16	11	9	100
61713590	LA 11	1.5 - 2.0	19	14	11	100
61713600	LA 12	1.5 - 2.0	25	18	12	100

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINMATIC® QUICK Set 1



### Benefits

- Easy installation by high packing density
- Enormous time and cost saving
- Easy and safe handling using open ratchet system
- 4 sizes (M12, 16, 20, 25), only one tool

### Application range

- Efficient assembly ratchet set for SKINTOP® plastic and brass cable glands.
- Optional SKINMATIC® TORQUE WRENCH with 9x12 mm adapter for use with SKINMATIC® QUICK SET 1

### Product features

- Made of high-quality tool steel
- Included: a handy and strong box for storing
- 1x R1 - ratchet
- 1x V1 - extension
- 5x open nut for wrench size (N) 15, 16, 19, 20, 25, 30, suitable for ratchet head R1

### Note

- Open Nut N 15 PA M 12
- Open nut N 16 MS M 12
- Open nut N 19 PA M 16
- Open nut N 20 (extension) MS M 16
- Open nut N 25 PA M 20 / MS M 20
- Open nut N 30 PA M 25 / MS M 25

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000149  
ETIM 5.0 Class-Description:  
Tool set

Article number	Article designation / size	Width of flat surface (mm)	Pieces / PU
<b>SKINMATIC® QUICK SET 1</b>			
61610000	QUICK SET 1	15, 16, 19, 20, 25, 30	1
<b>SKINMATIC® TORQUE WRENCH</b>			
61610012	SKINMATIC® DMG 2-10 Nm		1
61610013	SKINMATIC® DMG 5-25 Nm		1

Not subjected to RoHS directive.

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINMATIC® MH Set



### Benefits

- Fast, secure and damage-free assembly
- Shaped contact surface prevents the spanner from sliding off

### Application range

- Special tools designed for metric SKINTOP® brass types

### Product features

- Assembly set manufactured from chromium-plated tool steel
- The SKINMATIC® MH set consists of three special keys:
- SW 16/20 mm (M12/M16)
- SW 24/29 mm (M20/M25)
- SW 36/45 mm (M32/M40)



### Info

- Assembly tool for SKINTOP® gland sizes up to M110 x 2

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000149  
ETIM 5.0 Class-Description:  
Tool set

Article number	Width of flat surface (mm)	Brass gland sizes	Overall length (mm)	PU pieces (set)
<b>SKINMATIC® MH-Set</b>				
61791273	16/20, 24/29, 36/45	M 12, M 16, M 20, M 32, M 40	200 / 220 / 250	1
<b>SKINMATIC® MH single wrench</b>				
61791267	54	M 50		1
61791268	67	M 63		1
61791269	75	M 63 PLUS		1
61791286	95	M 75		1
61791287	115	M 90		1
61791288	135	M 110		1

Not subjected to RoHS directive.

Photographs are not to scale and do not represent detailed images of the respective products.

**SKINMATIC® KB-M**



**SKINMATIC® SB-M**



**SKINMATIC® GB-M**



**Application range**

**SKINMATIC® KB-M**

- For simultaneous core drilling and cutting of metric threads. Especially suitable for thin components and sheet metals.

**SKINMATIC® SB-M**

- For drilling the core-holes of metric threads.

**SKINMATIC® GB-M**

- For cutting metric threads.

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000945  
ETIM 5.0 Class-Description:  
Drill



**Material**

**SKINMATIC® KB-M**  
HSSE  
**SKINMATIC® SB-M**  
HSS  
**SKINMATIC® GB-M**  
HSSE

Article number	Article designation / size	Drill length (mm)	Overall length, C (mm)	Pieces / PU
<b>SKINMATIC® KB-M</b>				
61791274	12 x 1,5	30	130.0	1
61791275	16 x 1,5	35	150.0	1
61791276	20 x 1,5	40	165.0	1
61791277	25 x 1,5	45	185.0	1
<b>SKINMATIC® SB-M</b>				
61791278	32 x 1,5	180	301.0	1
61791279	40 x 1,5	200	349.0	1
61791280	50 x 1,5	220	369.0	1
<b>SKINMATIC® GB-M</b>				
61791282	32 x 1,5	28	150.0	1
61791283	40 x 1,5	28	170.0	1
61791284	50 x 1,5	32	190.0	1

Not subjected to RoHS directive.

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINMATIC® RZ**



**Benefits**

- Adjustable for all wrench sizes ranging from 14 to 33 mm
- Assembling after the cables are already inserted
- Ergonomic plastic grips

**Application range**

- For quick mounting of cable and conduit glands
- Suitable for polyamide and brass cable glands

**Product features**

- Made of chromium-plated tool steel
- With two expandable clamping ranges (lock positions)
- Small opening (14 - 22 mm): M12 to M16, PG7 to PG11, NPT 3/8"
- Large opening (24 - 33 mm): M20 to M25, PG13.5 to PG21, NPT 1/2" to 3/4"

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC002132  
ETIM 5.0 Class-Description:  
Momentum wrench

Article number	Article designation / size	Width of flat surface (mm)	Overall length (mm)	Pieces / PU
<b>SKINMATIC® RZ</b>				
61791260	SKINMATIC® RZ	14 - 33	250.0	1

Not subjected to RoHS directive.

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINTOP® NPT



### Benefits

- Conical NPT thread
- Permanent vibration protection
- Optimum strain relief
- Wide, variable clamping ranges
- Maximum reliability

### Application range

- Used in areas where cables and wires need to be safely inserted into housings
- Machine and equipment manufacturing
- Automation technology
- Devices
- Housings

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- NPT connection thread acc. to ANSI B 1.20.2 - 1983

### Note

- Refer to SKINTOP® PG accessories for suitable accessories. Note that SKINTOP® GMP-GL counter nut is not compatible with this model.
- 3/8" = PG9
- 1/2" = PG13.5
- 3/4" = PG21
- 1" = PG29

### Product Make-up

- SKINTOP® STR NPT is equipped with a reduction seal insert to seal cables and wires with small outer diameters.

### Technical data

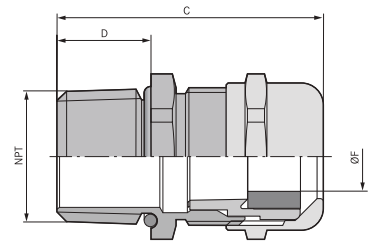
	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Colour delivered</b> Silver grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> Body: Polyamide Seal: CR
	<b>Protection rating</b> IP 68 - 5 bar
	<b>Temperature range</b> Dynamic: -20°C to +100°C Fixed: -40°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® ST silver grey</b>						
53016010	ST 3/8 NPT"	3,5 - 8	19	43.0	15	100
53016030	ST 1/2 NPT"	5 - 12	24	45.0	15	100
53016050	ST 3/4 NPT"	13 - 18	33	53.0	15	50
53016060	ST 1 NPT"	19 - 25,4	42	60.0	15	25
<b>SKINTOP® ST black</b>						
53016210	ST 3/8 NPT"	3,5 - 8	19	43.0	15	100
53016230	ST 1/2 NPT"	5 - 12	24	45.0	15	100
53016250	ST 3/4 NPT"	13 - 18	33	53.0	15	50
53016260	ST 1 NPT"	19 - 25,4	42	60.0	15	25
<b>SKINTOP® STR silver grey</b>						
53016110	STR 3/8 NPT"	2 - 6	19	43.0	15	100
53016130	STR 1/2 NPT"	4 - 9	24	45.0	15	100
53016150	STR 3/4 NPT"	9 - 16	33	53.0	15	50
<b>SKINTOP® STR black</b>						
53016310	STR 3/8 NPT"	2 - 6	19	43.0	15	100
53016330	STR 1/2 NPT"	4 - 9	24	45.0	15	100
53016350	STR 3/4 NPT"	9 - 16	33	53.0	15	50
<b>SKINTOP® BS silver grey</b>						
53016610	BS 3/8 NPT"	3,5 - 8	19	82.0	15	100
53016630	BS 1/2 NPT"	5 - 12	24	104.0	15	100
53016650	BS 3/4 NPT"	13 - 18	33	133.0	15	50
<b>SKINTOP® BS black</b>						
53016810	BS 3/8 NPT"	3,5 - 8	19	82.0	15	100
53016830	BS 1/2 NPT"	5 - 12	24	104.0	15	100
53016850	BS 3/4 NPT"	13 - 18	33	133.0	15	50

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® MS NPT**



**Benefits**

- Conical NPT thread
- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

**Application range**

- In areas where mechanical and chemical stability are critical
- Chemical industry
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- NPT connection thread acc. to ANSI B1.20.2 - 1983

**Note**

- Refer to SKINTOP® metric accessories for suitable accessories. Note that SKINDICHT® SM-M counter nut is not compatible with this model.
- 1/4" = M12, 3/8" = M16
- 1/2" = M20, 3/4" = M25
- 1" = M32, 1 1/4" = M40
- 1 1/2" = M50, 2" = M63

**Product Make-up**

- SKINTOP® MSR NPT is equipped with a reduction seal insert to seal cables and wires with small outer diameters

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Material**  
 Body: nickel-plated brass  
 Insert: polyamide  
 Sealing ring: CR  
 O-ring: NBR

**Protection rating**  
 IP 68 - 10 bar

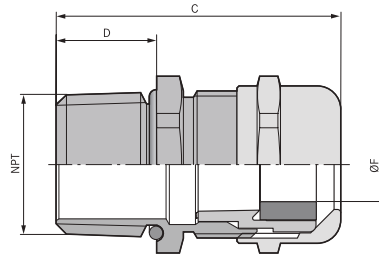
**Temperature range**  
 dynamic -25°C up to + 100°C  
 Fixed: -40°C to + 100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-NPT</b>						
53112004	1/4"	3,5 - 7	16	36.0	15	100
53112014	3/8"	4,5 - 10	20	39.7	15	100
53112024	1/2"	7 - 13	24	42.5	15	50
53112034	3/4"	9 - 17	29	44.5	15	25
53112044	1"	11 - 21	36	49.0	15	25
53112054	1 1/4"	19 - 28	45	57.5	17	10
53112064	1 1/2"	27 - 35	54	61.5	17	5
53112074	2"	34 - 45	67	63.5	17	5
<b>SKINTOP® MSR-NPT</b>						
53112006	1/4"	1 - 5	16	36.0	15	100
53112016	3/8"	2 - 7	20	39.7	15	100
53112026	1/2"	5 - 10	24	42.5	15	50
53112036	3/4"	6 - 13	29	44.5	15	25
53112046	1"	7 - 15	36	49.0	15	25
53112056	1 1/4"	15 - 23	45	57.5	17	10
53112066	1 1/2"	22 - 29	54	61.5	17	5
53112076	2"	28 - 39	67	63.5	17	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINTOP® MS-SC NPT



### Benefits

- Highly conductive, flexible EMC contact for clamping various screen diameters
- Low-resistance screen contact, optimum EMC protection
- Also suitable for continuing the cable screen to another connection
- Suitable for cables with and without inner sheath

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation technology
- Telecommunication
- Measurement and control technology
- Industrial machinery and plant engineering

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- NPT connection thread acc. to ANSI B 1.20.2 - 1983

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Material**  
 Body: nickel-plated brass  
 Insert: polyamide  
 Sealing ring: CR  
 O-ring: NBR

**IP** **Protection rating**  
 IP 68 - 10 bar

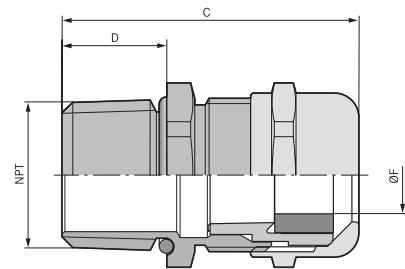
**Temperature range**  
 dynamic -25°C up to + 100°C  
 static -40°C up to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-SC NPT</b>						
53112910	3/8"	4,5 - 10	20	39,7	15	100
53112920	1/2"	7 - 13	24	42,5	15	50
53112930	3/4"	9 - 17	29	44,5	15	25
53112940	1"	11 - 21	36	49,0	15	25
53112950	1 1/4"	19 - 28	45	57,5	17	10
53112960	1 1/2"	27 - 35	54	61,5	17	5

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® MS-NPT BRUSH**



**Benefits**

- Faster, easier screen contact
- Optimum, low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

**Application range**

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation technology
- Conveyor technology
- High-power drives
- Frequency converters

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- NPT connection thread acc. to ANSI B1.20.2 - 1983

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Material**  
 Body: nickel-plated brass  
 EMC brush: brass  
 Sealing ring: special elastomer  
 O-ring: special elastomer

**Protection rating**  
 IP 68 - 10 bar

**Temperature range**  
 dynamic -25°C up to + 100°C  
 static -40°C up to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-NPT BRUSH</b>						
53112037	3/4"	9 - 17	29	43.0	15	10
53112047	1"	11 - 21	36	48.0	15	1
53112057	1 1/4"	19 - 28	45	57.5	17	1
53112067	1 1/2"	27 - 35	54	59.0	17	1
53112077	2"	34 - 45	67	63.0	17	1
53112087	2" plus	44 - 55	75	72.0	17	1

Photographs are not to scale and do not represent detailed images of the respective products.

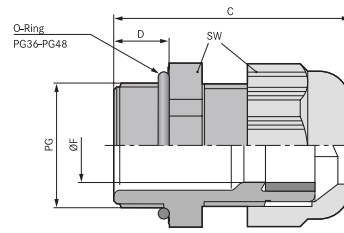
ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



SKINTOP® PG polyamide cable glands • Easy to install



## SKINTOP® ST / SKINTOP® STR



### Benefits

- Various accessories (e.g. multiple sealing inserts)
- High oil-resistance for maximum reliability
- Permanent vibration protection
- Optimum strain relief
- Wide, variable clamping ranges

### Application range

- Used in areas where cables and wires need to be safely inserted into housings
- Machine and equipment manufacturing
- Photovoltaic
- Automation technology

### SKINTOP® STR

- With reducing seal insert, to seal cables with smaller outer diameters.

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- PG connection thread

### Note

- Refer to SKINTOP® PG accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 Refer to Appendix T21 for the installation dimensions and torques

**Colour delivered**  
 Silver grey (RAL 7001)  
 Light grey (RAL 7035)  
 Black (RAL 9005), UV-resistant

**Material**  
 Body: Polyamide  
 Seal: CR

**Tests**  
 GGVS: TÜ.EGG.020-95

**Protection rating**  
 IP 68 - 5 bar

**Temperature range**  
**SKINTOP® ST**  
 Dynamic: -20°C up to +80°C  
 Fixed: -40°C to +100°C

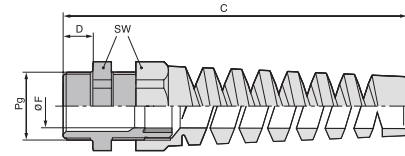
Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® ST silver grey</b>						
53015000	ST 7	2,5 - 6,5	15	32.0	8	100
53015010	ST 9	3,5 - 8	19	36.0	8	100
53015020	ST 11	4 - 10	22	38.0	8	100
53015030	ST 13,5	6 - 12	24	41.0	9	100
53015040	ST 16	9 - 14	27	44.0	10	50
53015050	ST 21	13 - 18	33	49.0	11	50
53015060	ST 29	14 - 25	42	56.0	11	25
53015070	ST 36	24 - 32	53	66.0	13	10
53015080	ST 42	35 - 38	60	68.0	13	5
53015090	ST 48	39 - 44	65	69.0	14	5
<b>SKINTOP® ST black</b>						
53015200	ST 7	2,5 - 6,5	15	32.0	8	100
53015210	ST 9	3,5 - 8	19	36.0	8	100
53015220	ST 11	4 - 10	22	38.0	8	100
53015230	ST 13,5	6 - 12	24	41.0	9	100
53015240	ST 16	9 - 14	27	44.0	10	50
53015250	ST 21	13 - 18	33	49.0	11	50
53015260	ST 29	14 - 25	42	56.0	11	25
53015270	ST 36	24 - 32	53	66.0	13	10
53015280	ST 42	35 - 38	60	68.0	13	5
53015290	ST 48	39 - 44	65	69.0	14	5
<b>SKINTOP® ST light grey</b>						
53018000	ST 7	2,5 - 6,5	15	32.0	8	100
53018010	ST 9	3,5 - 8	19	36.0	8	100
53018020	ST 11	4 - 10	22	38.0	8	100
53018030	ST 13,5	6 - 12	24	41.0	9	100
53018040	ST 16	9 - 14	27	44.0	10	50
53018050	ST 21	13 - 18	33	49.0	11	50
53018060	ST 29	14 - 25	42	56.0	11	25
53018070	ST 36	24 - 32	53	66.0	13	10
53018080	ST 42	35 - 38	60	68.0	13	5
53018090	ST 48	39 - 44	65	69.0	14	5

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® STR silver grey</b>						
53015100	STR 7	1,5 - 5	15	32.0	8	100
53015110	STR 9	2 - 6	19	36.0	8	100
53015120	STR 11	2 - 7	22	38.0	8	100
53015130	STR 13,5	4 - 9	24	41.0	9	100
53015140	STR 16	6 - 12	27	44.0	10	50
53015150	STR 21	9 - 16	33	49.0	11	50
53015160	STR 29	11 - 20	42	56.0	11	25
53015170	STR 36	17 - 26	53	66.0	13	10
53015180	STR 42	22 - 31	60	68.0	13	5
53015190	STR 48	26 - 35	65	69.0	14	5
<b>SKINTOP® STR black</b>						
53015300	STR 7	1,5 - 5	15	32.0	8	100
53015310	STR 9	2 - 6	19	36.0	8	100
53015320	STR 11	2 - 7	22	38.0	8	100
53015330	STR 13,5	4 - 9	24	41.0	9	100
53015340	STR 16	6 - 12	27	44.0	10	50
53015350	STR 21	9 - 16	33	49.0	11	50
53015360	STR 29	11 - 20	42	56.0	11	25
53015370	STR 36	17 - 26	53	66.0	13	10
53015380	STR 42	22 - 31	60	68.0	13	5
53015390	STR 48	26 - 35	65	69.0	14	5
<b>SKINTOP® STR light grey</b>						
53018100	STR 7	1,5 - 5	15	32.0	8	100
53018110	STR 9	2 - 6	19	36.0	8	100
53018120	STR 11	2 - 7	22	38.0	8	100
53018130	STR 13,5	4 - 9	24	41.0	9	100
53018140	STR 16	6 - 12	27	44.0	10	50
53018150	STR 21	9 - 16	33	49.0	11	50
53018160	STR 29	11 - 20	42	56.0	11	25
53018170	STR 36	17 - 26	53	66.0	13	10
53018180	STR 42	22 - 31	60	68.0	13	5
53018190	STR 48	26 - 35	65	69.0	14	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINTOP® BS



### Benefits

- Reliable bending and anti-kink protection
- Cable conservation
- Functional reliability
- To protect flexible cables

### Application range

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Robotics industry
- Light and sound applications
- Moving machine parts

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- PG connection thread

### Note

- Refer to SKINTOP® PG accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL
- Version with smaller insert to seal smaller cable cross-sections, SKINTOP® BSR, is available upon request

### Technical data

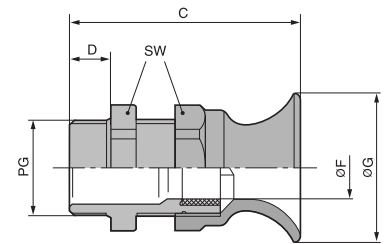
	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Caution</b> Refer to Appendix T21 for the installation dimensions and torques
	<b>Colour delivered</b> Silver grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> Body: Polyamide Seal: CR
	<b>Protection rating</b> IP 68 - 5 bar
	<b>Temperature range</b> -20°C to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® BS silver grey</b>						
53015600	BS 7	2,5 - 6,5	15	62.0	8	100
53015610	BS 9	3,5 - 8	19	73.5	8	100
53015620	BS 11	4 - 10	22	86.0	8	100
53015630	BS 13,5	6 - 12	24	98.0	9	50
53015640	BS 16	9 - 14	27	111.5	10	25
53015650	BS 21	13 - 18	33	129.0	11	25
<b>SKINTOP® BS black</b>						
53015800	BS 7	2,5 - 6,5	15	62.0	8	100
53015810	BS 9	3,5 - 8	19	73.5	8	100
53015820	BS 11	4 - 10	22	86.0	8	100
53015830	BS 13,5	6 - 12	24	98.0	9	50
53015840	BS 16	9 - 14	27	111.5	10	25
53015850	BS 21	13 - 18	33	129.0	11	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® BT**



**Benefits**

- Reliable bending and anti-kink protection
- Cable conservation
- Functional reliability

**Application range**

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Apparatus construction
- Light and sound applications
- Moving machine parts

**Norm references / Approvals**

- UL File Nr. E79903

**Product Make-up**

- PG connection thread

**Note**

- Refer to SKINTOP® PG accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL

**Technical data**

**ETIM** **Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 Refer to Appendix T21 for the installation dimensions and torques

**RAL** **Colour delivered**  
 Silver grey (RAL 7001)

**Material**  
 Body: Polyamide  
 Seal: CR

**IP** **Protection rating**  
 IP 68 - 5 bar

**Temperature range**  
 -20°C to +100°C

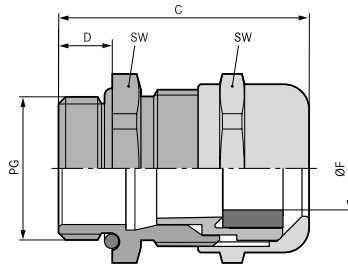
Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® BT silver grey</b>						
53015410	9	3,5 - 8	19	42.9	8	100
53015420	11	4 - 10	22	47.7	8	100
53015430	13,5	5 - 12	24	52.0	9	50
53015440	16	9 - 14	27	55.9	10	50
53015450	21	13 - 18	33	64.4	11	50

Photographs are not to scale and do not represent detailed images of the respective products.

SKINTOP® PG nickel-plated brass cable glands • Easy to install



## SKINTOP® MS / SKINTOP® MSR



### Benefits

- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

### Application range

#### SKINTOP® MS

- In areas where mechanical and chemical stability are critical
- Chemical industry
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

#### SKINTOP® MSR

- With reducing seal insert, to seal cables with smaller outer diameters.

### Product Make-up

- PG connection thread

### Note

- Counter nut to be used: SKINDICHT® SM
- Refer to SKINTOP® PG accessories for suitable accessories

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Refer to Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



#### Protection rating

IP 68 - 10 bar



#### Temperature range

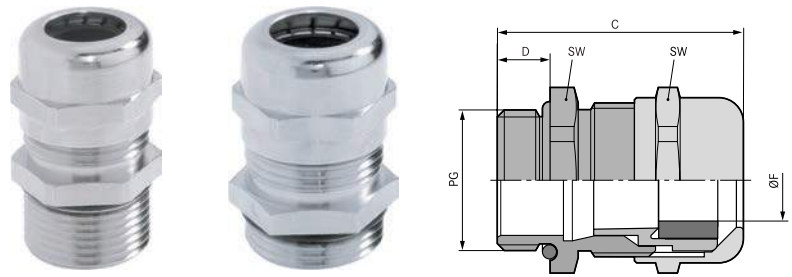
dynamic -25 °C up to + 100 °C  
static -40 °C up to +100 °C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS</b>						
52015700	MS 7	2 - 6.5	14	25.0	5	100
52015710	MS 9	4 - 8	17	29.0	6	100
52015720	MS 11	4 - 10	20	32.0	6	50
52015730	MS 13,5	5 - 12	22	34.0	6.5	50
52015740	MS 16	8 - 14	24	35.0	6.5	50
52015750	MS 21	11 - 18	30	40.0	7	25
52015760	MS 29	16 - 25	40	48.0	8	25
52015765	MS 36	19 - 32	50	62.0	15	10
52015766	MS 42	28 - 38	57	62.0	15	5
52015767	MS 48	34 - 44	64	62.0	15	5
<b>SKINTOP® MSR</b>						
52015770	MSR 7	2 - 5	14	25.0	5	100
52015780	MSR 9	2 - 6	17	29.0	6	100
52015790	MSR 11	3 - 7	20	32.0	6	50
52015800	MSR 13,5	4 - 9	22	34.0	6.5	50
52015810	MSR 16	6 - 13	24	35.0	6.5	50
52015820	MSR 21	8 - 16	30	40.0	7	25
52015830	MSR 29	10.5 - 20	40	48.0	8	25
52015831	MSR 36	19 - 26	50	62.0	15	10
52015832	MSR 42	24 - 31	57	62.0	15	5
52015833	MSR 48	28 - 35	64	62.0	15	5

Photographs are not to scale and do not represent detailed images of the respective products.



SKINTOP® MS-XL / SKINTOP® MSR-XL



**Benefits**

- Especially for thick walls
- Maximum reliability
- Wide, variable clamping ranges
- Optimum strain relief

**Application range**

- SKINTOP® MS-XL**
- With long connection thread for applications involving a thicker wall.

**SKINTOP® MSR-XL**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Product Make-up**

- PG connection thread

**Note**

- Counter nut to be used: SKINDICHT® SM
- Refer to SKINTOP® PG accessories for suitable accessories

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Caution**

Refer to Appendix T21 for the installation dimensions and torques



**Material**

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



**Protection rating**

IP 68 - 10 bar



**Temperature range**

dynamic -25°C up to +100°C  
static -40°C up to +100°C

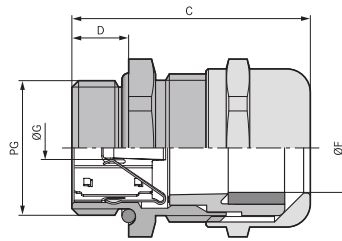
Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-XL</b>						
52115700	MS 7 XL	2 - 6.5	14	32.0	12	100
52115710	MS 9 XL	4 - 8	17	35.0	12	100
52115720	MS 11 XL	4 - 10	20	38.0	12	50
52115730	MS 13,5 XL	5 - 12	22	39.5	12	50
52115740	MS 16 XL	8 - 14	24	40.5	12	50
52115750	MS 21 XL	11 - 18	30	45.0	12	25
52115760	MS 29 XL	16 - 25	40	52.0	15	25
<b>SKINTOP® MSR-XL</b>						
52115770	MSR 7	2 - 5	14	32.0	12	100
52115780	MSR 9	2 - 6	17	35.0	12	100
52115790	MSR 11	3 - 7	20	38.0	12	50
52115800	MSR 13,5	4 - 9	22	39.5	12	50
52115810	MSR 16	6 - 13	24	40.5	12	50
52115820	MSR 21	8 - 16	30	45.0	12	25
52115830	MSR 29	10.5 - 20	40	52.0	15	25

Photographs are not to scale and do not represent detailed images of the respective products.

SKINTOP® PG nickel-plated brass cable glands • Easy to install



## SKINTOP® MS-SC



### Benefits

- Suitable for cables with and without inner sheath
- Also suitable for continuing the cable screen to another connection
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Few operation steps, easy to assemble

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation technology
- Telecommunication
- Measurement and control technology
- Industrial machinery and plant engineering

### Product Make-up

- PG connection thread

### Note

- Refer to SKINTOP® PG accessories for suitable accessories
- EMC counter nut, SKINDICHT® SM nut should be used to ensure optimum contact with painted, anodised or powder-coated housings

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

Refer to Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



#### Protection rating

IP 68 - 10 bar

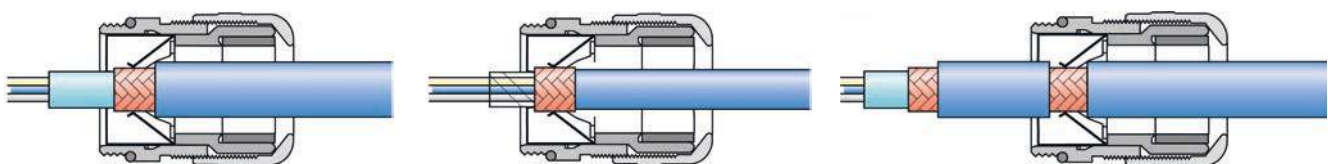


#### Temperature range

dynamic -25°C up to + 100°C  
static -40°C up to +100°C

Article number	Article designation / size	Clamping range ØF (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINTOP® MS-SC</b>				
53112210	MS-SC 9	3 - 8	6	50
53112220	MS-SC 11	4 - 10	6	50
53112230	MS-SC 13,5	5 - 12	6,5	25
53112240	MS-SC 16	8 - 14	6,5	25
53112250	MS-SC 21	11 - 17,5	7	25
53112260	MS-SC 29	16 - 25	8	10
53112270	MS-SC 36	19 - 32	15	5
<b>SKINTOP® MS-SC XL</b>				
53112310	MS-SC XL 9	3 - 8	12	50
53112320	MS-SC XL 11	4 - 10	12	50
53112330	MS-SC XL 13,5	5 - 12	12	25
53112340	MS-SC XL 16	8 - 14	12	25
53112350	MS-SC XL 21	11 - 17,5	12	25
53112360	MS-SC XL 29	16 - 25	15	10

Photographs are not to scale and do not represent detailed images of the respective products.

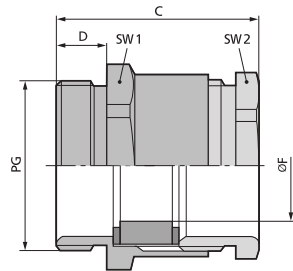




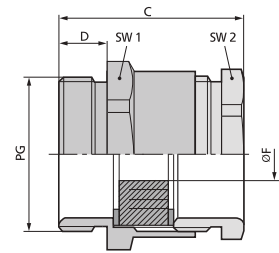
**SKINDICHT® SVRN / SKINDICHT® SVRE**



**SKINDICHT® SVRN**



**SKINDICHT® SVRE**



**Benefits**

**SKINDICHT® SVRN**

- High mechanical stability
- Optimum strain relief

**SKINDICHT® SVRE**

- With incised sealing ring for adjustment to several cable diameters
- Fewer sizes need to be kept in stock

**Application range**

**SKINDICHT® SVRN**

- Brass cable gland with hexagonal fitting, for fast assembly with a flat spanner.

**SKINDICHT® SVRE**

- Brass cable gland with hexagonal fitting and variable incised sealing ring.

**Product Make-up**

- PG connection thread

**Note**

**SKINDICHT® SVRN**

- Counter nut to be used: SKINDICHT® SM

**SKINDICHT® SVRE**

- Refer to SKINDICHT® EV for additional accessories
- Counter nut to be used: SKINDICHT® SM

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland



**Caution**

The installation dimensions can be found in appendix T21



**SKINDICHT® SVRE**

Available with long connection thread  
Available with PG 11 to 36 with VITON® incised ring



**Material**

**SKINDICHT® SVRN**

Body: nickel-plated brass

Sealing ring: CR

**SKINDICHT® SVRE**

Body: nickel-plated brass

Incised seal: CR



**Protection rating**

IP 54



**Temperature range**

**SKINDICHT® SVRN**

-20°C to +100°C

**SKINDICHT® SVRE**

-20°C to +80°C

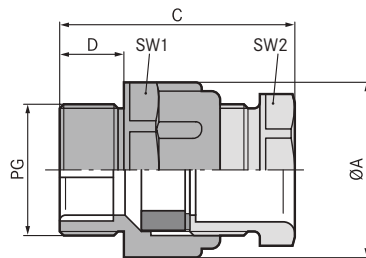
Article number	Article designation / size	Incised sealing ring ØF (mm)	PG size	Clamping range in mm	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SVRN</b>								
52000210	SVRN 7005/N		7	5	14 / 13	20.6	5	100
52020300	SVRN 7006/N		7	6	14 / 13	20.6	5	100
52020310	SVRN 7007/N		7	7	14 / 13	20.6	5	100
52020320	SVRN 9007/N		9	7	17 / 15	22.6	6	100
52020330	SVRN 9008/N		9	8	17 / 15	22.6	6	100
52000220	SVRN 9009/N		9	9	17 / 15	22.6	6	100
52020341	SVRN 11010/N		11	10	20 / 18	23.6	6	50
52000240	SVRN 13011/N		13.5	11	22 / 20	26.1	6.5	50
52000241	SVRN 13012/N		13.5	12	22 / 20	26.1	6.5	50
52000251	SVRN 16014/N		16	14	24 / 22	27.1	6.5	50
52000260	SVRN 21018/N		21	18	30 / 28	29.6	7	50
52000270	SVRN 29027/N		29	27	40 / 37	32.6	8	50
52000280	SVRN 36034/N		36	34	50 / 47	38.6	9	20
<b>SKINDICHT® SVRE</b>								
52005540	SVRE 9	5/8			17 / 15	22.6	6	100
52000310	SVRE 11	7 / 10 / 12.5			20 / 18	22.6	6	50
52000320	SVRE 13,5	7 / 10.5 / 13 / 16			22 / 20	26.1	6.5	50
52000330	SVRE 16	8 / 10.5 / 13.5 / 16			24 / 22	27.1	6.5	50
52000340	SVRE 21	11 / 15 / 18 / 20			30 / 28	29.6	7	50
52000350	SVRE 29	19 / 23 / 27 / 31			40 / 37	32.6	8	50
52000360	SVRE 36	25 / 28 / 31 / 35			50 / 47	38.6	9	20
52005550	SVRE 42	35.5 / 39 / 42.5 / 46			57 / 54	43.6	10	10
52005560	SVRE 48	40.5 / 44 / 47 / 50.5			64 / 60	45.1	10	10

Photographs are not to scale and do not represent detailed images of the respective products.  
Viton® is a registered trademark of DuPont de Nemours





## SKINDICHT® SVFK



### Benefits

- Economical type
- Lateral sealing lips fit automatically around various cable dimensions
- Cable-specific seal dimensions are no longer necessary
- Tolerance
- Large opening allows clamping of up to two flat cables

### Application range

- For inserting flat cables
- Conveyor systems
- Pumps
- Lifts
- Control cabinet manufacturing

### Product Make-up

- PG connection thread

### Note

- For suitable flat cables, refer to ÖLFLEX® LIFT F for indoor applications or ÖLFLEX® CRANE F for outdoor applications

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

The installation dimensions can be found in appendix T21



#### Colour delivered

Light grey (RAL 7035)



#### Material

Body: Polystyrene  
Special sealing insert: CR



#### Protection rating

IP 54



#### Temperature range

-20°C to +60°C

Article number	Article designation / size	Min./max. flat cable width	Min./max. cable thickness (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SVFK</b>							
52005470	SVFK 16	-- 15.0	-- 5.0	27 / 23	39.5	10	25
52005680	SVFK 21	10.0 - 20.5	3.0 - 8.0	32 / 30	43.0	11	25
52005690	SVFK 29	15.0 - 27.0	4.0 - 11.5	42 / 41	45.0	11	25
52005700	SVFK 36	25.0 - 34.0	4.0 - 11.5	53 / 50	51.0	13	10
52005710	SVFK 42	30.0 - 40.0	5.0 - 12.0	60 / 55	54.0	13	5
52005720	SVFK 48	35.0 - 45.0	5.0 - 12.0	65 / 60	55.0	15	5

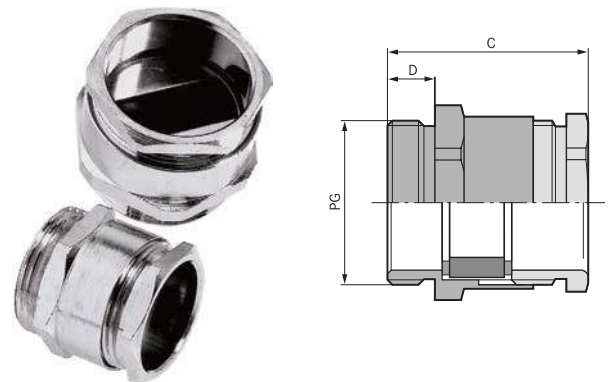
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® GMK refer to page 816



**SKINDICHT® SVF**



**Benefits**

- High mechanical stability
- Lateral sealing lips fit automatically around various cable dimensions
- Optimum strain relief
- Large opening allows clamping of up to two flat cables

**Application range**

- For inserting flat cables
- Conveyor systems
- Pumps
- Lifts
- Control cabinet manufacturing

**Product Make-up**

- PG connection thread

**Note**

- For suitable flat cables, refer to ÖLFLEX® LIFT F for indoor applications or ÖLFLEX® CRANE F for outdoor applications

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 Available with long connection thread

**Material**  
 Body: nickel-plated brass  
 Special sealing insert: CR

**Protection rating**  
 IP 54

**Temperature range**  
 -20°C to +100°C

Article number	Article designation / size	Min./max. flat cable width	Min./max. cable thickness (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SVF</b>							
52005480	PG 16	-- 16.0	-- 5.0	24 / 22	27.5	6.5	25
52005490	PG 21	9.0 - 21.0	3.0 - 8.0	30 / 28	30.0	7	25
52005500	PG 29	14.0 - 30.0	4.0 - 11.5	40 / 37	31.5	8	10
52005510	PG36	24.0 - 40.0	4.0 - 11.5	50 / 47	36.0	9	10
52005520	PG 42	29.0 - 45.0	5.0 - 12.0	57 / 54	40.0	10	5
52005530	PG 48	34.0 - 50.0	5.0 - 12.0	64 / 60	41.5	10	5

Photographs are not to scale and do not represent detailed images of the respective products.

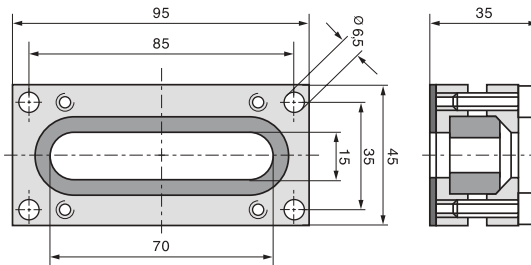
**Accessories**

- SKINDICHT® SM refer to page 817
- SKINDICHT® SM-PE refer to page 817

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



## SKINDICHT® FL



### Benefits

- The seal profiles enable many problems to be solved
- Several flat and round cables can be fed through at the same time
- Through the internal conical contour in the upper part of the housing, the sealing inserts are pressed onto the cable

### Application range

- Cable flange that can be used universally, mainly for large flat cables.
- Lifts
- Conveyor systems
- Crane and conveying machinery
- Power chains

### Note

- When assembled professionally and properly, the protection class of IP 65 can be reached
- For suitable flat cables, refer to ÖLFLEX® LIFT F for indoor applications or ÖLFLEX® CRANE F for outdoor applications

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Material

Body: aluminium, special untreated alloy  
Screws and spring washers: zinc-plated steel  
Seal: NBR



#### Protection rating

IP 65



#### Temperature range

-20°C to +100°C

Article number	Article designation / size	Cable pass length x width in mm	Dimensions: L x W x H (mm)	Pieces / PU
<b>SKINDICHT® FL</b>				
52008010	FL 1	70 x 12 + 63 x 7	45 x 35 x 95	1
52008020	FL 2	49 x 4,5	45 x 35 x 95	1
52008030	FL 3	49 x 4,5 + 49 x 4,5 (49 x 11,5)	45 x 35 x 95	1
52008040	FL 4	63 x 12,0 (+0,2)	45 x 35 x 95	1
52008050	FL 5	70 x 12	45 x 35 x 95	1

Photographs are not to scale and do not represent detailed images of the respective products.



FL 1  
1 x 70 x 12 mm  
1 x 63 x 7 mm



FL 4  
63 x 12 mm



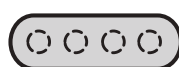
FL 2  
49 x 4,5 mm



FL 5  
70 x 12 mm



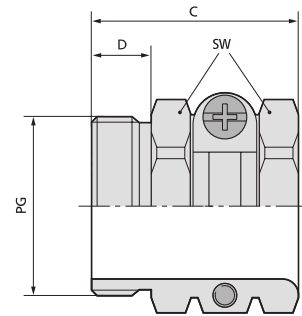
FL 3  
2 x 49 x 4,5 mm  
1 x 49 x 11,5 mm



e.g. 4 x ÖLFLEX® CLASSIC 110  
3 x 1,5 mm<sup>2</sup> / Ø 6,7 mm



**SKINDICHT® SH**



**Benefits**

- Seawater-resistant
- Anti-magnetic
- Corrosion-resistant
- Stable and safe strain relief

**Application range**

- Extremely robust and solid strain relief cable gland
- Building sites
- Plant engineering
- Electric motor manufacturing

**Product Make-up**

- PG connection thread

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 Available with long connection thread

**Material**  
 Body: nickel-plated brass

**Protection rating**  
 IP 20

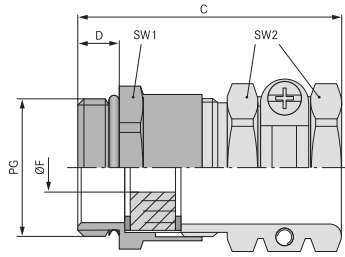
**Temperature range**  
 -20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Max. fitting size for installation (mm)	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SH</b>							
52000830	SH 7	8 - 10	15	22	17,5	5,5	50
52000840	SH 9	10 - 12,5	17	25	20,5	6	50
52000850	SH 11	11 - 15	20	28	21,5	6	50
52000860	SH 13,5	14 - 16,5	22	32	24,0	7,5	25
52000870	SH 16	15 - 18	24	35	26,0	7,5	25
52000880	SH 21	18 - 23,5	30	46	29,0	8	25
52000890	SH 29	23 - 31	41	58	33,0	8	10
52000900	SH 36	29 - 40,5	50	70	36,5	9,5	10
52000910	SH 42	34 - 45	57	78	38,0	10	5
52000920	SH 48	39 - 50	64	86	39,5	11,5	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® SHZ



### Benefits

- With incised sealing ring for adjustment to several cable diameters
- High strain relief
- Robust
- For cables with large outer diameters

### Application range

- Compact brass cable gland for reliable strain relief, solid, for large cable diameters.

### Product Make-up

- PG connection thread

### Note

- SKINDICHT® SHZ-XL is similar to the SKINDICHT® SHZ, but has an extended connection thread for thick walls
- Refer to SKINDICHT® EV for additional accessories

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Caution

The installation dimensions can be found in appendix T21



#### Material

Body: nickel-plated brass  
Sealing: CR  
O-ring: NBR



#### Protection rating

IP 55



#### Temperature range

-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHZ</b>							
52005590	SHZ 7	5 - 6	21	14 / 15	30.0	5	50
52005600	SHZ 9	7,5 - 8,5	25	17 / 17	34.0	6	50
52000930	SHZ 11	9,5 - 12	28	20 / 20	35.0	6	25
52000940	SHZ 13,5	12,5 - 14	32	22 / 22	40.0	6.5	25
52000950	SHZ 16	13,5 - 16	35	24 / 24	42.0	6.5	25
52000960	SHZ 21	15,5 - 21	46	30 / 30	47.0	7	25
52000970	SHZ 29	21,5 - 27,5	58	40 / 41	53.0	8	10
52000980	SHZ 36	27 - 34	70	50 / 50	61.0	9	10
52005610	SHZ 42	34 - 43	78	57 / 57	66.0	10	5
52005620	SHZ 48	38 - 48	86	64 / 64	68.0	10	5
52023717	SHZ 9	7,5 - 8,5	25	17 / 17	43.0	10	50
52023718	SHZ 11	9,5 - 12	28	20 / 20	44.0	10	25
52023719	SHZ 13,5	12,5 - 14	32	22 / 22	48.5	10	25
52023720	SHZ 16	13,5 - 16	35	24 / 24	50.5	10	25
52024840	SHZ 21	15,5 - 21	46	30 / 30	55.0	11	25
52025530	SHZ 29	21,5 - 27,5	58	40 / 41	60.0	13	10
52023721	SHZ 36	27 - 34	70	50 / 50	67.0	13	10
52023722	SHZ 42	34 - 43	78	57 / 57	71.0	14	5
52023723	SHZ 48	38 - 48	86	64 / 64	73.0	14	5

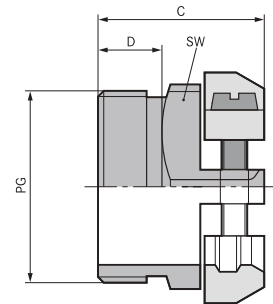
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817



**SKINDICHT® SK**



**Benefits**

- Reliable strain relief
- Wide clamping range

**Application range**

- Cable gland with two solid brass saddle clamps
- Connectors
- Switches
- Control panels

**Product Make-up**

- PG connection thread

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 Available with long connection thread

**Material**  
 Body: nickel-plated brass

**Protection rating**  
 IP 20

**Temperature range**  
 -20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Max. fitting size for installation (mm)	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SK</b>							
52004230	SK 9	6 - 12	19	24	16.5	6	50
52004240	SK 11	7 - 15	21	27	16.5	6	50
52004250	SK 13,5	12 - 16,5	22	30	18.5	7.5	25
52004260	SK 16	13 - 18	24	33	19.0	7.5	25
52004270	SK 21	15 - 23	30	42	22.5	8	25
51712740	SK 29	20 - 31	41	58	26.0	8	10

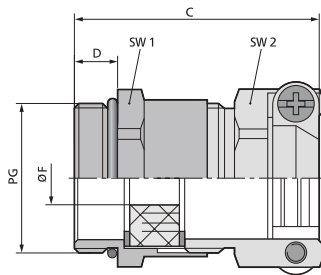
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM refer to page 817



## SKINDICHT® SKZ



### Benefits

- With incised sealing ring for adjustment to several cable diameters
- High strain relief
- High mechanical stability

### Application range

- Saddle clamp strain relief gland for harsh application conditions.
- Building sites
- Plant engineering
- Electric motor manufacturing

### Product Make-up

- PG connection thread

### Note

- SKINDICHT® SKZ-XL is similar to the SKINDICHT® SKZ, but has an extended connection thread for thick walls
- Refer to SKINDICHT® EV for additional accessories

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000441 ETIM 5.0 Class-Description: Cable screw gland
	<b>Caution</b> The installation dimensions can be found in appendix T21
	<b>Material</b> Body: nickel-plated brass Incised sealing ring: CR O-ring: NBR
	<b>Protection rating</b> IP 55
	<b>Temperature range</b> -20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SKZ</b>							
52004280	SKZ 9	6 - 10	24	17 / 17	30.0	6	50
52004290	SKZ 11	7 - 13	27	20 / 21	30.0	6	50
52004300	SKZ 13,5	12 - 14	30	22 / 22	34.0	6.5	25
52004310	SKZ 16	13 - 16	33	24 / 24	35.0	6.5	25
52004320	SKZ 21	15 - 21	42	30 / 30	41.0	7	25
52005570	SKZ 29	20 - 29	58	40 / 41	46.0	8	10
<b>SKINDICHT® SKZ-XL</b>							
52005575	SKZ 9	6 - 10	24	17 / 17	39.0	15	50
52005576	SKZ 11	7 - 13	27	20 / 21	39.0	15	50
52005577	SKZ 13,5	12 - 14	30	22 / 22	42.5	15	25
54000043	SKZ 16	13 - 16	33	24 / 24	43.5	15	25
54000011	SKZ 21	15 - 21	42	30 / 30	49.0	15	25
54000098	SKZ 29	20 - 29	58	40 / 41	53.0	15	10

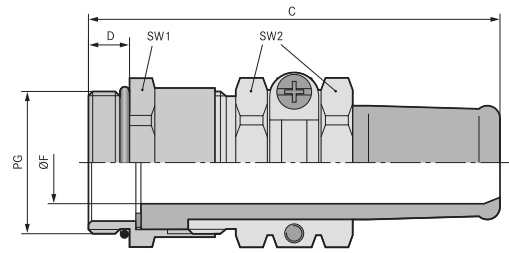
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817



SKINDICHT® SR



**Benefits**

- Reliable bending and anti-kink protection
- High strain relief
- Robust
- For cables with large outer diameters
- High degree of protection

**Application range**

- Cables for electrical appliances and machinery that are moved under normal use must be protected against excessive bending as required in accordance with VDE 0700-1
- Handheld device
- Portable equipment
- Building sites
- Moving machine parts

**Product Make-up**

- PG connection thread

**Note**

- For EMC version, refer to SKINDICHT® SRE

**Technical data**

**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland

**Caution**  
The installation dimensions can be found in appendix T21

**On request**  
Available with long connection thread

**Material**  
Body: nickel-plated brass  
O-ring: NBR  
Anti-kink protection: CR

**Protection rating**  
IP 65

**Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SR</b>							
52000990	SR 07/05	3,5 - 5	23	14 / 15	50.0	5	50
52001000	SR 09/07	5,5 - 7	25	17 / 17	52.0	6	50
52001010	SR 11/07	5,5 - 7	28	20 / 20	56.0	6	25
52001020	SR 11/09	7,5 - 9	28	20 / 20	56.0	6	25
52001030	SR 13/09	7,5 - 9	32	22 / 22	62.0	6.5	25
52001040	SR 13/11	9 - 11	32	22 / 22	62.0	6.5	25
52001050	SR 13/13	11 - 13	32	22 / 22	62.0	6.5	25
52001060	SR 16/13	11,5 - 13	35	24 / 24	67.0	6.5	25
52001070	SR 16/15	13 - 15	35	24 / 24	67.0	6.5	25
52001080	SR 21/15	13,5 - 15	46	30 / 30	79.0	7	25
52001090	SR 21/17	15 - 17	46	30 / 30	79.0	7	25
52001100	SR 21/19	17 - 19	46	30 / 30	79.0	7	25
52001110	SR 21/20	18 - 20	46	30 / 30	79.0	7	25
52001120	SR 29/20	18 - 20	59	40 / 41	91.0	8	10
52001130	SR 29/23	21 - 23	59	40 / 41	91.0	8	10
52001140	SR 29/25	23 - 25	59	40 / 41	91.0	8	10
52001150	SR 36/26	23 - 26	70	50 / 50	110.0	9	5
52001160	SR 36/30	27 - 30	70	50 / 50	110.0	9	5
52001170	SR 36/33	30 - 33	70	50 / 50	110.0	9	5
52001180	SR 36/35	32 - 35	70	50 / 50	110.0	9	5
52001190	SR 42/35	32 - 35	75	57 / 57	114.0	10	5
52001200	SR 42/38	35 - 38	75	57 / 57	114.0	10	5
52001210	SR 42/40	36 - 40	75	57 / 57	114.0	10	5
52001220	SR 48/40	36 - 40	83	64 / 64	119.0	10	1
52001230	SR 48/44	40 - 44	83	64 / 64	119.0	10	1

Photographs are not to scale and do not represent detailed images of the respective products.

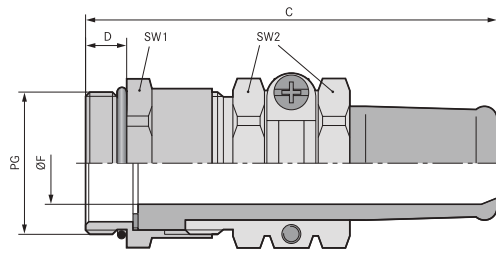
**Accessories**

- SKINDICHT® SM refer to page 817
- SKINDICHT® SNR refer to page 832





## SKINDICHT® SR-SV



### Benefits

- For high temperatures
- Resistant to oils, solvents, acids and chemicals
- Seawater-resistant
- High strain relief
- Robust

### Application range

- Special cable gland with VITON® anti-kink sleeve. Our own reinforced acid-resistant VITON® receptacle does not show any effects of aging even after an extended period of use at a temperature of +165°C.
- Machine and turbine manufacturing
- Power plant engineering
- Laboratory

### Product Make-up

- PG connection thread

### Note

- EMC version is available upon request

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 Available with long connection thread

**Material**  
 Body: nickel-plated brass  
 O-ring: FKM  
 Anti-kink protection: FKM

**Protection rating**  
 IP 65

**Temperature range**  
 -15°C to +165°C

Article number	Article designation / size	Clamping range ØF (mm)	Max. fitting size for installation (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SR-SV</b>							
52023620	SR-SV 11/07	5,5 - 7	28	20 / 20	56.0	6	25
52023621	SR-SV 11/09	7,5 - 9	28	20 / 20	56.0	6	25
52023622	SR-SV 13/09	7,5 - 9	32	22 / 22	62.0	6.5	25
52023623	SR-SV 13/11	9 - 11	32	22 / 22	62.0	6.5	25
52023624	SR-SV 13/13	11 - 13	32	22 / 22	62.0	6.5	25
52023625	SR-SV 16/13	11,5 - 13	35	24 / 24	67.0	6.5	10
52023626	SR-SV 16/15	13 - 15	35	24 / 24	67.0	6.5	10
52023627	SR-SV 21/15	13,5 - 15	40	30 / 30	79.0	7	10
52023628	SR-SV 21/17	15 - 17	46	30 / 30	79.0	7	10
52023629	SR-SV 21/19	17 - 19	46	30 / 30	79.0	7	10

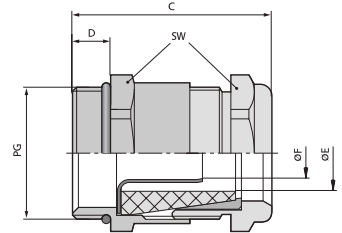
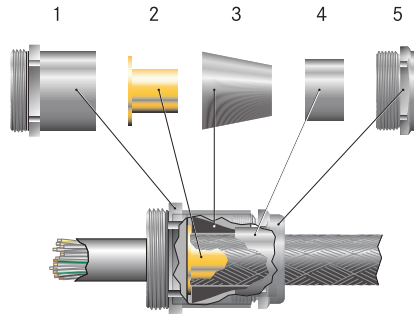
Viton® is a registered trademark of DuPont de Nemours  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817



SKINDICHT® SHVE



Benefits

- Optimum, low-resistance 360° screen contact
- High degree of protection
- High strain relief

Application range

- Earthing gland, for applications where electrical interference fields can occur.
- Medical engineering
- Frequency converters
- Airports
- Measurement and control technology

Product Make-up

- 1 fitting
- 2 earth sleeves
- 3 sealing cones
- 4 cone, brass
- 5 compression screws

Note

- EMC counter nut, SKINDICHT® SM nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Example order identification:  
SHVE 13.5 / 9 / 9 / 5  
13.5 = PG thread compression screw  
9 = PG connection thread  
9 = Clear width of sealing cone  
5 = Clear width earthing sleeve

Technical data

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- Material**  
Body: nickel-plated  
Earthing sleeve: blank brass  
Special sealing cone: CR  
O-ring: NBR
- Protection rating**  
IP 68 - 10 bar
- Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Outer sheath Ø, min./ max. (mm)	Min./max. inner sheath Ø (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHVE</b>							
52010400	9/9/6/3,2	4.0 / 5,8	2,2 / 3,2	17	28.5	6	25
52010405	9/9/7/3,2	5.0 / 6,8	2,2 / 3,2	17	28.5	6	25
52010415	9/9/6/3,6	4.0 / 5,8	2,6 / 3,6	17	28.5	6	25
52010420	9/9/7/3,6	5.0 / 6,8	2,6 / 3,6	17	28.5	6	25
52010440	11/11/7/4,5	5.0 / 6,8	3,5 / 4,5	20	31.0	6	25
52010450	11/11/9/4,5	6,8 / 8,8	3,5 / 4,5	20	31.0	6	25
52010460	13,5/9/9/5	6,8 / 8,8	3,5 / 5,0	22	32.5	5.5	25
52010490	13,5/11/9/5	6,8 / 8,8	3,5 / 5,0	22	32.5	5.5	25
52010470	13,5/9/9/6	6,8 / 8,8	4,5 / 6,0	22	32.5	5.5	25
52010500	13,5/11/9/6	6,8 / 8,8	4,5 / 6,0	22	32.5	5.5	25
52005080	13,5/13,5/9/6	6,8 / 8,8	4,5 / 6,0	22	37.0	6	25
52010480	13,5/9/11/7	8,5 / 10,8	5,5 / 7,0	22	32.5	5.5	25
52010510	13,5/11/11/7	8,5 / 10,8	5,5 / 7,0	22	32.5	5.5	25
52005090	13,5/13,5/11/7	8,5 / 10,8	5,5 / 7,0	22	37.0	6	25
52010520	16/11/11/8	8,5 / 10,8	6,0 / 8,0	24	35.0	5.5	25
52010560	16/13,5/11/8	8,5 / 10,8	6,0 / 8,0	24	35.5	6	25
52005100	16/16/11/8	8,5 / 10,8	6,0 / 8,0	24	37.5	6	25
52010530	16/11/13/9	10,8 / 12,8	7,0 / 9,0	24	35.0	5.5	25
52010570	16/13,5/13/9	10,8 / 12,8	7,0 / 9,0	24	35.5	6	25
52005110	16/16/13/9	10,8 / 12,8	7,0 / 9,0	24	37.5	6	25
52010540	16/11/13/10	10,8 / 12,8	8,0 / 10,0	24	35.0	5.5	25
52010580	16/13,5/13/10	10,8 / 12,8	8,0 / 10,0	24	35.5	6	25
52005120	16/16/13/10	10,8 / 12,8	8,0 / 10,0	24	37.5	6	25
52010550	16/11/15/11	12,0 / 14,8	9,0 / 11,0	24	35.0	5.5	25
52010590	16/13,5/15/11	12,0 / 14,8	9,0 / 11,0	24	35.5	6	25
52005130	16/16/15/11	12,0 / 14,8	9,0 / 11,0	24	37.5	6	25
52010600	21/16/16/12	14,0 / 15,8	10,0 / 12,0	30	38.5	6.5	25
52005140	21/21/16/12	14,0 / 15,8	10,0 / 12,0	30	43.5	7	25
52010610	21/16/16/13	14,0 / 15,8	11,0 / 13,0	30	38.5	6,5	25
52005150	21/21/16/13	14,0 / 15,8	11,0 / 13,0	30	43.5	7	25
52010620	21/16/18/14	15,8 / 17,8	12,0 / 14,0	30	38.5	6,5	25
52005160	21/21/18/14	15,8 / 17,8	12,0 / 14,0	30	43.5	7	25
52010630	21/16/18/15	15,8 / 17,8	13,0 / 15,0	30	38.5	6,5	25
52005170	21/21/18/15	15,8 / 17,8	13,0 / 15,0	30	43.5	7	25
52010640	21/16/20/16	17,5 / 19,8	14,0 / 16,0	30	38.5	6,5	25
52005180	21/21/20/16	17,5 / 19,8	14,0 / 16,0	30	43.5	7	25
52005190	29/29/22/17	19,5 / 21,8	15,0 / 17,0	40	47.5	8	10
52005200	29/29/22/18	19,5 / 21,8	16,0 / 18,0	40	47.5	8	10
52005210	29/29/24/19	21,5 / 23,8	17,0 / 19,0	40	47.5	8	10
52005240	29/29/26/19	23,5 / 25,8	17,0 / 19,0	40	47.5	8	10

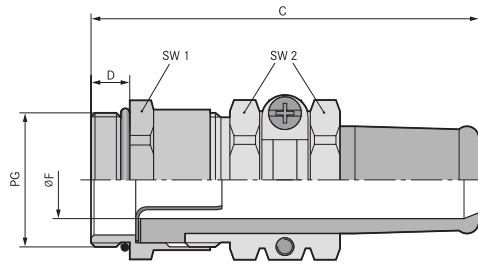
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- SKINDICHT® SM refer to page 817
- SKINDICHT® SM-PE refer to page 817



## SKINDICHT® SRE



### Benefits

- Perfect seal with anti-kink protection
- Optimum, low-resistance 360° screen contact
- Cable-protecting strain relief
- Gentle cable clamping
- High degree of protection

### Application range

- Earthing gland with additional anti-kink protection. For applications where electrical interference fields can occur.
- Moving machine parts
- Conveyor and transport systems
- Production lines
- Measurement and control technology

### Product Make-up

- PG connection thread

### Note

- EMC counter nut, SKINDICHT® SM nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- PVC sheath

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 Available with longer connection thread

**Material**  
 Body: nickel-plated brass  
 Earthing sleeve: plain brass  
 Anti-kink sleeve: CR/NBR  
 O-ring: NBR

**Protection rating**  
 IP 65

**Temperature range**  
 -20°C to +80°C

Article number	Article designation / size	Outer sheath Ø, min./max. (mm)	Min./max. inner sheath Ø (mm)	SW1/SW2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SRE</b>							
52010780	13,5/9/9/6	7,5 / 9.0	4,5 / 6.0	22 / 22	60.0	5.5	25
52010790	13,5/9/11/7	9.0 / 11.0	5,5 / 7.0	22 / 22	60.0	5.5	25
52010800	13,5/11/9/6	7,5 / 9.0	4,5 / 6.0	22 / 22	60.0	5.5	25
52010810	13,5/11/11/7	9.0 / 11.0	5,5 / 7.0	22 / 22	60.0	5.5	25
52005310	13,5/13,5/9/6	7,5 / 9.0	4,5 / 6.0	22 / 22	60.0	6.5	25
52005320	13,5/13,5/11/7	9.0 / 11.0	5,5 / 7.0	22 / 22	60.0	6.5	25
52010820	16/11/13/9	11.0 / 13.0	7.0 / 9.0	24 / 24	65.0	5.5	25
52010830	16/11/13/10	11.0 / 13.0	8.0 / 10.0	24 / 24	65.0	5.5	25
52010840	16/11/15/11	13.0 / 15.0	9.0 / 11.0	24 / 24	65.0	5.5	25
52010850	16/13,5/13/9	11.0 / 13.0	7.0 / 9.0	24 / 24	67.0	6	25
52010860	16/13,5/13/10	11.0 / 13.0	8.0 / 10.0	24 / 24	67.0	6	25
52010870	16/13,5/15/11	13.0 / 15.0	9.0 / 11.0	24 / 24	67.0	6	25
52005330	16/16/13/9	11.0 / 13.0	7.0 / 9.0	24 / 24	65.0	6.5	25
52005340	16/16/13/10	11.0 / 13.0	8.0 / 10.0	24 / 24	65.0	6.5	25
52005350	16/16/15/11	13,5 / 15.0	9.0 / 11.0	24 / 24	65.0	6.5	25
52010880	21/16/15/12	13,5 / 15.0	10.0 / 12.0	30 / 30	78.0	6.5	25
52010890	21/16/17/14	15.0 / 17.0	12.0 / 14.0	30 / 30	78.0	6.5	25
52010900	21/16/19/15	17.0 / 19.0	13.0 / 15.0	30 / 30	78.0	6.5	25
52010910	21/16/20/16	18.0 / 20.0	14.0 / 16.0	30 / 30	78.0	6.5	25
52005360	21/21/15/12	13.0 / 15.0	10.0 / 12.0	30 / 30	78.0	7	25
52005370	21/21/17/14	15.0 / 17.0	12.0 / 14.0	30 / 30	78.0	7	25
52005380	21/21/19/15	17.0 / 19.0	13.0 / 15.0	30 / 30	78.0	7	25
52005390	21/21/20/16	18.0 / 20.0	14.0 / 16.0	30 / 30	78.0	7	25
52005400	29/29/20/17	19.0 / 20.0	15.0 / 17.0	40 / 41	90.0	8	10
52005410	29/29/23/19	22.0 / 23.0	17.0 / 19.0	40 / 41	90.0	8	10
52005411	36/36/26/22	23,5 / 26.0	20.0 / 22.0	50 / 50	109.0	9	5
52005412	36/36/30/24	27.0 / 30.0	22.0 / 24.0	50 / 50	109.0	9	5
52003585	36/36/30/26	27.0 / 30.0	24.0 / 26.0	50 / 50	109.0	9	5
52005414	36/36/33/28	30.0 / 33.0	26.0 / 28.0	50 / 50	109.0	9	5
52023586	36/36/35/30	32.0 / 35.0	28.0 / 30.0	50 / 50	109.0	9	5

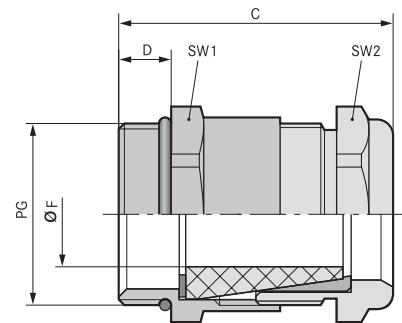
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817
- SKINDICHT® SNR refer to page 832
- SKINDICHT® SM-PE refer to page 817



**SKINDICHT® SHV**



**Benefits**

- Watertight
- Gentle cable clamping
- Robust
- High strain relief

**Application range**

- Watertight cable gland with conical sealing element.
- Pumps
- Floater switches

**Product Make-up**

- PG connection thread

**Note**

- Suitable accessory: SKINDICHT® SHV sealing cones
- Example order designation:  
SHV 13.5/9/9  
13.5 = PG thread of compression screw  
9 = PG connection thread  
9 = clear opening of sealing cone

**Technical data**



**Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Caution**  
The installation dimensions can be found in appendix T21



**Material**  
Body: nickel-plated brass  
Sealing cone: CR  
O-ring: NBR



**Protection rating**  
IP 68 - 10 bar



**Temperature range**  
-20°C to +80°C

Article number	Article designation / size	Clamping range ØF (mm)	SW 1/2 mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHV</b>						
52002530	SHV 7/7/5	3,8 - 4,8	14	26,0	5	50
52002550	SHV 9/9/6	4,8 - 5,8	17	28,5	6	50
52002540	SHV 9/9/7	5,8 - 6,8	17	28,5	6	50
52002570	SHV 11/11/7	5,8 - 6,8	20	31,0	6	25
52002560	SHV 11/11/9	6,8 - 8,8	20	31,0	6	25
52010650	SHV 13,5/9/9	6,5 - 8,8	22	33,0	6,5	25
52010660	SHV 13,5/9/11	8,5 - 10,8	22	33,0	6,5	25
52010670	SHV 13,5/11/9	6,8 - 8,8	22	33,0	6,5	25
52010680	SHV 13,5/11/11	8,5 - 10,8	22	33,0	6,5	25
52002600	SHV 13,5/13,5/9	6,8 - 8,8	22	33,0	6,5	25
52002590	SHV 13,5/13,5/11	8,5 - 10,8	22	33,0	6,5	25
52010690	SHV 16/11/11	8,5 - 10,8	24	35,0	6,5	25
52010700	SHV 16/11/13	10,8 - 12,8	24	35,0	6,5	25
52010710	SHV 16/11/15	13,8 - 14,8	24	35,0	6,5	25
52010720	SHV 16/13,5/11	8,5 - 10,8	24	35,0	6,5	25
52010730	SHV 16/13,5/13	10,8 - 12,8	24	35,0	6,5	25
52010740	SHV 16/13,5/15	13,8 - 14,8	24	35,0	6,5	25
52002640	SHV 16/16/11	8,5 - 10,8	24	35,0	6,5	25
52002630	SHV 16/16/13	10,8 - 12,8	24	35,0	6,5	25
52002620	SHV 16/16/15	13,8 - 14,8	24	35,0	6,5	25
52010750	SHV 21/16/16	13,3 - 15,6	30	40,0	7	25
52010760	SHV 21/16/18	15,8 - 17,8	30	38,0	7	25
52010770	SHV 21/16/20	17,5 - 19,8	30	38,0	7	25
52002670	SHV 21/21/16	14,8 - 15,8	30	38,0	7	25
52002660	SHV 21/21/18	15,8 - 17,8	30	38,0	7	25
52002650	SHV 21/21/20	17,5 - 19,8	30	38,0	7	25
52002710	SHV 29/29/22	19,5 - 21,8	40	44,5	8	10
52002700	SHV 29/29/24	21,8 - 23,8	40	44,5	8	10
52002690	SHV 29/29/26	23,8 - 25,8	40	44,5	8	10

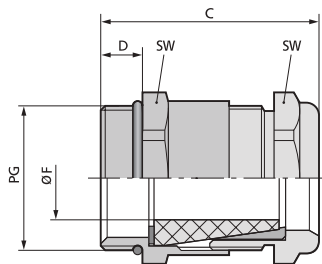
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM refer to page 817



**SKINDICHT® SHV VITON®**



**Benefits**

- For high temperatures
- Resistant to oils, solvents, acids and chemicals
- Watertight
- High strain relief
- Robust

**Application range**

- Watertight and high temperature-resistant cable gland with special conical VITON® sealing element
- Brickworks
- Sewage treatment plants
- Car wash sites

**Product Make-up**

- 1 fitting
- 2 washers
- 3 VITON® sealing cone
- 4 brass cones
- 5 compression screws

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description: Cable screw gland
- Caution**  
The installation dimensions can be found in appendix T21
- Material**  
Body: nickel-plated brass  
Sealing cone: FKM  
O-ring: FKM
- Protection rating**  
IP 68 - 10 bar
- Temperature range**  
-15°C to +200°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® SHV VITON®</b>						
52024934	SHV-V 7/7/5	3,8 - 4,8	14	26,0	5	50
54000015	SHV-V 9/9/6	4,8 - 5,8	17	28,5	6	50
52024935	SHV-V 9/9/7	5,8 - 6,8	17	28,5	6	50
52024936	SHV-V 11/11/7	5,8 - 6,8	20	31,0	6	25
52024937	SHV-V 11/11/9	6,8 - 8,8	20	31,0	6	25
52024970	SHV-VITON® 13,5/9/11	8,5 - 10,8	22	33,0	6,5	25
52024968	SHV-V 13,5/11/9	6,8 - 8,8	22	33,0	6,5	25
52024969	SHV-V 13,5/11/11	8,5 - 10,8	22	33,0	6,5	25
52024961	SHV-V 13,5/13,5/9	6,8 - 8,8	22	33,0	6,5	25
52024962	SHV-V 13,5/13,5/11	8,5 - 10,8	22	33,0	6,5	25
52024971	SHV-V 16/11/13	10,8 - 12,8	24	35,0	6,5	25
52024973	SHV-V 16/13,5/13	10,8 - 12,8	24	35,0	6,5	25
52024964	SHV-V 16/16/13	10,8 - 12,8	24	35,0	6,5	25
52024965	SHV-V 16/16/15	13,8 - 14,8	24	35,0	6,5	25
52024966	SHV-V 21/21/18	15,8 - 17,8	30	38,0	7	25
52024967	SHV-V 21/21/20	17,5 - 19,8	30	38,0	7	25
52024974	SHV-V 29/29/22	19,5 - 21,8	40	44,5	8	10

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

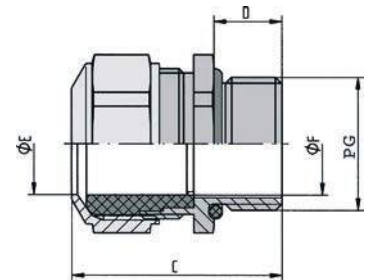
- SKINDICHT® SM refer to page 817



**SKINDICHT® CN**

**Info**

- Flexible down to -40°C



**Benefits**

- For high temperatures up to +200 °C
- Resistant to oils, solvents, acids and chemicals
- Seawater-resistant
- For high mechanical stress
- High corrosion-resistance

**Application range**

- Chromium nickel steel cable gland with VITON® seal, specially designed for use under tough conditions
- Pharmaceutical and petrochemical industry
- Offshore sector
- Wind power plants
- Brickworks

**Product Make-up**

- PG connection thread

**Note**

- Refer to the chart to find a suitable counter-nut for SKINDICHT® SM CrNi

**Technical data**

**Classification**  
 ETIM 5.0 Class-ID: EC000441  
 ETIM 5.0 Class-Description:  
 Cable screw gland

**Caution**  
 The installation dimensions can be found in appendix T21

**On request**  
 TPE seal

**Material**  
 Body: Chrome-nickel steel in accordance with DIN, material no. 1.4305  
 Seal: FPM  
 O-ring: FPM

**Protection rating**  
 IP 68 - 5 bar

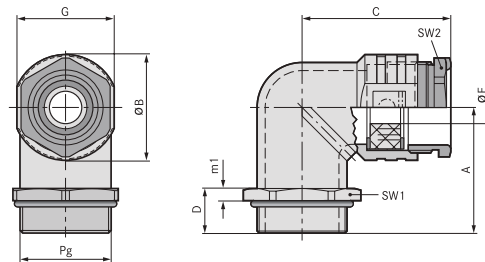
**Temperature range**  
 -40°C to +200°C

Article number	Article designation / size	Clamping range ØF (mm)	SW wrench size mm	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® CN</b>						
52032520	CN 9	6 - 10	18	28.0	10	5
52032525	CN 11	5 - 12	22	32.0	10	5
52032540	CN 13,5	8 - 15	24	34.0	10	5
52032550	CN 16	8 - 15	24	34.0	10	5
52032560	CN 21	12,5 - 20,5	30	42.0	12	5
52032570	CN 29	19 - 27,5	41	53.0	12	5

Viton® is a registered trademark of DuPont de Nemours  
 Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® RWV



### Benefits

- Strain relief
- Sealed by incised sealing ring
- Corrosion-resistant
- Decrease in installation height
- Seawater-resistant

### Application range

- Angled glands are used in areas where cables have to run in parallel to the housing wall.
- Electric motor manufacturing
- Machine and equipment manufacturing
- Plant engineering
- Light and sound applications

### Product Make-up

- PG connection thread

### Note

- For combination with other SKINDICHT® or SKINTOP® cable glands, we propose our SKINDICHT® RWV without incised sealing ring and compression screw

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Material

Body: zinc die-casting  
Compression screw and hexagon nut:  
nickel-plated brass  
Incised sealing ring: CR  
O-ring: NBR



#### Protection rating

IP 55



#### Temperature range

-20°C to +80°C  
Without incised sealing ring:  
-20°C to +100°C

Article number	Article designation / size	A (mm)	G mm	Ø-B mm	Incised sealing ring ØF (mm)	Overall length, C (mm)	Thread length, D (mm)	SW1/SW2 mm	Pieces / PU
<b>SKINDICHT® RWV</b>									
52004180	RWV 7	20.5	14	15.3	5	26.0	8.5	15.0 / 13.0	25
52004190	RWV 9	23.5	17	18.3	5/8	28.0	9.5	18.0 / 15.0	25
52004200	RWV 11	26	20	21.9	7 / 10 / 12.5	31.5	10	21.0 / 18.0	25
52004210	RWV 13,5	28.5	22	24	7 / 10.5 / 13 / 16	34.5	10.5	23.0 / 20.0	25
52004220	RWV 16	31	24	26.1	8 / 10.5 / 13.5 / 16	35.5	11	26.0 / 22.0	10
52005420	RWV 21	33.5	30	32.5	11 / 15 / 18 / 20	42.5	11.5	32.0 / 28.0	10
52004225	RWV 29	43	40	42	19 / 23 / 27 / 31	49.0	13	41.0 / 37.0	10
<b>SKINDICHT® RWV without E+D</b>									
52024020	RWV 7	20.5	14	15.3		20.2	8.5	15.0 / 13.0	25
52023970	RWV 9	23.5	17	18.3		21.8	9.5	18.0 / 15.0	25
52023980	RWV 11	26	20	21.9		24.9	10	21.0 / 18.0	25
52023990	RWV 13,5	28.5	22	24		27.4	10.5	23.0 / 20.0	25
52024000	RWV 16	31	24	26.1		28.5	11	26.0 / 22.0	10
52024010	RWV 21	33.5	30	32.5		34.8	11.5	32.0 / 28.0	10
52024015	RWV 29	43	40	42		41.2	13	41.0 / 37.0	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817



**SKINDICHT® SE**



**Benefits**

- Sealed by incised sealing ring
- Corrosion-resistant
- Easy to install
- Completely safe cable entry
- Low overall height

**Application range**

- For high mechanical stress
- When no connection thread is provided

**Product Make-up**

- PG 16 - 21 with 2 screw holes
- PG 29 - 36 with 4 screw holes

**Note**

- For combination with other SKINDICHT® or SKINTOP® cable glands, we propose our SKINDICHT® SE without incised sealing ring and compression screw

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Material**

Body: zinc die-casting, grey, hammer tone finish  
Incised sealing ring: CR  
O-ring: NBR  
Compression screw: nickel-plated brass



**Protection rating**

IP 55



**Temperature range**

-20°C to +80°C

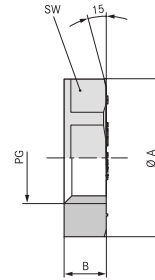
Article number	Article designation / size	Incised sealing ring ØF (mm)	SW wrench size mm	Overall length (mm)	Overall width (mm)	Overall height (mm)	Pieces / PU
<b>SKINDICHT® SE</b>							
52004130	SE 16	8/10.5/13.5/16	22	49.2	42	36.0	10
52004140	SE 21	11/15/18/20	28	68.1	60	52.5	10
52005430	SE 29	19/23/27/31	37	83.6	66	54.0	5
52004150	SE 36	25/28/31/35	47	99.6	85	73.0	1
<b>SKINDICHT® SE without E+D</b>							
52024090	SE 16			42.0	42	36.0	10
52024100	SE 21			60.0	60	52.5	10
52024110	SE 29			76.0	66	54.0	5
52024120	SE 36			90.0	85	73.0	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINTOP® GMP-GL



### Benefits

- Glass fibre-reinforced for maximum mechanical stability
- Supporting surface for spanner means scratches on the housing are avoided

### Application range

- For locking SKINTOP® cable glands in boreholes without thread.

### Norm references / Approvals

- UL File Nr. E79903

### Product Make-up

- PG connection thread

### Note

- UL approval only when used with the UL-approved SKINTOP® polyamide cable glands
- Designed for use with SKINTOP® ST(R)

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### On request

Available without collar  
(without surface for assembling tool)



#### Colour delivered

Silver grey (RAL 7001)  
Light grey (RAL 7035)  
Black (RAL 9005), UV-resistant



#### Material

Polyamide, glass fibre-reinforced



#### Temperature range

-20°C to +100°C

Article number	Article designation / size	SW wrench size mm	Pieces / PU
<b>SKINTOP® GMP-GL silver grey with collar</b>			
53019000	GMP-GL 7	19	100
53019010	GMP-GL 9	22	100
53019020	GMP-GL 11	24	100
53019030	GMP-GL 13,5	27	100
53019040	GMP-GL 16	30	100
53019050	GMP-GL 21	36	50
53019060	GMP-GL 29	46	50
53019070	GMP-GL 36	60	25
53019080	GMP-GL 42	65	25
53019090	GMP-GL 48	70	25
<b>SKINTOP® GMP-GL black with collar</b>			
53019200	GMP-GL 7	19	100
53019210	GMP-GL 9	22	100
53019220	GMP-GL 11	24	100
53019230	GMP-GL 13,5	27	100
53019240	GMP-GL 16	30	100
53019250	GMP-GL 21	36	50
53019260	GMP-GL 29	46	50
53019270	GMP-GL 36	60	25
53019280	GMP-GL 42	65	25
53019290	GMP-GL 48	70	25
<b>SKINTOP® GMP-GL light grey with collar</b>			
53019001	GMP-GL 7	19	100
53019011	GMP-GL 9	22	100
53019021	GMP-GL 11	24	100
53019031	GMP-GL 13,5	27	100
53019041	GMP-GL 16	30	100
53019051	GMP-GL 21	36	50
53019061	GMP-GL 29	46	50
53019071	GMP-GL 36	60	25
53019081	GMP-GL 42	65	25
53019091	GMP-GL 48	70	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINTOP® DIX**

**Benefits**

- Easy insertion of several cables into one gland
- Higher packing density allows smaller part construction

**Application range**

- For use in SKINTOP® cable glands.
- A sealing ring with several holes is used in place of the inner sealing insert.

**Note**

- IP 68 can be achieved when all openings are closed and all bores are optimally occupied, i.e. when using cables with nominal diameter and/or SKINTOP® DIX-DV sealing plugs

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	<b>Colour delivered</b> natural
	<b>Material</b> Silicone
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -40°C to +100°C



Article number	Article designation / size	PG size	Number of cables x clamping range	Pieces / PU
<b>SKINTOP® DIX</b>				
53607225	DIX 7225	7	2 x 2.5	100
53607417	DIX 7417	7	4 x 1.7	100
53609230	DIX 9230	9	2 x 3	100
53611225	DIX 11225	11	2 x 2.5	100
53611330	DIX 11330	11	3 x 3	100
53611240	DIX 11240	11	2 x 4	100
53611430	DIX 11430	11	4 x 3	100
53613250	DIX 13250	13.5	2 x 5	100
53613340	DIX 13340	13.5	3 x 4	100
53613440	DIX 13440	13.5	4 x 4	100
53616140	DIX 16140	16	1 x 4	50
53616225	DIX 16225	16	2 x 2.5	50
53616240	DIX 16240	16	2 x 4	50
53616340	DIX 16340	16	3 x 4	50
53616350	DIX 16350	16	3 x 5	50
53616440	DIX 16440	16	4 x 4	50
53616540	DIX 16540	16	5 x 4	50
53616450	DIX 16450	16	4 x 5	50
53616356	DIX 16356	16	3 x 5.6	50
53616260	DIX 16260	16	2 x 6	50
53616360	DIX 16360	16	3 x 6	50
53621550	DIX 21550	21	5 x 5	50
53621460	DIX 21460	21	4 x 6	50
53621640	DIX 21640	21	6 x 4	50
53621270	DIX 21270	21	2 x 7	50
53621370	DIX 21370	21	3 x 7	50
53621280	DIX 21280	21	2 x 8	50
53621380	DIX 21380	21	3 x 8	50
53629556	DIX 29556	29	5 x 5.6	50
53629470	DIX 29470	29	4 x 7	50
53629570	DIX 29570	29	5 x 7	50
53629480	DIX 29480	29	4 x 8	50
53629290	DIX 29290	29	2 x 9	50
53629390	DIX 29390	29	3 x 9	50
53629490	DIX 29490	29	4 x 9	50
53629675	DIX 29675	29	6 x 7.5	50

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINTOP® DIX-AUTOMATION



### Benefits

- Optimal seal when using AS-I bus cables
- Strain relief

### Application range

- These seals can be used instead of our standard seals in the SKINTOP® cable glands.
- Control cabinets
- Control panels
- Office applications

### Note

- IP 68 can be achieved if the hole is optimally occupied, i.e. when using standard AS-I cables

### Product Make-up

- Precise cut for AS-I bus cables

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	<b>Colour delivered</b> Black, RAL 9005
	<b>Material</b> NBR
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -40°C to +100°C

Article number	Article designation / size	Pieces / PU
<b>SKINTOP® DIX ASI</b>		
53611000	DIX ASI 11	50

Photographs are not to scale and do not represent detailed images of the respective products.



SKINTOP® DIX-DV / SKINTOP® SD / SKINTOP® DV



SKINTOP® DIX-DV



SKINTOP® SD



SKINTOP® DV

**Benefits**

**SKINTOP® DIX-DV**

- Prevents water and dust penetrating into unused bore holes of SKINTOP® DIX multiple sealing inserts

**SKINTOP® SD**

- Prevents dust and dirt from getting into the housing

**SKINTOP® DV**

- Prevents humidity from seeping into the housing

**Application range**

**SKINTOP® DIX-DV**

- For inserting into unoccupied holes of the SKINTOP® DIX multiple sealing inserts, to ensure protection class.

**SKINTOP® SD**

- This dust protector can be placed under the cap nut of below mentioned SKINDICHT® types and specified SKINTOP® cable glands.
- Preparations
- Protection of unused connection points

**SKINTOP® DV**

- These seals are placed into the sealing ring of the SKINTOP® cable glands.
- Preparations
- Protection of unused connection points

**Note**

**SKINTOP® DIX-DV**

- When assembled professionally and properly, the protection class of IP 68 can be reached

**SKINTOP® SD**

- Easy to handle, without disassembly - push cable through
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**SKINTOP® DV**

- When assembled professionally and properly, the protection class of IP 68 can be reached
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data**

**RAL Colour delivered**

- SKINTOP® DIX-DV natural
- SKINTOP® SD Black
- SKINTOP® DV Black



- Material**
- SKINTOP® DIX-DV Polyamide
- SKINTOP® SD PE foam
- SKINTOP® DV CR



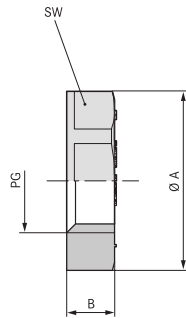
- Temperature range**
- SKINTOP® DIX-DV -40°C to +100°C
- SKINTOP® SD -70°C to +100°C
- SKINTOP® DV -30°C to +100°C

Article number	Article designation / size	Ø-F mm	Height (mm)	Pieces / PU
<b>SKINTOP® DIX-DV</b>				
53100003	DIX-DV 3 x 9	3.0	9	100
53100004	DIX-DV 4 x 9	4.0	9	100
53100005	DIX-DV 5 x 11	5.0	11	100
53100055	DIX-DV 5,5 x 11	5.5	11	100
53100006	DIX-DV 6 x 14	6.0	14	100
53100007	DIX-DV 7 x 14	7.0	14	100
53100008	DIX-DV 8 x 14	8.0	14	100
53100009	DIX-DV 9 x 14	9.0	14	100
<b>SKINTOP® SD</b>				
52025235	SD 7	10.5	2	500
52025240	SD 9	13.5	2	500
52025250	SD 11	17.0	2	250
52025260	SD 13,5	18.5	2	250
52025270	SD 16	20.5	2	250
52025280	SD 21	26.0	2	100
52025290	SD 29	34.5	2	100
52025291	SD 36	44.5	2	100
<b>SKINTOP® DV</b>				
53800640	DV 7	7.0	6.5	500
53800641	DV 9	8.5	7.5	500
53800579	DV 11	10.5	8.5	250
53800583	DV 13,5	12.5	8.5	250
53800642	DV 16	14.5	9	250
53800643	DV 21	18.5	11	100

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® GMK



### Benefits

- Supporting surface for spanner means scratches on the housing are avoided

### Application range

- For locking SKINDICHT® cable glands in boreholes without thread.

### Product Make-up

- PG connection thread

### Note

- SKINTOP® GMP-GL counter nuts are recommended if there are high mechanical stress and high torques for tightening are required

### Technical data

**Classification**  
 ETIM 5.0 Class-ID: EC000940  
 ETIM 5.0 Class-Description:  
 Locknut for cable screw gland

**Colour delivered**  
 Light grey (RAL 7035)

**Material**  
 Polystyrene

**Temperature range**  
 -20°C to +70°C

Article number	Article designation / size	B in mm	SW wrench size mm	Pieces / PU
<b>SKINDICHT® GMK</b>				
52000110	GMK 7	5	19	100
52000120	GMK 9	5	22	100
52000130	GMK 11	5	24	100
52000140	GMK 13,5	6	27	100
52000150	GMK 16	6	30	100
52000160	GMK 21	7	36	50
52000170	GMK 29	7	46	50
52000180	GMK 36	8	60	25
52000190	GMK 42	8	65	25
52000200	GMK 48	8	70	25

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® SM / SKINDICHT® SM-PE



SKINDICHT® SM



SKINDICHT® SM-PE

**Benefits**

**SKINDICHT® SM-PE**

- Cutting edges cut through the insulating layer, thus guaranteeing an optimum EMC contact
- Suitable for all metric glands used in earthing and EMC applications

**Application range**

**SKINDICHT® SM**

- Used when a gland has to be countered, or in through-holes on thin-walled housings

**SKINDICHT® SM-PE**

- For lacquered, anodised or powder-coated housings.

**Product Make-up**

- PG connection thread

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000940  
ETIM 5.0 Class-Description:  
Locknut for cable screw gland



**Material**

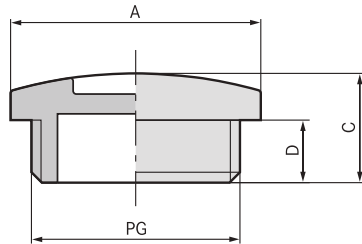
Nickel-plated brass

Article number	Article designation / size	Height (mm)	SW wrench size mm	Far corner dimension	Pieces / PU
<b>SKINDICHT® SM</b>					
52003490	SM 7	2.8	15	16.6	100
52003500	SM 9	2.8	18	20	100
52003510	SM 11	3	21	23.5	100
52003520	SM 13,5	3	23	25.5	100
52003530	SM 16	3	26	29	100
52003540	SM 21	3.5	32	35.5	50
52003550	SM 29	4	41	45	50
52003560	SM 36	5	51	56	25
52003570	SM 42	5	60	65	25
52003580	SM 48	5.5	64	69	25
<b>SKINDICHT® SM-PE</b>					
52103200	SM-PE 7	4.7	15		100
52103210	SM-PE 9	4.7	18		100
52103220	SM-PE 11	4.7	21		100
52103230	SM-PE 13,5	4.7	23		100
52103240	SM-PE 16	4.7	26		100
52103250	SM-PE 21	5.2	32		50
52103260	SM-PE 29	5.7	41		50
52103270	SM-PE 36	6.7	51		50

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® BLK / BLK-GL



### Benefits

- For closing pre-threaded holes

### Application range

- Control cabinet manufacturing
- Distribution box
- Junction boxes







### Product Make-up

- PG connection thread

### Note

- SKINDICHT® BLK-GL offers high stability due to glass fibre reinforcement

### Technical data

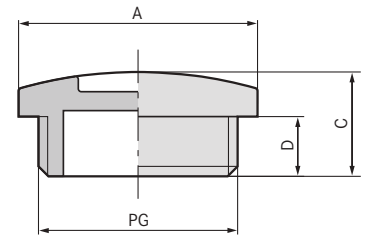
-  **Classification**  
ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland
-  **On request**  
with O-ring fitted
-  **Colour delivered**  
Light grey (RAL 7035)
-  **Material**  
BLK: polystyrene  
BLK-GL: glass fibre-reinforced polyamide
-  **Protection rating**  
IP 54  
IP 68 - 5 bar (with O-Ring)
-  **Temperature range**  
BLK: -20°C to +70°C  
BLK-GL: -40°C to +100°C

Article number	Article designation / size	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® BLK</b>			
52005949	BLK 7	6	100
52005950	BLK 9	6	100
52005960	BLK 11	6	100
52005970	BLK 13,5	6	100
52005980	BLK 16	6	100
52005990	BLK 21	8	50
52006000	BLK 29	8	50
52006010	BLK 36	10	25
52006020	BLK 42	10	25
52006030	BLK 48	12	25
<b>SKINDICHT® BLK-GL</b>			
52024848	BLK - GL 7	6	100
52024849	BLK - GL 9	6	100
52024850	BLK - GL 11	6	100
52024851	BLK - GL 13,5	6	100
52024852	BLK - GL 16	6	100
52024853	BLK - GL 21	8	50
52024854	BLK - GL 29	8	50
52024855	BLK - GL 36	10	25
52024856	BLK - GL 42	10	25
52024857	BLK - GL 48	12	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® BL**



**Benefits**

- For closing pre-threaded holes
- Assembling with screwdriver

**Application range**

- Machine and equipment manufacturing
- Electric motor manufacturing

**Product Make-up**

- PG connection thread

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000032  
ETIM 5.0 Class-Description:  
Plug for cable screw gland



**Material**

Body: nickel-plated brass  
O-ring: NBR



**Protection rating**

IP 54  
IP 68 - 5 bar (with O-Ring)



With O-ring: -30°C to +100°C  
Without O-ring: -60°C to +200°C

Article number	Article designation / size	Pieces / PU
<b>SKINDICHT® BL</b>		
52002680	BL 7	100
52003390	BL 9	100
52003400	BL 11	100
52003410	BL 13,5	100
52003420	BL 16	100
52003430	BL 21	50
52003440	BL 29	50
52003450	BL 36	25
52003460	BL 42	10
52002790	BL 48	10
<b>SKINDICHT® BL with O-ring</b>		
54001610	BL 7 m. O-Ring	100
54000071	BL 9 m. O-Ring	100
54000040	BL 11 m. O-Ring	100
54001630	BL 13,5 m. O-Ring	100
54001640	BL 16 m. O-Ring	100
54001660	BL 21 m. O-Ring	50
54001620	BL 29 m. O-Ring	50
54001650	BL 36 m. O-Ring	25
54001670	BL 42 m. O-Ring	10
54001680	BL 48 m. O-Ring	10

Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® KU, KUS, KUK



1



2



3

### Benefits

- Enables the use of cable glands with smaller connection threads than the existing threaded holes
- Glass fibre-reinforced for maximum mechanical stability

### Application range

- Machines
- Devices
- Housings

### Product Make-up

- PG connection thread

### Product Make-up

- SKINDICHT® KU with hexagon and flat design
- SKINDICHT® KUS with hexagon and larger height
- SKINDICHT® KUK with knurled heads

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Colour delivered

Light grey (RAL 7035)



#### Material

Polyamide, glass fibre-reinforced



#### Temperature range

KU, KUS: -40°C to +100°C  
KUK: -20°C to +80°C

Article number	Article designation / sizeOuter / inner	Pieces / PU
<b>SKINDICHT® KU</b>		
51730010	KU 11/7	50
52025100	KU 13,5/7	50
52025110	KU 16/9	50
52025120	KU 21/11	25
51730040	KU 21/13,5	25
52025130	KU 29/13,5	25
51730050	KU 29/16	25
52025140	KU 36/16	25
52025150	KU 36/21	25
52025050	KU 36/29	25
52025160	KU 42/21	25
52025170	KU 42/29	25
52025060	KU 42/36	25
52025180	KU 48/29	25
52025190	KU 48/36	25
52025070	KU 48/42	25
<b>SKINDICHT® KUS</b>		
52025040	KUS 9/7	50
51730060	KUS 11/9	50
51730070	KUS 13,5/11	50
51730080	KUS 16/13,5	50
<b>SKINDICHT® KUK</b>		
51730020	KUK 13,5/9	50
51730025	KUK 16 /9	50
51730030	KUK 16/11	50
51730035	KUK 21/13,5	50
51730090	KUK 21/16	50
51730100	KUK 29/21	25
51730110	KUK 36/29	25

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® MR**



**Benefits**

- Enables the use of cable glands with smaller connection threads than the existing threaded holes

**Application range**

- Machines
- Devices
- Housings

**Product Make-up**

- PG connection thread

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Material**

Nickel-plated brass

Article number	Article designation / sizeOuter / inner	Pieces / PU
<b>SKINDICHT® MR</b>		
52003750	MR 9/7	100
52003760	MR 11/7	100
52003770	MR 11/9	100
52003780	MR 13,5/7	100
52003790	MR 13,5/9	100
52003800	MR 13,5/11	100
52003810	MR 16/7	100
52003820	MR 16/9	100
52003830	MR 16/11	100
52003840	MR 16/13,5	100
52003850	MR 21/11	50
52003860	MR 21/13,5	50
52003870	MR 21/16	50
52003880	MR 29/13,5	50
52003890	MR 29/16	50
52003900	MR 29/21	50
52003910	MR 36/16	25
52003920	MR 36/21	25
52003930	MR 36/29	25
52003940	MR 42/29	10
52003950	MR 42/36	10
52003970	MR 48/36	10
52003980	MR 48/42	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® EKU



### Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes
- Assembling with a wrench
- Supporting surface for spanner means scratches on the housing are avoided

### Application range

- Machines
- Devices
- Housings

### Product Make-up

- PG connection thread

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Colour delivered

Light grey (RAL 7035)



#### Material

Polyamide, glass fibre-reinforced



#### Temperature range

-40°C to +100°C

Article number	Article designation / sizeOuter / inner	Pieces / PU
<b>SKINDICHT® EKU</b>		
52025200	EKU 7/9	100
51731000	EKU 9/11	100
51731010	EKU 11/13,5	100
51731020	EKU 13,5/16	100
51731030	EKU 16/21	50
51731040	EKU 21/29	25
52025210	EKU 29/36	25
52025220	EKU 36/42	25
52025230	EKU 42/48	25

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® ME



### Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes

### Application range

- Industrial connectors
- Devices
- Housings
- Machines

### Product Make-up

- PG connection thread

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Material

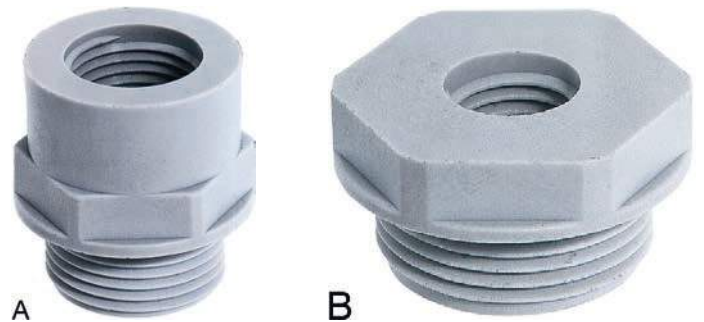
Nickel-plated brass

Article number	Article designation / sizeOuter / inner	Pieces / PU
<b>SKINDICHT® ME</b>		
52003990	ME 7/9	100
52004000	ME 9/11	100
52004010	ME 9/13,5	100
52004020	ME 11/13,5	100
52004030	ME 11/16	100
52004040	ME 11/21	100
52004050	ME 13,5/16	100
52004060	ME 13,5/21	50
52004070	ME 16/21	50
52004080	ME 16/29	50
52004090	ME 21/29	50
52004100	ME 29/36	50
52004110	ME 36/42	10
52004120	ME 42/48	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® A-PG/M**



**Benefits**

- Adapter from a PG outer thread to a metric inner thread

**Application range**

- Housings
- Industrial connectors
- Machines

**Product Make-up**

- PG connection thread

**Product Make-up**

- Form A = high
- Form B = flat

**Technical data**

- Classification**  
ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland
- Colour delivered**  
Light grey (RAL 7035)
- Material**  
Polyamide, glass fibre-reinforced
- Temperature range**  
-40°C to +100°C

Article number	Form	Thread, male PG	Thread, female M2	SW wrench size mm	Pieces / PU
<b>SKINDICHT® A-PG/M</b>					
52100320	A	PG 7	12 x 1.5	16	25
52100321	A	PG 7	16 x 1.5	20	25
52100322	A	PG 9	12 x 1.5	20	25
52100323	A	PG 9	16 x 1.5	20	25
52100324	A	PG 9	20 x 1.5	24	25
52100325	A	PG 11	16 x 1.5	22	25
52100326	A	PG 11	20 x 1.5	24	25
52100327	A	PG 11	25 x 1.5	29	25
52100328	A	PG 13.5	16 x 1.5	24	25
52100329	A	PG 13.5	20 x 1.5	24	25
52100330	A	PG 13.5	25 x 1.5	29	25
52100331	A	PG 16	20 x 1.5	27	25
52100332	A	PG 16	25 x 1.5	29	25
52100333	A	PG 16	32 x 1.5	36	25
52100334	A	PG 21	25 x 1.5	33	10
52100335	A	PG 21	32 x 1.5	36	10
52100336	A	PG 21	40 x 1.5	46	10
52100337	B	PG 29	32 x 1.5	42	10
52100338	A	PG 29	40 x 1.5	46	10
52100339	A	PG 29	50 x 1.5	55	10
52100340	B	PG 36	40 x 1.5	53	10
52100341	A	PG 36	50 x 1.5	55	10
52100342	A	PG 36	63 x 1.5	68	10
52100343	B	PG 42	40 x 1.5	60	5
52100344	A	PG 42	50 x 1.5	60	5
52100345	A	PG 42	63 x 1.5	68	5
52100346	B	PG 48	50 x 1.5	65	5
52100347	A	PG 48	63 x 1.5	68	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® MA-PG/M



### Benefits

- Adapter from a PG outer thread to a metric inner thread

### Application range

- Housings
- Industrial connectors
- Machines

### Product Make-up

- PG connection thread

### Product Make-up

- Form A top: knurl
- Form B bottom: smooth

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



#### Material

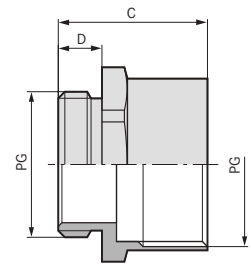
Nickel-plated brass

Article number	Form	PG size	Thread, female M2	Pieces / PU
<b>SKINDICHT® MA-PG/M</b>				
52104490	B	7	12 x 1.5	100
52104491	B	9	16 x 1.5	50
52104492	A	11	16 x 1.5	50
52104493	B	11	20 x 1.5	50
52104494	B	13	20 x 1.5	50
52104495	A	16	20 x 1.5	50
52104496	B	16	25 x 1.5	50
52104497	A	21	20 x 1.5	50
52104498	A	21	25 x 1.5	50
52104499	B	21	32 x 1.5	50
52104500	A	29	25 x 1.5	25
52104501	A	29	32 x 1.5	25
52104502	B	29	40 x 1.5	10
52104503	A	36	40 x 1.5	10

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® ZS/ZS-XL



**Benefits**

- Can be used as an extension part or spare part
- Assembling with a wrench

**Application range**

- Hexagonal converter from a PG outer thread to a PG inner thread.
- Machines
- Devices
- Housings

**Product Make-up**

- PG connection thread

**Note**

- SKINDICHT® ZS-XL offers a long connection thread

**Technical data**



**Classification**

ETIM 5.0 Class-ID: EC000441  
ETIM 5.0 Class-Description:  
Cable screw gland



**Material**

Nickel-plated brass

Article number	Article designation / size	SW wrench size mm	Thread length, D (mm)	Pieces / PU
<b>SKINDICHT® ZS</b>				
52100010	ZS 7	14	5	100
52100020	ZS 9	17	6	100
52100030	ZS 11	20	6	100
52100040	ZS 13,5	22	6.5	100
52100050	ZS 16	24	6.5	50
52100060	ZS 21	30	7	50
52100070	ZS 29	40	8	25
52100080	ZS 36	50	9	10
52100090	ZS 42	57	10	10
52100100	ZS 48	64	10	10
52020940	ZS 9	17	15	100
52020930	ZS 11	20	15	100
52020950	ZS 13,5	22	15	100
52020960	ZS 16	24	15	50
52020970	ZS 21	30	15	50
52020980	ZS 29	40	15	25
52020990	ZS 36	50	15	10
52021000	ZS 42	57	15	10
52021010	ZS 48	64	15	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® STK



### Benefits

- Prevents dust and dirt from getting into the housing

### Application range

- This dust protector can be placed under the cap nut of below mentioned SKINDICHT® types and specified SKINTOP® cable glands.

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC000032 ETIM 5.0 Class-Description: Plug for cable screw gland
	<b>Colour delivered</b> White
	<b>Material</b> PVC
	<b>Temperature range</b> -20°C to +80°C

Article number	Article designation / size	Thread, male PG	Suitable for SKINDICHT® SVRN-M, SHZ-M, SKZ-M, SVR-M, SVRE-M, SHVE-M, SHV-M	Pieces / PU
<b>SKINDICHT® STK</b>				
52020818	STK 7	7	M 12	500
52020820	STK 9	9	M 16	500
52020830	STK 11	11	M 20 / 11	250
52020840	STK 13,5	13	M 20 / 13,5	250
52020850	STK 16	16	M 20 / 16	250
52020860	STK 21	21	M 25	250
52020870	STK 29	29	M 32	100
52020880	STK 36	36	M 40	100
52020890	STK 42	42	M 50	50
52020900	STK 48	48	M 63	50

Photographs are not to scale and do not represent detailed images of the respective products.

## SKINDICHT® E



### Benefits

- One seal for several clamping ranges
- Rings can be individually adapted to various cable diameters

### Application range

- Incised sealing ring for SKINDICHT® cable glands

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Black
	<b>Material</b> CR
	<b>Temperature range</b> -20°C to +80°C

Article number	Article designation / size	Outer diameter x bores (mm)	Thickness (mm)	Pieces / PU
<b>SKINDICHT® E</b>				
52005780	E 9	13.5 x 5/8	5.5	250
52003690	E 11	16.5 x 7 / 10 / 12.5	6.0	250
52003700	E 13,5	18.5 x 7 / 10.5 / 13 / 16	6.5	250
52003710	E 16	20.5 x 8 / 10.5 / 13.5 / 16	7.5	250
52003720	E 21	26.0 x 11 / 15 / 18 / 20	8.0	100
52003730	E 29	35.0 x 19 / 23 / 27 / 31	9.5	100
52003740	E 36	45.0 x 25 / 28 / 31 / 35	12.0	50
52005790	E 42	52.0 x 35.5 / 39 / 42.5 / 46	14.0	50
52005800	E 48	57.0 x 40.5 / 44 / 47 / 50.5	14.0	50

Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® EV

### Benefits

- One seal for several clamping ranges
- Rings can be individually adapted to various cable diameters
- For high temperatures
- Resistant to oils, solvents, acids and chemicals

### Application range

- Incised sealing ring made of VITON® for SKINDICHT® cable glands

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Red brown
	<b>Material</b> FKM
	<b>Temperature range</b> -20°C to +200°C



Article number	Article designation / size	Outer diameter x bores (mm)	Thickness (mm)	Pieces / PU
<b>SKINDICHT® EV</b>				
52010340	EV 11	7/10/12.5	6.0	50
52010350	EV 13,5	7/10.5/13/16	6.5	50
52010360	EV 16	8/10.5/13.5/16	7.5	50
52010370	EV 21	11/15/18/20	8.0	25
52010380	EV 29	19/23/27/31	9.5	25
52010390	EV 36	25/28/31/35	12.0	25
52010410	EV 42	35.5/39/42.5/46	14.0	25

Viton® is a registered trademark of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® O-Ring Perbunan® PG

### Benefits

- Resistant to oil, dust and water

### Application range

- For a reliable sealing against foreign objects and liquids at the connecting thread of a gland or similar components.

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> Black
	<b>Material</b> NBR Ozone and UV-resistant
	<b>Temperature range</b> -20°C to +100°C



Article number	Article designation / size	Inner Ø x thickness Ø (mm)	Pieces / PU
<b>SKINDICHT® O-Ring Perbunan®</b>			
53001010	O 7	10.0 x 1.5	100
53102011	O 9	13.0 x 1.5	100
53001020	O 11	16.0 x 1.5	100
52005740	O 13,5	18.0 x 1.5	100
53001030	O 16	20.0 x 1.5	100
52005750	O 21	26.0 x 2.0	100
53001040	O 29	34.0 x 2.0	50
52005760	O 36	44.0 x 2.0	50
53001050	O 42	50.0 x 2.0	50
52005770	O 48	55.0 x 2.0	50

Perbunan® is a registered trademark of BAYER AG  
Photographs are not to scale and do not represent detailed images of the respective products.





## SKINDICHT® O-Ring VITON® PG



### Benefits

- For high temperatures
- Resistant to oils, solvents, acids and chemicals

### Application range

- For a reliable sealing against foreign objects and liquids at the connecting thread of a gland or similar components.

### Note

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

### Technical data



#### Classification

ETIM 5.0 Class-ID: EC001181  
ETIM 5.0 Class-Description:  
Sealing ring



#### Colour delivered

Green



#### Material

FKM



#### Temperature range

-20°C to +200°C

Article number	Article designation / size	Inner Ø x thickness Ø (mm)	Pieces / PU
<b>SKINDICHT® O-Ring VITON®</b>			
52023607	O 7	10.0 x 1.5	100
52122011	O 9	13.0 x 1.5	100
52023602	O 11	16.0 x 1.5	100
52023601	O 13,5	18.0 x 1.5	100
52023603	O 16	20.0 x 1.5	50
52023604	O 21	26.0 x 2.0	50
52023606	O 29	34.0 x 2.0	50
52023608	O 36	44.0 x 2.0	25
52023609	O 42	50.0 x 2.0	25
52023611	O 48	55.0 x 2.0	25

Viton® is a registered trademark of DuPont de Nemours

Photographs are not to scale and do not represent detailed images of the respective products.



**SKINDICHT® JT PTFE PG**



**Benefits**

- Resistant to oil, water, alkaline solutions, acids, solvents, etc.
- Suitable for foodstuffs

**Application range**

- PTFE sealing disks for SKINTOP® and SKINDICHT® cable glands

**Note**

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC001181 ETIM 5.0 Class-Description: Sealing ring
	<b>Colour delivered</b> White
	<b>Material</b> PTFE
	<b>Temperature range</b> -120°C to +250°C Short-term: up to +300°C

Article number	Article designation / size	Internal Ø/external Ø (mm)	Thickness (mm)	Pieces / PU
<b>SKINDICHT® JT PTFE</b>				
53801035	JT 7	12 / 16	2.0	100
53801045	JT 9	15 / 19	2.0	100
53801055	JT 11	18 / 22	2.0	100
53801065	JT 13,5	20 / 25	2.0	100
53801075	JT 16	22 / 27	2.0	100
53801085	JT 21	28 / 33	3.0	50
53801095	JT 29	37 / 43	3.0	50
53801105	JT 36	47 / 55	3.0	25
53801115	JT 42	54 / 63	3.0	25
53801125	JT 48	59 / 69	3.0	25

Photographs are not to scale and do not represent detailed images of the respective products.

**SKINDICHT® EH****Benefits**

- Alternative earthing sleeves

**Application range**

- Earthing sleeve for SKINDICHT® SHVE and SKINDICHT® SRE.

**Note**

- Allocation example, earthing sleeve for suitable gland
- SKINDICHT® EH 13.5/5 fits SKINDICHT® SHVE 13.5/9/9/5.
- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data****Classification**

ETIM 5.0 Class-ID: EC002317  
ETIM 5.0 Class-Description:  
Earthing lug for cable screw gland

**Material**

Brass

Article number	PG size/clear opening	Inner Ø (mm)	Flange Ø (mm)	Length (mm)	Pieces / PU
<b>SKINDICHT® EH</b>					
52010980	EH 9 / 3.2	3.2	13.3	11.0	100
52010985	EH 9 / 3.6	3.6	13.3	11.0	100
52010996	EH 11 / 4.5	4.5	16.7	9.0	100
52010000	EH 13.5 / 5.0	5.0	18.5	14.0	100
52010010	EH 13.5 / 6.0	6.0	18.5	14.0	100
52010020	EH 13.5 / 7.0	7.0	18.5	14.0	100
52010030	EH 16 / 8.0	8.0	20.5	14.0	50
52010040	EH 16 / 9.0	9.0	20.5	14.0	50
52010050	EH 16 / 10.0	10.0	20.5	14.0	50
52010060	EH 16 / 11.0	11.0	20.5	14.0	50
52010070	EH 21 / 12.0	12.0	26	16.0	50
52010080	EH 21 / 13.0	13.0	26	16.0	50
52010090	EH 21 / 14.0	14.0	26	16.0	50
52010100	EH 21 / 15.0	15.0	26	16.0	50
52010110	EH 21 / 16.0	16.0	26	16.0	50
52010120	EH 29 / 17.0	17.0	35	18.0	25
52010130	EH 29 / 18.0	18.0	35	18.0	25
52010140	EH 29 / 19.0	19.0	35	18.0	25
52010161	EH 36 / 22.0	22.0	45	10.0	10
52010162	EH 36 / 24.0	24.0	45	10.0	10
52010163	EH 36 / 26.0	26.0	45	10.0	10
52010164	EH 36 / 28.0	28.0	45	10.0	10

Photographs are not to scale and do not represent detailed images of the respective products.



SKINDICHT® SHV cone seal



**Benefits**

- SKINDICHT® SHV Neoprene® resistant to oil, dust and water
- SKINDICHT® SHV VITON® for high temperatures
- SKINDICHT® SHV VITON® resistant to oils, solvents, acids and chemicals

**Application range**

- Sealing cone for SKINDICHT® cable glands.

**Note**

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data**

	<b>Classification</b> ETIM 5.0 Class-ID: EC000451 ETIM 5.0 Class-Description: Cable plug sealing clamp
	<b>Colour delivered</b> CR: black FKM: red
	<b>Material</b> CR FKM
	<b>Temperature range</b> CR: -20°C to +80°C FKM: -15°C to +200°C

Article number	PG size/clear opening	Inner Ø (mm)	Length (mm)	Pieces / PU
<b>SKINDICHT® SHV Neoprene®</b>				
52021120	SHV 7/5.0	5.0	13.8	100
52021130	SHV 9/6.0	6.0	14.8	100
52021140	SHV 9/7.0	7.0	14.8	100
52021150	SHV 11/7.0	7.0	17.5	100
52021160	SHV 11/9.0	9.0	17.0	100
52021180	SHV 13.5/9.0	9.0	18.5	100
52021170	SHV 13.5/11.0	11.0	18.5	100
52021190	SHV 16/11.0	11.0	19.5	50
52021200	SHV 16/13.0	13.0	19.5	50
52021210	SHV 16/15.0	15.0	19.5	50
52024460	SHV 21/16.0	16.0	19.8	50
52021220	SHV 21/18.0	18.0	19.8	50
52021230	SHV 21/20.0	20.0	19.8	50
52021240	SHV 29/22.0	22.0	24.0	25
52021250	SHV 29/24.0	24.0	24.0	25
52021260	SHV 29/26.0	26.0	24.0	25
<b>SKINDICHT® SHV VITON®</b>				
52021259	SHV 7/5.0	5.0	13.8	100
52021146	SHV 9/6.0	6.0	14.8	100
52021261	SHV 9/7.0	7.0	14.8	100
52021262	SHV 11/7.0	7.0	17.5	100
52021263	SHV 11/9.0	9.0	17.0	100
52021271	SHV 13.5/9.0	9.0	18.5	100
52021272	SHV 13.5/11.0	11.0	18.5	100
52021265	SHV 16/13.0	13.0	19.5	50
52021269	SHV 16/15.0	15.0	19.5	50
52021268	SHV 21/18.0	18.0	19.5	50
52021266	SHV 21/20.0	20.0	19.8	50
52021267	SHV 29/22.0	22.0	19.8	50

Neoprene® and Viton® are registered trademarks of DuPont de Nemours  
Photographs are not to scale and do not represent detailed images of the respective products.



## SKINDICHT® SNR

**Benefits**

- Alternative anti-kink sleeves

**Application range**

- Anti-kink sleeves for improved protection against kinking in SKINDICHT® cable glands.

**Note**

- Delivery will be made in the largest possible packing unit (bulk goods), minimum order quantity is one packing unit

**Technical data****Classification**

ETIM 5.0 Class-ID: EC000451  
ETIM 5.0 Class-Description:  
Cable plug sealing clamp

**Colour delivered**

Black

**Material**

CR

**Temperature range**

-20°C to +80°C

Article number	External/internal PG size	Max. cable Ø (mm)	min. cable Ø (mm)	Suitable SKINDICHT® gland	Suitable SKINDICHT® gland	Pieces / PU
<b>SKINDICHT® SNR</b>						
52001970	SNR 7/5	5	3.5	SH 7	SR 7005	100
52001980	SNR 9/7	7	5.5	SH 9	SR 9007	100
52001990	SNR 11/7	7	5.5	SH 11	SR 1107	100
52002000	SNR 11/9	9	7.5	SH 11	SR 1109	100
52002010	SNR 13/9	9	7.5	SH 13,5	SR 1309	100
52002020	SNR 13/11	11	9	SH 13,5	SR 1311	100
52002030	SNR 13/13	13	11	SH 13,5	SR 1313	100
52002040	SNR 16/13	13	11.5	SH 16	SR 1613	100
52002050	SNR 16/15	15	13	SH 16	SR 1615	100
52002060	SNR 21/15	15	13.5	SH 21	SR 2115	50
52002070	SNR 21/17	17	15	SH 21	SR 2117	50
52002080	SNR 21/19	19	17	SH 21	SR 2119	50
52002090	SNR 21/20	20	18	SH 21	SR 2120	50
52002100	SNR 29/20	20	18	SH 29	SR 2920	25
52002110	SNR 29/23	23	21	SH 29	SR 2923	25
52002120	SNR 29/25	25	23	SH 29	SR 2925	25
52002130	SNR 36/26	26	23	SH 36	SR 3626	25
52002140	SNR 36/30	30	27	SH 36	SR 3630	25
52002150	SNR 36/33	33	30	SH 36	SR 3633	25
52002160	SNR 36/35	35	32	SH 36	SR 3635	25
52002170	SNR 42/35	35	32	SH 42	SR 4235	10
52002180	SNR 42/38	38	35	SH 42	SR 4238	10
52002190	SNR 42/40	40	36	SH 42	SR 4240	10
52002200	SNR 48/40	40	36	SH 48	SR 4840	10
52002210	SNR 48/44	44	40	SH 48	SR 4244	10

Photographs are not to scale and do not represent detailed images of the respective products.

# SILVYN®

## Protective cable conduit systems and cable carrier systems



The universal range of SILVYN® protection and guidance systems protect cables effectively against dust, moisture, mechanical, thermal and chemical influences. The versatile SILVYN® CHAIN range of energy supply chains also protects and guides cables in dynamic applications.

### **Application range**

- Industrial machinery and plant engineering
- Automotive industry
- Machine tool manufacture
- Renewable energies
- Wherever cables require additional protection or guidance

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

**Plastic protective cable conduit systems**
**SILVYN® SI/SP/SP-PU/BRAID**

SILVYN® BRAID PA6 / SILVYN® SNAP PET /	
SILVYN® SHRINK BRAID PET	840
SILVYN® SI	841
SILVYN® SP	842
SILVYN® SP-PU	843
SILVYN® SSV-M / SILVYN® SSVZ-M	844
SILVYN® USK-M	845
SILVYN® USK	846
SILVYN® SSV / SILVYN® SSVZ	847
SILVYN® SCH	848

**SILVYN® EL/ELU/ELO/ELT**

SILVYN® EL	New	849
SILVYN® ELU	New	850
SILVYN® ELÖ	New	851
SILVYN® ELT	New	852
SILVYN® ELR	New	853
SILVYN® MPC-M / SILVYN® MPC 90° M		854
SILVYN® MPC 45° M	New	855
SILVYN® MPC / SILVYN® MPC 90°		856

**SILVYN® FPS/FD-PU**

SILVYN® FPS		857
SILVYN® FD-PU		858
SILVYN® MSK-M EE		859
SILVYN® LKI-M / SILVYN® LKI		860
SILVYN® EE-K		861

**Parallel corrugated protective cable conduit systems**
**SILVYN® RILL**

SILVYN® RILL PA 6		862
SILVYN® RILL PA 12		863
SILVYN® KLICK-M		864
SILVYN® KLICK 90° M		865
SILVYN® KLICK GPZ-M		866
SILVYN® KSE		867
SILVYN® KLICK PG		868
SILVYN® KLICK 90° PG		869
SILVYN® KLICK-GPZ		870
SILVYN® KLICK-Y / SILVYN® KLICK-Y (TPE)		871
SILVYN® KLICK-S / SILVYN® KLICK-D / SILVYN® KLICK-V		872
SILVYN® KLICK-RH	New	873
SILVYN® K-EM		874

**SILVYN® FPAS**

SILVYN® FPAS	New	875
SILVYN® FPAX-M	New	876
SILVYN® FPAX 90° M	New	877
SILVYN® FPAX T / SILVYN® FPAX Y / SILVYN® FPAX R /		
SILVYN® FPAX P	New	878
SILVYN® FPAG-M		879
SILVYN® FPAG 90° M		880
SILVYN® KSE-M		881
SILVYN® FLEXILOK M / SILVYN® FLEXILOK 90° M	New	882
SILVYN® FLEXILOK PG / SILVYN® FLEXILOK 90° PG	New	883
SILVYN® FPAG PG / SILVYN® FPAG 90° PG		884

**SILVYN® FCL**

SILVYN® FCL		885
SILVYN® FPAC		886
SILVYN® EC	New	887

**SILVYN® HCC**

SILVYN® HCC		888
SILVYN® HG-M / SILVYN® HW-M		889

**SILVYN® MAXI PA**

SILVYN® MAXI PA		890
SILVYN® AFG-PA / SILVYN® gasket AFG-PA / AFW-PA /		
SILVYN® AFW-PA		891

**SILVYN® TC**

SILVYN® TC	New	892
------------	-----	-----

**SILVYN® SPLIT**

SILVYN® SPLIT	New	893
SILVYN® SPLIT COV / SILVYN® SPLIT GMP-M / SILVYN® SPLIT COS		894

**SILVYN® SINUS**

SILVYN® SINUS PA6		895
-------------------	--	-----

**Metal protective cable conduit systems**
**SILVYN® AS/EDU-AS/AS-P**

SILVYN® AS		896
SILVYN® AS-P		897
SILVYN® EDU-AS		898
SILVYN® EMC AS-CU		899
SILVYN® FPS-EDU	New	900
SILVYN® MSK-M US		901
SILVYN® MSK-M BRUSH	New	902
SILVYN® MSK-M ATEX	New	903
SILVYN® MSK-M ATEX BRUSH	New	904
SILVYN® US-M	New	905
SILVYN® US	New	906
SILVYN® US-AS / SILVYN® US-EDU-AS		907

**SILVYN® SSUE**

SILVYN® SSUE		908
SILVYN® LGES-M		909
SILVYN® LGEF-M		910
SILVYN® LGEP	New	911

**SILVYN® UI 511**

SILVYN® UI 511		912
SILVYN® UI COMPACT M	New	913

**Liquid-tight conduits**
**SILVYN® HIPROJACKET**

SILVYN® HIPROJACKET / SILVYN® HIPROSILTAP		914
SILVYN® HIPROJACKET AMG	New	915

**SILVYN® CNP**

SILVYN® CNP / SILVYN® CNP conduit gland		916
---	--	-----

**Liquid-tight conduits**

SILVYN® HTDL		917
SILVYN® EF / SILVYN® OR		918
SILVYN® HCX / SILVYN® HFX		919
SILVYN® COMPACT M	New	920
SILVYN® COMPACT PG	New	921
SILVYN® COMPACT NPT	New	922
SILVYN® FG	New	923
SILVYN® FG NM	New	924
SILVYN® HYGIENIC	New	925

**SILVYN® LCC-2 / LCCH-2**

SILVYN® LCC-2		926
SILVYN® LCCH-2		927
SILVYN® LGF-2-M / SILVYN® LGS-2-M / SILVYN® LGS-2		928
SILVYN® LCG-M / SILVYN® LCW-M / SILVYN® LCS-M		929
SILVYN® LCC coupler	New	930
SILVYN® LCC-E	New	931

**SILVYN® LTP**

SILVYN® LTP		932
SILVYN® LTPG-M / SILVYN® LTPS-M / SILVYN® LTP 45° M /		
SILVYN® LTP 90° M		933
SILVYN® LTP coupler	New	934
SILVYN® LTP-E	New	934
SILVYN® SEALING WASHER	New	935

**SILVYN® processing tools**
**Cutting tools for protective cable conduit systems**

SILVYN® Conduit scissor		936
SILVYN® vice		936
SILVYN® coupler		937
SILVYN® BW-K-M		937
SILVYN® BW-M		937


**SILVYN® conduit cable clamps**

SILVYN® RKS		938
-------------	--	-----





Selection Table








Characteristics	Page	Inner diameter from – to mm	Temperature range	Material	Flexibility	Compression strength	Tensile strength	Flexural behaviour	Oil resistance	Solvent resistance	Protection against hot chips	Reversed bending fatigue behaviour	Flame retardant	Halogen-free	UV resistance	Approvals
<b>Protective conduits plastic</b>																
	840	4.0 – 32.0	-55 °C to +125 °C	Polyamide 6.6	●	○	●	●	●	○	○	○	○	○	○	-
SILVYN® SNAP PET	840	25.0	-55 °C to +150 °C	Polyester – PET	●	○	●	●	●	○	○	○	○	○	○	-
SILVYN® SHRINK BRAID PET	840	6.0 – 35.0	-55 °C to +125 °C	Polyester – PET	●	○	●	●	●	○	○	○	○	○	○	-
SILVYN® SI	841	7.0 – 32.0	-5 °C to +80 °C	Soft PVC	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SP	842	10.0 – 50.0	-20 °C to +60 °C	Soft PVC with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SP-PU	843	10.0 – 38.0	-20 °C to +90 °C	PUR with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® EL	849	10.0 – 50.0	-20 °C to +70 °C	Soft PVC with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	cURus
SILVYN® ELU	850	10.0 – 50.0	-20 °C to +70 °C	Soft PVC with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	cURus
SILVYN® ELÖ	851	10.0 – 50.0	-20 °C to +70 °C	Soft PVC with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	cURus
SILVYN® ELT	852	10.0 – 50.0	-20 °C to +90 °C	Soft PVC with Hard PVC Spiral	○	○	○	○	○	○	○	○	○	○	○	cURus
SILVYN® FPS	857	7.0 – 48.0	-20 °C to +80 °C	Soft PVC with insul. Spring Steel Wire	●	○	○	○	○	○	○	○	○	○	○	VDE
SILVYN® FD-PU	858	7.0 – 48.0	-40 °C to +80 °C	PUR with insul. Spring Steel Wire	●	○	○	○	○	○	○	○	○	○	○	VDE
<b>Protective corrugated</b>																
SILVYN® RILL PA 6	862	6.5 – 48.0	-40 °C to +115 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	cURus, VDE, GGVS, DNV-GL, Lloyds, DB, EN 45545
SILVYN® RILL PA12	863	6.5 – 48.0	-50 °C to +100 °C	Polyamide 12	○	○	○	○	○	○	○	○	○	○	○	VDE, Lloyds, DB
SILVYN® FPAS	875	6.3 – 56.3	-40 °C to +120 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	cURus, Lloyds, Link up
SILVYN® HCC	888	8.9 – 52.5	-25 °C to +100 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® TC	892	6.6 – 45.6	-40 °C to +120 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SPLIT PA 6	893	6.3 – 87.5	-40 °C to +120 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SPLIT PP	893	6.3 – 87.5	-40 °C to +135 °C	Polypropylene	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SINUS PA 6	895	6.7 – 23.2	-40 °C to +140 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® MAXI PA 6	890	66.5 – 91.0	-40 °C to +115 °C	Polyamide 6	○	○	○	○	○	○	○	○	○	○	○	cURus
<b>Protective conduits metal</b>																
SILVYN® AS	896	8.0 – 51.0	to +220 °C	Galvanized Steel Strip	○	○	○	○	○	○	○	○	○	○	○	VDE
SILVYN® AS-P	897	7.0 – 49.0	-25 °C to +80 °C	Galvanized Steel, Coating PVC	○	○	○	○	○	○	○	○	○	○	○	VDE
SILVYN® EDU-AS	898	7.0 – 49.0	to +220 °C	Galvanized Steel, Braiding: galvanized steel wire	○	○	○	○	○	○	○	○	○	○	○	VDE
SILVYN® EMC AS-CU	899	7.0 – 49.0	to +220 °C	Galvanized Steel, Braiding: tinned copper	○	○	○	○	○	○	○	○	○	○	○	VDE
SILVYN® FPS-EDU	900	9.0 – 48.0	-25 °C to +80 °C	PVC-insulated steel spring wire Soft PVC outer sheath Galvanised steel wire braiding	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® SSUE	908	6.8 – 48.0	-100 °C to +400 °C	Stainless Steel AISI 316	○	○	○	○	○	○	○	○	○	○	○	Link up
SILVYN® UI 511	912	9.5 – 52.0	-100 °C to +600 °C	Stainless Steel AISI 304	○	○	○	○	○	○	○	○	○	○	○	-
<b>Protective conduits liquidtight</b>																
SILVYN® HIPROJACKET	914	6.0 – 102.0	-55 °C to +1640 °C	Fibre glass with iron oxide silicone coat	○	○	○	○	○	○	○	○	○	○	○	EN 45545
SILVYN® CNP	916	12.6 – 40.7	-20 °C to +60 °C	PVC Mix with Nylon Braid	○	○	○	○	○	○	○	○	○	○	○	cULus
SILVYN® HTDL	917	12.6 – 51.6	-40 °C to +105 °C	Galvanized Steel, Copper wire, Coating PVC Mix	○	○	○	○	○	○	○	○	○	○	○	cULus
SILVYN® EF	918	10.1 – 51.6	-25 °C to +70 °C	Galvanized Steel, Coating PVC Mix	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® OR	918	12.6 – 51.6	-20 °C to +100 °C	Galvanized Steel, Coating PVC Mix	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® HCX	919	12.6 – 51.6	-55 °C to +145 °C	Galvanized Steel, Coating Elastomer plastic	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® HFX	919	10.1 – 51.6	-45 °C to +105 °C	Galvanized Steel, Coating PUR	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® FG	923	12.6 – 51.6	-20 °C to +80 °C	Galvanized Steel, PVC-mix special sheath	○	○	○	○	○	○	○	○	○	○	○	FDA, NSF
SILVYN® FG NM	924	12.6 – 51.6	-20 °C to +60 °C	Hard PVC inner spiral PVC-mix special sheath	○	○	○	○	○	○	○	○	○	○	○	FDA, NSF
SILVYN® LCC-2	926	6.8 – 70.0	-15 °C to +70 °C	Galvanized Steel, Coating PVC	○	○	○	○	○	○	○	○	○	○	○	-
SILVYN® LCCH-2	927	10.2 – 70.0	-25 °C to +90 °C	Galvanized Steel, Coating plastic halogen-free	○	○	○	○	○	○	○	○	○	○	○	Lloyds, Link up
SILVYN® LTP	932	7.0 – 51.6	-20 °C to +105 °C	Galvanized Steel, Coating Soft PVC	○	○	○	○	○	○	○	○	○	○	○	Lloyds

● = very high ○ = high ○ = medium ○ = low ○ = none

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

## SILVYN® CHAIN overview power chain application

As a system provider, we offer one-stop complete systems such as cable guiding systems and suitable wires. You will find more detailed information in the SILVYN® CHAIN catalogue on our web page under: [www.lappgroup.com/catalogues](http://www.lappgroup.com/catalogues)

		Characteristics	Application areas
<b>SILVYN® CHAIN Serie Light</b>		<ul style="list-style-type: none"> <li>• Light applications</li> <li>• Simple bolt system</li> <li>• Inner height 12 – 39 mm</li> <li>• Inner width 12 – 150 mm</li> <li>• 7 types</li> </ul>	<ul style="list-style-type: none"> <li>• Automation</li> <li>• Smaller robot gantries</li> <li>• Textile equipment with long travel</li> <li>• Printing equipment</li> </ul>
<b>SILVYN® CHAIN Serie Medium</b>		<ul style="list-style-type: none"> <li>• Standard applications</li> <li>• Tongue/groove system with yellow pin</li> <li>• Inner height 18 – 75.5 mm</li> <li>• Inner width 14 – 498 mm</li> <li>• 12 types</li> </ul>	<ul style="list-style-type: none"> <li>• Automation</li> <li>• Handling equipment</li> <li>• CNC machines</li> <li>• Medium sliding applications</li> </ul>
<b>SILVYN® CHAIN Serie Heavy</b>		<ul style="list-style-type: none"> <li>• Superior applications</li> <li>• Tongue/groove system with yellow tripple pin</li> <li>• Inner height 30 – 112 mm</li> <li>• Inner width 38 – 600 mm</li> <li>• 12 types, many frame versions: Nylon, Aluminium, Inox</li> </ul>	<ul style="list-style-type: none"> <li>• Automation with high travel frequency</li> <li>• Outdoor equipment</li> <li>• Movement with high lateral acceleration</li> </ul>
<b>SILVYN® CHAIN Serie Sliding</b>		<ul style="list-style-type: none"> <li>• Long sliding distances</li> <li>• Tongue/groove system with yellow tripple pin</li> <li>• Inner height 30 – 80.5 mm</li> <li>• Inner width 61 – 539 mm</li> <li>• 15 types, many frame versions: Nylon, Aluminium, Inox</li> </ul>	<ul style="list-style-type: none"> <li>• Sliding with high speed and high charge weight</li> <li>• Long life-cycle applications (very long lifetime)</li> </ul>
<b>SILVYN® CHAIN Serie Protection</b>		<ul style="list-style-type: none"> <li>• Standard applications</li> <li>• Tongue/groove system with yellow pin</li> <li>• Inner height 25 – 75.5 mm</li> <li>• Inner width 40 – 488 mm</li> <li>• 12 types, many withs</li> </ul>	<ul style="list-style-type: none"> <li>• Automation</li> <li>• Dirty environment</li> <li>• Machine tool centers</li> </ul>
<b>SILVYN® CHAIN Serie Robot</b>		<ul style="list-style-type: none"> <li>• Rotative applications</li> <li>• Tongue/groove system patented element construction</li> <li>• Inner height 35 – 59 mm</li> <li>• Inner width 45 – 210 mm</li> <li>• Standard rotation angle up to 200°</li> <li>• Guided rotation angle up to 400°</li> <li>• 6 types</li> </ul>	<ul style="list-style-type: none"> <li>• Welding robots</li> <li>• Painting robots</li> <li>• Handling robots</li> </ul>
<b>SILVYN® CHAIN Serie Steel</b>		<ul style="list-style-type: none"> <li>• Highest load capacity</li> <li>• Highest chemical resistance</li> <li>• Tongue/groove system in metal</li> <li>• Inner height 32 – 182 mm</li> <li>• Inner width 79 – 600 mm</li> <li>• 11 standard types</li> <li>• Customised versions with bigger widths, combination of different materials (e.g. polyamide and steel)</li> </ul>	<ul style="list-style-type: none"> <li>• Steel mills/steel works</li> <li>• Off-Shore</li> <li>• Long-travel machining centers</li> <li>• Heavy duty environment</li> </ul>

Photographs are not to scale and do not represent detailed images of the respective products.

## ÖLFLEX® CONNECT

Systems Solutions made by Lapp

### ÖLFLEX® CONNECT CHAIN

#### Drag chain assembly

Built upon our deep expertise in cable technology we have the capabilities to specify and assemble the right drag chain to protect the cable in any applications. With ÖLFLEX® CONNECT CHAIN you get populated drag chains – from light duty nylon to steel or a combination of nylon and steel drag chains. Your benefits with us:

- **Reliable cutting-edge technology**

The ÖLFLEX® CONNECT CHAIN reliability is based on high-quality components, assembled to deliver minimum maintenance and maximum service life.

- **Guaranteed brand quality**

Our systems are rigorously tested to guarantee full and faultless functionality.

- **Closer to you**

With multiple manufacturing sites in Europe, Asia and the Americas we can support you wherever you are.

- **Competent system supplier**

With Lapp, you receive everything from one source: Ranging from individual drag chain assemblies to a whole integrated system.

#### Our drag chain service



We design and manufacture connectivity components which allows us to provide innovative, reliable and quality chain solutions.

Full engineering service:

- 1 Technical evaluation
- 2 Initial CAD design of the drag chain system (including cable layout)
- 3 Complete project management
- 4 Completion of chain system design

Upon request, comprehensive test reports and individual installation instructions can be provided.



What can be included in a system chain package:

- Cable drag chains in nylon or steel design in accordance to application requirements
- Highly flexible power, control, signal and data network cables including accessories (cable lugs, connectors, etc.)
- Protective cable conduits with conduit glands
- Hydraulic hoses with fittings
- Pneumatic hoses
- Towing arms or other functional units
- CAD drawing of your chain including cable layout (optimal placement and separation of all energy lines in a chain)

## Our productlines

We offer you **three distinct system packages** according to your application needs – the choice is yours:

### basic chain

### core chain

### extended chain

#### basic chain

- Drag chains made of nylon or steel with highly flexible cables, cable protection conduits, hydraulic hoses or pneumatic hoses **with no termination** such as connectors or fittings

#### core chain

- Drag chains made of nylon or steel with highly flexible cables, cable protection conduits, hydraulic hoses or pneumatic hoses **including termination** (connectors, fittings)

#### extended chain

- Drag chains made of nylon or steel with highly flexible cables, cable protection conduits, hydraulic hoses or pneumatic hoses **including termination** (connectors, fittings) **and functional units** such as towing arms or supporting structures.



## Possible drag chain types

#### Nylon power chains

- Drag chains made from NYLON (polyamide PA 6) for self-supporting or sliding applications or applications with circular motion
- Open or fully closed design available

#### Steel power chains

- Drag chains made of steel (galvanized steel or stainless steel) for standard self-supporting, sliding applications or applications with circular motion
- Open or fully closed design available

#### Combined power chains

- Drag chains made of combined materials (e.g. nylon sidebands with aluminum frames or aluminum covers, etc.) for extraordinary requirements
- Open or fully closed design available





## SILVYN® BRAID PA6 / SILVYN® SNAP PET / SILVYN® SHRINK BRAID PET



**Info**

- Simple, fast cable bundling

### Benefits

#### SILVYN® BRAID PA6

- Can be cut without the need for a thermo-cutting tool
- Cut into length without frizzle on the conduit's end
- Abrasion protection
- Simple, fast cable bundling
- Protection against dust

#### SILVYN® SNAP PET

- Cables can be guided in or out of the SILVYN® SNAP at any point.
- Self-wrapping
- Simple, fast cable bundling
- Tidies away cables
- Protection against dust

#### SILVYN® SHRINK BRAID PET

- Additional abrasion protection for critical areas
- Cut into length without frizzle on the conduit's end
- Simple, fast cable bundling
- Protection against dust

### Application range

#### SILVYN® BRAID PA6

- Easy cable protection
- Additional insulation
- Bundling and guiding of cables and wires
- Low rodent-protection

#### SILVYN® SNAP PET

- Easy cable protection
- Bundling and guiding of cables and wires
- Cable harness

#### SILVYN® SHRINK BRAID PET

- Easy cable protection
- Additional insulation
- Bundling and guiding of cables and wires
- Low rodent-protection

### Product features

#### SILVYN® BRAID PA6

- Abrasion-resistant
- Flexible
- Can be cut at cold temperatures

#### SILVYN® SNAP PET

- Abrasion-resistant
- Flexible
- Self-wrapping
- Cut longitudinally

#### SILVYN® SHRINK BRAID PET

- Abrasion-resistant
- Flexible
- Shrinkable
- Shrinking ratio: 2:1
- Maximum length lost after shrinkage is less than 15 %

### Product Make-up

#### SILVYN® BRAID PA6

- Polyamide 6.6 - halogen-free

#### SILVYN® SNAP PET

- Polyester - PET braid sidewise rolled up

#### SILVYN® SHRINK BRAID PET

- Polyester - PET with shrinkable Polyolefin fibres

### Suitable tools

- Multipurpose shears A and B refer to page 998

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001182  
ETIM 5.0 Class-Description: Braided hose

**On request**  
Bulk containers on rolls  
More sizes available

**Note**  
**SILVYN® BRAID PA6**  
Halogen and cadmium-free  
Self-extinguishing according to DIN 75200/FMVSS302 and DIN5510  
**SILVYN® SNAP PET**  
Halogen and cadmium-free  
Self-extinguishing acc. to UL94 V2  
**SILVYN® SHRINK BRAID PET**  
No dielectric strength  
Self-extinguishing acc. to UL94 HB

**Colour delivered**  
**SILVYN® BRAID PA6**  
Black (RAL 9005), UV-resistant  
**SILVYN® SNAP PET**  
Black, grey, orange, yellow, white  
**SILVYN® SHRINK BRAID PET**  
Black (RAL 9005), UV-resistant

**Material**  
**SILVYN® BRAID PA6**  
Polyamide 6.6 - halogen-free  
**SILVYN® SNAP PET**  
Polyester - PET braid sidewise rolled up  
**SILVYN® SHRINK BRAID PET**  
Polyamide 6.6 - halogen-free

**Temperature range**  
**SILVYN® BRAID PA6**  
-55 °C to +125 °C  
**SILVYN® SNAP PET**  
-55 °C to +150 °C  
**SILVYN® SHRINK BRAID PET**  
-40 °C to +150 °C  
Processing: min. +180 °C

Article number	Nominal size	Clamping range in mm	Shrinkage range mm	Colour	PU (m)
<b>SILVYN® BRAID PA6</b>					
61721260	6	4.0 - 10.0		black	20
61721261	12	10.0 - 14.0		black	15
61721262	16	14.0 - 24.0		black	15
61721263	20	18.0 - 26.0		black	10
61721264	30	26.0 - 34.0		black	10
61721265	40	32.0 - 44.0		black	5
<b>SILVYN® SNAP PET</b>					
61721280	19	19.0 - 25.0		grey	2.5
61721281	19	19.0 - 25.0		orange	2.5
61721282	19	19.0 - 25.0		black	2.5
61721283	19	19.0 - 25.0		white	2.5
61721284	19	19.0 - 25.0		yellow	2.5
<b>SILVYN® SHRINK BRAID PET</b>					
61721270	12/06		12.0 - 6.0	black	5
61721271	25/12		25.0 - 12.0	black	5
61721272	30/15		30.0 - 15.0	black	5
61721273	50/25		50.0 - 25.0	black	5
61721274	70/35		70.0 - 35.0	black	5

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

#### SILVYN® SNAP PET

- KW plastic coil refer to page 1054
- Cable-Eater bunched cable conduit refer to page 1055

#### SILVYN® SHRINK BRAID PET

- KW plastic coil refer to page 1054

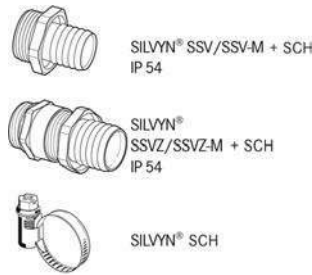
### Accessories

#### SILVYN® BRAID PA6

- Basic Tie cable tie refer to page 1057



**SILVYN® SI**



**Benefits**

- Protection against dust
- Protection against humidity
- Low abrasion protection

**Application range**

- Easy cable protection
- Additional insulation
- Bundling and guiding of cables and wires

**Product features**

- Flexible
- Soft

**Product Make-up**

- Soft-PVC conduit

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001177  
ETIM 5.0 Class-Description: Protective plastic hose

**Note** Flame-retardant and self-extinguishing  
Dielectric strength: 25 kV/mm  
Tear-resistance: 23 N/mm<sup>2</sup>  
Shore A hardness: 75 °C to 90 °C

**RAL** **Colour delivered** Silver grey (RAL 7001)

**Material** Soft PVC

**Temperature range** -5°C to +80°C

Article number	ID x OD mm	Suitable for SILVYN® SSV-M/SSVZ-M	Suitable for SILVYN® SSV/SSVZ	Suitable for SILVYN® SCH	PU ring (m)
<b>SILVYN® SI</b>					
61713210	7.0 x 9.0	12/1 / -		10 - 16 S	50
61713240	9.0 x 12.0	12/2 / -		10 - 16 S	50
61713270	11.0 x 14.0	16/1 / -		10 - 16 S	50
61713300	13.0 x 16.0	16/2 / -		12 - 20 S	50
61713330	14.0 x 18.0	20/1		12 - 20 S	50
61713360	18.0 x 22.0	20/3	13,5/1	16 - 25 S	50
61713390	23.0 x 28.0	25	21	25 - 40 S	50
61713420	32.0 x 38.0	32 / 32/2	29/2	32 - 50 S	50

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® SSV-M refer to page 844
- SILVYN® SSVZ-M refer to page 844
- SILVYN® SSV refer to page 847
- SILVYN® SSVZ refer to page 847
- SILVYN® SCH refer to page 848





## SILVYN® SP



### Benefits

- Protection against mechanical stress
- Protection against dust
- Protection against humidity

### Application range

- Cable protection
- Additional insulation
- Bundling and guiding of cables and wires

### Product features

- Flexible
- Dimensionally stable

### Product Make-up

- Hard PVC inner spiral
- Soft PVC outer sheath

### Technical data



ETIM 5.0 Class-ID: EC001177  
ETIM 5.0 Class-Description:  
Protective plastic hose



**Certifications**  
IEC EN 61386-23



**Colour delivered**  
Silver grey (RAL 7001)



**Material**  
Soft PVC with hard PVC spiral,  
SBR/NBR



**Temperature range**  
-15 °C to +60 °C

Article number	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® SSV-M/SSVZ-M	Suitable for SILVYN® USK-M	Suitable for SILVYN® SSV/SSVZ	Suitable for SILVYN® USK	Suitable for SILVYN® SCH	PU ring (m)
<b>SILVYN® SP</b>								
61714000	10.0 x 14.0	50	16 x 1,5/1	12 x 1,5	9/1	9	10 - 16 S	25
61714010	12.0 x 16.0	60	16 x 1,5/2	16 x 1,5	9/2	11	12 - 20 S	25
61714020	14.0 x 18.0	70	20 x 1,5/1		11/1	13,5	12 - 20 S	25
61714100	16.0 x 20.0	70	20 x 1,5/2	20 x 1,5	11/2	16	16 - 25 S	25
61714110	22.0 x 27.0	90	25 x 1,5	25 x 1,5	16	21	20 - 32 S	25
61714120	30.0 x 36.0	140	32 x 1,5	32 x 1,5	29/1	29	25 - 40 S	25
61714070	38.0 x 44.0	190	40 x 1,5	40 x 1,5	36	36	32 - 50 S	25
61714090	49.0 x 56.0	250	63 x 1,5	50 x 1,5	48	48	40 - 60 S	25

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® SP-PU refer to page 843

### Accessories

- SILVYN® SSV-M refer to page 844
- SILVYN® SSVZ-M refer to page 844
- SILVYN® USK-M refer to page 845
- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856
- SILVYN® USK refer to page 846
- SILVYN® SSV refer to page 847
- SILVYN® SSVZ refer to page 847
- SILVYN® SCH refer to page 848



**SILVYN® SP-PU**



**Benefits**

- Protection against mechanical stress
- Abrasion protection
- Protection against chemicals
- UV-resistant and weather-resistant

**Application range**

- Cable protection
- Bundling and guiding of cables and wires
- Outdoors
- In harsh environment

**Product features**

- Tear-resistant
- Oil and petrol-resistant
- Halogen-free
- Resistant to microbes
- Dimensionally stable

**Product Make-up**

- Hard PVC inner spiral
- Polyurethane outer sheath

**Technical data**

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> PUR with hard PVC spiral Fire behaviour according to UL 94V-0
	<b>Temperature range</b> -20°C to +90°C

Article number	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® SSV-M/SSVZ-M	Suitable for SILVYN® USK-M	Suitable for SILVYN® SSV/SSVZ	Suitable for SILVYN® USK	Suitable for SILVYN® SCH	PU ring (m)
<b>SILVYN® SP-PU</b>								
61793620	10.0 x 14.0	50	16 x 1,5/1	12 x 1,5	9/1	9	10 - 16 S	25
61793630	12.0 x 16.0	60	16 x 1,5/2	16 x 1,5	9/2	11	12 - 20 S	25
61793640	14.0 x 18.0	70	20 x 1,5/1		11/1	13,5	12 - 20 S	25
61793650	16.0 x 20.0	80	20 x 1,5/2	20 x 1,5	11/2	16	16 - 25 S	25
61793660	22.0 x 27.0	110	25 x 1,5	25 x 1,5		21	20 - 32 S	25
61793670	30.0 x 36.0	150	32 x 1,5	32 x 1,5	29/1	29	25 - 40 S	25
61793680	38.0 x 44.0	200	40 x 1,5	40 x 1,5	36	36	32 - 50 S	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® SSV-M refer to page 844
- SILVYN® SSVZ-M refer to page 844
- SILVYN® USK-M refer to page 845
- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856
- SILVYN® USK refer to page 846
- SILVYN® SSV refer to page 847
- SILVYN® SSVZ refer to page 847
- SILVYN® SCH refer to page 848





## SILVYN® SSV-M / SILVYN® SSVZ-M



SILVYN® SSV-M

SILVYN® SSVZ-M

### Benefits

#### SILVYN® SSV-M

- Conduit gland with high tensile strength for plastic conduits

#### SILVYN® SSVZ-M

- Conduit gland with high tensile strength for plastic conduits
- High-tensile cable protection

### Application range

- In combination with protective conduit:

- SILVYN® SI
- SILVYN® SP
- SILVYN® SP-PU

### Product features

#### SILVYN® SSV-M

- High-tensile
- Robust
- Compact design

#### SILVYN® SSVZ-M

- High-tensile
- Robust
- Compact design
- Cable strain relief
- Cable sealing

### Product Make-up

#### SILVYN® SSV-M

- Metric connection thread
- Conduit entry with special grip profile

#### SILVYN® SSVZ-M

- Metric connection thread
- Integrated cable gland
- Conduit entry with special grip profile

### Note

- Necessary conduit clamp SILVYN® SCH

### Suitable conduits

- SILVYN® SI Page 841
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

### Technical data



#### SILVYN® SSV-M

ETIM 5.0 Class-ID: EC001178

ETIM 5.0 Class-Description:

Screw connection for protective plastic hose

#### SILVYN® SSVZ-M

ETIM 5.0 Class-ID: EC001180

ETIM 5.0 Class-Description:

Screw connection for protective metallic hose



#### Material

##### SILVYN® SSV-M

Body: nickel-plated brass

O-ring: NBR

##### SILVYN® SSVZ-M

Body: nickel-plated brass

Incised sealing ring: CR

O-ring: NBR



#### Temperature range

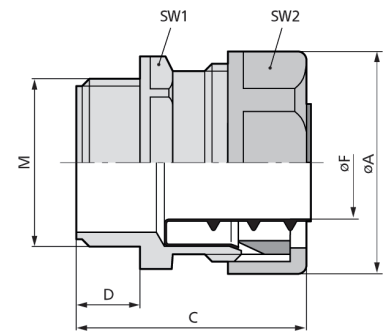
-20°C to +80°C

Article number	Metric size	SW wrench size mm	SW 1/2 mm	Overall length mm	Thread length mm	Clear opening (mm)	Suitable for SILVYN® SCH	Suitable for SILVYN® SI	Suitable for SILVYN® SP	Suitable for SILVYN® SP-PU	Pieces / PU
<b>SILVYN® SSV-M</b>											
52002827	12 x 1.5/1	16		25	8	7	10 - 16 S	7 x 9			50
52002828	12 x 1.5/2	19		25	8	9	10 - 16 S	9 x 12			50
52002840	16 x 1.5/1	19		25	8	8	10 - 16 S	11 x 14	10 x 14	10 x 14	50
52002839	16 x 1.5/2	19		25	8	10	12 - 20 S	13 x 16	12 x 16	12 x 16	50
52002841	20 x 1.5/1	22		25	8	12	16 - 25 S	14 x 18			50
52002842	20 x 1.5/3	25		25	8	15.5	20 - 32 S	18 x 23			50
52002843	25x1.5	32		29.5	8.5	19	20 - 32 S	23 x 28	22 x 27	22 x 27	25
52002844	32 x 1.5	40		32.5	9.5	27	32 - 50 S	32 x 38	30 x 36	30 x 36	25
52002845	40x1.5	50		36	11	34	32 - 50 S		38 x 44	38 x 44	10
52002846	50 x 1.5	57		39	12	41	40 - 60 S		45 x 51		5
52002847	63 x 1.5	67		43	12	46	40 - 60 S		49 x 56		5
<b>SILVYN® SSVZ-M</b>											
55501850	16 x 1.5/1		19 / 18	39	5	8	10 - 16 S		10 x 14	10 x 14	50
55501860	16 x 1.5/2		19 / 18	39	5	10	12 - 20 S		12 x 16	12 x 16	50
55501870	20 x 1.5/1		22 / 22	39.6	6	12	16 - 25 S	14 x 18	14 x 18	14 x 18	50
55501880	20 x 1.5/2		22 / 22	39.6	6	12.5	16 - 25 S		16 x 20	16 x 20	50
55501890	20 x 1.5/3		25 / 22	43	6	15.5	20 - 32 S	18 x 23			50
55501900	20 x 1.5/4		30 / 24	44	6	16	20 - 32 S		22 x 27	22 x 27	25
55501910	25 x 1.5		32 / 30	48	7	20	20 - 32 S	23 x 28			25
55501920	32 x 1.5/1		40 / 40	53.6	8	27	25 - 40 S		30 x 36	30 x 36	25
55501930	32 x 1.5/2		42 / 40	53.6	8	30	32 - 50 S	32 x 38			25
55501940	40 x 1.5		52 / 50	61.6	8	34	32 - 50 S		38 x 44	38 x 44	10
55501950	50 x 1.5		57 / 57	68.6	9	41	40 - 60 S		45 x 51		5
55501960	63 x 1.5		64 / 66	71.6	10	46	40 - 60 S		50 x 56		5

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® USK-M**



**Benefits**

- Fast and easy assembly
- Vibration protection
- No extra parts necessary

**Application range**

- In combination with protective conduit:
- SILVYN® FPS/ FD-PU
- SILVYN® SP/SP-PU
- Indoor applications
- Light mechanical stress

**Product features**

- Large wrench sizes

**Product Make-up**

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

**Note**

- Included: SILVYN® EE-K inner sleeve

**Suitable conduits**

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

**Technical data**



ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description:  
Screw connection for protective plastic hose



**Colour delivered**  
Silver grey (RAL 7001)



**Material**  
PP



**Protection rating**  
IP 54



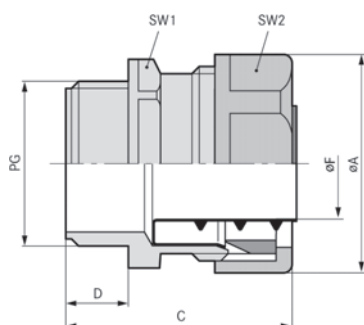
**Temperature range**  
-10°C to +110°C

Article number	Metric size	SW 1/2 mm	Overall length mm	Thread length mm	Clear opening (mm)	Suitable for SILVYN® FD-PU/FPS	Suitable for SILVYN® SP	Suitable for SILVYN® SP-PU	Pieces / PU
<b>SILVYN® USK-M</b>									
55501300	10 x 1.0	16 / 18	40	10	6	7 x 10			50
55501310	12 x 1.5	21 / 23	43	12	8	10 x 14	10 x 14	10 x 14	50
55501320	16 x 1.5	24 / 27	43	12	11	13 x 17	12 x 16	12 x 16	50
55501330	20 x 1.5	29 / 32	44	13	15	16 x 21	16 x 20	16 x 20	50
55501340	25 x 1.5	36 / 40	50	13	20	22 x 27	22 x 27	22 x 27	25
55501350	32 x 1.5	45 / 49	51	15	27	29 x 36	30 x 36	30 x 36	25
55501360	40 x 1.5	54 / 58	51	15	35	38 x 45	38 x 44	38 x 44	25
55501370	50 x 1.5	66 / 70	58	16	44.5	48 x 56	49 x 56		10

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® USK



### Benefits

- Fast and easy assembly
- Vibration protection
- No extra parts necessary

### Application range

- In combination with protective conduit
- SILVYN® FPS/ FD-PU
- SILVYN® SP/SP-PU
- Indoor applications
- Light mechanical stress

### Product features

- Large wrench sizes

### Product Make-up

- PG connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

### Note

- Included: SILVYN® EE-K inner sleeve

### Suitable conduits

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

### Technical data

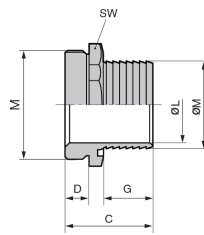
	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Silver grey (RAL 7001)
	<b>Material</b> PP
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -10°C to +110°C

Article number	PG size	SW 1/2 mm	Overall length mm	Thread length mm	Clear opening (mm)	Suitable for SILVYN® FD-PU/FPS	Suitable for SILVYN® SP/SP-PU	Pieces / PU
<b>SILVYN® USK</b>								
52005810	7	16 / 18	40	10	6	7 x 10		50
52005820	9	21 / 23	41	10	9	10 x 14	10 x 14	50
52005830	11	24 / 27	41	10	11	13 x 17	12 x 16	50
52005840	13.5	26 / 29	41	10	13	15 x 19	14 x 18	50
52005850	16	29 / 32	42	11	14.5	16 x 21	16 x 20	50
52005860	21	36 / 40	48	11	19.5	22 x 27	22 x 27	25
52005870	29	45 / 49	48	12	27	29 x 36	30 x 36	25
52005880	36	53 / 58	48	12	36	38 x 45	38 x 44	25
52005900	48	65 / 70	57	15	46	48 x 56	49 x 56	10

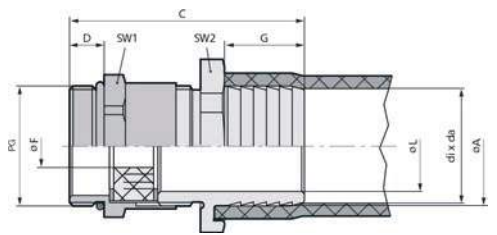
Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® SSV / SILVYN® SSVZ**



**SILVYN® SSV**



**SILVYN® SSVZ**

**Benefits**

**SILVYN® SSV**

- Conduit gland with high tensile strength for plastic conduits

**SILVYN® SSVZ**

- Conduit gland with high tensile strength for plastic conduits
- High-tensile cable protection

**Application range**

- In combination with protective conduit:
- SILVYN® SI
- SILVYN® SP
- SILVYN® SP-PU

**Product features**

**SILVYN® SSV**

- High-tensile
- Robust
- Compact design

**SILVYN® SSVZ**

- High-tensile
- Robust
- Compact design
- Cable strain relief
- Cable sealing

**Product Make-up**

**SILVYN® SSV**

- PG connection thread
- Conduit entry with special grip profile

**SILVYN® SSVZ**

- PG connection thread
- Integrated cable gland
- Conduit entry with special grip profile

**Note**

- Necessary conduit clamp SILVYN® SCH

**Suitable conduits**

- SILVYN® SI Page 841
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

**Technical data**



ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose



**Material**  
**SILVYN® SSV**

Body: nickel-plated brass  
O-ring: NBR

**SILVYN® SSVZ**  
Body: nickel-plated brass  
Incised sealing ring: CR  
O-ring: NBR



**Temperature range**  
-20°C to +80°C

Article number	PG size	SW wrench size mm	SW 1/2 mm	Overall length mm	Thread length mm	Clear opening (mm)	Suitable for SILVYN® SCH	Suitable for SILVYN® SI	Suitable for SILVYN® SP	Suitable for SILVYN® SP-PU	Pieces / PU
<b>SILVYN® SSV</b>											
52003070	9	19		25	5.5	8	10 - 16 S		10 x 14	10 x 14	100
53800020	9	19		25	5.5	10	12 - 20 S		12 x 16	12 x 16	100
52003080	11	22		25	6	12	16 - 25 S		14 x 18	14 x 18	50
52024560	11	22		25	6	14	16 - 25 S		16 x 20	16 x 20	50
52003090	13.5	25		27.5	6.5	15.5	20 - 32 S	18 x 22			50
52003100	16	30		27.5	7.5	19	20 - 32 S		22 x 27	22 x 27	25
52003110	21	32		30	8	21	20 - 32 S	23 x 28			25
53800080	29	40		33	9.5	27	25 - 40 S		30 x 36	30 x 36	25
52024640	29	42		33	9.5	30	32 - 50 S	32 x 38			25
52002980	36	52		37	12	34	32 - 50 S		38 x 44	38 x 44	10
52002990	42	57		41	14	41	40 - 60 S		45 x 51		5
52013000	48	64		44	14	46	40 - 60 S		49 x 56		5
<b>SILVYN® SSVZ</b>											
52021070	9		19 / 17	39.1	6	8	10 - 16 S		10 x 14	10 x 14	50
52021080	9		19 / 17	39.1	6	10	12 - 20 S		12 x 16	12 x 16	50
52003020	11		22 / 20	39.6	6	12	16 - 25 S		14 x 18	14 x 18	50
52024670	11		22 / 20	39.6	6	14	16 - 25 S		16 x 20	16 x 20	50
52003030	13.5		25 / 22	43.1	6.5	15.5	20 - 32 S	18 x 22			50
52003040	16		30 / 24	44.1	6.5	19	20 - 32 S		22 x 27	22 x 27	25
52003050	21		32 / 30	48.1	7	21	20 - 32 S	23 x 28			25
52003060	29		40 / 40	53.6	8	27	25 - 40 S		30 x 36	30 x 36	25
52024680	29		42 / 40	53.6	8	30	32 - 50 S	32 x 38			25

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® SCH



### Benefits

- Ensures the tensile strength
- Clamps various conduit sizes with one clamp

### Application range

- In combination with:
  - SILVYN® SSV-M/SSVZ-M
  - SILVYN® SSV/SSV-Z

### Product features

- Variable range of clamping force

### Product Make-up

- Galvanized steel ring
- Worm gear drive

### Suitable conduits

- SILVYN® SI Page 841
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

### Technical data



ETIM 5.0 Class-ID: EC001172  
ETIM 5.0 Class-Description:  
Coupler for corrugated plastic hoses



**Material**  
Steel, galvanized

Article number	Article designation	Clamping range in mm	Suitable for SILVYN® SI/SP/SP-PU	Pieces / PU
<b>SILVYN® SCH</b>				
52003130	10 - 16 S	10.0 - 16.0	10 x 14 / 11 x 14	100
52003140	12 - 20 S	12.0 - 20.0	12 x 16 / 13 x 16 / 14 x 18	100
52003160	16 - 25 S	16.0 - 25.0	16 x 20 / 18 x 22 / 18 x 23	100
52003170	20 - 32 S	20.0 - 32.0	22 x 27	100
52009050	25 - 40 S	25.0 - 40.0	30 x 36 / 23 x 28	100
52009061	35 - 50 S	35.0 - 50.0	32 x 38 / 38 x 44	50
52009040	40 - 60 S	40.0 - 60.0	45 x 51 / 50 x 56	25

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® SSV-M refer to page 844
- SILVYN® SSVZ-M refer to page 844
- SILVYN® SSV refer to page 847
- SILVYN® SSVZ refer to page 847



**SILVYN® EL**



**Benefits**

- Easy assembly of cables and wires due to smooth inner
- Bendable
- Crush-resistant
- A fully insulated system when used in combination with SILVYN® MPC/MPC-M

**Application range**

- Mechanical engineering
- Vehicle construction
- Vending machine construction
- Exporters

**Product features**

- Flexible
- Smooth inner wall
- Dimensionally stable

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Integrated hard PVC spiral
- Soft PVC outer sheath

**Note**

- Smooth version is not UL recognized

**Technical data**

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Silver grey (RAL 7001)
	<b>Material</b> Special soft PVC sheath with hard PVC spiral
	<b>Temperature range</b> -20°C to +70°C -5°C to +70°C (smooth version)

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MPC-M/MPC 90°M	Suitable for SILVYN® MPC	Suitable for SILVYN® MPC 90°	PU (m)
<b>SILVYN® EL</b>							
61747360	12	10.0 x 14.5	25	16/1	9	9	30
61747370	16	12.0 x 16.5	25	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61747380	20	16.0 x 21.0	35	20/2	13,5/2, 16	13,5/2, 16	30
61747390	25	22.0 x 27.5	45	25 x 1,5	21	21	30
61747400	30	25.0 x 30.5	55	32/1	29/1	29/1	30
61747410	32	28.0 x 33.5	60	32/2	29/2	29/2	30
61747420	40	35.0 x 41.0	80	40 x 1,5	36	36	30
61747430	50	40.0 x 46.4	105	50 x 1,5	42		30
61747440	63	50.0 x 57.0	120	63 x 1,5	48		30
<b>SILVYN® EL smooth</b>							
61747361	12	10.0 x 14.2	50	16/1	9	9	30
61747371	16	12.0 x 17.8	50	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61747381	20	16.0 x 21.1	70	20/2	13,5/2, 16	13,5/2, 16	30
61747391	25	21.0 x 26.4	90	25x1,5	21	21	30
61747411	32	26.5 x 33.1	140	32/2	29/2	29/2	30
61747421	40	35.4 x 41.8	190	40 x 1,5	36	36	30
61747431	50	40.0 x 47.9	240	50 x 1,5	42		30
61747441	63	51.3 x 59.7	270	63 x 1,5	48		30

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® ELU refer to page 850
- SILVYN® ELT refer to page 852
- SILVYN® ELR refer to page 853

**Accessories**

- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 45° M refer to page 855
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856



## SILVYN® ELU



### Benefits

- Easy assembly of cables and wires due to smooth inner
- Bendable
- Crush-resistant
- A fully insulated system when used in combination with SILVYN® MPC/MPC-M

### Application range

- Mechanical engineering
- Vehicle construction
- Vending machine construction
- Exporters

### Product features

- Flexible
- Smooth inner wall
- Dimensionally stable

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Integrated hard PVC spiral

### Note

- Smooth version is not UL recognized

### Technical data

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> Special soft PVC sheath with hard PVC spiral
	<b>Temperature range</b> -20°C to +70°C -5°C to +70°C (smooth version)

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MPC-M/MPC 90°M	Suitable for SILVYN® MPC	Suitable for SILVYN® MPC 90°	PU (m)
<b>SILVYN® ELU</b>							
61751790	12	10.0 x 14.5	25	16/1	9	9	30
61751791	16	12.0 x 16.5	25	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751792	20	16.0 x 21.0	35	20/2	13,5/2, 16	13,5/2, 16	30
61751793	25	22.0 x 27.5	45	25x1,5	21	21	30
61751794	30	25.0 x 30.5	55	32/1	29/1	29/1	30
61751795	32	28.0 x 33.5	60	32/2	29/2	29/2	30
61751796	40	35.0 x 41.0	80	40 x 1,5	36	36	30
61751797	50	40.0 x 46.4	105	50 x 1,5	42		30
61751798	63	50.0 x 57.0	120	63 x 1,5	48		30
<b>SILVYN® ELU smooth</b>							
61751590	12	10.0 x 14.2	50	16/1	9	9	30
61751591	16	12.0 x 17.8	50	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751592	20	16.0 x 21.1	70	20/2	13,5/2, 16	13,5/2, 16	30
61751593	25	21.0 x 26.4	90	25x1,5	21	21	30
61751595	32	26.5 x 33.1	140	32/2	29/2	29/2	30
61751596	40	35.4 x 41.8	190	40 x 1,5	36	36	30
61751597	50	40.0 x 47.9	240	50 x 1,5	42		30
61751598	63	51.3 x 59.7	270	63 x 1,5	48		30

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 45° M refer to page 855
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856



**SILVYN® ELÖ**



**Benefits**

- Resistant to grease, cooling agents and oils, especially ASTM2 testing oil
- Easy assembly of cables and wires due to smooth inner
- Bendable
- Crush-resistant
- A fully insulated system when used in combination with SILVYN® MPC/MPC-M

**Application range**

- Mechanical engineering
- Machine tools
- Vending machine construction
- Applications with strong chemical influences

**Product features**

- Oil-resistant
- Flexible
- Smooth inner wall
- Dimensionally stable

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Integrated hard PVC spiral
- Modified soft PVC sheath

**Note**

- Smooth version is not UL recognized

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001177  
ETIM 5.0 Class-Description: Protective plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Green (RAL 6001)

**Material**  
Special soft PVC sheath with hard PVC spiral

**Temperature range**  
-20°C to +70°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MPC-M/MPC 90°M	Suitable for SILVYN® MPC	Suitable for SILVYN® MPC 90°	PU (m)
<b>SILVYN® ELÖ</b>							
61751610	12	10.0 x 14.5	25	16/1	9	9	30
61751620	16	12.0 x 16.5	25	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751630	20	16.0 x 21.0	35	20/2	13,5/2, 16	13,5/2, 16	30
61751640	25	22.0 x 27.5	45	25 x 1,5	21	21	30
61751650	30	25.0 x 30.5	55	32/1	21	21	30
61751660	32	28.0 x 33.5	60	32/2	29/2	29/2	30
61751670	40	35.0 x 41.0	80	40 x 1,5	36	36	30
61751680	50	40.0 x 46.4	105	50 x 1,5	42		30
61751690	63	50.0 x 57.0	120	63 x 1,5	48		30
<b>SILVYN® ELO smooth</b>							
61751611	12	10.0 x 14.2	50	16/1	9	9	30
61751621	16	12.0 x 17.8	50	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751631	20	16.0 x 21.1	70	20/2	13,5/2, 16	13,5/2, 16	30
61751641	25	21.0 x 26.4	90	25x1,5	21	21	30
61751661	32	26.5 x 33.1	140	32/2	29/2	29/2	30
61751671	40	35.4 x 41.8	190	40 x 1,5	36	36	30
61751681	50	40.0 x 47.9	240	50 x 1,5	42		30
61751691	63	51.3 x 59.7	270	63 x 1,5	48		30

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® EL refer to page 849
- SILVYN® ELU refer to page 850
- SILVYN® ELT refer to page 852
- SILVYN® ELR refer to page 853

**Accessories**

- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 45° M refer to page 855
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856





## SILVYN® ELT



### Benefits

- High temperature resistance
- Easy assembly of cables and wires due to smooth inner
- Bendable
- Crush-resistant
- A fully insulated system when used in combination with SILVYN® MPC/MPC-M

### Application range

- Mechanical engineering
- Machine tools
- Vending machine construction
- Applications with higher temperatures

### Product features

- High temperature resistance
- Smooth inner wall
- Flexible
- Dimensionally stable

### Norm references / Approvals

- UL FILENUMBER E308201
- **ECOLAB®**  
Industry standard in the field of professional cleaning and disinfection

### Product Make-up

- Integrated hard PVC spiral
- Modified soft PVC sheath

### Technical data

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Blue (RAL 5012)
	<b>Material</b> Special soft PVC sheath with hard PVC spiral
	<b>Temperature range</b> -20°C to +90°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MPC-M/MPC 90°M	Suitable for SILVYN® MPC	Suitable for SILVYN® MPC 90°	PU (m)
<b>SILVYN® ELT</b>							
61751700	12	10.0 x 14.5	25	16/1	9	9	30
61751710	16	12.0 x 16.5	25	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751720	20	16.0 x 21.0	35	20/2	13,5/2, 16	13,5/2, 16	30
61751730	25	22.0 x 27.5	45	25 x 1,5	21	21	30
61751740	30	25.0 x 30.5	55	32/1	29/1	29/1	30
61751750	32	28.0 x 33.5	60	32/2	29/2	29/2	30
61751760	40	35.0 x 41.0	80	40 x 1,5	36	36	30
61751770	50	40.0 x 46.4	105	50 x 1,5	42		30
61751780	63	50.0 x 57.0	120	63 x 1,5	48		30
<b>SILVYN® ELT smooth</b>							
61751701	12	10.0 x 14.2	50	16/1	9	9	30
61751711	16	12.0 x 17.8	50	16/2, 20/1	11, 13,5/1	11, 13,5/1	30
61751721	20	16.0 x 21.1	70	20/2	13,5/2, 16	13,5/2, 16	30
61751731	25	21.0 x 26.4	90	25x1,5	21	21	30
61751751	32	26.5 x 33.1	140	32/2	29/2	29/2	30
61751761	40	35.4 x 41.8	190	40 x 1,5	36	36	30
61751771	50	40.0 x 47.9	240	50 x 1,5	42		30
61751781	63	51.3 x 59.7	270	63 x 1,5	48		30

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® EL refer to page 849
- SILVYN® ELU refer to page 850
- SILVYN® ELR refer to page 853

### Accessories

- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 45° M refer to page 855
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856



**SILVYN® ELR**



**Benefits**

- Easy assembly of cables and wires due to smooth inner
- Bendable
- Crush-resistant
- A fully insulated system when used in combination with SILVYN® MPC/MPC-M

**Application range**

- Mechanical engineering
- Vehicle construction
- Vending machine construction

**Product features**

- Flexible
- Smooth inner wall
- Dimensionally stable

**Product Make-up**

- Integrated hard PVC spiral
- Modified soft PVC sheath

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001177  
ETIM 5.0 Class-Description: Protective plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Orange (RAL 2008)

**Material**  
Special soft PVC sheath with hard PVC spiral

**Temperature range**  
-20°C to +70°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MPC-M/MPC 90°M	Suitable for SILVYN® MPC	Suitable for SILVYN® MPC 90°	PU (m)
<b>SILVYN® ELR</b>							
61751600	12	10.0 x 14.2	50	16 / 1	9	9	30
61751601	16	12.0 x 17.8	50	16 / 2 , 20 / 1	11 , 13,5 / 1	11 , 13,5 / 1	30
61751602	20	16.0 x 21.1	70	20 / 2	13,5 / 2 , 16	13,5 / 2 , 16	30
61751603	25	21.0 x 26.4	90	25x1,5	21	21	30
61751604	32	26.5 x 33.1	140	32 / 2	29 / 2	29 / 2	30
61751605	40	35.4 x 41.8	190	40 x 1,5	36	36	30
61751606	50	40.0 x 47.9	240	50 x 1,5	42		30
61751607	63	51.3 x 59.7	270	63 x 1,5	48		30

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® MPC-M refer to page 854
- SILVYN® MPC 45° M refer to page 855
- SILVYN® MPC 90° M refer to page 854
- SILVYN® MPC refer to page 856
- SILVYN® MPC 90° refer to page 856



## SILVYN® MPC-M / SILVYN® MPC 90° M



### SILVYN® MPC-M

#### Benefits

##### SILVYN® MPC-M

- All-purpose
- Fast and easy assembly

##### SILVYN® MPC 90° M

- All-purpose
- Fast and easy assembly
- 90° elbow allows easy installation

#### Application range

- In combination with protective conduit:
- SILVYN® EL/ELU/ELO/ELT/ELR (helically formed and smooth conduits)

#### Product features

- Dust protection
- Moisture-protection
- Ensures high tensile strength and mechanical protection

### SILVYN® MPC 90° M

#### Norm references / Approvals

- UL FILENUMBER E308201

#### Product Make-up

##### SILVYN® MPC-M

- Metric connection thread
- Hexagonal collar with integrated conduit connection

##### SILVYN® MPC 90° M

- Metric connection thread
- 90° elbow with integrated conduit connection

#### Suitable conduits

- SILVYN® EL Page 849
- SILVYN® ELÖ Page 851
- SILVYN® SP Page 842
- SILVYN® ELT Page 852
- SILVYN® SP-PU Page 843

#### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Black (RAL 9005), UV-resistant  
Grey, RAL 7001

**Material**  
PA66  
Halogen-free

**IP** **Protection rating**  
IP 65 with helically formed conduits  
IP 67 + IP 68 (2bar) with smooth conduits

**Temperature range**  
-40°C to +120°C

Article number	Metric size	Clear opening (mm)	Suitable for SILVYN® SI	Suitable for SILVYN® SP/SP-PU	Suitable for SILVYN® EL/ELU/ELO/ELT/ELR	Pieces / PU
<b>SILVYN® MPC-M black</b>						
55502460	16 x 1.5/1	9	11 x 14		12	10
55502461	16 x 1.5/2	10.5	13 x 16	12 x 16	16	10
55502462	20 x 1.5/1	10.5	13 x 16	12 x 16	16	10
55502463	20 x 1.5/2	14.5		16 x 20	20	10
55502464	25 x 1.5	19		22 x 27	25	10
55502465	32 x 1.5/1	24.5			30	10
55502469	32 x 1.5/2	24.5			32	10
55502466	40 x 1.5	33			40	2
55502467	50 x 1.5	39			50	2
55502468	63 x 1.5	48		49 x 56	63	1
<b>SILVYN® MPC-M grey</b>						
55502441	16 x 1.5/1	9	11 x 14		12	10
55502442	16 x 1.5/2	10.5	13 x 16	12 x 16	16	10
55502443	20 x 1.5/1	10.5	13 x 16	12 x 16	16	10
55502444	20 x 1.5/2	14.5		16 x 20	20	10
55502445	25 x 1.5	19		22 x 27	25	10
55502446	32 x 1.5/1	24.5			30	10
55502447	32 x 1.5/2	24.5			32	10
55502448	40 x 1.5	33			40	2
55502449	50 x 1.5	39			50	2
55502439	63 x 1.5	48		49 x 56	63	1
<b>SILVYN® MPC 90° M black</b>						
55502480	16 x 1.5	10.5	13 x 16	12 x 16	16	10
55502481	20 x 1.5/1	10.5	13 x 16	12 x 16	16	10
55502482	20 x 1.5/2	14.5		16 x 20	20	10
55502483	25 x 1.5	19		22 x 27	25	10
55502484	32 x 1.5	24.5			32	10
55502485	40 x 1.5	33			40	2
<b>SILVYN® MPC 90° M grey</b>						
55502458	16 x 1.5	10.5	13 x 16	12 x 16	16	10
55502459	20 x 1.5/1	10.5	13 x 16	12 x 16	16	10
55502366	20 x 1.5/2	14.5		16 x 20	20	10
55502367	25 x 1.5	19		22 x 27	25	10
55502368	32 x 1.5	24.5			32	10
55502369	40 x 1.5	33			40	2

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX



**SILVYN® MPC 45° M**



**Benefits**

- All-purpose
- Fast and easy assembly
- 45° elbow enables best assembling

**Application range**

- In combination with protective conduit
- SILVYN® EL/ELU/ELO/ELT/ELR (helicly formed and smooth conduits)

**Product features**

- Dust protection
- Moisture-protection
- Ensures high tensile strength and mechanical protection

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Metric connection thread
- 45° elbow with integrated conduit connection

**Suitable conduits**

- SILVYN® EL Page 849

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant Grey, RAL 7001
	<b>Material</b> PA66 Halogen-free
	<b>Protection rating</b> IP 65 with helicly formed conduits IP 67 + IP 68 (2bar) with smooth conduits
	<b>Temperature range</b> -40°C to +120°C

Article number	Metric size	Clear opening (mm)	Suitable for SILVYN® EL/ELU/ELO/ELT/ELR	Pieces / PU
<b>SILVYN® MPC 45° M black</b>				
55502431	20 x 1.5 / 1	10.5	16	10
55502432	20 x 1.5 / 2	14.5	20	10
55502433	25 x 1.5	19	25	10
55502434	32 x 1.5	24.5	32	2
<b>SILVYN® MPC 45° M grey</b>				
55502435	20 x 1.5 / 1	10.5	16	10
55502436	20 x 1.5 / 2	14.5	20	10
55502437	25 x 1.5	19	25	10
55502438	32 x 1.5	24.5	32	2

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® MPC / SILVYN® MPC 90°



### SILVYN® MPC

#### Benefits

##### SILVYN® MPC

- All-purpose
- Fast and easy assembly

##### SILVYN® MPC 90°

- All-purpose
- Fast and easy assembly
- 90° elbow allows easy installation

#### Application range

- In combination with protective conduit:
- SILVYN® EL/ELU/ELO/ELT/ELR (helically formed and smooth conduits)

#### Product features

- Dust protection
- Moisture-protection
- Ensures high tensile strength and mechanical protection

### SILVYN® MPC 90°

#### Norm references / Approvals

- UL FILENUMBER E308201

#### Product Make-up

##### SILVYN® MPC

- PG connection thread
- Hexagonal collar with integrated conduit connection

##### SILVYN® MPC 90°

- PG connection thread
- 90° elbow with integrated conduit connection

#### Suitable conduits

- SILVYN® EL Page 849
- SILVYN® ELU Page 850
- SILVYN® ELÖ Page 851
- SILVYN® ELT Page 852
- SILVYN® ELR Page 853

#### Technical data

ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**Certifications**  
IEC EN 61386-23

**Colour delivered**  
Black (RAL 9005), UV-resistant  
Grey, RAL 7001

**Material**  
PA66  
Halogen-free

**Protection rating**  
IP 65 with helically formed conduits  
IP 67 + IP 68 (2bar) with smooth conduits

**Temperature range**  
-40°C to +120°C

Article number	PG size	Clear opening (mm)	Suitable for SILVYN® SI	Suitable for SILVYN® SP/SP-PU	Suitable for SILVYN® EL/ELU/ELO/ELT/ELR	Pieces / PU
<b>SILVYN® MPC black</b>						
55502470	9	9	11 x 14		12	10
55502471	11	10.5	13 x 16	12 x 16	16	10
55502472	13.5	10.5	13 x 16	12 x 16	16	10
55502494	13.5	14.5		16 x 20	20	10
55502473	16	14.5		16 x 20	20	10
55502474	21	19		22 x 27	25	10
55502476	29	24.5			30	10
55502495	29	24.5			32	10
55502477	36	33			40	2
55502478	42	39			50	2
55502479	48	48			63	2
<b>SILVYN® MPC grey</b>						
55502496	9	9	11 x 14		12	10
55502497	11	10.5	13 x 16	12 x 16	16	10
55502498	13.5	10.5	13 x 16	12 x 16	16	10
55502499	13.5	14.5		16 x 20	20	10
55502451	16	14.5		16 x 20	20	10
55502452	21	19		22 x 27	25	10
55502453	29	24.5			30	10
55502454	29	24.5			32	10
55502455	36	33			40	2
55502456	42	39			50	2
55502457	48	48			63	2
<b>SILVYN® MPC 90° black</b>						
55502486	11	10.5	13 x 16	12 x 16	16	10
55502487	13.5	10.5	13 x 16	12 x 16	16	10
55502488	16	14.5			20	10
55502489	21	19		16 x 20	25	10
55502490	29	24.5		16 x 20	32	10
55502493	36	33			40	2
<b>SILVYN® MPC 90° grey</b>						
55502370	11	10.5	13 x 16	12 x 16	16	10
55502371	13.5	10.5	13 x 16	12 x 16	16	10
55502372	16	14.5			20	10
55502373	21	19		16 x 20	25	10
55502374	29	24.5		16 x 20	32	10
55502375	36	33			40	2

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® GMP-GL refer to page 812

APPENDIX ACCESSORIES FLEXIMARK® SILVYN® SKINTOP® EPIC® HITRONIC® ETHERLINE® UNITRONIC® ÖLFLEX®



**SILVYN® FPS**



**Benefits**

- Dimensionally stable
- Crushable and extendable
- Highly oil and acid-resistant
- Liquidtight
- Corrosion-resistant

**Application range**

- Mechanical engineering
- In drag chains (SILVYN® CHAIN)
- Robot-building
- Moving applications
- Indoor applications

**Product features**

- Cadmium-free

**Product Make-up**

- PVC-insulated steel spring wire
- Soft PVC outer sheath

**Note**

- PU = 50 m (on request)

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001177  
ETIM 5.0 Class-Description: Protective plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Grey

**Material**  
Soft PVC with insulated spring steel wire

**Temperature range**  
-25°C to +80°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® USK-M/US-M	Suitable for SILVYN® LKI-M/MSK-M	Suitable for SILVYN® USK/US/LKI/EE-K	PU ring (m)
<b>SILVYN® FPS</b>							
61711550	10	7.0 x 10.0	8	10 x 1,0	12 x 1,5	7	25
61711590	14	10.0 x 14.0	10	12 x 1,5	16 x 1,5	9	25
61711630	17	13.0 x 17.0	13	16 x 1,5	20 x 1,5	11	25
61711670	19	15.0 x 19.0	15			13,5	25
61711710	21	16.0 x 21.0	17	20 x 1,5	25 x 1,5	16	25
61711750	27	22.0 x 27.0	20	25 x 1,5	32 x 1,5	21	25
61711790	36	29.0 x 36.0	25	32 x 1,5	40 x 1,5	29	25
61711830	45	38.0 x 45.0	36	40 x 1,5	50 x 1,5	36	25
61711910	56	48.0 x 56.0	40	50 x 1,5	63 x 1,5	48	25
<b>SILVYN® FPS 10M</b>							
61721690	10	7.0 x 10.0	8	10 x 1,0	12 x 1,5	7	10
61721700	14	10.0 x 14.0	10	12 x 1,5	16 x 1,5	9	10
61721710	17	13.0 x 17.0	13	16 x 1,5	20 x 1,5	11	10
61721720	19	15.0 x 19.0	15			13,5	10
61721730	21	16.0 x 21.0	17	20 x 1,5	25 x 1,5	16	10
61721740	27	22.0 x 27.0	20	25 x 1,5	32 x 1,5	21	10
61721750	36	29.0 x 36.0	25	32 x 1,5	40 x 1,5	29	10
61721760	45	38.0 x 45.0	36	40 x 1,5	50 x 1,5	36	10
61721780	56	48.0 x 56.0	40	50 x 1,5	63 x 1,5	48	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® FD-PU refer to page 858

**Accessories**

- SILVYN® MSK-M EE refer to page 859
- SILVYN® US-M refer to page 905
- SILVYN® LKI-M refer to page 860
- SILVYN® US refer to page 906
- SILVYN® USK-M refer to page 845
- SILVYN® LKI refer to page 860
- SILVYN® EE-K refer to page 861



## SILVYN® FD-PU



### Benefits

- Dimensionally stable
- Highly flexible at cold temperatures
- Crushable and extendable
- High resistance to oil, petrol, acids and greases
- Liquidtight

### Application range

- For indoor and outdoor use
- Mechanical engineering
- In drag chains (SILVYN® CHAIN)
- Robot-building
- Moving applications

### Product features

- Halogen and cadmium-free
- Abrasion and microbe-resistant
- Fire behaviour of outer sheath according to UL 94V-2

### Product Make-up

- PVC-insulated steel spring wire
- PUR outer sheath

### Note

- PU = 50 m (on request)

### Technical data

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Metallic blue
	<b>Material</b> PUR with PVC-insulated spring steel wire Fire behaviour according to UL 94V-2
	<b>Temperature range</b> -40°C to +80°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® USK-M/US-M	Suitable for SILVYN® LKI-M/MSK-M	Suitable for SILVYN® USK/US/LKI/EE-K	PU ring (m)
<b>SILVYN® FD-PU</b>							
64453660	10	7.0 x 10.0	8	10 x 1,0	12 x 1,5	7	10
64453670	14	10.0 x 14.0	10	12 x 1,5	16 x 1,5	9	10
64453680	17	13.0 x 17.0	13	16 x 1,5	20 x 1,5	11	10
64453690	19	15.0 x 19.0	15			13,5	10
64453700	21	16.0 x 21.0	17	20 x 1,5	25 x 1,5	16	10
64453710	27	22.0 x 27.0	20	25 x 1,5	32 x 1,5	21	10
64453720	36	29.0 x 36.0	25	32 x 1,5	40 x 1,5	29	10
64453730	45	38.0 x 45.0	36	40 x 1,5	50 x 1,5	36	10
64453750	56	48.0 x 56.0	40	50 x 1,5	63 x 1,5	48	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® MSK-M EE refer to page 859
- SILVYN® US-M refer to page 905
- SILVYN® LKI-M refer to page 860
- SILVYN® US refer to page 906
- SILVYN® USK-M refer to page 845
- SILVYN® LKI refer to page 860
- SILVYN® EE-K refer to page 861



**SILVYN® MSK-M EE**



**Benefits**

- Optimum cable and conduit strain relief
- Maximum cable sealing
- Fast and easy assembly
- Wide clamping range
- Anti-turn protection

**Application range**

- In combination with protective conduit:
- SILVYN® FPS
- SILVYN® FD-PU
- For indoor and outdoor use
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

**Product features**

- Combination of SILVYN® and SKINTOP®

**Product Make-up**

- SKINTOP® MS-M cable gland or
- SKINTOP® MS-SC-M EMC connection
- SILVYN® conduit connection via inner sleeve and cap nut

**Suitable conduits**

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Material**  
Basis type:  
Body: nickel-plated brass  
Conduit connector seal: CR/NBR  
Tube seal: TPE

**IP** **Protection rating**  
Cable: IP 68  
Conduit:  
IP 54 with SILVYN® FPS, FD-PU

**Temperature range**  
-30°C to +100°C

Article number	Metric size	Suitable for SILVYN® FPS/FD-PU	Pieces / PU
<b>SILVYN® MSK-M for SILVYN® FPS/FD-PU</b>			
55506070	12 x 1.5	7 x 10	5
55506071	16 x 1.5	10 x 14	5
55506072	20 x 1.5	13 x 17	5
55506073	25 x 1.5	16 x 21	5
55506074	32 x 1.5	22 x 27	5
55506075	40 x 1.5	29 x 36	1
55506076	50 x 1.5	38 x 45	1
55506077	63 x 1.5	48 x 56	1
<b>SILVYN® MSK-SC-M for SILVYN® FPS/FD-PU</b>			
55506100	12 x 1.5	7 x 10	5
55506101	16 x 1.5	10 x 14	5
55506102	20 x 1.5	13 x 17	5
55506103	25 x 1.5	16 x 21	5
55506104	32 x 1.5	22 x 27	5
55506105	40 x 1.5	29 x 36	1
55506106	50 x 1.5	38 x 45	1

Other variations with multiple SKINTOP® DIX-M sealing inserts are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINTOP® DIX-DV refer to page 742





## SILVYN® LKI-M / SILVYN® LKI



### Info

- Swivelling upper part with integrated inner sleeve

### Benefits

- Fast and easy assembly
- Vibration protection
- High-tensile
- Can be rotated

### Application range

- In combination with protective conduit:
- SILVYN® FPS
- SILVYN® FD-PU
- Robot-building
- For rotating applications

### Product features

- Smooth inner surface
- Slim construction

### Product Make-up

#### SILVYN® LKI-M

- Metric connection thread
- Swivelling upper part with integrated inner sleeve

#### SILVYN® LKI

- PG connection thread
- Swivelling upper part with integrated inner sleeve

### Suitable conduits

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Silver grey (RAL 7001)
	<b>Material</b> PP
	<b>Protection rating</b> IP 54
	<b>Temperature range</b> -10°C to +110°C

Article number	Metric size	PG size	SW wrench size mm	Overall length mm	Thread length mm	Clear opening (mm)	Suitable for SILVYN® FPS/FD-PU	Pieces / PU
<b>SILVYN® LKI-M</b>								
55501400	12 x 1.5		16	38	10	5.5	7 x 10	50
55501410	16 x 1.5		19	39.5	10	9.5	10 x 14	50
55501420	20 x 1.5		22	42	10	11.5	13 x 17	50
55501430	25 x 1.5		27	48	11	14.5	16 x 21	50
55501440	32 x 1.5		35	58	12	19.5	22 x 27	25
55501450	40 x 1.5		45	59	12	27	29 x 36	25
55501460	50 x 1.5		54	62.5	12	35.5	38 x 45	25
55501470	63 x 1.5		65	68	15	46	48 x 56	10
<b>SILVYN® LKI</b>								
55000000		7	16	38	10	5.5	7 x 10	50
55000010		9	19	39.5	10	9.5	10 x 14	50
55000020		11	22	42	10	11.5	13 x 17	50
55000030		13.5	24	42	10	13	15 x 19	50
55000040		16	27	48	11	14.5	16 x 21	50
55000050		21	35	58	11	19.5	22 x 27	25
55000060		29	45	59	12	27	29 x 36	25
55000070		36	54	62.5	12	35.5	38 x 45	25
55000090		48	65	68	15	46	48 x 56	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® EE-K**



**Benefits**

- Cable damage can be prevented

**Application range**

- In combination with protective conduit:
- SILVYN® FPS/ FD-PU
- SILVYN® SP/SP-PU
- Conduit end cover

**Product features**

- All-round collar completely covers the protective conduit end

**Product Make-up**

- Threaded sleeve

**Suitable conduits**

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

**Technical data**

	ETIM 5.0 Class-ID: EC000519 ETIM 5.0 Class-Description: Terminal sleeve for protective hose
	<b>Colour delivered</b> Silver grey (RAL 7001)
	<b>Material</b> PP
	<b>Temperature range</b> -10°C to +110°C

Article number	Nominal size	Suitable for SILVYN® FPS/FD-PU	Pieces / PU
<b>SILVYN® EE-K</b>			
52023340	10	7 x 10	50
52023350	14	10 x 14	50
52023360	17	13 x 17	50
52023370	19	15 x 19	50
52023380	21	16 x 21	50
52023390	27	22 x 27	25
52023400	36	29 x 36	25
52023410	45	38 x 45	20
52023430	56	48 x 56	10

Photographs are not to scale and do not represent detailed images of the respective products.



### SILVYN® RILL PA 6



**Info**

- Maximum safety in the event of a fire

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001175  
ETIM 5.0 Class-Description: Corrugated plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23  
UL File No. E308201  
DNV, Lloyd's Register  
Rail:  
DB DIN 5510 Part 2 (S4/SR2/ST2)  
EN 45545-2 (HL-3)  
SNCF NFF 16 101 / 102 (I2/f2)  
UNDERGROUND BS 6853

**RAL** **Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9011), UV-resistant

**Material**  
PA 6  
Silicone-free  
Halogen-free  
Fire behaviour according to UL 94V-0

**Temperature range**  
-40°C to +115°C  
short-term +150°C

#### Benefits

- Dimensionally stable
- Flexible
- High flame-retardance and self-extinguishing in accordance with UL 94V-0
- Crush-resistant
- Lightweight

#### Application range

- Mechanical engineering
- Public utilities
- Railway applications / vehicle construction
- Moving applications
- Outdoor application (in black)

#### Product features

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

#### Norm references / Approvals

- UL FILENUMBER E308201

#### Product Make-up

- Fine-profile corrugated polyamide 6 conduit

#### Note

- UV and weather-resistant in black

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® KCLICK-M/90°M	Suitable for SILVYN® KCLICK PG/90°PG	Suitable for SILVYN® KCLICK-GPZ-M/GPZ	PU (m)
<b>SILVYN® RILL PA 6 grey</b>							
61746939	10	6.5 x 10.0	13	10 x 1,0	7/-	12 x 1,5/7	50
61746940	13	10.0 x 13.0	20	12 x 1,5/16 x 1,5	9/9	16x1,5/9	50
61746950	16	12.0 x 15.8	35	16 x 1,5/20 x 1,5	11/11	20x1,5/11	50
61747010	18	14.3 x 18.5	40		13,5/13,5	-/13,5	50
61746960	21	16.5 x 21.2	45	20 x 1,5	16/16	25x1,5/16	50
61746970	28	23.0 x 28.5	55	25 x 1,5	21/21	32x1,5/21	50
61746980	34	29.0 x 34.5	65	32 x 1,5	29/29	40x1,5/29	25
61746990	42	36.0 x 42.5	90	40 x 1,5	36/-	50x1,5/36	25
61747000	54	48.0 x 54.5	100	50 x 1,5	48/-	63x1,5/48	25
<b>SILVYN® RILL PA 6 black</b>							
61746935	10	6.5 x 10.0	13	10 x 1,0	7/-	12 x 1,5/7	50
61746945	13	10.0 x 13.0	20	12 x 1,5/16 x 1,5	9/9	16x1,5/9	50
61746955	16	12.0 x 15.8	35	16 x 1,5/20 x 1,5	11/11	20x1,5/11	50
61747015	18	14.3 x 18.5	40		13,5/13,5	-/13,5	50
61746965	21	16.5 x 21.2	45	20 x 1,5	16/16	25x1,5/16	50
61746975	28	23.0 x 28.5	55	25 x 1,5	21/21	32x1,5/21	50
61746985	34	29.0 x 34.5	65	32 x 1,5	29/29	40x1,5/29	25
61746995	42	36.0 x 42.5	90	40 x 1,5	36/-	50x1,5/36	25
61747005	54	48.0 x 54.5	100	50 x 1,5	48/-	63x1,5/48	25

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- SILVYN® FPAS refer to page 875
- SILVYN® RILL PA 12 refer to page 863

#### Accessories

- SILVYN® KCLICK-M refer to page 864
- SILVYN® KCLICK 90° M refer to page 865
- SILVYN® KCLICK GPZ-M refer to page 866
- SILVYN® KSE refer to page 867
- SILVYN® KCLICK PG refer to page 868
- SILVYN® KCLICK 90° PG refer to page 869
- SILVYN® KCLICK-GPZ refer to page 870
- SILVYN® KCLICK-Y refer to page 871
- SILVYN® KCLICK-RH refer to page 873
- SILVYN® K-EM refer to page 874

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**SILVYN® RILL PA 12**

**i Info**

- Designed for continuous movement



**Benefits**

- Dimensionally stable
- Highly flexible at cold temperatures
- Flame-retardant and self-extinguishing according to UL 94V-2
- Crush-resistant
- Highly flexible

**Application range**

- Mechanical engineering
- In drag chains (SILVYN® CHAIN)
- Building Automation
- Robot-building
- Outdoor application (in black)

**Product features**

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

**Norm references / Approvals**

- Railway: DB, SNCF

**Product Make-up**

- Fine-profile corrugated polyamide 12 conduit

**Note**

- UV and weather-resistant in black

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001175  
ETIM 5.0 Class-Description: Corrugated plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23  
Lloyd's Register  
Rail:  
DB DIN 5510 Part 2 (S4/SR2/ST2)  
SNCF NFF 16-101 / 102 (I3/F2)

**RAL** **Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9011), UV-resistant

**Material**  
PA 12  
Silicone-free  
Halogen-free  
Fire behaviour according to UL 94V-2

**Temperature range**  
-50°C bis +100°C  
short-term +150°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® KCLICK-M/90°M	Suitable for SILVYN® KCLICK PG/90°PG	Suitable for SILVYN® KCLICK-GPZ-M/GPZ	PU (m)
<b>SILVYN® RILL PA 12 grey</b>							
61815100	10	6.5 x 10.0	13	10 x 1,5	7/-	12 x 1,5/7	50
61815110	13	10.0 x 13.0	15	12 x 1,5/16 x 1,5	9/9	16x1,5/9	50
61815120	16	12.0 x 15.8	22	16 x 1,5/20 x 1,5	11/11	20x1,5/11	50
61815180	18	14.3 x 18.5	27		13,5/13,5	-/13,5	50
61815130	21	16.5 x 21.2	35	20 x 1,5	16/16	25x1,5/16	50
61815140	28	23.0 x 28.5	45	25 x 1,5	21/21	32x1,5/21	50
61815150	34	29.0 x 34.5	50	32 x 1,5	29/29	40x1,5/29	25
61815160	42	36.0 x 42.5	80	40 x 1,5	36/-	50x1,5/36	25
61815170	54	48.0 x 54.5	100	50 x 1,5	48/-	63x1,5/48	25
<b>SILVYN® RILL PA 12 black</b>							
61815105	10	6.5 x 10.0	13	10 x 1,5	7/-	12 x 1,5/7	50
61815115	13	10.0 x 13.0	15	12 x 1,5/16 x 1,5	9/9	16x1,5/9	50
61815125	16	12.0 x 15.8	22	16 x 1,5/20 x 1,5	11/11	20x1,5/11	50
61815185	18	14.3 x 18.5	27		13,5/13,5	-/13,5	50
61815135	21	16.5 x 21.2	35	20 x 1,5	16/16	25x1,5/16	50
61815145	28	23.0 x 28.5	45	25 x 1,5	21/21	32x1,5/21	50
61815155	34	29.0 x 34.5	50	32 x 1,5	29/29	40x1,5/29	25
61815165	42	36.0 x 42.5	80	40 x 1,5	36/-	50x1,5/36	25
61815175	54	48.0 x 54.5	100	50 x 1,5	48/-	63x1,5/48	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® FPAS refer to page 875
- SILVYN® RILL PA 6 refer to page 862

**Accessories**

- SILVYN® KCLICK-M refer to page 864
- SILVYN® KCLICK 90° M refer to page 865
- SILVYN® KCLICK GPZ-M refer to page 866
- SILVYN® KSE refer to page 867
- SILVYN® KCLICK PG refer to page 868
- SILVYN® KCLICK 90° PG refer to page 869
- SILVYN® KCLICK-GPZ refer to page 870
- SILVYN® KCLICK-Y refer to page 871
- SILVYN® KCLICK-RH refer to page 873
- SILVYN® K-EM refer to page 874



## SILVYN® KLICK-M



### Benefits

- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance
- Can be rotated

### Application range

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Rotating applications

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Metric connection thread
- Body with inner sealing
- Upper part with snap-in sleeve

### Suitable conduits

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	Metric size	SW wrench size mm	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK-M grey</b>							
55501000	10 x 1.0	17	12	6	10.0	10	50
55501010	12 x 1.5	20	12	7	13.0	13	50
55501020	16 x 1.5/1	20	12	10	13.0	13	50
55501030	16 x 1.5/2	23	12	11	15.8	16	50
55501040	20 x 1.5/1	23	13	12	15.8	16	50
55501050	20 x 1.5/2	29.5	13	16	21.2	21	50
55501060	25 x 1.5	37	13	17	28.5	28	25
55501070	32 x 1.5	44	15	25.5	34.5	34	25
55501080	40 x 1.5	51.5	17	32	42.5	42	25
55501090	50 x 1.5	65.5	17	42.5	54.5	54	10
55500990	63 x 1.5	59	17	49	54.5	54	10
<b>SILVYN® KLICK-M black</b>							
55501005	10 x 1.0	17	12	6	10.0	10	50
55501015	12 x 1.5	20	12	7	13.0	13	50
55501025	16 x 1.5/1	20	12	10	13.0	13	50
55501035	16 x 1.5/2	23	12	11	15.8	16	50
55501045	20 x 1.5/1	23	13	12	15.8	16	50
55501055	20 x 1.5/2	29.5	13	16	21.2	21	50
55501065	25 x 1.5	37	13	20.5	28.5	28	25
55501075	32 x 1.5	44	15	25.5	34.5	34	25
55501085	40 x 1.5	51.5	15	32	42.5	42	25
55501095	50 x 1.5	65.5	15.3	42.5	54.5	54	10
55500995	63 x 1.5	59	16	49	54.5	54	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® KLICK GPZ-M refer to page 866



**SILVYN® KLICK 90° M**



**Benefits**

- 90° elbow allows easy installation
- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance

**Application range**

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- For applications with limited space
- Rotating applications

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Metric connection thread
- 90° elbow
- Body with inner sealing
- Upper part with snap-in sleeve

**Suitable conduits**

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	Metric size	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK 90° M grey</b>						
55501110	10 x 1.0	12	6	10.0	10	50
55501120	12 x 1.5	12	8	13.0	13	50
55501130	16 x 1.5/1	12	12	13.0	13	50
55501140	16 x 1.5/2	12	12	15.8	16	50
55501150	20 x 1.5/1	13	15	15.8	16	50
55501160	20 x 1.5/2	13	15	21.2	21	50
55501170	25 x 1.5/1	13	18	21.2	21	50
55501180	25 x 1.5/2	13	18	28.5	28	25
55501190	32 x 1.5/1	15	24	28.5	28	25
55501200	32 x 1.5/2	15	24	34.5	34	10
55501210	40 x 1.5/1	15	32	34.5	34	10
55501220	40 x 1.5/2	15	32	42.5	42	10
55501230	50 x 1.5/1	16	39	42.5	42	10
55501240	50 x 1.5/2	16	39	54.5	54	5
55501250	63 x 1.5	16	53	54.5	54	5
<b>SILVYN® KLICK 90° M black</b>						
55501115	10 x 1.0	12	6	10.0	10	50
55501125	12 x 1.5	12	8	13.0	13	50
55501135	16 x 1.5/1	12	12	13.0	13	50
55501145	16 x 1.5/2	12	12	15.8	16	50
55501155	20 x 1.5/1	13	15	15.8	16	50
55501165	20 x 1.5/2	13	15	21.2	21	50
55501175	25 x 1.5/1	13	18	21.2	21	50
55501185	25 x 1.5/2	13	18	28.5	28	25
55501195	32 x 1.5/1	15	24	28.5	28	25
55501205	32 x 1.5/2	15	24	34.5	34	10
55501215	40 x 1.5/1	15	32	34.5	34	10
55501225	40 x 1.5/2	15	32	42.5	42	10
55501235	50 x 1.5/1	16	39	42.5	42	10
55501245	50 x 1.5/2	16	39	54.5	54	5
55501255	63 x 1.5	16	53	54.5	54	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® KLICK GPZ-M



### Benefits

- Fast assembly
- Easy to disassemble
- Additional cable strain relief
- Additional cable sealing

### Application range

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Metric connection thread
- Cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

### Suitable conduits

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

### Technical data

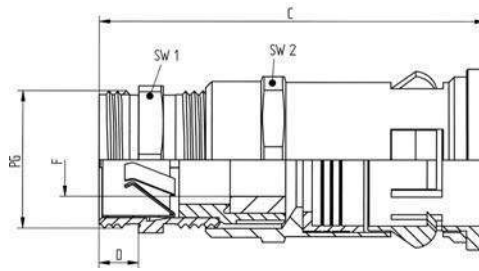
	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	Metric size	Clamping range in mm	SW wrench size mm	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK, GPZ-M grey</b>								
55500800	12 x 1.5	4.0 - 6.5	16	8	6.5	10	10	20
55500810	16 x 1.5	5.0 - 9.5	18	8	9.5	13	13	20
55500820	20 x 1.5	8.0 - 12.0	21	8	13	15.8	16	20
55500830	25 x 1.5	11.0 - 16.0	27	8	16	21.2	21	10
55500840	32 x 1.5	15.0 - 21.0	34	11	18	28.5	28	10
55500850	40 x 1.5	16.0 - 26.0	40	12	25	34.5	34	10
55500860	50 x 1.5	27.0 - 35.0	49	13	32	42.5	42	10
55500870	63 x 1.5	32.0 - 42.0	60	14	44	54.5	54	10
<b>SILVYN® KLICK, GPZ-M black</b>								
55500805	12 x 1.5	4.0 - 6.5	16	8	6.5	10	10	20
55500815	16 x 1.5	5.0 - 9.5	18	8	9.5	13	13	20
55500825	20 x 1.5	8.0 - 12.0	21	8	13	15.8	16	20
55500835	25 x 1.5	11.0 - 16.0	27	8	16	21.2	21	10
55500845	32 x 1.5	15.0 - 21.0	34	11	18	28.5	28	10
55500855	40 x 1.5	16.0 - 26.0	40	12	25	34.5	34	10
55500865	50 x 1.5	27.0 - 35.0	49	13	32	42.5	42	10
55500875	63 x 1.5	32.0 - 42.0	60	14	44	54.5	54	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® KSE**



**Benefits**

- Fast assembly
- Additional cable strain relief
- Additional cable sealing
- Optimum screen connection (EMC)

**Application range**

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Used in areas where screened cables and wires need to have additional protection

**Product Make-up**

- PG connection thread
- EMC cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

**Suitable conduits**

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC001178 <b>ETIM 5.0 Class-Description:</b> Screw connection for protective plastic hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> Polyamide Nickel-plated brass
	<b>Protection rating</b> IP 68
	<b>Temperature range</b> -40 °C to +115 °C

Article number	PG size	Clamping range in mm	SW 1/2 mm	Overall length mm	Thread length mm	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KSE</b>								
55001200	9	4.0 - 8.0	17 / 22	57	12	13.0	13	20
55001230	16	10.0 - 14.0	24 / 31	70	12	21.2	21	10
55001240	21	14.0 - 17.5	30 / 39	75	12	28.5	28	10

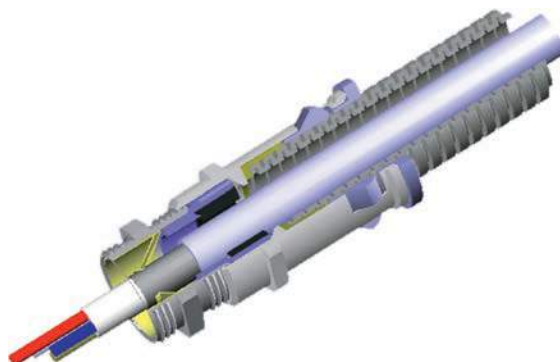
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® MSK-M EE refer to page 859
- SILVYN® MSK-M US refer to page 901
- SILVYN® KSE-M refer to page 881

**Accessories**

- SKINDICHT® SM-PE refer to page 817







## SILVYN® KLIKK PG



### Benefits

- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance
- Can be rotated

### Application range

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Rotating applications

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- PG connection thread
- Body with inner sealing
- Upper part with snap-in sleeve

### Suitable conduits

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	PG size	SW wrench size mm	Overall length mm	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLIKK PG grey</b>								
61800860	7	15.5	10	10	7	10.0	10	50
61800870	9	18	10	10	10	13.0	13	50
61800880	11	21	10	10	12.5	15.8	16	50
61800850	13.5	24	11	11	13.5	18.5	18	50
61800890	16	27	12	12	17	21.2	21	50
61800900	21	34	12	12	23.5	28.5	28	25
61800910	29	40	12	12	30	34.5	34	25
61800920	36	49	12	12	36	42.5	42	25
61800930	48	60	15	15	47.5	54.5	54	10
<b>SILVYN® KLIKK PG black</b>								
61800865	7	15.5	10	10	7	10.0	10	50
61800875	9	18	10	10	10	13.0	13	50
61800885	11	21	10	10	12.5	15.8	16	50
61800855	13.5	24	11	11	13.5	18.5	18	50
61800895	16	27	12	12	17	21.2	21	50
61800905	21	34	12	12	23.5	28.5	28	25
61800915	29	40	12	12	30	34.5	34	25
61800925	36	49	12	12	36	42.5	42	25
61800935	48	60	15	15	47.5	54.5	54	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® KLICK 90° PG**



**Benefits**

- 90° elbow allows easy installation
- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance

**Application range**

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- For applications with limited space
- Rotating applications

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- PG connection thread
- 90° elbow
- Body with inner sealing
- Upper part with snap-in sleeve

**Suitable conduits**

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	PG size	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK 90° PG grey</b>						
61801020	9	10	12	13.0	13	50
61801030	11	10	15.5	15.8	16	50
56000100	13.5	13	13.5	18.5	18	50
61801040	16	13	18	21.2	21	50
61801050	21	13	24	28.5	28	25
61801060	29	15	32	34.5	34	10
61801061	36	15	36.5	42.5	42	10
61801062	48	16	48.5	54.5	54	5
<b>SILVYN® KLICK 90° PG black</b>						
61801025	9	10	12	13.0	13	50
61801035	11	10	15.5	15.8	16	50
56000105	13.5	13	13.5	18.5	18	50
61801045	16	13	18	21.2	21	50
61801055	21	13	24	28.5	28	25
61801065	29	15	32	34.5	34	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® KCLICK-GPZ



### Benefits

- Fast assembly
- Easy to disassemble
- Additional cable strain relief
- Additional cable sealing

### Application range

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- PG connection thread
- Cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

### Suitable conduits

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 68 IP 69 according to DIN 40050 T.9
	<b>Temperature range</b> -40 °C to +115 °C

Article number	PG size	Clamping range in mm	SW wrench size mm	Thread length mm	Clear opening (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KCLICK-GPZ grey</b>								
61801120	7	3.0 - 6.5	16	8	7	10.0	10	20
61801130	9	4.0 - 8.0	18	8	8	13.0	13	20
61801140	11	5.0 - 10.0	21	8	10	15.8	16	20
61801200	13.5	6.0 - 11.0	27	8	11	15.8	16	20
61801202	13.5	6.0 - 12.0	27	8	12	18.5	18	20
61801150	16	10.0 - 14.0	27	10	14	21.2	21	10
61801160	21	13.0 - 18.0	34	11	20	28.5	28	10
61801170	29	18.0 - 25.0	40	12	25	34.5	34	10
61801180	36	22.0 - 32.0	49	13	32	42.5	42	10
61801190	48	34.0 - 44.0	60	14	44	54.5	54	10
<b>SILVYN® KCLICK-GPZ black</b>								
61801125	7	3.0 - 6.5	16	8	7	10.0	10	20
61801135	9	4.0 - 8.0	18	8	8	13.0	13	20
61801145	11	5.0 - 10.0	21	8	10	15.8	16	20
61801205	13.5	6.0 - 11.0	27	8	11	15.8	16	20
61801155	16	10.0 - 14.0	27	10	14	21.2	21	10
61801165	21	13.0 - 18.0	34	11	20	28.5	28	10
61801175	29	18.0 - 25.0	40	12	25	34.5	34	10
61801185	36	22.0 - 32.0	49	13	32	42.5	42	10
61801195	48	34.0 - 44.0	60	14	44	54.5	54	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® KLICK-Y / SILVYN® KLICK-Y (TPE)**



SILVYN® KLICK-Y



SILVYN® KLICK-Y (TPE)

**Benefits**

**SILVYN® KLICK-Y**

- Fast assembly
- Easy to disassemble
- High-tensile
- Easy combination of different conduit sizes

**SILVYN® KLICK-Y (TPE)**

- Easy to assemble
- High temperature resistance

**Application range**

**SILVYN® KLICK-Y**

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Y-distributor for SILVYN® RILL conduits

**SILVYN® KLICK-Y (TPE)**

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Y-distributor for SILVYN® RILL conduits

**Norm references / Approvals**

**SILVYN® KLICK-Y**

- UL FILENUMBER E308201

**Product Make-up**

**SILVYN® KLICK-Y**

- 3 x conduit connection
- 2 x bore hole for fixation with M5 screws

**SILVYN® KLICK-Y (TPE)**

- 3 x conduit connection
- 1 x bore hole for fixation with M4 screws

**Suitable conduits**

**SILVYN® KLICK-Y**

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

**SILVYN® KLICK-Y (TPE)**

- SILVYN® RILL PA 6 Page 862

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>On request</b> <b>SILVYN® KLICK-Y</b> More sizes / combinations
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> <b>SILVYN® KLICK-Y</b> PA6 <b>SILVYN® KLICK-Y (TPE)</b> TPE
	<b>Protection rating</b> <b>SILVYN® KLICK-Y</b> IP 68 IP 69 according to DIN 40050 T.9 <b>SILVYN® KLICK-Y (TPE)</b> IP 66
	<b>Temperature range</b> -40 °C to +115 °C

Article number	Nominal size	For conduit with outer Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK-Y grey</b>				
61801090	2 x 10 / 1 x 13	10.0 / 13.0	10 / 13	10
61801100	3 x 13	13.0	13	10
61801110	2 x 13 / 1 x 16	13.0 / 15.8	13 / 16	10
56000130	3 x 16	15.8	16	10
<b>SILVYN® KLICK-Y black</b>				
61801095	2 x 10 / 1 x 13	10.0 / 13.0	10 / 13	10
61801105	3 x 13	13.0	13	10
61801115	2 x 13 / 1 x 16	13.0 / 15.8	13 / 16	10
56000135	3 x 16	15.8	16	10
<b>SILVYN® KLICK-Y (TPE) grey</b>				
56000120	3 x 10	10.0	10	10
56000140	2 x 16 / 1 x 21	15.8 / 21.2	16 / 21	10
56000150	2 x 21 / 1 x 28	21.2 / 28.5	21 / 28	10
56000160	2 x 28 / 1 x 34	28.5 / 34.5	28 / 34	10
<b>SILVYN® KLICK-Y (TPE) black</b>				
56000125	3 x 10	10.0	10	10
56000145	2 x 16 / 1 x 21	15.8 / 21.2	16 / 21	10
56000155	2 x 21 / 1 x 28	21.2 / 28.5	21 / 28	10
56000165	2 x 28 / 1 x 34	28.5 / 34.5	28 / 34	10

Photographs are not to scale and do not represent detailed images of the respective products.

**SILVYN® KLICK-S / SILVYN® KLICK-D / SILVYN® KLICK-V**

**SILVYN® KLICK-S**

**SILVYN® KLICK-D**

**SILVYN® KLICK-V**
**Benefits**
**SILVYN® KLICK-S**

- Fast assembly
- Easy to disassemble
- High tensile strength
- Conduit retained by rib

**SILVYN® KLICK-D**

- Ensures that the conduit is fixed to the conduit-holder

**SILVYN® KLICK-V**

- Connects several conduit holders with one another

**Application range**
**SILVYN® KLICK-S**

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Fastening of conduits on machine walls for all applications

**SILVYN® KLICK-D**

- In combination with
- SILVYN® KLICK S
- Cover for conduit holder SILVYN® KLICK S

**SILVYN® KLICK-V**

- In combination with
- SILVYN® KLICK S

**Product features**
**SILVYN® KLICK-S**

- Impact-resistant polyamide

**SILVYN® KLICK-D**

- Fits tightly to SILVYN® KLICK S

**SILVYN® KLICK-V**

- Fits tightly to SILVYN® KLICK S

**Product Make-up**
**SILVYN® KLICK-S**

- Multi-part conduit holder with M5 borehole for fixation

**SILVYN® KLICK-D**

- Cover with connection pins

**SILVYN® KLICK-V**

- Connection pin

**Suitable conduits**

- SILVYN® RILL PA 6 Page 862

**Technical data**


ETIM 5.0 Class-ID: EC001171  
ETIM 5.0 Class-Description:  
Holder for protective hose



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Temperature range**  
**SILVYN® KLICK-S**  
-30 °C to +70 °C  
**SILVYN® KLICK-D**  
-40 °C to +115 °C  
**SILVYN® KLICK-V**  
-40 °C to +115 °C

Article number	Nominal size	For conduit with outer Ø (mm)	Pieces / PU
<b>SILVYN® KLICK-S grey</b>			
61811110	10	10	100
61811120	13	13	100
61811130	16	15.8	50
61811190	18	18.5	50
61811140	21	21.2	50
61811150	28	28.5	50
61811160	34	34.5	30
61811170	42	42.5	20
61811180	54	54.5	20
<b>SILVYN® KLICK-D grey</b>			
61811200	10/13		100
61811260	16		50
61811210	21		50
61811220	28		50
61811230	34		30
61811240	42		20
61811250	54		20
<b>SILVYN® KLICK-D black</b>			
61811205	13		100
61811265	16		50
61811215	21		50
61811225	28		50
61811235	34		30
61811245	42		20
61811255	54		20
<b>SILVYN® KLICK-V grey</b>			
61811270			100
<b>SILVYN® KLICK-V black</b>			
61811275			100

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® KLICK-RH**



**Info**

- New design

**Benefits**

- Fast assembly
- Easy to disassemble
- High tensile strength
- Conduit retained by rib
- No loose parts

**Application range**

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Fastening of conduits on machine walls for all applications

**Product features**

- Impact-resistant polyamide
- One-piece conduit holder
- Suitable for mounting onto a C-profile rail
- Stackable

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- One-piece conduit holder with M5/M6 borehole for fixation

**Suitable conduits**

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

**Technical data**



ETIM 5.0 Class-ID: EC001171  
ETIM 5.0 Class-Description:  
Holder for protective hose



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Temperature range**  
-40 °C to +115 °C

Article number	Nominal size	Hole Ø (mm)	Suitable for SILVYN® RILL	Pieces / PU
<b>SILVYN® KLICK-RH grey</b>				
65500630	10	5	10	50
65500631	13	5	13	50
65500632	16	6	16	50
65500633	18	6	18	50
65500634	21	6	21	50
65500635	28	6	28	25
65500636	34	6	34	25
65500637	42	6	42	25
65500638	54	6	54	10
<b>SILVYN® KLICK-RH black</b>				
65500639	10	5	10	50
65500640	13	5	13	50
65500641	16	6	16	50
65500642	18	6	18	50
65500643	21	6	21	50
65500644	28	6	28	25
65500645	34	6	34	25
65500646	42	6	42	25
65500647	54	6	54	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® K-EM



### Benefits

- Easy to assemble
- High temperature resistance
- Cable damage can be prevented
- Additional sealing

### Application range

- In combination with protective conduit:
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Intersection or end sleeve

### Suitable conduits

- SILVYN® RILL PA 6 Page 862
- SILVYN® RILL PA 12 Page 863

### Technical data

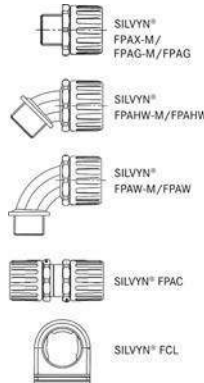
	ETIM 5.0 Class-ID: EC000519 ETIM 5.0 Class-Description: Terminal sleeve for protective hose
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> TPE-V
	<b>Temperature range</b> -40°C to +120°C

Article number	Nominal size	Overall length mm	For conduit with outer Ø (mm)	Pieces / PU
<b>SILVYN® K-EM grey</b>				
65500200	10	29	10	50
65500210	13	32.5	13	50
65500220	16	36.5	15.8	50
65500230	21	37.5	21.2	50
65500240	28	40.2	28.5	25
65500250	34	44.2	34.5	25
65500260	42	46	42.5	25
65500270	54	52	54.5	10
<b>SILVYN® K-EM black</b>				
65500205	10	29	10	50
65500215	13	32.5	13	50
65500225	16	36.5	15.8	50
65500235	21	37.5	21.2	50
65500245	28	40.2	28.5	25
65500255	34	44.2	34.5	25
65500265	42	46	42.5	25
65500275	54	52	54.5	10

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® FPAS**



**Benefits**

- Dimensionally stable
- Flexible
- Flame-retardant and self-extinguishing according to UL 94V-2
- High crush-resistance
- Impact-resistant

**Application range**

- Mechanical engineering
- Plant engineering
- Railway applications / vehicle construction
- Moving applications
- For indoor and outdoor use

**Product features**

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Fine-profile corrugated polyamide 6 conduit

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001175  
ETIM 5.0 Class-Description: Corrugated plastic hose
- DIN VDE** **Certifications**  
IEC EN 61386-23
- On request**  
Available in PA 12
- Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant
- Material**  
PA 6  
Halogen-free  
Fire behaviour according to UL 94V-2
- Temperature range**  
-40°C to +120°C static  
-20°C to +100°C dynamic

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® FPAS black</b>				
61754005	10	6.3 x 10.0	15	50
61754015	13	9.8 x 13.0	25	50
61754025	16	11.8 x 15.8	35	50
61754275	18	14.2 x 18.5	40	50
61737162	20	14.8 x 20.0	45	50
61754035	21	16.7 x 21.2	45	50
61737164	25	19.1 x 25.0	50	50
61754045	28	22.8 x 28.5	50	50
61754055	34	28.1 x 34.5	60	25
61754065	42	35.5 x 42.5	70	25
61754075	54	47.2 x 54.5	80	25
61754305	67	56.3 x 67.2	130	10
<b>SILVYN® FPAS grey</b>				
61754000	10	6.3 x 10.0	15	50
61754010	13	9.8 x 13.0	25	50
61754020	16	11.8 x 15.8	35	50
61754270	18	14.2 x 18.5	40	50
61737253	20	14.8 x 20.0	45	50
61754030	21	16.7 x 21.2	45	50
61737163	25	19.1 x 25.0	50	50
61754040	28	22.8 x 28.5	50	50
61754050	34	28.1 x 34.5	60	25
61754060	42	35.5 x 42.5	70	25
61754070	54	47.2 x 54.5	80	25
61754300	67	56.3 x 67.2	130	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® FPAX-M refer to page 876
- SILVYN® FPAX 90° M refer to page 877
- SILVYN® FPAG-M refer to page 879
- SILVYN® FPAG 45° M
- SILVYN® FPAG 90° M refer to page 880
- SILVYN® KSE-M refer to page 881
- SILVYN® FPAG PG refer to page 884
- SILVYN® FPAG 90° PG refer to page 884
- SILVYN® FLEXILOK M refer to page 882
- SILVYN® FLEXILOK 90° M refer to page 882
- SILVYN® FLEXILOK PG refer to page 883
- SILVYN® FLEXILOK 90° PG refer to page 883
- SILVYN® FCL refer to page 885
- SILVYN® FPAC refer to page 886





## SILVYN® FPAX-M



### Info

- IP66  
IP67
- IP68 (2bar)  
IP69

### Benefits

- Fast assembly
- High tensile strength
- Watertight
- Vibration protection

### Application range

- In combination with protective conduit:
- SILVYN® FPAS
- Applications with strong vibrations

### Product features

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Metric connection thread
- Body with inner sealing
- Upper part with integrated all-round toothing

### Suitable conduits

- SILVYN® FPAS Page 875

### Technical data

ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**Certifications**  
IEC EN 61386-23

**On request**  
PG or NPT connection thread

**Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**Protection rating**  
IP66  
IP67  
IP68 (2bar)  
IP69

**Temperature range**  
-50°C to +135°C

Article number	Metric size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAX-M black</b>			
55506135	16 x 1.5/1	FPAS 10	10
55506145	16 x 1.5/2	FPAS 16	10
55506155	20 x 1.5/1	FPAS 16	10
55506165	20 x 1.5/2	FPAS 21	10
55506175	25 x 1.5	FPAS 28	10
55506185	32 x 1.5	FPAS 34	10
55506195	40 x 1.5	FPAS 42	2
55506205	50 x 1.5/1	FPAS 42	2
55506215	50 x 1.5/2	FPAS 54	2
55506225	63 x 1.5	FPAS 54	2
<b>SILVYN® FPAX-M grey</b>			
55506235	16 x 1.5/1	FPAS 10	10
55506245	16 x 1.5/2	FPAS 16	10
55506255	20 x 1.5/1	FPAS 16	10
55506265	20 x 1.5/2	FPAS 21	10
55506275	25 x 1.5	FPAS 28	10
55506285	32 x 1.5	FPAS 34	10
55506295	40 x 1.5	FPAS 42	2
55507265	50 x 1.5/1	FPAS 42	2
55507275	50 x 1.5/2	FPAS 54	2
55507285	63 x 1.5	FPAS 54	2

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® GMP-GL-M refer to page 738



**SILVYN® FPAX 90° M**

**i Info**

- IP66
- IP67
- IP68 (2 bar)
- IP69



**Benefits**

- 90° elbow allows easy installation
- Fast assembly
- High tensile strength
- Watertight
- Vibration protection

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS
- Applications with strong vibrations

**Product features**

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Metric connection thread
- Body with inner sealing
- Upper part with integrated all-round toothing
- 90° elbow

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**IP** **Protection rating**  
IP66  
IP67  
IP68 (2 bar)  
IP69

**Temperature range**  
-50°C to +135°C

Article number	Metric size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAX 90° M black</b>			
55507300	16 x 1.5/1	FPAS 10	10
55507301	16 x 1.5/2	FPAS 16	10
55507302	20 x 1.5/1	FPAS 16	10
55507303	20 x 1.5/2	FPAS 21	10
55507304	25 x 1.5	FPAS 28	10
55507305	32 x 1.5	FPAS 34	10
55507306	40 x 1.5	FPAS 42	2
55507307	50 x 1.5/1	FPAS 42	2
55507308	50 x 1.5/2	FPAS 54	1
55507309	63 x 1.5	FPAS 54	1
<b>SILVYN® FPAX 90° M grey</b>			
55507310	16 x 1.5/1	FPAS 10	10
55507311	16 x 1.5/2	FPAS 16	10
55507312	20 x 1.5/1	FPAS 16	10
55507313	20 x 1.5/2	FPAS 21	10
55507314	25 x 1.5	FPAS 28	10
55507315	32 x 1.5	FPAS 34	10
55507316	40 x 1.5	FPAS 42	2
55507317	50 x 1.5/1	FPAS 42	2
55507318	50 x 1.5/2	FPAS 54	1
55507319	63 x 1.5	FPAS 54	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® GMP-GL-M refer to page 738



**SILVYN® FPAX T / SILVYN® FPAX Y / SILVYN® FPAX R / SILVYN® FPAX P**



**SILVYN® FPAX T**



**SILVYN® FPAX Y**



**SILVYN® FPAX R**



**SILVYN® FPAX P**

**Benefits**

**SILVYN® FPAX T**

- Fast assembly
- High tensile strength
- Watertight
- Vibration protection

**SILVYN® FPAX Y**

- Fast assembly
- High tensile strength
- Watertight
- Vibration protection

**SILVYN® FPAX R**

- Reducer for the SILVYN® FPAX T/Y system

**SILVYN® FPAX P**

- Stop Plug for the SILVYN® FPAX T/Y system

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS

**Technical data**

**RAL** Colour delivered  
**SILVYN® FPAX T**  
 Black (RAL 9005), UV-resistant

**Material**  
 PA66  
 Halogen-free  
 Polyester Elastomer

**IP** Protection rating  
 IP66  
 IP67  
 IP68 (2 bar)  
 IP69

**Temperature range**  
 -50°C to +135°C

Article number	Nominal size	Hole Ø (mm)	Suitable for SILVYN® FPAX T/Y	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAX T</b>					
55507340	16	6		16	3
55507341	21	6		21	3
55507342	28	6		28	3
55507343	34	7		34	3
55507344	42	7		42	3
<b>SILVYN® FPAX Y</b>					
55507350	16-13-13	4		1x16 / 2x13	3
55507351	21-16-16	5		1x21 / 2x16	3
55507352	28-21-21	6		1x28 / 2x21	3
55507353	34-28-28	6.5		1x34 / 2x28	3
<b>SILVYN® FPAX R</b>					
55507360	16-13		16	13	5
55507361	21-16		21	16	5
55507363	28-16		28	16	5
55507362	28-21		28	21	5
55507366	34-16		34	16	5
55507365	34-21		34	21	5
55507364	34-28		34	28	5
55507369	42-21		42	21	3
55507368	42-28		42	28	3
55507367	42-34		42	34	3
<b>SILVYN® FPAX P</b>					
55507370	16		16		5
55507371	21		21		5
55507372	28		28		5
55507373	34		34		3

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® FPAG-M**



**Benefits**

- Fast assembly
- High-tensile
- Sealing
- Vibration protection

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS
- Applications with strong vibrations

**Product features**

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- Metric connection thread
- Upper part with integrated all-round toothing

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Grey (RAL 7031) Black (RAL 9005), UV-resistant
	<b>Material</b> PA66 Halogen-free
	<b>Protection rating</b> IP 66
	<b>Temperature range</b> -50°C to +135°C

Article number	Metric size	For conduit with outer Ø (mm)	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAG-M black</b>				
55506305	12 x 1.5	10.0	10	10
55506315	16 x 1.5/1	13.0	13	10
55506325	16 x 1.5/2	15.8	16	10
55506335	20 x 1.5/1	15.8	16	10
55506345	20 x 1.5/2	21.2	21	10
55507055	20 x 1.5/3	18.5	18	10
55506355	25 x 1.5	28.5	28	10
55506365	32 x 1.5	34.5	34	10
55506375	40 x 1.5	42.5	42	2
55506385	50 x 1.5/1	42.5	42	2
55506395	50 x 1.5/2	54.5	54	2
55506405	63 x 1,5/1	54.5	54	2
55506475	63 x 1,5/2	67.2	67	2
<b>SILVYN® FPAG-M grey</b>				
55506300	12 x 1.5	10.0	10	10
55506310	16 x 1.5/1	13.0	13	10
55506320	16 x 1.5/2	15.8	16	10
55506330	20 x 1.5/1	15.8	16	10
55506340	20 x 1.5/2	21.2	21	10
55507050	20 x 1.5/3	18.5	18	10
55506350	25 x 1.5	28.5	28	10
55506360	32 x 1.5	34.5	34	10
55506370	40 x 1.5	42.5	42	2
55506380	50 x 1.5/1	42.5	42	2
55506390	50 x 1.5/2	54.5	54	2
55506400	63 x 1,5/1	54.5	54	2
55506470	63 x 1,5/2	67.2	67	2

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® FPAX-M refer to page 876
- SILVYN® KSE-M refer to page 881

**Accessories**

- SKINTOP® GMP-GL-M refer to page 738



## SILVYN® FPAG 90° M



### Benefits

- 90° elbow allows easy installation
- Fast assembly
- High-tensile
- Sealing
- Vibration protection

### Application range

- In combination with protective conduit:
- SILVYN® FPAS
- Applications with strong vibrations
- For applications with limited space

### Product features

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Metric connection thread
- 90° elbow
- Body
- Upper part with integrated all-round toothing

### Suitable conduits

- SILVYN® FPAS Page 875

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Grey (RAL 7031) Black (RAL 9005), UV-resistant
	<b>Material</b> PA66 Halogen-free
	<b>Protection rating</b> IP66
	<b>Temperature range</b> -50°C to +135°C

Article number	Metric size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAG 90° M black</b>			
55506485	12 x 1.5	10	10
55506495	16 x 1.5/1	13	10
55506505	16 x 1.5/2	16	10
55506515	20 x 1.5/1	16	10
55506525	20 x 1.5/2	21	10
55507075	20 x 1.5/3	18	10
55506535	25 x 1.5	28	10
55506545	32 x 1.5	34	10
55507085	40 x 1.5	42	1
55506555	50 x 1.5/1	42	1
55506565	50 x 1.5/2	54	1
55506575	63 x 1.5/1	54	1
55507095	63 x 1.5/2	67	1
<b>SILVYN® FPAG 90° M grey</b>			
55506480	12 x 1.5	10	10
55506490	16 x 1.5/1	13	10
55506500	16 x 1.5/2	16	10
55506510	20 x 1.5/1	16	10
55506520	20 x 1.5/2	21	10
55507070	20 x 1.5/3	18	10
55506530	25 x 1.5	28	10
55506540	32 x 1.5	34	10
55507080	40 x 1.5	42	1
55506550	50 x 1.5/1	42	1
55506560	50 x 1.5/2	54	1
55506570	63 x 1.5/1	54	1
55507090	63 x 1.5/2	67	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® GMP-GL-M refer to page 738



**SILVYN® KSE-M**



**Benefits**

- Fast assembly
- Vibration protection
- Additional cable strain relief
- Additional cable sealing
- Optimum screen connection (EMC)

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS
- Used in areas where screened cables and wires need to have additional protection

**Product features**

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

**Product Make-up**

- Metric connection thread
- EMC cable gland
- Upper part with integrated all-round toothing

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose
- DIN VDE** **Certifications**  
IEC EN 61386-23
- i** **On request**  
With 45° elbow  
With 90° elbow
- RAL** **Colour delivered**  
Black (RAL 9005), UV-resistant
- Material**  
Nickel-plated brass  
PA66  
Halogen-free
- IP** **Protection rating**  
Conduit: IP66  
Cable: IP68
- Temperature range**  
-30°C to +100°C

Article number	Metric size	Clamping range in mm	Thread length mm	Suitable for SILVYN® FPAS	For conduit with outer Ø (mm)	Pieces / PU
<b>SILVYN® KSE-M black</b>						
55507105	16 x 1.5/1	4.5 - 9.0	12	13	13,0	10
55507115	16 x 1.5/2	4.5 - 9.0	12	16	15,8	10
55507125	20 x 1.5/1	7.0 - 12.5	12	16	15,8	10
55507135	20 x 1.5/2	7.0 - 12.5	12	21	21,2	10
55507145	25x1.5	9.0 - 16.5	12	28	28,5	10
55507155	32 x 1.5	11.0 - 21.0	15	34	34,5	10
55507165	40x1.5	19.0 - 28.0	15	42	42,5	1
55507175	50 x 1.5	27.0 - 35.0	15	54	54,5	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-PE-M refer to page 763





## SILVYN® FLEXILOK M / SILVYN® FLEXILOK 90° M



SILVYN® FLEXILOK M

SILVYN® FLEXILOK 90° M



**Info**

- Extremely economical
- New purchasing unit

**Benefits**

- Fast assembly
- Easy to assemble
- Cost-effective conduit gland
- No loose parts
- New space-saving design

**Application range**

- Mechanical engineering
- Control cabinet manufacturing
- Moving applications
- Applications with limited space
- Building Installation

**Product features**

- In black colour UV-resistant and weather-proofed
- One-piece slim design
- Halogen and cadmium-free

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

**SILVYN® FLEXILOK M**

- Metric connection thread
- One-piece body
- Special clamping system

**SILVYN® FLEXILOK 90° M**

- Metric connection thread
- 90° elbow
- Special clamping system

**Note**

- Removeable with a screwdriver

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**DIN VDE** Norm references / Approvals  
IEC EN 61386-23

**RAL** Colour delivered  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**IP** Protection rating  
IP 66

**Temperature range**  
-40°C to +120°C

Article number	Metric size	Thread length mm	Suitable for SILVYN® FPAS	Suitable for conduit OØ (mm)	Pieces / PU
<b>SILVYN® FLEXILOK M black</b>					
65500403	12 x 1.5	9	FPAS 10	10,0	10
65500405	16 x 1.5/1	12	FPAS 10	13,0	10
65500425	16 x 1.5/2	12	FPAS 16	15,8	10
65500415	20 x 1.5/1	14	FPAS 10	13,0	10
65500435	20 x 1.5/2	14	FPAS 16	15,8	10
65500445	20 x 1.5/3	14	FPAS 21	21,2	10
65500455	25 x 1.5	15	FPAS 28	28,5	10
65500465	32 x 1.5	16	FPAS 34	34,5	10
65500458	40 x 1.5	16	FPAS 42	42,5	2
65500459	50 x 1.5	16	FPAS 54	54,5	1
65500468	63 x 1.5	16	FPAS 54	54,5	1
<b>SILVYN® FLEXILOK M grey</b>					
65500404	12 x 1.5	9	FPAS 10	10,0	10
65500600	16 x 1.5/1	12	FPAS 10	13,0	10
65500420	16 x 1.5/2	12	FPAS 16	15,8	10
65500410	20 x 1.5/1	14	FPAS 10	13,0	10
65500430	20 x 1.5/2	14	FPAS 16	15,8	10
65500440	20 x 1.5/3	14	FPAS 21	21,2	10
65500610	25 x 1.5	15	FPAS 28	28,5	10
65500460	32 x 1.5	16	FPAS 34	34,5	10
65500466	40 x 1.5	16	FPAS 42	42,5	2
65500467	50 x 1.5	16	FPAS 54	54,5	1
65500469	63 x 1.5	16	FPAS 54	54,5	1
<b>SILVYN® FLEXILOK 90° M black</b>					
68100100	16 x 1.5	12	FPAS 16	15,8	10
68100105	20 x 1.5/1	14	FPAS 16	15,8	10
68100110	20 x 1.5/2	14	FPAS 21	21,2	10
68100115	25 x 1.5	15	FPAS 28	28,5	10
68100120	32 x 1.5	16	FPAS 34	34,5	10
<b>SILVYN® FLEXILOK 90° M grey</b>					
68100125	16 x 1.5	12	FPAS 16	15,8	10
68100130	20 x 1.5/1	14	FPAS 16	15,8	10
68100135	20 x 1.5/2	14	FPAS 21	21,2	10
68100140	25 x 1.5	15	FPAS 28	28,5	10
68100145	32 x 1.5	16	FPAS 34	34,5	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINTOP® GMP-GL-M refer to page 738

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**SILVYN® FLEXILOK PG / SILVYN® FLEXILOK 90° PG**

**i Info**

- Extremely economical
- New purchasing unit



SILVYN® FLEXILOK PG



SILVYN® FLEXILOK 90° PG

**Benefits**

- Fast assembly
- Easy to assemble
- Cost-effective conduit gland
- No loose parts
- New space-saving design

**Application range**

- Mechanical engineering
- Control cabinet manufacturing
- Moving applications
- Applications with limited space
- Building Installation

**Product features**

- In black colour UV-resistant and weather-proofed
- One-piece slim design
- Halogen and cadmium-free

**Norm references / Approvals**

- UL FILENUMBER E308201

**Product Make-up**

- SILVYN® FLEXILOK PG**
- PG connection thread
  - One-piece body
  - Special clamping system
- SILVYN® FLEXILOK 90° PG**
- PG connection thread
  - 90° elbow
  - Special clamping system

**Note**

- Removeable with a screwdriver

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001178  
ETIM 5.0 Class-Description: Screw connection for protective plastic hose

**DIN VDE** Norm references / Approvals IEC EN 61386-23

**i** On request  
**SILVYN® FLEXILOK PG**  
PG 7 for FPAS 10  
PG 36 for FPAS 42  
PG 48 for FPAS 54

**RAL** Colour delivered  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**IP** Protection rating  
IP 66

**Temperature range**  
-40°C to +120°C

Article number	PG size	Thread length mm	Suitable for SILVYN® FPAS	Suitable for conduit Ø (mm)	Pieces / PU
<b>SILVYN® FLEXILOK PG black</b>					
65500475	9/1	10	FPAS 10	13,0	10
65500495	9/2	10	FPAS 16	15,8	10
65500485	11/1	10	FPAS 10	13,0	10
65500395	11/2	10	FPAS 16	15,8	10
68100055	13,5/1	10	FPAS 16	15,8	10
68100075	13,5/2	10	FPAS 21	21,2	10
68100065	16/1	11	FPAS 16	15,8	10
68100085	16/2	11	FPAS 21	21,2	10
68100095	21	12	FPAS 28	28,5	10
68880005	29	12	FPAS 34	34,5	10
<b>SILVYN® FLEXILOK PG grey</b>					
65500470	9/1	10	FPAS 10	13,0	10
65500490	9/2	10	FPAS 16	15,8	10
65500480	11/1	10	FPAS 10	13,0	10
65500390	11/2	10	FPAS 16	15,8	10
68100050	13,5/1	10	FPAS 16	15,8	10
68100060	16/1	11	FPAS 16	15,8	10
68100080	16/2	11	FPAS 21	21,2	10
68100090	21	12	FPAS 28	28,5	10
65500620	29	12	FPAS 34	34,5	10
<b>SILVYN® FLEXILOK 90° PG black</b>					
68100150	9	10	FPAS 16	15,8	10
68100155	11	10	FPAS 16	15,8	10
68100160	13,5/1	10	FPAS 16	15,8	10
68100170	13,5/2	10	FPAS 21	21,2	10
68100165	16/1	11	FPAS 16	15,8	10
68100175	16/2	11	FPAS 21	21,2	10
68100180	21	12	FPAS 28	28,5	10
68100185	29	12	FPAS 34	34,5	10
<b>SILVYN® FLEXILOK 90° PG grey</b>					
68100190	9	10	FPAS 16	15,8	10
68100195	11	10	FPAS 16	15,8	10
68100200	13,5/1	10	FPAS 16	15,8	10
68100210	13,5/2	10	FPAS 21	21,2	10
68100205	16/1	11	FPAS 16	15,8	10
68100215	16/2	11	FPAS 21	21,2	10
68100220	21	12	FPAS 28	28,5	10
68100225	29	12	FPAS 34	34,5	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**SILVYN® FLEXILOK PG**

- SKINTOP® GMP-GL refer to page 812





## SILVYN® FPAG PG / SILVYN® FPAG 90° PG



SILVYN® FPAG PG



SILVYN® FPAG 90° PG

### Benefits

#### SILVYN® FPAG PG

- Fast assembly
- High-tensile
- Sealing
- Vibration protection

#### SILVYN® FPAG 90° PG

- 90° elbow allows easy installation
- Fast assembly
- High-tensile
- Sealing
- Vibration protection

### Application range

- In combination with protective conduit:
- SILVYN® FPAS
- Applications with strong vibrations

### Product features

- In black colour UV-resistant and weather-proofed
- Removeable with a screwdriver

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

#### SILVYN® FPAG PG

- PG connection thread
- Body
- Upper part with integrated all-round toothing

#### SILVYN® FPAG 90° PG

- PG connection thread
- 90° elbow
- Body
- Upper part with integrated all-round toothing

### Suitable conduits

- SILVYN® FPAS Page 875

### Technical data

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>On request</b> SILVYN® FPAG PG IP68 version
	<b>Colour delivered</b> Grey (RAL 7031) Black (RAL 9005), UV-resistant
	<b>Material</b> PA66 Halogen-free
	<b>Protection rating</b> IP 66
	<b>Temperature range</b> -50°C to +135°C

Article number	PG size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAG PG black</b>			
55506585	7	10	10
55506595	9/1	10	10
55506605	9/2	13	10
55506615	9/3	16	10
55506625	11	16	10
55506635	13,5/1	16	10
55506645	13,5/2	18	10
55506995	13,5/3	21	10
55506655	16	21	10
55506665	21	28	10
55506675	29	34	10
55506685	36	42	2
55506695	48/1	54	2
55506705	48/2	67	2
<b>SILVYN® FPAG PG grey</b>			
55506580	7	10	10
55506590	9/1	10	10
55506600	9/2	13	10
55506610	9/3	16	10
55506620	11	16	10
55506630	13,5/1	16	10
55506640	13,5/2	18	10
55506990	13,5/3	21	10
55506650	16	21	10
55506660	21	28	10
55506670	29	34	10
55506680	36	42	2
55506690	48/1	54	2
55506700	48/2	67	2

Article number	PG size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAG 90° PG black</b>			
55506715	7	10	10
55506725	9	13	10
55506735	11	16	10
55506745	13,5/1	16	10
55506755	13,5/2	18	10
55506815	13,5/3	21	10
55506765	16	21	10
55506775	21	28	10
55506785	29	34	10
55506795	36	42	1
55506805	48/1	54	1
55506825	48/2	67	1
<b>SILVYN® FPAG 90° PG grey</b>			
55506710	7	10	10
55506720	9	13	10
55506730	11	16	10
55506740	13,5/1	16	10
55506750	13,5/2	18	10
55506810	13,5/3	21	10
55506760	16	21	10
55506770	21	28	10
55506780	29	34	10
55506790	36	42	1
55506800	48/1	54	1
55506820	48/2	67	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINTOP® GMP-GL refer to page 812

APPENDIX ACCESSORIES FLEXIMARK® SILVYN® SKINTOP® EPIC® HITRONIC® ETHERLINE® UNITRONIC® ÖLFLEX®



**SILVYN® FCL**



**Benefits**

- Fast assembly
- Easy to disassemble
- High mechanical strength
- Conduit retained by rib
- No loose parts

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS
- Fastening of conduits on machine walls for all applications

**Product features**

- Removeable with a screwdriver
- One-piece conduit holder

**Product Make-up**

- One-piece conduit holder with borehole for fixation

**Note**

- UV-resistant and weather-resistant

**Suitable conduits**

- SILVYN® FPAS Page 875

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001171  
ETIM 5.0 Class-Description: Holder for protective hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**Temperature range**  
-50°C to +135°C

Article number	Nominal size	Hole Ø (mm)	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FCL black</b>				
55506905	10	5	10	10
55506915	13	5	13	10
55506925	16	5	16	10
55506985	18	6	18	10
55507405	20	6	20	10
55506935	21	6	21	10
55507415	25	6	25	10
55506945	28	6	28	10
55506955	34	6	34	10
55506965	42	6	42	5
55506975	54	6	54	5
<b>SILVYN® FCL grey</b>				
55506900	10	5	10	10
55506910	13	5	13	10
55506920	16	5	16	10
55506980	18	6	18	10
55507400	20	6	20	10
55506930	21	6	21	10
55507410	25	6	25	10
55506940	28	6	28	10
55506950	34	6	34	10
55506960	42	6	42	5
55506970	54	6	54	5

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® FPAC



### Benefits

- Fast assembly
- High tensile strength
- Optional extension of parallel corrugated conduits

### Application range

- In combination with protective conduit:
- SILVYN® FPAS
- Conduit coupler for extension

### Product features

- Removeable with a screwdriver

### Note

- UV-resistant and weather-resistant

### Suitable conduits

- SILVYN® FPAS Page 875

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001171  
ETIM 5.0 Class-Description:  
Holder for protective hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**i** **On request**  
IP68 / IP69 version

**RAL** **Colour delivered**  
Grey (RAL 7031)  
Black (RAL 9005), UV-resistant

**Material**  
PA66  
Halogen-free

**IP** **Protection rating**  
IP 66

**Temperature range**  
-50°C to +135°C

Article number	Nominal size	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® FPAC black</b>			
55507005	16	16	5
55507006	20	20	5
55507015	21	21	5
55507016	25	25	5
55507025	28	28	5
55507035	34	34	5
55507036	42	42	2
55507037	54	54	2
<b>SILVYN® FPAC grey</b>			
55507000	16	16	5
55507001	20	20	5
55507010	21	21	5
55507011	25	25	5
55507020	28	28	5
55507030	34	34	5
55507031	42	42	2
55507032	54	54	2

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® EC**



**Benefits**

- Cable damage can be prevented
- Additional sealing
- Easy to assemble

**Application range**

- In combination with protective conduit:
- SILVYN® FPAS
- Intersection or end sleeve

**Technical data**

	ETIM 5.0 Class-ID: EC000519 ETIM 5.0 Class-Description: Terminal sleeve for protective hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> NEC: PA66 REC: TPE
	<b>Temperature range</b> NEC: -50°C to +135°C REC: -50°C to +120°C

Article number	Nominal size	Clamping range in mm	Clear opening (mm)	Suitable for SILVYN® FPAS	Pieces / PU
<b>SILVYN® NEC</b>					
55507097	16		10.5	16	10
55507098	21		15	21	10
55507099	28		20	28	10
55507100	34		25.5	34	10
55507101	42		32	42	10
55507102	54		43.5	54	10
<b>SILVYN® REC</b>					
55507040	10	3.0 - 7.0		10	10
55507041	13	3.0 - 7.0		13	10
55507042	16	3.0 - 11.0		16	10
55507043	21	3.0 - 15.0		21	10
55507044	28	3.0 - 21.0		28	10
55507045	34	3.0 - 25.0		34	10
55507046	42	5.0 - 34.0		42	10
55507047	54	5.0 - 46.0		54	10

Photographs are not to scale and do not represent detailed images of the respective products.





### SILVYN® HCC



#### Benefits

- Dimensionally stable
- Flexible
- Lightweight
- Crush-resistant

#### Application range

- Mechanical engineering
- Apparatus construction
- Building Automation
- Moving applications
- Outdoors

#### Product features

- Conduit with full metric design
- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

#### Product Make-up

- Fine-profile corrugated polyamide 6 conduit

#### Note

- UV-resistant and weather-resistant

#### Technical data

	ETIM 5.0 Class-ID: EC001175 ETIM 5.0 Class-Description: Corrugated plastic hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> PA6 Halogen-free
	<b>Temperature range</b> -25°C to +100°C

Article number	Article designation	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® FPAG-M / FLEXILOK-M	Suitable for SILVYN® HG-M / HW-M	PU ring (m)
<b>SILVYN® HCC</b>							
61793970	12	12	8,9 x 13.0	25	12		50
61793980	16	16	11,1 x 16.0	30	16		50
61793990	20	20	13,5 x 20.0	40	20		50
61794000	25	25	17,7 x 25.0	50	25		50
61794010	32	32	24,3 x 32.0	65		32	25
61794020	40	40	30,2 x 40.0	85		40	25
61794030	50	50	40,1 x 50.0	110		50	25
61794035	63	63	52,5 x 63.0	130		63	25

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SILVYN® FPAG-M refer to page 879
- SILVYN® HG-M refer to page 889
- SILVYN® HW-M refer to page 889
- SILVYN® FLEXILOK M refer to page 882
- SILVYN® FCL refer to page 885



**SILVYN® HG-M / SILVYN® HW-M**



SILVYN® HG-M



SILVYN® HW-M

**Benefits**

**SILVYN® HG-M**

- Easy to disassemble
- High-tensile
- Sealing

**SILVYN® HW-M**

- 90° elbow allows easy installation
- Easy to disassemble
- High-tensile
- Sealing

**Application range**

**SILVYN® HG-M**

- In combination with protective conduit
- SILVYN® HCC

**SILVYN® HW-M**

- In combination with protective conduit
- SILVYN® HCC
- For applications with limited space

**Product Make-up**

**SILVYN® HG-M**

- Metric connection thread
- Body with sealing and clamping ring
- Cap nut

**SILVYN® HW-M**

- Metric connection thread
- 90° elbow
- Body with sealing and clamping ring
- Cap nut

**Note**

**SILVYN® HG-M**

- In black colour UV-resistant and weather-proofed

**SILVYN® HW-M**

- UV-resistant and weather-resistant

**Suitable conduits**

- SILVYN® HCC Page 888

**Technical data**

	ETIM 5.0 Class-ID: EC001178 ETIM 5.0 Class-Description: Screw connection for protective plastic hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> PA6
	<b>Protection rating</b> IP 65
	<b>Temperature range</b> -25°C to +100°C

Article number	Article designation	Overall length mm	Thread length mm	Suitable for SILVYN® HCC	Pieces / PU
<b>SILVYN® HG-M</b>					
55501640	32 x 1,5	47	15	32	30
55501650	40 x 1,5	53	15	40	20
55501660	50 x 1,5	57.4	15	50	16
55501670	63 x 1,5	74	20	63	8
<b>SILVYN® HW-M</b>					
55501720	32 x 1,5		15	32	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® MAXI PA



### Benefits

- Dimensionally stable
- Flexible
- Crush-resistant

### Application range

- Mechanical engineering
- Public utilities
- Moving applications
- Outdoors

### Product features

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

### Norm references / Approvals

- UL FILENUMBER E308201

### Product Make-up

- Thick-walled corrugated polyamide 6 conduit

### Technical data



ETIM 5.0 Class-ID: EC001175  
ETIM 5.0 Class-Description:  
Corrugated plastic hose



#### On request

Available in PA 12



#### Colour delivered

Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



#### Material

PA 6  
Halogen-free  
Fire behaviour according to UL 94 HB



#### Temperature range

-40 °C to +115 °C  
short-term +150 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® AFG-PA/AFW-PA	PU ring (m)
<b>SILVYN® MAXI PA grey</b>					
61791150	70	66.5 x 79.2	170	70	10
61791160	95	91.0 x 106.0	225	95	10
<b>SILVYN® MAXI PA black</b>					
61791155	70	66.5 x 79.2	170	70	10
61791165	95	91.0 x 106.0	225	95	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® AFG-PA refer to page 891
- SILVYN® AFW-PA refer to page 891



**SILVYN® AFG-PA / SILVYN® gasket AFG-PA / AFW-PA / SILVYN® AFW-PA**



**SILVYN® AFG-PA**



**SILVYN® gasket AFG-PA / AFW-PA**



**SILVYN® AFW-PA**

**Benefits**

**SILVYN® AFG-PA**

- Tear-resistant connection
- Secure conduit insertion

**SILVYN® gasket AFG-PA / AFW-PA**

- Increases the IP degree of protection of SILVYN® AFG-PA and SILVYN® AFW-PA

**SILVYN® AFW-PA**

- Tear-resistant connection
- Secure conduit insertion

**Application range**

**SILVYN® AFG-PA**

- In combination with protective conduit
- SILVYN® MAXI PA
- Mechanical engineering
- Bundling and guiding of cables and wires

**SILVYN® gasket AFG-PA / AFW-PA**

- In combination with protective conduit
- SILVYN® MAXI PA
- SILVYN® AFG-PA
- SILVYN® AFW-PA

**SILVYN® AFW-PA**

- In combination with protective conduit
- SILVYN® MAXI PA
- Mechanical engineering
- Bundling and guiding of cables and wires

**Norm references / Approvals**

**SILVYN® AFG-PA**

- UL FILENUMBER E308201

**Product Make-up**

**SILVYN® AFG-PA**

- One-piece connector with clap mechanism specifically designed for use with the SILVYN® MAXI PA. Thanks to the special design, the conduit can be pre-locked and mounted ready for connection

**SILVYN® AFW-PA**

- One-piece 90° elbow connector with clap mechanism specifically designed for use with the SILVYN® MAXI PA. Thanks to the special design, the conduit can be pre-locked and mounted ready for connection

**Suitable conduits**

- SILVYN® MAXI PA Page 890

**Technical data**

	ETIM 5.0 Class-ID: EC000781 ETIM 5.0 Class-Description: Sealing for hose screw connection
	<b>Colour delivered</b> Grey (RAL 7001) Black (RAL 9005), UV-resistant
	<b>Material</b> PA6 Halogen-free
	<b>Protection rating</b> IP 54 IP 66 with AFG-PA/AFW-PA seal
	<b>Temperature range</b> -40 °C to +115 °C

Article number	Nominal size	Overall length, C (mm)	Pieces / PU
<b>SILVYN® AFG-PA grey</b>			
55001080	70	60.5	1
55001081	95	74	1
<b>SILVYN® AFG-PA black</b>			
55001085	70	60.5	1
55001086	95	74	1
<b>SILVYN® seal for AFG-PA, AFW-PA</b>			
55001082	70		1
55001083	95		1
<b>SILVYN® AFW-PA 90° grey</b>			
55001090	70		1
55001091	95		1
<b>SILVYN® AFW-PA 90° black</b>			
55001093	70		1
55001092	95		1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

**SILVYN® AFG-PA**

- SILVYN® gasket AFG-PA / AFW-PA refer to page 891

**SILVYN® Dichtung AFG-PA / AFW-PA**

- SILVYN® gasket AFG-PA / AFW-PA refer to page 891
- SILVYN® AFW-PA refer to page 891

**SILVYN® AFW-PA**

- SILVYN® gasket AFG-PA / AFW-PA refer to page 891





### SILVYN® TC



#### Info

- No conduit gland required
- With counter nut usable
- Selected section length

#### Benefits

- Dimensionally stable
- Flexible
- Threaded
- Cost-saving due to quick and easy installation

#### Application range

- Control cabinet manufacturing
- Mechanical engineering
- Plant engineering
- For indoor and outdoor use

#### Product features

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals

#### Product Make-up

- Fine-profile corrugated polyamide 6 conduit

#### Note

- We recommend to use an additional sealing to maximize the IP rating
- Section length 222 mm

#### Technical data

	ETIM 5.0 Class-ID: EC001175 ETIM 5.0 Class-Description: Corrugated plastic hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> PA 6 Halogen-free Fire behaviour according to UL 94 HB
	<b>Temperature range</b> -40 °C to +120 °C

Article number	Nominal size	ID x OD mm	Metric size	PU ring (m)
<b>SILVYN® TC</b>				
64400823	7,5	6,6 x 10,0	10 x 1,5	50
64400824	8,5	9,8 x 12,8	12 x 1,5	50
64400825	12	12,3 x 15,7	16 x 1,5	50
61221035	17	16,6 x 21,2	20 x 1,5	50
64400650	22	23,1 x 28,4	25 x 1,5	50
64400651	26	28,9 x 34,5	32 x 1,5	50
64400826	37	34,0 x 42,2	40 x 1,5	50
64400827	50	45,6 x 52,8	50 x 1,5	50

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- SILVYN® FPAS refer to page 875
- SILVYN® RILL PA 6 refer to page 862

#### Accessories

- SILVYN® Conduit scissor refer to page 936
- SKINTOP® GMP-GL-M refer to page 738
- SILVYN® SPLIT COS refer to page 894
- SILVYN® SEALING WASHER refer to page 935
- SKINDICHT® JT PTFE metric refer to page 780





**SILVYN® SPLIT**



**Info**

- New sizes are available



**Benefits**

- Dimensionally stable
- Flexible
- Crush-resistant
- Subsequent cable protection after cable installation
- Fast and easy assembly

**Application range**

- Vehicle construction
- Shipbuilding
- Mechanical engineering
- Electrical industry
- Used in areas where cables and wires need to be protected after assembly

**Product features**

- Halogen-free (PA6)
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals
- Very good UV- and Weathering performance (SILVYN® SPLIT PP UV)

**Product Make-up**

- Divisible corrugated conduit

**Technical data**

	ETIM 5.0 Class-ID: EC001175 ETIM 5.0 Class-Description: Corrugated plastic hose
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> Polyamide 6 (PA6) Polypropylene (PP)
	<b>Protection rating</b> IP 43 with SILVYN® SPLIT COV
	<b>Temperature range</b> PA6 : -40°C to +120°C PP : -40°C to +135°C PP UV: -40°C to +105°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® COV	PU (m)
<b>SILVYN® SPLIT PA6</b>					
61806621	6	6.3 x 10.0	15		50
61806620	10	8.4 x 13.4	15	M16/PG9	50
61806631	11	11.0 x 16.1	15		50
61806630	14	12.5 x 18.5	15	M20/PG13,5	50
61806641	16	16.0 x 21.5	20		50
61806640	20	19.2 x 25.3	25	M25/PG21	50
61806650	23	23.4 x 30.8	35	M32/PG29	50
61806651	29	27.3 x 35.5	35		50
61806660	37	31.0 x 41.4	40	M40/PG29	25
61806670	45	42.7 x 54.0	70	M50	25
61806671	70	67.5 x 79.8	95		10
61806672	100	87.5 x 102.5	100		10
<b>SILVYN® SPLIT PP</b>					
61806615	6	6.3 x 10.0	15		50
61806625	10	8.4 x 13.4	15	M16/PG9	50
61806616	11	11.0 x 16.1	15		50
61806635	14	12.5 x 18.5	15	M20/PG13,5	50
61806617	16	16.0 x 21.5	20		50
61806645	20	19.2 x 25.3	20	M25/PG21	50
61806655	23	23.4 x 30.8	45	M32/PG29	50
61806618	29	27.3 x 35.5	50		50
61806665	37	31.0 x 41.4	60	M40/PG29	25
61806675	45	42.7 x 54.0	75	M50	25
61806619	70	67.5 x 79.8	95		10
61806622	100	87.5 x 102.5	100		10
<b>SILVYN® SPLIT PP UV</b>					
61806100	6	6.3 x 10.0	15		50
61806110	10	8.4 x 13.4	15	M16/PG9	50
61806120	11	11.0 x 16.1	15		50
61806130	14	12.5 x 18.5	15	M20/PG13,5	50
61806140	16	16.0 x 21.5	20		50
61806150	20	19.2 x 25.3	20	M25/PG21	50
61806160	23	23.4 x 30.8	45	M32/PG29	50
61806170	29	27.3 x 35.5	50		50
61806180	37	31.0 x 41.4	60	M40/PG29	25
61806190	45	42.7 x 54.0	75	M50	25
61806200	70	67.5 x 79.8	95		10
61806210	100	87.5 x 102.5	100		10

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® SINUS

**Accessories**

- SILVYN® SPLIT COV refer to page 894
- SILVYN® SPLIT GMP-M refer to page 894
- SILVYN® SPLIT COS refer to page 894
- Spare tool Cable - Eater refer to page 1057



**SILVYN® SPLIT COV / SILVYN® SPLIT GMP-M / SILVYN® SPLIT COS**



**SILVYN® SPLIT GMP-M**



**SILVYN® SPLIT COV**



**SILVYN® SPLIT COS**

**Benefits**

**SILVYN® SPLIT COV**

- Fast and easy assembly
- Subsequent mountable conduit insertion

**SILVYN® SPLIT GMP-M**

- Fast assembly
- Easy to disassemble

**SILVYN® SPLIT COS**

- Fast assembly
- Easy to disassemble
- High tensile strength
- Conduit retained by rib
- No loose parts

**Application range**

**SILVYN® SPLIT COV**

- In combination with protective conduit:
- SILVYN® SPLIT
- Mechanical engineering
- Electrical industry
- Used in areas where cables and wires need to be protected after assembly

**SILVYN® SPLIT COS**

- In combination with protective conduit:
- SILVYN® SPLIT
- Fastening of conduits on machine walls for all applications

**Product features**

**SILVYN® SPLIT COV**

- Included: divisible counter nut

**SILVYN® SPLIT COS**

- One-piece conduit holder

**Note**

- UV-resistant and weather-resistant

**Suitable conduits**

- SILVYN® SPLIT Page 893

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001176  
ETIM 5.0 Class-Description: Screw connection for corrugated plastic hose

**RAL** **Colour delivered**  
Black (RAL 9005), UV-resistant

**Material**  
Halogen-free PA

**Temperature range**  
-40°C to +120°C

Article number	Nominal size	Metric size	PG size	Hole Ø (mm)	Suitable for SILVYN® SPLIT	Pieces / PU
<b>SILVYN® SPLIT COV (counter nut included)</b>						
61806760			9		10	100
61806770			13.5		14	100
61806780			21		20	50
61806790			29		23	50
61806800			29		37	25
<b>SILVYN® SPLIT COV-M (counter nut not included)</b>						
61806680		16 x 1.5			10	100
61806681		20 x 1.5			14	100
61806682		25 x 1.5			20	50
61806683		32 x 1.5			23	50
61806684		40 x 1.5			37	25
61806685		50 x 1.5			45	25
<b>SILVYN® SPLIT GMP-M (metric counter nut)</b>						
61806686		16 x 1.5				100
61806687		20 x 1.5				100
61806688		25 x 1.5				50
61806689		32 x 1.5				50
61806691		40 x 1.5				25
61806692		50 x 1.5				25
<b>SILVYN® SPLIT COS</b>						
61806693	6			M3	6	100
61806690	10			M3	10	100
61806676	10			M5	10	100
61806694	11			M3	11	100
61806700	14			M3	14	100
61806677	14			M5	14	50
61806695	16			M5	16	50
61806696	16			M6	16	50
61806710	20			M5	20	50
61806678	20			M6	20	50
61806720	23			M5	23	50
61806679	23			M6	23	50
61806697	29			M5	29	50
61806698	29			M6	29	50
61806730	37			M6	37	20
61806740	45			M6	45	20
61806699	70			M6	70	10

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



SILVYN® SINUS PA6



Info

- Sinusoidal slit for subsequent assembly
- Made of special heat-resistant polyamide up to +140°C



Benefits

- Dimensionally stable
- Flexible
- Crush-resistant
- Subsequent cable protection
- Sinusoidal slit remains closed under torsion for the most part

Application range

- Mechanical engineering
- Electrical industry
- Shipbuilding
- Solar applications

Product features

- High resistance to oil, petrol, acids and other chemicals
- Halogen and cadmium-free
- Abrasion-resistant

Norm references / Approvals

- NFR-13-903 from 8.4 x 11.4

Product Make-up

- Fine-profile corrugated polyamide 6 conduit with sinusoidal slit

Note

- On request
- SILVYN® RILL PA6 SINUS PP (polypropylene)

Technical data

**ETIM** ETIM 5.0 Class-ID: EC001175  
ETIM 5.0 Class-Description: Corrugated plastic hose

**DIN VDE** **Certifications**  
GGVS, NFR-13-903 from 8.4 x 11.4

**i** **Note**  
Elongation at tear in accordance with DIN 53 455: 50 - 200 %  
Impact resistance in accordance with DIN 53 453: without rupture  
Notched impact resistance in accordance with DIN 53 453: without rupture  
Flammability rating: UL 94HB

**RAL** **Colour delivered**  
Black (RAL 9005), UV-resistant

**Material**  
PA6 heat-modified  
Cadmium-free  
Halogen-free

**Temperature range**  
-40°C to +140°C

Article number	ID x OD mm	Suitable for SILVYN® holder	PU ring (m)
<b>SILVYN® RILL PA6 SINUS</b>			
61806550	6,7 x 10,0	FCL 10 / 5550 6905	50
61806555	8,4 x 11,4		50
61806560	9,9 x 13,0	FCL 13 / 5550 6915	50
61806565	12,2 x 15,7	FCL 16 / 5550 6925	50
61806570	16,6 x 21,2	FCL 21 / 5550 6935	50
61806575	21,3 x 25,4	SPLIT COS 20 / 6180 6710	50
61806580	23,2 x 28,3	FCL 28 / 5550 6945	50

Photographs are not to scale and do not represent detailed images of the respective products.

Similar products

- SILVYN® SPLIT refer to page 893

Accessories

- SILVYN® SPLIT GMP-M refer to page 894
- SILVYN® SPLIT COS refer to page 894
- SILVYN® FCL refer to page 885
- STKP tool of the cable eater serves as an insertion tool



### SILVYN® AS



#### Benefits

- High-tensile
- High crush-resistance
- Flexible
- High mechanical resistance
- Heat-resistant

#### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Rolling stock
- Applications with high mechanical stress

#### Norm references / Approvals

- VDE
- DIN 49012, complies with design G according to DIN EN IEC 61386-23
- In EX-area according to EN 1127-1

#### Product Make-up

- Spirally-wound metal protective conduit with roughened profile

#### Note

- PU = 10m (on request)

#### Technical data

ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description: Protective metallic hose

**Material**  
Galvanized steel

**Temperature range**  
Up to +220°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MSK-M	Suitable for SILVYN® US-M	Suitable for SILVYN® US	PU ring (m)
<b>SILVYN® AS</b>							
61802080	10	8.0 x 10.0	28	12 x 1,5	10 x 1,0	7	50
61802090	14	11.0 x 14.0	34	16 x 1,5	12 x 1,5	9	50
61802100	17	14.0 x 17.0	40	20 x 1,5	16 x 1,5	11	50
61802110	19	16.0 x 19.0	45			13,5	50
61802120	21	18.0 x 21.0	50	25 x 1,5	20 x 1,5	16	50
61802130	27	23.0 x 27.0	63	32 x 1,5	25 x 1,5	21	50
61802140	36	31.0 x 36.0	85	40 x 1,5	32 x 1,5	29	25
61802150	45	40.0 x 45.0	100	50 x 1,5	40 x 1,5	36	25
61802170	56	51.0 x 56.0	125	63 x 1,5	50 x 1,5	48	25

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

- SILVYN® EDU-AS refer to page 898

#### Accessories

- SILVYN® MSK-M US refer to page 901
- SILVYN® US-M refer to page 905
- SILVYN® US refer to page 906
- SILVYN® US-AS refer to page 907



**SILVYN® AS-P**



**Benefits**

- Protects against liquids
- High-tensile
- High crush-resistance
- Flexible
- High mechanical resistance

**Application range**

- Mechanical engineering
- Plant engineering
- Automation technology
- Used in areas where liquids are present
- Applications with high mechanical stress

**Norm references / Approvals**

- VDE
- DIN 49012, complies with design I according to DIN EN IEC 61386-23
- In EX-area according to EN 1127-1

**Product Make-up**

- Spirally-wound metal protective conduit with roughened profile
- PVC sheath

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description: Protective metallic hose

**RAL** **Colour delivered**  
Grey

**Material**  
Inner conduit: steel, galvanised  
Outer sheath: PVC

**Temperature range**  
-25°C to +80°C  
Short-term: up to +100°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MSK-M	Suitable for SILVYN® US-M	Suitable for SILVYN® US	PU ring (m)
<b>SILVYN® AS-P</b>							
64400010	10	7.0 x 10.0	32	12 x 1,5	10 x 1,0	7	50
64400020	14	10.0 x 14.0	40	16 x 1,5	12 x 1,5	9	50
64400030	17	13.0 x 17.0	45	20 x 1,5	16 x 1,5	11	50
64400040	19	15.0 x 19.0	52			13,5	50
64400050	21	17.0 x 21.0	58	25 x 1,5	20 x 1,5	16	50
64400060	27	22.0 x 27.0	72	32 x 1,5	25 x 1,5	21	50
64400070	36	29.0 x 36.0	98	40 x 1,5	32 x 1,5	29	25
64400080	45	38.0 x 45.0	118	50 x 1,5	40 x 1,5	36	25
64400090	56	49.0 x 56.0	140	63 x 1,5	50 x 1,5	48	25
<b>SILVYN® AS-P 10M</b>							
64400100	10	7.0 x 10.0	32	12 x 1,5	10 x 1,0	7	10
64400110	14	10.0 x 14.0	40	16 x 1,5	12 x 1,5	9	10
64400120	17	13.0 x 17.0	45	20 x 1,5	16 x 1,5	11	10
64400130	19	15.0 x 19.0	52			13,5	10
64400140	21	17.0 x 21.0	58	25 x 1,5	20 x 1,5	16	10
64400150	27	22.0 x 27.0	72	32 x 1,5	25 x 1,5	21	10
64400160	36	29.0 x 36.0	98	40 x 1,5	32 x 1,5	29	10
64400170	45	38.0 x 45.0	118	50 x 1,5	40 x 1,5	36	10
64400180	56	49.0 x 56.0	140	63 x 1,5	50 x 1,5	48	10

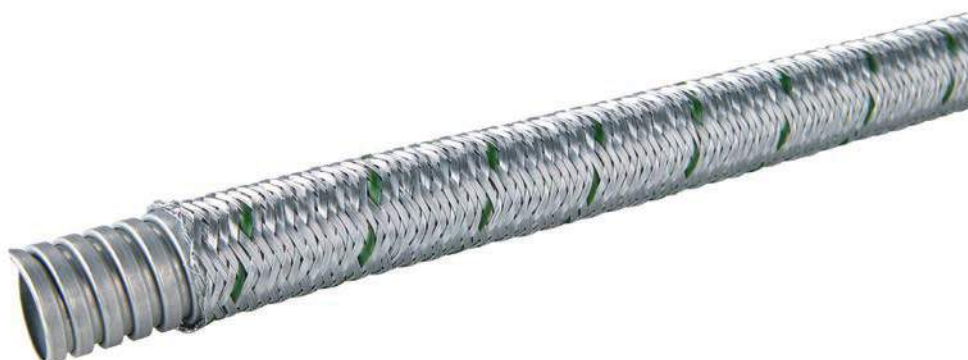
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® MSK-M US refer to page 901
- SILVYN® US-M refer to page 905
- SILVYN® US refer to page 906
- SILVYN® US-AS refer to page 907
- SILVYN® US-EDU-AS refer to page 907



## SILVYN® EDU-AS



### Benefits

- Protects against hot chips
- High-tensile
- High crush-resistance
- Flexible
- For high mechanical stress

### Application range

- Mechanical engineering
- Plant engineering
- Automation technology
- Used in areas where cables and wires could be damaged by welding sparks and hot chips
- Applications with high mechanical stress

### Norm references / Approvals

- VDE
- DIN 49012, complies with design K according to DIN EN IEC 61386-23
- In EX-area according to EN 1127-1


### Product Make-up


- Spirally-wound metal protective conduit with roughened profile
- Galvanised steel wire braiding


### Note

- PU = 10m (on request)

### Technical data

 ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description: Protective metallic hose

 **Material**  
Galvanized steel  
Braiding: galvanized steel wire

 **Temperature range**  
Up to +220°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MSK-M	Suitable for SILVYN® US-M	Suitable for SILVYN® US	PU ring (m)
<b>SILVYN® EDU-AS</b>							
61802380	10	7.0 x 10.0	28	12 x 1,5	10 x 1,0	7	50
61802390	14	10.0 x 14.0	34	16 x 1,5	12 x 1,5	9	50
61802400	17	13.0 x 17.0	40	20 x 1,5	16 x 1,5	11	50
61802410	19	15.0 x 19.0	45			13,5	50
61802420	21	17.0 x 21.0	50	25 x 1,5	20 x 1,5	16	50
61802430	27	22.0 x 27.0	63	32 x 1,5	25 x 1,5	21	50
61802440	36	29.0 x 36.0	85	40 x 1,5	32 x 1,5	29	25
61802450	45	38.0 x 45.0	100	50 x 1,5	40 x 1,5	36	25
61802470	56	49.0 x 56.0	135	63 x 1,5	50 x 1,5	48	25

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SILVYN® MSK-M US refer to page 901
- SILVYN® US-M refer to page 905
- SILVYN® US refer to page 906
- SILVYN® US-EDU-AS refer to page 907
- SILVYN® US-MS-DR



**SILVYN® EMC AS-CU**



**Benefits**

- Optimum EMC protection
- High-tensile
- High crush-resistance
- Flexible
- High mechanical resistance

**Application range**

- Mechanical engineering
- Automotive industry
- Conveyor technology
- Railway applications / vehicle construction
- Used in areas where electromagnetic interferences can occur

**Product features**

- According to EN 50289-1-6, a screening factor from 30 MHz up to 80 dB can be reached.

**Product Make-up**

- Spirally-wound metal protective conduit with roughened profile
- Tinned-copper braiding

**Technical data**



ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description:  
Protective metallic hose



**Material**

Inner conduit: galvanized steel  
Braiding: tinned copper wire



**Temperature range**

Up to +150°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MSK-M	Suitable for SILVYN® US-M	Suitable for SILVYN® US	PU ring (m)
<b>SILVYN® EMC AS-CU</b>							
64400500	10	7.0 x 10.0	28	12 x 1,5	10 x 1,0	7	50
64400501	14	10.0 x 14.0	34	16 x 1,5	12 x 1,5	9	50
64400502	17	13.0 x 17.0	40	20 x 1,5	16 x 1,5	11	50
64400503	19	15.0 x 19.0	45			13,5	50
64400504	21	17.0 x 21.0	50	25 x 1,5	20 x 1,5	16	50
64400505	27	22.0 x 27.0	63	32 x 1,5	25 x 1,5	21	50
64400506	36	29.0 x 36.0	85	40 x 1,5	32 x 1,5	29	25
64400507	45	38.0 x 45.0	100	50 x 1,5	40 x 1,5	36	25
64400508	56	49.0 x 56.0	135	63 x 1,5	50 x 1,5	48	25

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- 3M Scotch™ 1183 screening tape refer to page 1044
- SILVYN® MSK-M US refer to page 901
- SILVYN® US-M refer to page 905
- SILVYN® US refer to page 906
- SILVYN® US-EDU-AS refer to page 907
- SILVYN® US-MS-DR





## SILVYN® FPS-EDU



### Info

- High flexible and mechanical protection at the same time

### Benefits

- Protects against hot chips
- High-tensile
- Highly flexible
- Air-tight and impermeable
- Mechanical resistance

### Application range

- Mechanical engineering
- Plant engineering
- Automation technology
- Used in areas where cables and wires could be damaged by welding sparks and hot chips
- Robotics industry

### Product Make-up

- PVC-insulated steel spring wire
- Soft PVC outer sheath
- Galvanised steel wire braiding

### Note

- PU = 10m (on request)

### Technical data

ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description: Protective metallic hose

**Material**  
insulated spring steel wire with Soft PVC and galvanized steel braid

**Temperature range**  
-25 °C to +80 °C  
Short-term: up to +100 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® MSK-M	Suitable for SILVYN® US-M	Suitable for SILVYN® US	PU ring (m)
<b>SILVYN® FPS-EDU</b>							
61802330	14	9.0 x 14.0	16	16 x 1,5	16 x 1,5	9	50
61802331	17	12.0 x 17.0	19	20 x 1,5	20 x 1,5	11	50
61802332	19	14.0 x 19.0	22			13,5	50
61802333	21	15.0 x 21.0	24	25 x 1,5	20 x 1,5	16	50
61802334	27	20.0 x 27.0	30	32 x 1,5	25 x 1,5	21	50
61802335	36	28.0 x 36.0	40	40 x 1,5	32 x 1,5	29	25
61802336	45	37.0 x 45.0	48	50 x 1,5	40 x 1,5	36	25
61802337	56	48.0 x 56.0	60	63 x 1,5	50 x 1,5	48	25

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® FPS refer to page 857
- SILVYN® FD-PU refer to page 858
- SILVYN® EDU-AS refer to page 898

### Accessories

- SILVYN® MSK-M US refer to page 901
- SILVYN® US-M refer to page 905
- SILVYN® US refer to page 906



**SILVYN® MSK-M US**



**Benefits**

- Optimum cable and conduit strain relief
- Maximum cable sealing
- Fast and easy assembly
- Wide clamping range
- Anti-turn protection

**Application range**

- In combination with protective conduit:
- SILVYN® AS/AS-P/EDU-AS/EMC AS-CU
- Indoor / outdoor applications
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

**Product features**

- Combination of SILVYN® and SKINTOP®

**Product Make-up**

- Optional:
- SKINTOP® MS-M cable gland or
- SKINTOP® MS-SC-M EMC connection
- SKINTOP® DIX multiple sealing insert
- SILVYN® conduit connection via inner sleeve and cap nut

**Note**

- For suitable accessories, refer to SKINTOP® metric accessories

**Suitable conduits**

- SILVYN® AS Page 896
- SILVYN® AS-P Page 897
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Material**  
Basis type:  
Body: nickel-plated brass  
Conduit connector seal: CR/NBR  
Tube seal: TPE

**IP** **Protection rating**  
Cable: IP 68  
Conduit:  
IP 40 with SILVYN® AS, EDU-AS, EMC AS-CU  
IP 65 with SILVYN® AS-P

**Temperature range**  
-30°C to +100°C

Article number	Metric size	Suitable for conduit Ø (mm)	Pieces / PU
<b>SILVYN® MSK-M for SILVYN® AS</b>			
55506080	12 x 1.5	10	5
55506081	16 x 1.5	14	5
55506082	20 x 1.5	17	5
55506083	25 x 1.5	21	5
55506084	32 x 1.5	27	5
55506085	40 x 1.5	36	1
55506086	50 x 1.5	45	1
55506087	63 x 1.5	56	1
<b>SILVYN® MSK-M for SILVYN® AS-P / EDU-AS / EMC AS-CU</b>			
55506090	12 x 1.5	10	5
55506091	16 x 1.5	14	5
55506092	20 x 1.5	17	5
55506093	25 x 1.5	21	5
55506094	32 x 1.5	27	5
55506095	40 x 1.5	36	1
55506096	50 x 1.5	45	1
55506097	63 x 1.5	56	1
<b>SILVYN® MSK-SC-M for SILVYN® AS</b>			
55506110	12 x 1.5	10	5
55506111	16 x 1.5	14	5
55506112	20 x 1.5	17	5
55506113	25 x 1.5	21	5
55506114	32 x 1.5	27	5
55506115	40 x 1.5	36	1
55506116	50 x 1.5	45	1
<b>SILVYN® MSK-SC-M for SILVYN® AS-P / EDU-AS / EMC AS-CU</b>			
55506120	12 x 1.5	10	5
55506121	16 x 1.5	14	5
55506122	20 x 1.5	17	5
55506123	25 x 1.5	21	5
55506124	32 x 1.5	27	5
55506125	40 x 1.5	36	1
55506126	50 x 1.5	45	1

Other variations with multiple SKINTOP® DIX-M sealing inserts are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINTOP® DIX-M AUTOMATION refer to page 741
- SKINTOP® DIX-DV refer to page 742



## SILVYN® MSK-M BRUSH



**Info**

- Conduit gland with the innovative BRUSH solution
- Optimum 360° screen contact

### Benefits

- Easy installation
- Faster, easier screen contact
- Optimum cable and conduit strain relief
- Maximum cable sealing
- Wide clamping range

### Application range

- Mechanical engineering
- Plant engineering
- Heavy industry
- In EMC-sensitive environments

### Product features

- Combination of SILVYN® and SKINTOP®

### Note

- For suitable accessories, refer to SKINTOP® metric accessories

### Suitable conduits

- SILVYN® AS Page 896
- SILVYN® AS-P Page 897
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Material**  
Basis type:  
Body: nickel-plated brass  
Conduit connector seal: CR/NBR  
Tube seal: TPE  
EMC brush: brass

**IP** **Protection rating**  
Cable: IP 68  
Conduit:  
IP 40 with SILVYN® AS, EDU-AS, EMC AS-CU  
IP 65 with SILVYN® AS-P

**Temperature range**  
-30°C to +100°C

Article number	Metric size	Suitable for conduit Ø (mm)	Pieces / PU
<b>SILVYN® MSK-M for SILVYN® AS</b>			
55506020	25 x 1.5	21	10
55506021	32 x 1.5	27	1
55506022	40 x 1.5	36	1
55506023	50 x 1.5	45	1
55506024	63 x 1.5	56	1
<b>SILVYN® MSK-M for SILVYN® AS-P / EDU-AS / EMC AS-CU</b>			
55506025	25 x 1.5	21	10
55506026	32 x 1.5	27	1
55506027	40 x 1.5	36	1
55506028	50 x 1.5	45	1
55506029	63 x 1.5	56	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763
- SKINTOP® DIX-M refer to page 740
- SKINTOP® DIX-M AUTOMATION refer to page 741
- SKINTOP® DIX-DV refer to page 742

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



**SILVYN® MSK-M ATEX**

**Info**

- IECEx approval worldwide



**Benefits**

- Optimum cable and conduit strain relief
- Maximum cable sealing
- Fast and easy assembly
- Wide clamping range
- Anti-turn protection

**Application range**

- Devices, machines and apparatus of enhanced safety protection type “e”
- Chemical and petrochemical industry
- Plant engineering
- Used in areas where cables and wires need additional mechanical protection

**Product features**

- Combination of SILVYN® and SKINTOP®

**Product Make-up**

- SILVYN® conduit connection via inner sleeve and cap nut
- Metric connection thread acc. to DIN EN 60423

**Suitable conduits**

- SILVYN® AS Page 896
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**DIN VDE** **Certifications**  
SILVYN® MSK-M 16x1,5 AS ATEX  
IBExU06ATEX1012X  
II 2G EEx eII  
II 1D EEx eII  
CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIIC  
IECEX IBE 13.0033X

**Material**  
Basis type:  
Body: nickel-plated brass  
Conduit connector seal: CR/NBR  
Tube seal: TPE

**Tests**  
DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31

**IP** **Protection rating**  
Cable: IP 68  
Conduit:  
IP 40 with SILVYN® AS, EDU-AS,  
EMC AS-CU

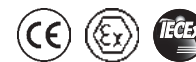
**Temperature range**  
-30°C to +90°C

Article number	Metric size	Suitable for conduit OØ (mm)	Pieces / PU
<b>SILVYN® MSK-M ATEX for SILVYN® AS</b>			
55506010	12 x 1.5	10	5
55506011	16 x 1.5	14	5
55506012	20 x 1.5	17	5
55506013	25 x 1.5	21	5
55506014	32 x 1.5	27	5
55506015	40 x 1.5	36	1
55506016	50 x 1.5	45	1
55506017	63 x 1.5	56	1
<b>SILVYN® MSK-M ATEX for SILVYN® EDU-AS / EMC AS-CU</b>			
55506018	12 x 1.5	10	5
55506019	16 x 1.5	14	5
55506036	20 x 1.5	17	5
55506037	25 x 1.5	21	5
55506038	32 x 1.5	27	5
55506039	40 x 1.5	36	1
55506040	50 x 1.5	45	1
55506041	63 x 1.5	56	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINMATIC® MH Set refer to page 782



## SILVYN® MSK-M ATEX BRUSH



**Info**

- IECEx approval worldwide
- Optimum 360° screen contact

### Benefits

- Easy installation
- Faster, easier screen contact
- Optimum cable and conduit strain relief
- Maximum cable sealing
- Wide clamping range

### Application range

- Devices, machines and apparatus of enhanced safety protection type “e”
- Chemical and petrochemical industry
- Plant engineering
- Used in areas where cables and wires need additional mechanical protection

### Product features

- Combination of SILVYN® and SKINTOP®

### Product Make-up

- SILVYN® conduit connection via inner sleeve and cap nut
- Metric connection thread acc. to DIN EN 60423

### Suitable conduits

- SILVYN® AS Page 896
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**DIN VDE** **Certifications**  
CE 0637 Ex II 2G  
Ex eb IIC Ex II 1D  
Ex ta IIIC  
IECEx IBE 13.0033X

**Material**  
Basis type:  
Body: nickel-plated brass  
Conduit connector seal: CR/NBR  
Tube seal: TPE  
EMC brush: brass

**Tests**  
DIN EN 60079-0  
DIN EN 60079-7  
DIN EN 60079-31

**IP** **Protection rating**  
Cable: IP 68  
Conduit:  
IP 40 with SILVYN® AS, EDU-AS, EMC AS-CU

**Temperature range**  
-30°C to +90°C

Article number	Metric size	Suitable for conduit Ø (mm)	Pieces / PU
<b>SILVYN® MSK-M ATEX BRUSH for SILVYN® AS</b>			
55506042	25 x 1.5	21	10
55506043	32 x 1.5	27	1
55506044	40 x 1.5	36	1
55506045	50 x 1.5	45	1
55506030	63 x 1.5	56	1
<b>SILVYN® MSK-M ATEX BRUSH for SILVYN® EDU-AS / EMC AS-CU</b>			
55506031	25 x 1.5	21	10
55506032	32 x 1.5	27	1
55506033	40 x 1.5	36	1
55506034	50 x 1.5	45	1
55506035	63 x 1.5	56	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINMATIC® MH Set refer to page 782



**SILVYN® US-M**



**Benefits**

- High tensile strength
- Space-saving
- Vibration protection
- All-purpose

**Application range**

- In combination with protective conduit:
- SILVYN® AS/AS-P/EDU-AS/EMC AS-CU
- SILVYN® FPS/FD-PU/FPS-EDU
- Mechanical engineering
- Plant engineering

**Product features**

- Compact design

**Product Make-up**

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Sealing element
- Cap nut

**Suitable conduits**

- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858
- SILVYN® AS-P Page 897
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899
- SILVYN® FPS-EDU Page 900

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC001180 <b>ETIM 5.0 Class-Description:</b> Screw connection for protective metallic hose
	<b>Material</b> Body: nickel-plated brass Sealing ring: TPE
	<b>Protection rating</b> IP 40 (with SILVYN® AS, EDU-AS and EMC AS-CU) IP 54 (with SILVYN® FPS, FD-PU, FPS-EDU) IP 65 (with SILVYN® AS-P)
	<b>Temperature range</b> -40°C to +125°C

Article number	Metric size	Clear opening (mm)	Suitable conduit nominal size	Pieces / PU
<b>SILVYN® US-M for SILVYN® FPS / FD-PU</b>				
55502601	10 x 1.0	6	10	50
55502602	12 x 1.5	9	14	50
55502603	16 x 1.5	11.5	17	50
55502604	20 x 1.5	14.5	21	50
55502605	25 x 1.5	19.5	27	25
55502606	32 x 1.5	26.5	36	25
55502607	40 x 1.5	35	45	20
55502608	50 x 1.5	45.5	56	10
55502609	63 x 1.5	45.5	56	10
<b>SILVYN® US-M for SILVYN® AS</b>				
55502611	10 x 1.0	6.5	10	50
55502612	12 x 1.5	9	14	50
55502613	16 x 1.5	12.5	17	50
55502614	20 x 1.5	16	21	50
55502615	25 x 1.5	21	27	25
55502616	32 x 1.5	27.5	36	25
55502617	40 x 1.5	35	45	20
55502618	50 x 1.5	45	56	10
55502619	63 x 1.5	45	56	10
<b>SILVYN® US-M for SILVYN® AS-P</b>				
55502621	10 x 1.0	6	10	50
55502622	12 x 1.5	8.5	14	50
55502623	16 x 1.5	11.5	17	50
55502624	20 x 1.5	15.5	21	50
55502625	25 x 1.5	20.5	27	25
55502626	32 x 1.5	27.5	36	25
55502627	40 x 1.5	35	45	20
55502628	50 x 1.5	45	56	10
55502629	63 x 1.5	45	56	10
<b>SILVYN® US-M for SILVYN® EDU-AS / EMC AS-CU</b>				
55502631	10 x 1.0	6	10	50
55502632	12 x 1.5	8.5	14	50
55502633	16 x 1.5	11	17	50
55502634	20 x 1.5	15.5	21	50
55502636	25 x 1.5	20.5	27	25
55502637	32 x 1.5	27.5	36	25
55502638	40 x 1.5	35	45	20
55502639	50 x 1.5	45	56	10
55502641	63 x 1.5	45	56	10
<b>SILVYN® US-M for SILVYN® FPS-EDU</b>				
55502642	12 x 1.5	8.5	14	50
55502643	16 x 1.5	11	17	50
55502644	20 x 1.5	14.5	21	50
55502645	25 x 1.5	19.5	27	25
55502646	32 x 1.5	27.5	36	25
55502647	40 x 1.5	35	45	20
55502648	50 x 1.5	45	56	10
55502649	63 x 1.5	45	56	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- SILVYN® MSK-M EE refer to page 859
- SILVYN® MSK-M US refer to page 901

**Accessories**

- SKINDICHT® SM-M refer to page 763



## SILVYN® US



### Benefits

- High tensile strength
- Space-saving
- Vibration protection
- All-purpose

### Application range

- In combination with protective conduit:
- SILVYN® AS/AS-P/EDU-AS/EMC AS-CU
- SILVYN® FPS/FD-PU/FPS-EDU
- Mechanical engineering
- Plant engineering

### Product features

- Compact design

### Product Make-up

- PG connection thread
- Hexagonal collar
- Threaded sleeve
- Sealing element
- Cap nut

### Suitable conduits

- SILVYN® AS Page 896
- SILVYN® FPS Page 857
- SILVYN® FD-PU Page 858
- SILVYN® AS-P Page 897
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899
- SILVYN® FPS-EDU Page 900

### Technical data

	ETIM 5.0 Class-ID: EC001180 ETIM 5.0 Class-Description: Screw connection for protective metallic hose
	<b>Material</b> Body: nickel-plated brass Sealing ring: TPE
	<b>Protection rating</b> IP 40 (with SILVYN® AS, EDU-AS and EMC AS-CU) IP 54 (with SILVYN® FPS, FD-PU, FPS-EDU) IP 65 (with SILVYN® AS-P)
	<b>Temperature range</b> -40 °C to +125 °C

Article number	PG size	Clear opening (mm)	Suitable conduit nominal size	Pieces / PU
<b>SILVYN® US for SILVYN® FPS / FD-PU</b>				
55502651	7	6	10	50
55502652	9	9	14	50
55502653	11	11.5	17	50
55502654	13.5	13	19	50
55502655	16	14.5	21	50
55502656	21	19.5	27	25
55502657	29	26.5	36	20
55502658	36	36	45	20
55502659	48	45.5	56	10
<b>SILVYN® US for SILVYN® AS</b>				
55502661	7	6.5	10	50
55502662	9	10	14	50
55502663	11	12.5	17	50
55502664	13.5	14.5	19	50
55502665	16	16	21	50
55502666	21	21.5	27	25
55502667	29	29	36	20
55502668	36	38	45	20
55502669	48	49	56	10
<b>SILVYN® US for SILVYN® AS-P</b>				
55502671	7	6	10	50
55502672	9	8.5	14	50
55502673	11	11.5	17	50
55502674	13.5	13.5	19	50
55502675	16	15.5	21	50
55502676	21	20.5	27	25
55502677	29	27.5	36	20
55502678	36	36.5	45	20
55502679	48	47.5	56	10
<b>SILVYN® US for SILVYN® EDU-AS / EMC AS-CU</b>				
55502680	7	6	10	50
55502681	9	8.5	14	50
55502682	11	11.5	17	50
55502683	13.5	13.5	19	50
55502684	16	15.5	21	50
55502685	21	20.5	27	25
55502686	29	27.5	36	20
55502687	36	36.5	45	20
55502688	48	47.5	56	10
<b>SILVYN® US for SILVYN® FPS-EDU</b>				
55502689	9	8.5	14	50
55502690	11	11	17	50
55502691	13.5	13	19	50
55502692	16	14.5	21	50
55502693	21	19.5	27	25
55502694	29	27.5	36	20
55502696	36	35.5	45	20
55502697	48	47	56	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM refer to page 817

APPENDIX ACCESSORIES FLEXIMARK® SILVYN® SKINTOP® EPIC® HITRONIC® ETHERLINE® UNITRONIC® ÖLFLEX®



**SILVYN® US-AS / SILVYN® US-EDU-AS**



**SILVYN® US-AS**



**SILVYN® US-EDU-AS**

**Benefits**

- Cable damage can be prevented

**Application range**

**SILVYN® US-AS**

- In combination with protective conduit:
- SILVYN® AS
- Conduit end cover

**SILVYN® US-EDU-AS**

- In combination with protective conduit:
- SILVYN® EDU-AS/EMC AS-CU/AS-P
- Conduit end cover

**Product features**

- All-round collar completely covers the protective conduit end

**Product Make-up**

- Threaded sleeve

**Suitable conduits**

**SILVYN® US-AS**

- SILVYN® AS Page 896

**SILVYN® US-EDU-AS**

- SILVYN® AS Page 896
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899

**Technical data**



ETIM 5.0 Class-ID: EC000519  
ETIM 5.0 Class-Description:  
Terminal sleeve for protective hose



**Material**  
**SILVYN® US-AS**  
Nickel-plated brass  
**SILVYN® US-EDU-AS**  
Brass



**Temperature range**  
-40 °C to +250 °C

Article number	Nominal size	Pieces / PU
<b>SILVYN® US-AS for SILVYN® AS</b>		
61802180	10	50
61802190	14	50
61802200	17	50
61802210	19	50
61802220	21	50
61802230	27	25
61802240	36	25
61802250	45	20
61802270	56	10
<b>SILVYN® US-EDU-AS for SILVYN® AS-P / EDU-AS / EMC AS-CU</b>		
61802480	10	50
61802490	14	50
61802500	17	50
61802510	19	50
61802520	21	50
61802530	27	25
61802540	36	25
61802550	45	20
61802570	56	10

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® SSUE



### Benefits

- High-tensile
- Corrosion-resistant
- Flexible
- For high mechanical stress
- Heat-resistant

### Application range

- Offshore applications
- Measuring technology
- Plant engineering
- Outdoors
- Applications with high mechanical stress

### Product features

- Stainless steel AISI 316

### Product Make-up

- Spirally-wound stainless steel protective conduit

### Note

- Sizes 10, 12 with double-interlocked Agraff profile

### Technical data



ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description:  
Protective metallic hose



**Certifications**  
IEC EN 61386-23



**Note**  
Sizes 10, 12 with double-interlocked  
Agraff profile



**Material**  
Stainless steel AISI 316  
DW Nr. 1.4404



**Protection rating**  
IP 40



**Temperature range**  
-100°C to +400°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® LGEF-M/LGES-M	PU ring (m)
<b>SILVYN® SSUE</b>					
61804600	10	6,8 x 9,1	25	M 12 x 1,5	25
61804601	12	10,0 x 12,3	30	M 16 x 1,5/1	25
61804602	16	12,9 x 16,4	40	M 16 x 1,5/2	25
61804603	20	16,9 x 20,4	45	M 20 x 1,5/1	25
61804604	25	20,9 x 24,3	55	M 25 x 1,5	25
61804605	32	27,8 x 31,7	70	M 32 x 1,5	25
61804612	40	37,3 x 42,1	80	M 40 x 1,5	10
61804613	50	48,0 x 52,8	90	M 50 x 1,5	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® UI 511 refer to page 912

### Accessories

- SILVYN® LGES-M refer to page 909
- SILVYN® LGEF-M refer to page 910



**SILVYN® LGES-M**



**Info**

- Swivelling upper part with integrated inner sleeve

**Benefits**

- Corrosion-resistant
- For rotating applications
- High tensile strength
- Space-saving

**Application range**

- In combination with protective conduit:
- SILVYN® SSUE
- Offshore applications
- Outdoors
- Applications with high mechanical stress

**Product features**

- Stainless steel AISI 316

**Product Make-up**

- Metric connection thread
- Hexagonal collar with torsion element
- Cap nut

**Suitable conduits**

- SILVYN® SSUE Page 908

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**DIN VDE** **Certifications**  
IEC EN 61386-23

**Material**  
Stainless steel AISI 316

**IP** **Protection rating**  
IP 40

**Temperature range**  
-100°C to +400°C

Article number	Metric size	SW wrench size mm	Overall length mm	Thread length mm	Suitable for SILVYN® SSUE	Pieces / PU
<b>SILVYN® LGES-M (Stainless steel)</b>						
55503210	12 x 1.5	14	30.2	8	10	1
55503211	16 x 1.5	19	35.5	8	12	1
55503212	16 x 1.5	19	35.5	10	16	1
55503213	20 x 1.5	24	38.5	10	20	1
55503214	25 x 1.5	29	41.5	10	25	1
55503215	32 x 1.5	38	49	13	32	1
<b>SILVYN® LGES-M (Nickel plated brass)</b>						
55503489	12 x 1.5	13	30	8	10	10
55503490	16 x 1.5	17	32.2	8	12	10
55503491	16 x 1.5	20	34.2	10	16	10
55503492	20 x 1.5	22	34.2	10	16	10
55503493	20 x 1.5	24	35.5	10	20	10
55503494	25 x 1.5	29	43.7	12	25	10
55503495	32 x 1.5	37	48	13	32	10
55503496	40 x 1.5	48	51.2	14	40	10
55503497	50 x 1.5	58	54.2	15	50	10
55503498	63 x 1.5	70	63.2	18	63	10

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® LGEF-M



### Benefits

- Corrosion-resistant
- For fixed applications
- High tensile strength
- Space-saving

### Application range

- In combination with protective conduit:
- SILVYN® SSUE
- Offshore applications
- Outdoors
- Applications with high mechanical stress

### Product Make-up

- Metric connection thread
- Hexagonal collar
- Cap nut

### Suitable conduits

- SILVYN® SSUE Page 908

### Technical data



ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose



**Certifications**  
IEC EN 61386-23



**Material**  
Stainless steel AISI 316



**Protection rating**  
IP 40



**Temperature range**  
-100°C to +400°C

Article number	Metric size	SW wrench size mm	Overall length mm	Thread length mm	Suitable for SILVYN® SSUE	Pieces / PU
<b>SILVYN® LGEF-M (Stainless steel)</b>						
55503200	12 x 1.5	14	21	7	10	1
55503201	16 x 1.5	19	23	10	12	1
55503202	16 x 1.5	19	25	10	16	1
55503203	20 x 1.5	24	26.3	10	20	1
55503204	25 x 1.5	29	29.5	10	25	1
55503205	32 x 1.5	38	36.8	13	32	1
55503206	40 x 1.5	48	39	14	40	1
55503207	50 x 1.5	58	42	15	50	1
<b>SILVYN® LGEF-M (Nickel plated brass)</b>						
55503168	12 x 1.5	13	21	7	10	10
55503169	16 x 1.5	17	23	10	12	10
55503170	16 x 1.5	20	25	10	16	10
55503171	20 x 1.5	22	25	10	16	10
55503172	20 x 1.5	24	26.3	10	20	10
55503173	25 x 1.5	29	29.5	10	25	10
55503174	32 x 1.5	36	36.8	13	32	10
55503175	40 x 1.5	48	39	14	40	10
55503176	50 x 1.5	58	42	15	50	10
55503177	63 x 1.5	70	50	18	63	10
55503178	75 x 1.5	84	60	20	75	10

Photographs are not to scale and do not represent detailed images of the respective products.





**SILVYN® LGEP**



**Info**

- Ensuring cables do not get damaged

**Benefits**

- Cable damage can be prevented
- High tensile strength
- Space-saving

**Application range**

- In combination with protective conduit:
- SILVYN® SSUE
- Conduit end cover
- If no conduit fitting is used
- Applications with high mechanical stress

**Technical data**

ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Certifications**  
IEC EN 61386-23

**Material**  
Nickel-plated brass

**Protection rating**  
IP 40

**Temperature range**  
-50°C to +300°C

Article number	Nominal size	Suitable for SILVYN® SSUE	Pieces / PU
<b>SILVYN® LGEP</b>			
55503179	10	10	10
55503180	12	12	10
55503181	16	16	10
55503182	20	20	10
55503183	25	25	10
55503184	32	32	10
55503185	40	40	10
55503186	50	50	10
55503187	63	63	10
55503188	75	75	10

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® UI 511



### Info

- Double-interlocked Agraff profile
- For the most demanding mechanical requirements

### Benefits

- Torsion-resistant and very flexible
- Corrosion-resistant
- For high mechanical stress
- Suitable for outdoor use and direct burial
- High-tensile

### Application range

- Offshore applications
- Measuring technology
- Plant engineering
- Steel industry
- Applications with the highest mechanical stresses

### Product features

- Stainless steel AISI 304

### Product Make-up

- Spirally-wound stainless steel protective conduit with interlocked profile (AGRAFF)

### Technical data



ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description:  
Protective metallic hose



**Note**  
Size 2" not stocked!



**Material**  
Stainless steel AISI 304  
DW no. 1.4301



**Protection rating**  
IP40



**Temperature range**  
-100 °C to +600 °C

Article number	Nominal size	ID x OD mm	Static/dynamic bending radius in mm	PU (m)
<b>SILVYN® UI 511</b>				
61799815	5/16"	9.5 x 12.5	50.0/60.0	30
61799816	3/8"	13.0 x 16.5	65.0/80.0	30
61799817	1/2"	17.0 x 20.3	75.0/100.0	30
61799818	3/4"	22.0 x 25.3	90.0/125.0	30
61799819	1"	25.8 x 31.0	120.0/160.0	30
61799820	1 1/4"	34.2 x 39.5	175.0/220.0	30
61799822	2"	52.0 x 58.0	285.0/340.0	15

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® SSUE

### Accessories

- SILVYN® UI COMPACT M refer to page 913



**SILVYN® UI COMPACT M**

**i Info**

- Space-saving due to compact dimensions



**Benefits**

- High chemical-resistance
- For high mechanical stress
- High tensile strength
- Corrosion-resistant

**Application range**

- In combination with protective conduit:
- SILVYN® UI 511

**Product Make-up**

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

**Technical data**

**Material**  
 Stainless steel AISI 304  
 DW no. 1.4301  
 Nickel-plated brass

**IP Protection rating**  
 IP 40

**Temperature range**  
 -55 °C to +260 °C

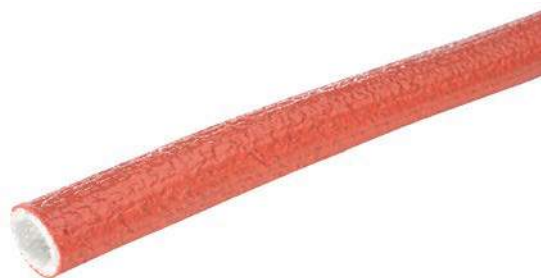
Article number	Metric size	Clear opening (mm)	Suitable for SILVYN® UI 511	Pieces / PU
<b>SILVYN® UI COMPACT M (stainless steel)</b>				
61803880	16 x 1.5	9.8	3/8"	1
61803881	20 x 1.5/1	9.8	3/8"	1
61803882	20 x 1.5/2	13.9	1/2"	1
61803883	25 x 1.5	18.5	3/4"	1
61803884	32 x 1.5	22.8	1"	1
61803885	40 x 1.5	30.8	1 1/4"	1
61803886	50 x 1.5	36.8	1 1/2"	1
61803887	63 x 1.5	47.8	2"	1
<b>SILVYN® UI COMPACT M (nickel-plated brass)</b>				
61803870	16 x 1.5/1	6.8	5/16"	1
61803871	16 x 1.5/2	9.8	3/8"	1
61803872	20 x 1.5/1	6.8	5/16"	1
61803873	20 x 1.5/2	9.8	3/8"	1
61803874	20 x 1.5/3	13.9	1/2"	1
61803875	25 x 1.5	18.5	3/4"	1
61803876	32 x 1.5	22.8	1"	1
61803877	40 x 1.5	30.8	1 1/4"	1
61803878	50 x 1.5	36.9	1 1/2"	1
61803879	63 x 1.5	47.9	2"	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® HIPROJACKET / SILVYN® HIPROSILTAPE



**SILVYN® HIPROJACKET**



**SILVYN® HIPROSILTAPE**

### Benefits

- Heat-resistant
- Flexible
- Temporarily reduces the temperature in the conduit by up to 30 %
- The protection rating increases to IP67 if SILVYN® HIPROSILTAPE is also used

### Application range

- Heavy industry, iron and steel works, foundries, glass and ceramic processing, chemical industries
- Steel industry
- Railway applications / vehicle construction
- Mechanical engineering
- Used in areas where cables and wires are exposed to extreme heat

### Product Make-up

#### SILVYN® HIPROJACKET

- Woven glass fibre conduit
- Iron oxide silicone coat

#### Suitable tools

- Multipurpose shears A and B refer to page 998

### Info

- Outstanding protection for extreme impact of heat

### Technical data

**SILVYN® HIPROJACKET**  
 ETIM 5.0 Class-ID: EC001175  
 ETIM 5.0 Class-Description: Corrugated plastic hose  
**SILVYN® HIPROSILTAPE**  
 ETIM 5.0 Class-ID: EC000128

**Certifications**  
**SILVYN® HIPROJACKET**  
 NFF 16-101 I2 (French railway system)

**On request**  
**SILVYN® HIPROJACKET**  
 Other sizes, lengths and colours are available upon request

**Colour delivered**  
 Red

**Material**  
**SILVYN® HIPROJACKET**  
 Glass fibre with iron oxide silicone coat  
 LOI 42.5  
**SILVYN® HIPROSILTAPE**  
 Silicone-rubber compound, self-vulcanising, halogen-free

**Protection rating**  
**SILVYN® HIPROJACKET**  
 IP 54 in combination with SILVYN® HIPROJACKET AMG fitting  
 HIPROJACKET AMG fitting  
 IP 67 if SILVYN® HIPROSILTAPE is also used

**Temperature range**  
**SILVYN® HIPROJACKET**  
 -55°C to +260 °C permanent temp.  
 +1090°C for approx. 10 minutes  
 +1640°C for approx. 15-30 seconds  
**SILVYN® HIPROSILTAPE**  
 -55°C to +260 °C permanent temp.

Article number	Nominal size	ID x OD mm	Suitable gland size	PU ring (m)
<b>SILVYN® HIPROJACKET</b>				
52021385	6	6.0 x 15.0		15
61713003	10	10.0 x 15.0	M 16/2 + PG 9/2, 11/2, 13,5	15
61713005	13	13.0 x 18.0	M 16/2, M20 PG 9/2, 11/2, 13,5, 16	15
61713007	16	16.0 x 22.0	M20 + PG 16	15
61713010	19	19.0 x 25.0	M25 + PG 21	15
61713011	22	22.0 x 28.0	M25 + PG 21	15
61713000	25	25.0 x 31.0	M32 + PG 29	15
61713014	29	29.0 x 35.0		15
61713015	32	32.0 x 38.0	M40 + PG 36	15
61713016	35	35.0 x 41.0	M40 + PG 36	15
61713017	38	38.0 x 44.0	M50 + PG 42	15
61713018	41	41.0 x 47.0		15
61713021	44	44.0 x 50.0		15
61713019	51	51.0 x 57.0	M63 + PG 48	15
61713022	57	57.0 x 63.0		15
61713025	64	64.0 x 70.0		15
61713027	70	70.0 x 76.0		15
61713028	76	76.0 x 82.0		15
61713029	83	83.0 x 89.0		15
61713037	89	89.0 x 95.0		15
61713038	95	95.0 x 101.0		15
61713039	102	102.0 x 108.0		15
<b>SILVYN® HIPROSILTAPE</b>				
61713040	25	25.0 x 0.5		11

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SILVYN® HIPROJACKET

- Multipurpose shears A and B refer to page 998



**SILVYN® HIPROJACKET AMG**



**Info**

- Suitable fitting for use with SILVYN® HIPROJACKET

**Benefits**

- High tensile strength
- For high mechanical stress
- 45° and 90° elbow enables optimal assembly

**Application range**

- In combination with protective conduit:
- SILVYN® HIPROJACKET

**Product Make-up**

- Connection thread metric/PG
- Hexagonal collar, straight/45° elbow/90° elbow
- Threaded sleeve
- Cap nut

**Technical data**



**Material**

Body: nickel-plated brass  
Clamping ring: nickel-plated brass  
O-ring: NBR



**Protection rating**

IP 54  
IP 67 if SILVYN® HIPROSILTAPPE is also used



**Temperature range**

-45°C to +105°C

Article number	Metric size	PG size	Pieces / PU
<b>SILVYN® HIPROJACKET AMG M</b>			
55503516	16 x 1.5		50
55503517	20 x 1.5		50
55503518	25 x 1.5		25
55503519	32 x 1.5		10
55503520	40 x 1.5		5
55503521	50 x 1.5		5
55503522	63 x 1.5		4
<b>SILVYN® HIPROJACKET AMG 45° M</b>			
55503523	16 x 1.5		50
55503524	20 x 1.5		50
55503525	25 x 1.5		25
55503526	32 x 1.5		10
55503527	40 x 1.5		5
55503528	50 x 1.5		5
55503529	63 x 1.5		4
<b>SILVYN® HIPROJACKET AMG 90° M</b>			
55503530	16 x 1.5		50
55503531	20 x 1.5		50
55503532	25 x 1.5		25
55503533	32 x 1.5		10
55503534	40 x 1.5		5
55503535	50 x 1.5		5
55503536	63 x 1.5		4
<b>SILVYN® HIPROJACKET AMG PG</b>			
55503537		9	50
55503538		11	50
55503539		13.5	50
55503540		16	50
55503541		21	25
55503542		29	10
55503543		36	5
55503544		42	5
55503499		48	4
<b>SILVYN® HIPROJACKET AMG 45° PG</b>			
55503500		11	50
55503501		13.5	50
55503502		16	50
55503503		21	25
55503504		29	10
55503505		36	5
55503506		42	5
55503507		48	4
<b>SILVYN® HIPROJACKET AMG 90° PG</b>			
55503508		11	50
55503509		13.5	50
55503510		16	50
55503511		21	25
55503512		29	10
55503513		36	5
55503514		42	5
55503515		48	4

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® CNP / SILVYN® CNP conduit gland



SILVYN® CNP

SILVYN® CNP conduit gland

### Benefits

#### SILVYN® CNP

- Protection against mechanical stress
- Protects against liquids
- Bendable
- Highly oil and acid-resistant

#### SILVYN® CNP conduit gland

- Flame-retardant
- High tensile strength
- For high mechanical stress
- High chemical-resistance

### Application range

- Mechanical engineering
- Robot-building
- Vending machine construction
- Exporters

### Product Make-up

#### SILVYN® CNP

- PVC inner conduit
- Nylon braiding
- Plastic outer sheath

#### SILVYN® CNP conduit gland

- The basic body is made of cast steel with a galvanised surface. The inner sleeve is made of polyamide and accommodates the conduit. A special profile on the inner sleeve is pressed into the conduit by the union nut
- Including O-ring and counter nut

### Technical data



#### SILVYN® CNP

ETIM 5.0 Class-ID: EC001177

ETIM 5.0 Class-Description:

Protective plastic hose

#### SILVYN® CNP conduit gland

ETIM 5.0 Class-ID: EC001180

ETIM 5.0 Class-Description:

Screw connection for protective metallic hose



#### Colour delivered

#### SILVYN® CNP

Orange



#### Material

#### SILVYN® CNP

PVC compound with nylon fabric

#### SILVYN® CNP conduit gland

Body: cast steel with zinc-plated surface

Inner sleeve: PA



#### SILVYN® CNP conduit gland

IP 67



#### Temperature range

#### SILVYN® CNP

-20 °C to +60 °C

CSA: -18 °C to +75 °C

Short-term: up to +80 °C

#### SILVYN® CNP conduit gland

-45 °C to +105 °C

Article number	Nominal size	ID x OD mm	NPT size	Static/dynamic bending radius in mm	SW wrench size mm	Overall length mm	ID mm	For conduit with outer Ø (mm)	Internal Ø	Suitable for SILVYN® CNP-G	PU ring (m)
<b>SILVYN® CNP</b>											
61712930	3/8"	12.6 x 19.4		70.0/100.0			12.6	19.4	12.6	1/2"	76
61722330	1/2"	16.1 x 23.4		90.0/125.0			16.1	23.4	16.1	1/2"	60
61722340	3/4"	21.0 x 29.5		115.0/160.0			21	29.5	21	3/4"	53
61712460	1"	26.5 x 36.3		170.0/200.0			26.5	36.3	26.5	1"	30
61712910	1 1/4"	31.5 x 46.0		200.0/240.0			31.5	46.0	31.5	1 1/4"	15
61722270	1 1/2"	40.4 x 52.4		230.0/290.0			40.4	52.4	40.4	1 1/2"	15
61722320	2"	52.4 x 66.6		260.0/350.0			52.4	66.6	52.4	2"	15
<b>SILVYN® CNP fitting</b>											
55500400			1/2"		27	55				3/8"	1
55500410			1/2"		32	66				1/2"	1
55500420			3/4"		39	66				3/4"	1
55500430			1"		45	73				1"	1
55500440			1 1/4"		59	87				1 1/4"	1
55500450			1 1/2"		67	87				1 1/2"	1
55500460			2"		82	101				2"	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

#### SILVYN® CNP

- SILVYN® CNP conduit gland refer to page 916



SILVYN® HTDL



**Benefits**

- Protects against liquids
- High-tensile
- Robust
- High crush-resistance

**Application range**

- Mechanical engineering
- Plant engineering
- Transformer construction
- Railway applications
- Exporters

**Norm references / Approvals**

- NEC 501-4B

**Product Make-up**

- Spirally-wound heavy metal protective conduit with roughened profile
- Plastic outer sheath

**Note**

- With continuous copper conductor for earthing in the case of the nominal sizes 3/8" up to and including 1 1/4". Heavy metal core insert made of galvanised steel strip with special heat and sunlight-resistant plastic sheath. In the ex-range, usable according to NEC 501-4B.

**Technical data**

	ETIM 5.0 Class-ID: EC001179 ETIM 5.0 Class-Description: Protective metallic hose
	<b>Colour delivered</b> Black
	<b>Material</b> Metal with PVC-compund sheath
	<b>Temperature range</b> -40°C to +105°C Short-term: up to +120°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® HTDL</b>				
61814190	3/8"	12.6 x 17.8	85	60
61814200	1/2"	16.1 x 21.1	110	60
61814210	3/4"	21.1 x 26.4	140	45
61814220	1"	26.8 x 33.1	170	30
61814230	1 1/4"	35.4 x 41.8	215	15
61814240	1 1/2"	40.3 x 47.8	250	15
61814250	2"	51.6 x 59.9	300	15

\* Trade product, no Lapp product  
 Sizes 1 1/2" and 2" without copper conductors  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® COMPACT M refer to page 920
- SILVYN® COMPACT PG refer to page 921
- SILVYN® COMPACT NPT refer to page 922
- SILVYN® LTP-E refer to page 934



## SILVYN® EF / SILVYN® OR



SILVYN® EF



SILVYN® OR

### Benefits

#### SILVYN® EF

- Protects against liquids
- High-tensile
- Robust
- High crush-resistance
- Extra flexible

#### SILVYN® OR

- Protects against liquids
- High-tensile
- Robust
- High crush-resistance
- Highly oil and acid-resistant

### Application range

- Mechanical engineering
- Plant engineering
- Transformer construction
- Railway applications
- Paper industry

### Product Make-up

- Spirally-wound heavy metal protective conduit with roughened profile
- Plastic outer sheath

### Note

- PU = 10m (on request)

### Technical data



ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description:  
Protective metallic hose



#### On request

Longer lengths on drums  
10m coils are available upon request



#### Colour delivered

**SILVYN® EF**  
Grey  
**SILVYN® OR**  
Black



#### Material

**SILVYN® EF**  
Galvanized steel with PVC sheath  
**SILVYN® OR**  
Galvanized steel with special PVC sheath



#### Temperature range

**SILVYN® EF**  
-25 °C to +70 °C Short-term:  
up to +90 °C  
**SILVYN® OR**  
-20 °C to +100 °C  
Short-term: up to +120 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® EF</b>				
61722240	5/16"	10.1 x 14.4	65	50
61712470	3/8"	12.6 x 17.8	85	75
61712480	1/2"	16.0 x 21.1	110	60
61712490	3/4"	21.0 x 26.4	140	50
61712500	1"	26.5 x 33.1	170	30
61712510	1 1/4"	35.1 x 41.8	215	30
61712520	1 1/2"	40.3 x 47.8	250	15
61712530	2"	51.6 x 59.9	300	15
<b>SILVYN® OR</b>				
61712840	3/8"	12.6 x 17.8	85	75
61712850	1/2"	16.0 x 21.1	110	60
61712860	3/4"	21.0 x 26.4	140	50
61712870	1"	26.5 x 33.0	170	30
61712880	1 1/4"	35.1 x 41.8	215	30
61712890	1 1/2"	40.3 x 47.8	250	15
61712900	2"	51.6 x 59.9	300	15

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

#### SILVYN® EF

- SILVYN® LTP refer to page
- SILVYN® HTDL refer to page 917
- SILVYN® OR refer to page 918

#### SILVYN® OR

- SILVYN® LTP refer to page
- SILVYN® HTDL refer to page 917

### Accessories

- SILVYN® COMPACT M refer to page 920
- SILVYN® COMPACT PG refer to page 921
- SILVYN® COMPACT NPT refer to page 922
- SILVYN® LTP-E refer to page 934



**SILVYN® HCX / SILVYN® HFX**



**SILVYN® HCX**



**SILVYN® HFX**

**Benefits**

**SILVYN® HCX**

- Protects against liquids
- High-tensile
- Robust
- High crush-resistance
- High temperature resistance

**SILVYN® HFX**

- High crush-resistance
- Robust
- Abrasion protection
- Protection against chemicals
- Protects against liquids

**Application range**

- Mechanical engineering
- Paper industry
- Measurement and control technology
- Railway applications
- Outdoors

**Product features**

- UV-resistant

**Product Make-up**

**SILVYN® HCX**

- Spirally-wound heavy metal protective conduit with roughened profile
- Heat-stabilised plastic outer sheath

**SILVYN® HFX**

- Spirally-wound heavy metal protective conduit with roughened profile
- PUR outer sheath

**Note**

- PU = 10m (on request)

**Technical data**



ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description:  
Protective metallic hose



**On request**

Longer lengths on drums  
10m coils are available upon request



**Colour delivered**

Black



**Material**

**SILVYN® HCX**  
Metal with thermoplastic elastomer sheath

**SILVYN® HFX**

Metal with PUR sheath



**Temperature range**

**SILVYN® HCX**  
-55 °C to +145 °C  
Short-term: up to +160 °C  
**SILVYN® HFX**  
-45 °C to +105 °C  
Short-term up to +125 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® HCX</b>				
61744228	3/8"	12.6 x 17.8	85	30
61744229	1/2"	16.0 x 21.1	110	30
61744230	3/4"	21.0 x 26.4	140	30
61744231	1"	26.5 x 33.1	170	30
61744240	1 1/4"	35.1 x 41.8	215	15
61744242	1 1/2"	40.3 x 47.8	250	15
61744244	2"	51,6 x 59,9	300	15
<b>SILVYN® HFX</b>				
64400200	5/16"	10.1 x 14.4	65	30
64400210	3/8"	12.6 x 17.8	85	30
64400220	1/2"	16.0 x 21.1	110	30
64400230	3/4"	21.0 x 26.4	140	30
64400240	1"	26.5 x 33.1	170	30
64400250	1 1/4"	35.1 x 41.8	215	15
64400251	1 1/2"	40,3 x 47,8	250	15
64400252	2"	51,6 x 59,9	300	15

\* Trade product, no Lapp product  
Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® COMPACT M refer to page 920
- SILVYN® COMPACT PG refer to page 921
- SILVYN® COMPACT NPT refer to page 922
- SILVYN® LTP-E refer to page 934

Liquid-tight conduits • Liquid-tight conduits



## SILVYN® COMPACT M



### Info

- Space-saving due to compact dimensions

### Benefits

- Space-saving application
- For high mechanical stress
- High tensile strength
- Corrosion-resistant

### Application range

- In combination with protective conduit:
- Suitable for SILVYN® HTDL/EF/OR/HCX/HFX
- Mechanical engineering
- Railway applications

### Product Make-up

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

### Suitable conduits

- SILVYN® HTDL Page 917
- SILVYN® EF Page 918
- SILVYN® OR Page 918
- SILVYN® HCX Page 919
- SILVYN® HFX Page 919

### Technical data



ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose



**Material**  
Body: nickel-plated brass  
Sealing: polyamide  
O-ring: NBR



**Protection rating**  
IP 66 + IP 67  
NEMA 4X



**Temperature range**  
-45°C to +105°C

Article number	Metric size	Suitable for SILVYN® HTDL/EF/OR/HCX/HFX	Pieces / PU
<b>SILVYN® COMPACT M</b>			
61803800	16 x 1.5	3/8"	10
61803801	20 x 1.5	3/8"	10
61803802	20 x 1.5	1/2"	10
61803803	25 x 1.5	3/4"	5
61803804	32 x 1.5	1"	5
61803805	40 x 1.5	1 1/4"	5
61803806	50 x 1.5	1 1/2"	2
61803807	63 x 1.5	2"	2
<b>SILVYN® COMPACT 45° M</b>			
61803850	16 x 1.5	3/8"	10
61803851	20 x 1.5	3/8"	10
61803852	20 x 1.5	1/2"	10
61803853	25 x 1.5	3/4"	5
61803854	32 x 1.5	1"	5
<b>SILVYN® COMPACT 90° M</b>			
61803808	16 x 1.5	3/8"	10
61803809	20 x 1.5	3/8"	10
61803810	20 x 1.5	1/2"	10
61803811	25 x 1.5	3/4"	5
61803812	32 x 1.5	1"	5
61803813	40 x 1.5	1 1/4"	5
61803814	50 x 1.5	1 1/2"	2
61803815	63 x 1.5	2"	2

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763



**SILVYN® COMPACT PG**

**i Info**

- Space-saving due to compact dimensions



**Benefits**

- Space-saving application
- For high mechanical stress
- High tensile strength
- Corrosion-resistant

**Application range**

- In combination with protective conduit:
- Suitable for SILVYN® HTDL/EF/OR/HCX/HFX
- Mechanical engineering
- Railway applications

**Product Make-up**

- PG connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

**Suitable conduits**

- SILVYN® HTDL Page 917
- SILVYN® EF Page 918
- SILVYN® OR Page 918
- SILVYN® HCX Page 919
- SILVYN® HFX Page 919

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Material**  
Body: nickel-plated brass  
Sealing: polyamide  
O-ring: NBR

**IP** **Protection rating**  
IP 66 + IP 67  
NEMA 4X

**Temperature range**  
-45°C to +105°C

Article number	PG size	Suitable for SILVYN® HTDL/EF/OR/HCX/HFX	Pieces / PU
<b>SILVYN® COMPACT PG</b>			
61803816	11	3/8"	10
61803817	13.5	3/8"	10
61803818	16	1/2"	10
61803819	21	3/4"	5
61803820	29	1"	5
61803821	36	1 1/4"	5
61803822	42	1 1/2"	2
61803823	48	2"	2
<b>SILVYN® COMPACT 90° PG</b>			
61803824	11	3/8"	10
61803825	13.5	3/8"	10
61803826	16	1/2"	10
61803827	21	3/4"	5
61803828	29	1"	5
61803829	36	1 1/4"	5
61803830	42	1 1/2"	2
61803831	48	2"	2

Photographs are not to scale and do not represent detailed images of the respective products.

Liquid-tight conduits • Liquid-tight conduits



## SILVYN® COMPACT NPT



### Info

- Space-saving due to compact dimensions

### Benefits

- Space-saving application
- For high mechanical stress
- High tensile strength
- Corrosion-resistant

### Application range

- In combination with protective conduit:
- Suitable for SILVYN® HTDL/EF/OR/HCX/HFX
- Mechanical engineering
- Railway applications

### Product Make-up

- NPT connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

### Suitable conduits

- SILVYN® HTDL Page 917
- SILVYN® EF Page 918
- SILVYN® OR Page 918
- SILVYN® HCX Page 919
- SILVYN® HFX Page 919

### Technical data



ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose



**Material**  
Body: nickel-plated brass  
Sealing: polyamide  
O-ring: NBR



**Protection rating**  
IP 66 + IP 67  
NEMA 4X



**Temperature range**  
-45 °C to +105 °C

Article number	NPT size	Suitable for SILVYN® HTDL/EF/OR/HCX/HFX	Pieces / PU
<b>SILVYN® COMPACT NPT</b>			
61803832	1/2"	3/8"	10
61803833	1/2"	1/2"	10
61803834	3/4"	3/4"	5
61803835	1"	1"	5
61803836	1 1/4"	1 1/4"	2
61803837	1 1/2"	1 1/2"	2
61803838	2"	2"	2
<b>SILVYN® COMPACT 90° NPT</b>			
61803839	1/2"	3/8"	10
61803840	1/2"	1/2"	10
61803841	3/4"	3/4"	5
61803842	1"	1"	5
61803843	1 1/4"	1 1/4"	2
61803844	1 1/2"	1 1/2"	2
61803845	2"	2"	2

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



SILVYN® FG



Info

- Specifically for the food and drinks industry



Benefits

- FDA-approved outer sheath
- Smooth, white surface makes it easy to clean
- Protects against liquids
- High-tensile
- High crush-resistance

Application range

- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Food packaging machinery
- Pharmaceutical industry
- Mechanical engineering
- Plant engineering

Product features

- Flexible
- Crush-resistant
- Impact-resistant
- High-tensile

Norm references / Approvals

- Certified according to FDA CFR 21 and NSF 51 (standard for the USA)

Product Make-up

- Spirally-wound heavy metal protective conduit with roughened profile
- Special, FDA-approved plastic sheath

Suitable tools

- SILVYN® vice refer to page 936

Technical data

	ETIM 5.0 Class-ID: EC001179 ETIM 5.0 Class-Description: Protective metallic hose
	<b>Colour delivered</b> White
	<b>Material</b> Electro-galvanised, strip-wound inner hoop-steel hose with special plastic sheath
	<b>Temperature range</b> -20°C to +60°C Short-term: +80 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN FG</b>				
55503279	3/8"	12.6 x 17.8	60	30
55503280	1/2"	16.0 x 21.1	75	30
55503281	3/4"	21.0 x 26.4	90	30
55503282	1"	26.5 x 33.1	120	30
55503283	1 1/4"	35.1 x 41.8	135	15
55503284	1 1/2"	40.3 x 47.8	165	15
55503285	2"	51.6 x 59.9	210	15

\* Trade product, no Lapp product  
Photographs are not to scale and do not represent detailed images of the respective products.

Accessories

- Detectable Cable ties refer to page 1059
- SILVYN® HYGIENIC refer to page 925
- SILVYN® LTP-E refer to page 934



Liquid-tight conduits • Liquid-tight conduits



## SILVYN® FG NM



### Info

- All-plastic conduit
- Specifically for the food and drinks industry

### Benefits

- FDA-approved outer sheath
- Smooth, blue surface makes it easy to clean
- Protects against liquids

### Application range

- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Food packaging machinery
- Pharmaceutical industry
- Mechanical engineering
- Plant engineering

### Product features

- Flexible
- Dimensionally stable
- Flame-retardant

### Norm references / Approvals

- Certified according to FDA CFR 21 and NSF 51 (standard for the USA)
- **ECOLAB®**  
Industry standard in the field of professional cleaning and disinfection

### Product Make-up

- Hard PVC inner spiral
- Special, FDA-approved plastic sheath

### Technical data

	ETIM 5.0 Class-ID: EC001177 ETIM 5.0 Class-Description: Protective plastic hose
	<b>Certifications</b> FDA CFR 21 NSF 51
	<b>Colour delivered</b> Blue
	<b>Material</b> Special soft PVC sheath with hard PVC spiral
	<b>Temperature range</b> -20°C to +60°C Short-term: +80 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® FG NM blue</b>				
55503370	3/8"	12.6 x 17.8	70	30
55503371	1/2"	16.0 x 21.1	100	30
55503372	3/4"	21.0 x 26.4	130	30
55503373	1"	26.5 x 33.1	180	30
55503374	1 1/4"	35.1 x 41.8	225	15
55503375	1 1/2"	40.3 x 47.8	255	15
55503376	2"	51.6 x 59.9	310	15

\* Trade product, no Lapp product  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® FG refer to page 923

### Accessories

- SILVYN® HYGIENIC refer to page 925



**SILVYN® HYGIENIC**



**Info**

- Ideal for hygienic critical areas - resistant, edge-free, robust and reliable
- No gaps, voids or outer lying thread - so no risk of contamination of food machines, facilities or components.

**Benefits**

- Hygienic Design for ideal cleaning results
- Smooth surfaces and no edges prevent the accumulation of fluids and formation of micro-organisms

**Application range**

- Food machinery, equipment and components
- Pharmaceutical industry
- Mechanical engineering

**Product features**

- High chemical and thermal stability with very aggressive media such as Detergents and disinfectants, acids and alkalis during cleaning processes etc.

**Norm references / Approvals**

- **DIN EN 1672-2**  
Guideline for the design of machinery
- **DIN EN ISO 14 159**  
Security of machinery Hygienic requirements for the design of machinery

**Product Make-up**

- Material and shape provide an easy and safe cleaning
- By the blue coloring of the sealing material clearly distinguishable from foodstuffs
- Rounded key areas for mounting with standard tools

**Note**

- Please note: for size M63x1,5 there is **SILVYN® AMG FG** with a different construction and design

**Suitable conduits**

- SILVYN® FG NM Page 924



**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**DIN VDE** **Norm references / Approvals**  
IEC EN 61386-23

**Material**  
Body: Stainless Steel (Grade 316)  
Insert: Nickel Plated Brass  
Inner seal: Polyamide 6  
Sealing material: Special Elastomer

**IP** **Protection rating**  
IP66  
IP67  
IP68 (2 bar)  
IP69

**Temperature range**  
-50°C to +135°C

Article number	Metric size	Clear opening (mm)	Suitable for SILVYN® FG NM	Pieces / PU
<b>SILVYN® HYGIENIC</b>				
55510700	16 x 1.5	10.7	3/8"	1
55510701	20 x 1.5	14.5	1/2"	1
55510702	25 x 1.5	18.7	3/4"	1
55510703	32 x 1.5	24.6	1"	1
55510704	40 x 1.5	32.7	1 1/4"	1
55510705	50 x 1.5	37.7	1 1/2"	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® LCC-2



### Benefits

- Protects against liquids
- High-tensile
- High crush-resistance
- Suitable for outdoor use and direct burial
- High mechanical resistance

### Application range

- Mechanical engineering
- Plant engineering
- Outdoors
- Used in areas where liquids are present
- Applications with high mechanical stress

### Product Make-up

- Spirally-wound metal protective conduit with roughened profile
- PVC sheath

### Technical data

	ETIM 5.0 Class-ID: EC001179 ETIM 5.0 Class-Description: Protective metallic hose
	<b>Norm references / Approvals</b> IEC EN 61386-23
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> Inner conduit: steel, galvanised Outer sheath: PVC
	<b>Temperature range</b> -15 °C to +70 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	Suitable for SILVYN® LGF-2-M/LGS-2-M	Suitable for SILVYN® LGS-2	PU ring (m)
<b>SILVYN® LCC-2</b>						
61804702	10	6.8 x 10.0	25	M12x1,5	7	30
61804712	12	10.2 x 14.0	30	M16x1,5/1	9	30
61804722	16	13.0 x 17.0	40	M16x1,5/2 + M20x1,5/1	11	30
61804732	20	16.9 x 21.5	45	M20x1,5/2	13,5 + 16	30
61804742	25	21.1 x 26.0	55	M25x1,5	21	30
61804752	32	28.1 x 34.0	60	M32x1,5	29	30
61804762	40	37.6 x 44.5	80	M40x1,5	36	10
61804772	50	48.4 x 55.0	90	M50x1,5		10
61804792	63	57.5 x 64.5	115	M63x1,5	48	10
61804787	75	70.0 x 79.0	150	M75x1,5		10

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® LCCH-2 refer to page 927
- SILVYN® LCC-E refer to page 931

### Accessories

- SILVYN® LGF-2-M refer to page 928
- SILVYN® LGS-2-M refer to page 928
- SILVYN® LGS-2 refer to page 928
- SILVYN® LCG-M refer to page 929
- SILVYN® LCW-M refer to page 929
- SILVYN® LCS-M refer to page 929
- SILVYN® LCC coupler refer to page 930



**SILVYN® LCCH-2**



**Benefits**

- High flame-retardance and self-extinguishing in accordance with UL 94V-0
- Protects against liquids
- High crush-resistance
- Suitable for outdoor use and direct burial
- High mechanical resistance

**Application range**

- Public utilities
- Mechanical engineering
- Used in areas where liquids are present
- Applications with high mechanical stress
- Outdoors

**Product features**

- Halogen-free
- Low smoke
- Low toxicity

**Product Make-up**

- Spirally-wound metal protective conduit with roughened profile
- Plastic outer sheath

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001179  
ETIM 5.0 Class-Description: Protective metallic hose

**DIN VDE** **Norm references / Approvals**  
IEC EN 61386-23

**RAL** **Colour delivered**  
Black (RAL 9005), UV-resistant

**Material**  
Inner conduit: steel, galvanised  
Outer sheath: plastic, halogen-free  
Fire behaviour according to UL 94V-0

**Temperature range**  
-25°C to +90°C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® LCCH-2</b>				
61804793	12	10.2 x 14.0	30	25
61804794	16	13.0 x 17.0	40	25
61804795	20	16.9 x 21.5	45	25
61804796	25	21.1 x 26.0	55	25
61804797	32	28.1 x 34.0	60	25
61804798	40	37.6 x 44.5	80	10
61804799	50	48.4 x 55.0	90	10
61804788	63	57.5 x 64,5	115	10
61804789	75	70.0 x 79.0	150	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® LGF-2-M refer to page 928
- SILVYN® LGS-2-M refer to page 928
- SILVYN® LGS-2 refer to page 928
- SILVYN® LCG-M refer to page 929
- SILVYN® LCW-M refer to page 929
- SILVYN® LCS-M refer to page 929
- SILVYN® LCC coupler refer to page 930
- SILVYN® LCC-E refer to page 931



## SILVYN® LGF-2-M / SILVYN® LGS-2-M / SILVYN® LGS-2



SILVYN® LGF-2-M

SILVYN® LGS-2-M

SILVYN® LGS-2

### Benefits

#### SILVYN® LGF-2-M

- For fixed applications
- High tensile strength
- Space-saving

#### SILVYN® LGS-2-M

- For rotating applications
- High tensile strength
- Space-saving

#### SILVYN® LGS-2

- For rotating applications
- High tensile strength
- Space-saving

### Product Make-up

#### SILVYN® LGF-2-M

- Metric connection thread
- Hexagonal collar
- Cap nut

#### SILVYN® LGS-2-M

- Metric connection thread
- Hexagonal collar with torsion element
- Cap nut

#### SILVYN® LGS-2

- PG connection thread
- Hexagonal collar with torsion element
- Cap nut

### Technical data



ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose



**Norm references / Approvals**  
IEC EN 61386-23



**Material**  
Nickel-plated brass



**Protection rating**  
IP 54



**Temperature range**  
-50°C to +300°C

### Application range

- In combination with protective conduit:
- SILVYN® LCC-2
- SILVYN® LCCH-2
- Applications with high mechanical stress
- Outdoors

### Suitable conduits

- SILVYN® LCC-2 Page 926
- SILVYN® LCCH-2 Page 927

Article number	Metric size	SW wrench size mm	Overall length mm	Thread length mm	Suitable for SILVYN® LCC-2 / LCCH-2	Pieces / PU
<b>SILVYN® LGF-2-M</b>						
55501981	12 x 1.5	13	21	8	10	10
55502001	16 x 1.5/1	17	23	8	12	10
55502002	16 x 1.5/2	20	25	10	16	10
55502021	20 x 1.5/1	22	25	10	16	10
55502022	20 x 1.5/2	24	26.3	10	20	10
55502031	25 x 1.5	29	32.5	10	25	10
55502041	32 x 1.5	38	36.8	13	32	10
55502051	40 x 1.5	48	39	14	40	4
55502061	50 x 1.5	58	42	15	50	4
55502071	63 x 1.5	70	50	18	63	1
55502073	75 x 1,5	84	60	20	75	1
<b>SILVYN® LGS-2-M</b>						
55501982	12 x 1.5	13	30.2	8	10	10
55502003	16 x 1.5/1	17	32.2	8	12	10
55502004	16 x 1.5/2	20	34.2	10	16	10
55502023	20 x 1.5/1	22	34.2	10	16	10
55502024	20 x 1.5/2	24	35.5	10	20	10
55502032	25 x 1.5	29	43.7	10	25	10
55502042	32 x 1.5	38	48	13	32	10
55502052	40 x 1.5	48	51.2	14	40	4
55502062	50 x 1.5	58	54.2	15	50	4
55502072	63 x 1.5	70	63.2	18	63	1
<b>SILVYN® LGS-2</b>						
55502710	7	13	32	7	10	10
55502720	9	17	38	10	12	10
55502730	11	22	38	10	16	10
55502740	13.5	24	39	12	20	10
55502750	16	24	44	12	20	10
55502760	21	29	50	12	25	10
55502770	29	36	56	12	32	10
55502780	36	48	59	12	40	4
55502790	48	70	61.2	16	63	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- SKINDICHT® SM-M refer to page 763



**SILVYN® LCG-M / SILVYN® LCW-M / SILVYN® LCS-M**



SILVYN® LCG-M



SILVYN® LCW-M



SILVYN® LCS-M

**Benefits**

- High tensile strength
- Vibration protection
- Enhanced sealing

**Application range**

- In combination with protective conduit:
- SILVYN® LCC-2 / LCCH-2
- Applications with high mechanical stress
- Used in areas where liquids are present

**Product Make-up**

**SILVYN® LCG-M**

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

**SILVYN® LCW-M**

- Metric connection thread
- 90° hexagonal collar
- Threaded sleeve
- Cap nut

**SILVYN® LCS-M**

- Metric connection thread
- Hexagonal collar with torsion element
- Threaded sleeve
- Cap nut

**Suitable conduits**

- SILVYN® LCC-2 Page 926
- SILVYN® LCCH-2 Page 927

**Technical data**

	ETIM 5.0 Class-ID: EC001180 ETIM 5.0 Class-Description: Screw connection for protective metallic hose
	<b>Norm references / Approvals</b> IEC EN 61386-23
	<b>Material</b> Body: nickel-plated brass Seal: PA compression seal
	<b>Protection rating</b> IP 65
	<b>Temperature range</b> -50°C to +135°C

Article number	Metric size	SW 1/2 mm	Overall length mm	Thread length mm	Suitable for SILVYN® LCC-2/LCCH-2	Pieces / PU
<b>SILVYN® LCG-M</b>						
55503220	12 x 1.5	20 / 20	29.8	10	10	10
55503221	16 x 1.5/1	20 / 22	29.8	10	12	10
55503222	16 x 1.5/2	24 / 26	33	12	16	10
55503223	20 x 1.5/1	24 / 26	33	12	16	10
55503224	20 x 1.5/2	26 / 29	33.5	12	20	10
55503225	25 x 1.5	33 / 35	40.5	14	25	10
55503226	32 x 1.5	40 / 42	45.8	15	32	2
55503227	40 x 1.5	56 / 58	47.5	16	40	1
55503228	50 x 1.5	70 / 70	51	16	50	1
<b>SILVYN® LCW-M</b>						
55503234	16 x 1.5/1	20 / 24	31	10	12	10
55503235	16 x 1.5/2	20 / 26	31	10	16	10
55503230	20 x 1.5/1	24 / 26	36	13	16	10
55503231	20 x 1.5/2	24 / 29	37	13	20	10
55503232	25 x 1.5	30 / 35	44	14	25	10
55503233	32 x 1.5	36 / 42	53	15	32	2
<b>SILVYN® LCS-M</b>						
55503470	16 x 1.5/1	20 / 22	39	10	12	10
55503471	16 x 1.5/2	24 / 26	40.9	10	16	10
55503472	20 x 1.5/1	24 / 26	41	10	16	10
55503473	20 x 1.5/2	26 / 29	41.8	10	20	10
55503474	25 x 1.5	33 / 35	50.7	12	25	10
55503475	32 x 1.5	40 / 42	56.9	13	32	2

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SKINDICHT® SM-M refer to page 763



## SILVYN® LCC coupler



### Benefits

- Optional extension of SILVYN® LCC-2 / LCCH-2
- Fast assembly
- High tensile strength

### Application range

- In combination with protective conduit:
- SILVYN® LCC-2 / LCCH-2
- Conduit coupler for extension

### Suitable conduits

- SILVYN® LCC-2 Page 926
- SILVYN® LCCH-2 Page 927

### Technical data

	ETIM 5.0 Class-ID: EC001180 ETIM 5.0 Class-Description: Screw connection for protective metallic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Material</b> Nickel-plated brass
	<b>Protection rating</b> IP 65
	<b>Temperature range</b> -50°C to +135°C

Article number	Nominal size	Suitable for SILVYN® LCC-2/LCCH-2	Pieces / PU
<b>SILVYN® LCC coupler</b>			
55503476	16	16	2
55503477	20	20	2
55503478	25	25	2
55503479	32	32	2

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® LCC-E**



**Info**

- Ensuring cables do not get damaged



**Benefits**

- Cable damage can be prevented

**Application range**

- Conduit end cover
- If no conduit fitting is used

**Product features**

- All-round collar completely covers the protective conduit end

**Product Make-up**

- Threaded sleeve

**Suitable conduits**

- SILVYN® LCC-2 Page 926
- SILVYN® LCCH-2 Page 927

**Technical data**



ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose



**Material**  
Nickel-plated brass



**Temperature range**  
-50°C to +135°C

Article number	Nominal size	Suitable for SILVYN® LCC-2 / LCCH-2	Pieces / PU
<b>SILVYN® LCC-E</b>			
61805600	10	10	10
61805610	12	12	10
61805620	16	16	10
61805630	20	20	10
61805640	25	25	10
61805650	32	32	10
61805660	40	40	10
61805670	50	50	4
61805680	63	63	1
61805690	75	75	1

Photographs are not to scale and do not represent detailed images of the respective products.





## SILVYN® LTP



### Benefits

- Protects against liquids
- High-tensile
- Robust
- High crush-resistance
- Largely resistant to oil and acids, UV-resistant

### Application range

- Mechanical engineering
- Outdoors
- Transformer construction
- Railway applications
- Paper industry

### Product Make-up

- Spirally-wound heavy metal protective conduit with roughened profile
- Plastic outer sheath

### Suitable conduits

- SILVYN® FG Page 923

### Technical data

	ETIM 5.0 Class-ID: EC001180 ETIM 5.0 Class-Description: Screw connection for protective metallic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Colour delivered</b> Black (RAL 9005), UV-resistant
	<b>Material</b> Steel, galvanised PVC sheath
	<b>Temperature range</b> -20 °C to +105 °C

Article number	Nominal size	ID x OD mm	Bending radius (mm)	PU ring (m)
<b>SILVYN® LTP</b>				
61805400	10 - 1/4"	7.0 x 11.8	35	50
61805410	12 - 5/16"	10.0 x 14.2	40	50
61805420	16 - 3/8"	12.6 x 17.8	45	50
61805430	20 - 1/2"	16.0 x 21.1	65	50
61805440	25 - 3/4"	21.0 x 26.4	100	25
61805450	32 - 1"	26.5 x 33.1	135	25
61805460	40 - 1 1/4"	35.4 x 41.8	175	10
61805470	50 - 1 1/2"	40.4 x 47.9	230	10
61805480	63 - 2"	51.6 x 59.7	280	10

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SILVYN® HTDL refer to page 917
- SILVYN® OR refer to page 918

### Accessories

- SILVYN® LTPG-M refer to page 933
- SILVYN® LTPS-M refer to page 933
- SILVYN® LTP 45° M refer to page 933
- SILVYN® LTP 90° M refer to page 933



**SILVYN® LTPG-M / SILVYN® LTPS-M / SILVYN® LTP 45° M / SILVYN® LTP 90° M**



SILVYN® LTPG-M



SILVYN® LTPS-M



SILVYN® LTP 45° M



SILVYN® LTP 90° M

**Benefits**

- High tensile strength
- Vibration protection
- High sealing performance

**Application range**

- In combination with protective conduit:
- SILVYN® LTP
- Applications with high mechanical stress
- Used in areas where liquids are present

**Product Make-up**

**SILVYN® LTPG-M**

- Metric connection thread
- Hexagonal collar
- Threaded sleeve
- Cap nut

**SILVYN® LTPS-M**

- Metric connection thread
- Hexagonal collar with torsion element
- Threaded sleeve
- Cap nut

**SILVYN® LTP 45° M**

- Metric connection thread
- 45° elbow, hexagonal collar
- Threaded sleeve
- Cap nut

**SILVYN® LTP 90° M**

- Metric connection thread
- 90° hexagonal collar
- Threaded sleeve
- Cap nut

**Suitable conduits**

- SILVYN® LTP Page 932

**Technical data**

	ETIM 5.0 Class-ID: EC001180 ETIM 5.0 Class-Description: Screw connection for protective metallic hose
	<b>Certifications</b> IEC EN 61386-23
	<b>Material</b> Body: nickel-plated brass Seal: PA compression seal
	<b>Protection rating</b> IP66 IP67 IP68 (5 bar) IP69
	<b>Temperature range</b> -50°C to +135°C

Article number	Metric size	SW 1/2 mm	Overall length mm	Thread length mm	Suitable for SILVYN® LTP	Pieces / PU
<b>SILVYN® LTPG-M</b>						
55510200	12 x 1.5	20 / 20	29.8	10	10	10
55510210	16 x 1.5/1	20 / 22	29.8	10	12	10
55510220	16 x 1.5/2	24 / 26	33	10	16	10
55510230	20 x 1.5/1	24 / 26	33	12	16	10
55510240	20 x 1.5/2	26 / 29	33.5	12	20	10
55510250	25 x 1.5	33 / 35	40.5	14	25	10
55510260	32 x 1.5	40 / 42	45.8	15	32	2
55510270	40 x 1.5	50 / 52	47.5	16	40	1
55510280	50 x 1.5	58 / 58	51	16	50	1
55510290	63 x 1.5	70 / 70	58.8	20	63	1
<b>SILVYN® LTPS-M</b>						
55510600	16 x 1.5/1	20 / 22	39	10	12	10
55510610	16 x 1.5/2	24 / 26	40.9	10	16	10
55510620	20 x 1.5/1	24 / 26	41	10	16	10
55510630	20 x 1.5/2	26 / 29	41.8	10	20	10
55510640	25 x 1.5	33 / 35	50.7	12	25	10
55510650	32 x 1.5	40 / 42	56.9	13	32	2
<b>SILVYN® LTP 45° M</b>						
55510300	20 x 1.5/1	24 / 26	44.8	13	16	10
55510301	20 x 1.5/2	24 / 29	49.5	13	20	10
55510302	25 x 1.5	30 / 35	63	14	25	10
55510303	32 x 1.5	36 / 42	76.6	15	32	2
55510304	40 x 1.5	47 / 57	86.9	18	40	1
55510305	50 x 1.5	61 / 62	93.4	18	50	1
55510306	63 x 1.5	67 / 76	111	20	63	1
<b>SILVYN® LTP 90° M</b>						
55510400	16 x 1.5/1	20 / 24	27.5	10	12	10
55510410	16 x 1.5/2	20 / 26	27.5	10	16	10
55510420	20 x 1.5/1	24 / 26	33	13	16	10
55510430	20 x 1.5/2	24 / 29	33	13	20	10
55510440	25 x 1.5	30 / 35	39.3	14	25	10
55510450	32 x 1.5	36 / 42	46	15	32	2
55510460	40 x 1.5	46 / 52	56.9	18	40	1
55510470	50 x 1.5	57 / 58	66.5	18	50	1
55510480	63 x 1.5	72 / 70	81.8	20	63	1

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® SEALING WASHER refer to page 935

Liquid-tight conduits • SILVYN® LTP



## SILVYN® LTP coupler



### Benefits

- Optional extension of SILVYN® LTP
- Fast assembly
- High tensile strength

### Application range

- In combination with protective conduit:
- SILVYN® LTP
- Conduit coupler for extension

### Suitable conduits

- SILVYN® LTP Page 932

### Technical data

**Certifications**  
IEC EN 61386-23

**Material**  
Nickel-plated brass

**Protection rating**  
IP66  
IP67  
IP68 (5 bar)  
IP69

**Temperature range**  
-50°C to +135°C

Article number	Nominal size	Suitable for SILVYN® LTP	Pieces / PU
<b>SILVYN® LTP coupler</b>			
55510310	16	16	2
55510311	20	20	2
55510312	25	25	2
55510313	32	32	2

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® LTP-E



### Benefits

- Cable damage can be prevented

### Application range

- Conduit end cover
- If no conduit fitting is used

### Product features

- All-round collar completely covers the protective conduit end

### Product Make-up

- Threaded sleeve

### Suitable conduits

- SILVYN® HTDL Page 917
- SILVYN® LTP Page 932
- SILVYN® EF Page 918
- SILVYN® OR Page 918
- SILVYN® HXC Page 919
- SILVYN® HFX Page 919
- SILVYN® FG Page 923



### Info

- Ensuring cables do not get damaged

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001180  
ETIM 5.0 Class-Description: Screw connection for protective metallic hose

**Material**  
Nickel-plated brass

**Temperature range**  
-50°C to +135°C

Article number	Nominal size	Suitable conduit nominal size	Pieces / PU
<b>SILVYN® LTP-E</b>			
61802300	10	1/4"	10
61802301	12	5/16"	10
61802302	16	3/8"	10
61802303	20	1/2"	10
61802305	25	3/4"	10
61802306	32	1"	10
61802307	40	1 1/4"	10
61802304	50	1 1/2"	4
61802308	63	2"	1

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® SEALING WASHER**



**Application range**

- For sealing the housing reliably to protect against oils, dust, and water at the connection thread of a gland or other similar parts

**Product features**

- Ribs on both faces enhance sealing.
- Oil-resistant

**Technical data**

<b>RAL</b>	<b>Colour delivered</b> blue
	<b>Material</b> Polyester Elastomer
<b>IP</b>	<b>Protection rating</b> IP66 IP67 IP68 (5 bar) IP69
	<b>Temperature range</b> -50°C to +135°C

Article number	ID x OD mm	Metric size	Pieces / PU
<b>SILVYN® SEALING WASHER</b>			
61809400	16.0 x 24.0	16 x 1.5	10
61809410	20.0 x 27.0	20 x 1.5	10
61809420	25.0 x 34.0	25 x 1.5	10
61809430	32.0 x 42.0	32 x 1.5	10
61809440	40.0 x 50.0	40 x 1.5	10
61809450	50.0 x 62.0	50 x 1.5	10

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- SILVYN® LTPG-M
- SILVYN® LTPS-M
- SILVYN® LTP 90° M



## SILVYN® Conduit scissor



### Benefits

- Proper and safe cutting of plastic conduits

### Application range

- Conduit shears for non-metallic conduit, e.g. parallel corrugated protective conduit.

### Suitable conduits

- SILVYN® EL/ELU/ELO/ELT
- SILVYN® HIPROJACKET Page 914
- SILVYN® FPAS Page 875
- SILVYN® HCC Page 888
- SILVYN® RILL PA 6 Page 862
- SILVYN® SI Page 841
- SILVYN® SINUS PA6 Page 895
- SILVYN® SPLIT Page 893
- SILVYN® RILL PA 12 Page 863
- SILVYN® SP Page 842
- SILVYN® SP-PU Page 843

Article number	Article designation	Cutting range Ø (mm)	Pieces / PU
<b>SILVYN® Conduit scissor</b>			
61722285	CC01	0 - 34	1
61722286	CC02	0 - 67	1

Photographs are not to scale and do not represent detailed images of the respective products.

## SILVYN® vice



### Application range

- For right-angled sawing of protective metal conduits.

### Suitable conduits

- SILVYN® HTDL Page 917
- SILVYN® SSUE Page 908
- SILVYN® UI 511 Page 912
- SILVYN® EF Page 918
- SILVYN® OR Page 918
- SILVYN® HCX Page 919
- SILVYN® HFX Page 919
- SILVYN® AS-P Page 897
- SILVYN® EDU-AS Page 898
- SILVYN® EMC AS-CU Page 899
- SILVYN® FPS-EDU Page 900
- SILVYN® FG Page 923

Article number	Article designation	Saw range Ø (mm)	Pieces / PU
<b>SILVYN® vice</b>			
61722280	SAWING DEVICE WZ	18 - 45	1

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® coupler**



**Benefits**

- Easy to assemble
- High tensile strength
- Optional extension of all conduits

**Application range**

- In combination with protective conduit
- All metric conduit glands

**Technical data**

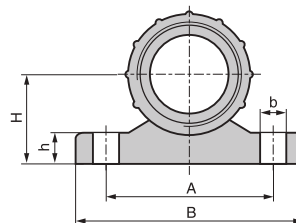
	<b>ETIM 5.0 Class-ID:</b> EC001180 <b>ETIM 5.0 Class-Description:</b> Screw connection for protective metallic hose
	<b>On request</b> M75 PG sizes
	<b>Material</b> Nickel-plated brass
	<b>Temperature range</b> Dependent on the glands used

Article number	Article designation	Metric size	SW wrench size mm	Overall length mm	Outer Ø (mm)	Pieces / PU
<b>SILVYN® coupler</b>						
55510000	16	M16 x 1.5	20	22.5	22.0	10
55510010	20	M20 x 1.5	24	25	26.4	10
55510020	25	M25 x 1.5	29	30	31.9	10
55510030	32	M32 x 1.5	35	32.5	38.5	10
55510040	40	M40 x 1.5	48	34	53.0	2
55510050	50	M50 x 1.5	58	38	63.8	1
55510060	63	M63 x 1.5	70	45	77.0	1
55510070	75	M75 x 1,5	84	45	93,0	

Photographs are not to scale and do not represent detailed images of the respective products.



**SILVYN® BW-K-M**



**SILVYN® BW-M**



**Benefits**

- Space-saving

**Application range**

- Mechanical engineering
- Plant engineering
- Control cabinet manufacturing
- Used in areas where SILVYN® protective conduits cannot be inserted into a machine or an appliance

**Product Make-up**

- SILVYN® BW-K-M**
- Plastic fixing bracket
  - 2 x bore hole for fixation
- SILVYN® BW-M**
- Steel fixing bracket
  - 2 x bore hole for fixation

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC001458 <b>ETIM 5.0 Class-Description:</b> Fastening angle for hose fitting		<b>Material</b> SILVYN® BW-K-M PP SILVYN® BW-M Steel, passivated
	<b>Colour delivered</b> SILVYN® BW-K-M Grey, RAL 7001		<b>Temperature range</b> SILVYN® BW-K-M -40°C to +100°C

Article number	Article designation	Metric size	A (mm)	B in mm	Overall length, C (mm)	D (mm)	E mm	h mm	H	Hole Ø (mm)	Pieces / PU
<b>SILVYN® BW-K-M</b>											
55000911		20 x 1.5	37.5	50				7.5	20	5.7	50
55000921		25 x 1.5	43	57				8	25	5.7	50
55000931		32 x 1.5	53.5	67				8	27	6.7	50
55000941		40 x 1.5	65.5	79.5				9	33	6.7	50
55000951		50 x 1.5	69.5	86				9.5	36.5	6.7	50
<b>SILVYN® BW-M</b>											
55000531	16		20	50	33.2	40	17				25
55000541	20		20	50	38	40	21				25
55000551	25		20	60	46.9	50	26				25
55000561	32		20	70	56.9	60	33				25
55000571	40		20	80	67	70	41				25
55000572	50		20	90	78.4	80	51				25

Photographs are not to scale and do not represent detailed images of the respective products.



## SILVYN® RKS



### Benefits

- Fast and easy mounting
- Various applications

### Application range

- Plant engineering
- Railway applications
- Automotive industry
- Fastening clamp for cables, conduits and pipes

### Technical data

ETIM 5.0 Class-ID: EC001172  
 ETIM 5.0 Class-Description:  
 Coupler for corrugated plastic hoses

**Material**  
 Steel, galvanised  
 Polychloroprene

**Temperature range**  
 -35 °C to +100 °C

Article number	Article designation	Metal width (mm)	Width x thickness of rubber profile (mm)	Diameter (mm)	Hole Ø (mm)	Support length (mm)	Pieces / PU
<b>SILVYN® RKS 1</b>							
61825170	6/12	12	15 x 1,2	6	5.3 (M5)	16	100
61825180	8/12	12	15 x 1,2	8	5.3 (M5)	17	100
61825190	10/12	12	15 x 1,2	10	5.3 (M5)	18	100
61825200	12/12	12	15 x 1,2	12	5.3 (M5)	19	100
61825210	13/15	15	18,5 x 1,5	13	6.4 (M6)	23.7	100
61825355	14/15	15	18,5 x 1,5	14	6.4 (M6)	24.2	100
61825365	15/15	15	18,5 x 1,5	15	6.4 (M6)	24.7	100
61825375	16/15	15	18,5 x 1,5	16	6.4 (M6)	25.2	100
61825040	18/15	15	18,5 x 1,5	18	6.4 (M6)	26.2	100
61825052	19/15	15	18,5 x 1,5	19	6.4 (M6)	26.7	100
61825380	20/15	15	18,5 x 1,5	20	6.4 (M6)	27.2	100
61825382	21/15	15	18,5 x 1,5	21	6.4 (M6)	27.7	100
61825050	22/15	15	18,5 x 1,5	22	6.4 (M6)	28.2	100
61825390	23/15	15	18,5 x 1,5	23	6.4 (M6)	28.7	100
61825392	24/20	20	25 x 1,5	24	8.4 (M8)	35	100
61825400	25/15	15	18,5 x 1,5	25	6.4 (M6)	29.7	100
61825402	26/15	15	18,5 x 1,5	26	6.4 (M6)	30.2	100
61825250	28/15	15	18,5 x 1,5	28	6.4 (M6)	31.2	100
61825255	30/15	15	18,5 x 1,5	30	6.4 (M6)	32.2	100
61825257	32/15	15	18,5 x 1,5	32	6.4 (M6)	33.2	100
61825259	34/15	15	18,5 x 1,5	34	6.4 (M6)	34.2	100
61825260	35/15	15	18,5 x 1,5	35	6.4 (M6)	34.7	100
61825262	36/20	20	25 x 1,5	36	8.4 (M8)	41	100
61825264	38/20	20	25 x 1,5	38	8.4 (M8)	42	100
61825295	40/20	20	25 x 1,5	40	8.4 (M8)	43	100

Photographs are not to scale and do not represent detailed images of the respective products.

# FLEXIMARK®

## Marking systems



The requirement: permanent marking. The solution: FLEXIMARK®. These sophisticated systems mean that a clear overview inside a control cabinet is no longer just a pipe dream. From simple labels for manual marking through to electronic markings, the FLEXIMARK® range is guaranteed to be permanent.

### Application range

- Control cabinet manufacturing
- Automation technology
- Industrial machinery and plant engineering
- Renewable energies
- Wherever cables are used



ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
**FLEXIMARK®**  
ACCESSORIES  
APPENDIX

**FLEXIMARK® Cable Marking**

**Customized System Cable Marking**

FLEXIMARK® Stainless steel marking FCC		944
FLEXIMARK® Cablelabel PUR FCC	New	945
FLEXIMARK® Cable marking FCC		946
FLEXIMARK® Shrink Mark FCC		947

**PC Marking Laser printing Cable Marking**

FLEXIMARK® Wrapping labels LCK		948
FLEXIMARK® Cablelabel LFL		949
FLEXIMARK® Flexilabel LFL		950
FLEXIMARK® Label LMB		951

**PC Marking Thermal transfer printing Cable Marking**

FLEXIMARK® Cablelabel PUR	New	952
FLEXIMARK® Organized shrink tube	New	953
FLEXIMARK® Heat shrinkable tubing		954
FLEXIMARK® Wrapping labels TCK		955
FLEXIMARK® Stainless steel kit		956

**Basic System Cable Marking**

FLEXIMARK® MR Stainless steel character/		
FLEXIMARK® Stainless steel - character Set		957
FLEXIMARK® NM Stainless steel - character holders	New	958
FLEXIMARK® Micro Kit		958
FLEXIMARK® Marking Kit MINI		960
WM BW Blank cable marker		960
FLEXIMARK® Cablelabel LAM		961
MS Marker pens		961

**FLEXIMARK® Single core marking**

**Customized System Single Core Marking**

FLEXIMARK® Flexiprint TF FCC		962
FLEXIMARK® Organized shrink tube FCC		963

**PC Marking Laser printing Single Core Marking**

FLEXIMARK® Flexiprint LF		964
--------------------------	--	-----

**PC Marking Thermal transfer printing Single Core Marking**

FLEXIMARK® Flexiprint TF		965
--------------------------	--	-----

**Basic System Single Core Marking**

Marking rings PA		966
Marking rings PC		969
PAD Mounting rod		972
PAV Mounting tool		972
Storage box		972
Marking rings Pliosnap		973
FLEXIMARK® LA Labels		977

**FLEXIMARK® component marking**

**PC Marking Thermal transfer printing Component Marking**

FLEXIMARK® TA foam Component marking		978
--------------------------------------	--	-----

**FLEXIMARK® Accessories PC Marking**

**FLEXIMARK® Software**

FLEXIMARK® Software 10.0		979
--------------------------	--	-----

**FLEXIMARK® Printing systems**

FLEXIMARK® Thermoprint A4+M and EOS4*	New	980
FLEXIMARK® Ribbons Transfer Printer A4+M/300 and EOS4*		981

**FLEXIMARK® character holders and accessories**

**FLEXIMARK® Character holders**

FLEXIMARK® Character holders PTE		982
FLEXIMARK® PTEF/ CAB		983
FLEXIMARK® Character holders PGS		984
FLEXIMARK® Collar Snap-on		985
FLEXIMARK® Collar closed		986
FLEXIMARK® Collar for cable tie		987

**Accessories character holders**

FLEXIMARK® Pliers FL52ERA for character holders		988
FLEXIMARK® Pliers FL52A for character holders		988

**Cable bundling**

KMK Label holders		989
ETB Label holders		989

**Electronic label-printers**

**Electronic label-printers**

DYMO® Industry Rhino Pro 4200	New	990
DYMO® ID1 - Industry tape D1		991

**Embossing machines**

**Manual embossing machines**

M1011 Manual embossing machine		992
SP Metal print		992

I FLEXIMARK



FLEXIMARK



FLEXIMARK

		How?	
		Customized system	Basic system
What?		Your demand – we deliver	Ready made to deliver for each environment
Cable	Outdoor & Indoor	<p>Stainless Steel FCC <b>944</b></p> <p>Cablelabel FCC <b>946</b></p>	<p>MINI character strips</p> <p>Stainless Steel Marking <b>956</b></p>
		<p>Marking tags TMB FCC</p> <p>Cablelabel PUR FCC <b>945</b></p>	<p>Collars <b>987</b></p> <p>Marking kit DYMO® PL 150 <b>990</b></p>
Wire	Indoor	<p>Shrink tube FCC <b>947</b></p> <p>Cable Marker FCC <b>946</b></p> <p>Cable tie marking FKBB FCC</p> <p>Wrapping labels LCK FCC</p>	<p>Label cards &amp; Label blocks</p> <p>Cablelabel LAM <b>961</b></p> <p>Handheld Printers <b>990</b></p>
	before mounting the wire	<p>Shrink tube FCC <b>947</b></p> <p>Flexiprint FCC <b>962</b></p> <p>Organized shrink tube FCC <b>963</b></p> <p>Marking tags TMB FCC</p>	<p>Marking rings <b>966</b></p> <p>Collars <b>986</b></p> <p>Flexiprint <b>965</b></p>
Component	after mounting the wire	<p>Marking tags TMB FCC</p>	<p>Snap-On collars <b>985</b></p>
	Device marking	<p>BMK FCC</p> <p>Stainless steel component marking FCC <b>944</b></p>	<p>Character holders MLM</p> <p>Character holders PGS <b>984</b></p>
Accessories	Terminal	<p>Terminal block marking</p>	<p>Handheld Printers <b>990</b></p>
	Sensor	<p>Marking tags TMB FCC</p>	<p>Clip-On collars</p>
Accessories		<p>Pliers FL 52 ERA <b>988</b></p> <p>Manual embossing machine <b>992</b></p>	<p>Stainless steel cable ties <b>1066</b></p> <p>Stainless steel tie gun HT-338 <b>1068</b></p>

Photographs are not to scale and do not represent detailed images of the respective products. DYMO® is a registered trademark of SANFORD GmbH.

**Data marking**

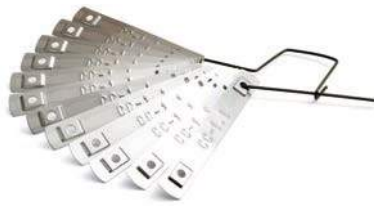
Laser office printers		Thermal transfer printer	
 <p>Flexilabel LFL <span style="float: right;">950</span> Labels LMB <span style="float: right;">951</span></p>	 <p>Flexilabel TFL <span style="float: right;">952</span> Cablelabel PUR <span style="float: right;">952</span></p> <p>Cablelabel MTFL <span style="float: right;">951</span> Marking tags TMB <span style="float: right;">952</span></p>		
 <p>Wrapping labels LCK <span style="float: right;">948</span> Labels LA <span style="float: right;">977</span> Cablelabel LFL <span style="float: right;">949</span></p>	 <p>Flaglabels <span style="float: right;">955</span> Labels TA <span style="float: right;">955</span> Wrapping labels TCK <span style="float: right;">955</span></p> <p>Cablelabel TFL <span style="float: right;">953</span> Organized shrink tube <span style="float: right;">953</span> Shrink tube <span style="float: right;">954</span></p>		
 <p>Flexiprint LF <span style="float: right;">964</span> Labels LMB <span style="float: right;">951</span></p>	 <p>Flexiprint TF <span style="float: right;">965</span> Organized shrink tube <span style="float: right;">953</span> Marking tags TMB <span style="float: right;">953</span></p>		
 <p>Labels LMB <span style="float: right;">951</span></p>	 <p>Marking tags TMB <span style="float: right;">953</span></p>		
 <p>Labels LA <span style="float: right;">977</span> Flexilabel LFL <span style="float: right;">950</span></p>	 <p>Labels TA <span style="float: right;">978</span> TA Foam labels <span style="float: right;">978</span> Flexilabel TFL <span style="float: right;">978</span></p>		
 <p>Labels LA <span style="float: right;">977</span></p>	 <p>Terminal block marking <span style="float: right;">978</span> TA Foam labels <span style="float: right;">978</span></p>		
 <p>Labels LMB <span style="float: right;">951</span> Marking tags TMB <span style="float: right;">951</span></p>	 <p>Marking tags TMB <span style="float: right;">951</span></p>		
<p>FLEXIMARK® SOFTWARE 10.0 <span style="float: right;">979</span></p> <ul style="list-style-type: none"> <li>• Print your own labels &amp; signs</li> <li>• Work with Excel files</li> <li>• Print barcodes &amp; sequences</li> </ul> 	<p>Thermal transfer printer <span style="float: right;">980</span></p> 		

Photographs are not to scale and do not represent detailed images of the respective products.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



### FLEXIMARK® Stainless steel marking FCC



#### Benefits

- Customised stainless steel cable and component marking
- Markers are sorted prior to delivery
- No time-consuming preparation and installation
- Acid-resistant
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

#### Application range

- Cable and component marking system
- Markers will be delivered with the desired text (printing service is included in the price)
- Markers could be used in any industry with a demanding environment (e.g. oil & gas, railways)

#### Product features

- For fastening with cable ties (LS) up to a width of 7.9 mm
- Included cable ties in article no.83251406, 83251456, 83251426, 83251468: Stainless steel cable ties LS 4,6-200 (article no.61812950)

#### Norm references / Approvals

- Achilles JQS certified

#### Note

- **Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column B or C: Amount of each text
- Length of the markers is depending on the number of characters
- The column "number of characters" refers to the quantity in one line (the maximum amount of characters e.g. for article no. 83251426 is 30-max.15 per line)
- All characters are printed in capital letters

#### Included

- 1 PU= 1 marker, there is no minimum purchase quantity

#### Suitable tools

- STEEL GUN HT-338 cable tie pliers refer to page 1068

#### Info

- Contained in FLEXIMARK® sample bag (article number M3251010)

#### Technical data

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- Dimensions**  
Character size (height): 4.5 mm  
Diameter borehole: 3,2 mm
- On request**  
Blank version available upon request
- Note**  
Gap between characters: approximately 1 mm
- Info**  
Available characters: A-Ö, 0-9, +, -, /, ;, =, .  
X Earthing sign
- Material**  
Acid resistant stainless steel  
EN 1.4404 (SS2348, AISI 316L)
- Temperature range**  
-80°C to +500°C

Article number	Article designation	Height (mm)	Product Make-up	Number of characters	Number of markers per PU
<b>One line embossing/with cable tie brackets</b>					
83251406	FLEXIMARK® Stainless SMC FCC LS200 0-15	9.9	with cable tie	0-15	1
83251456	FLEXIMARK® Stainless SMC FCC LS200 16-25	9.9	with cable tie	16-25	1
83251402	FLEXIMARK® Stainless SMC FCC 0-15	9.9	without cable tie	0-15	1
83251454	FLEXIMARK® Stainless SMC FCC 16-25	9.9	without cable tie	16-25	1
<b>One line embossing/with screw hole</b>					
83251450	FLEXIMARK® Stainless SM FCC 0-15	9.9	with screw hole	0-15	1
83251478	FLEXIMARK® Stainless SM FCC 16-25	9.9	with screw hole	16-25	1
<b>Two-line embossing/with cable tie brackets*</b>					
83251426	FLEXIMARK® Stainless SMC2R FCC LS200 0-15	13.9	with cable tie	0-15	1
83251468	FLEXIMARK® Stainless SMC2R FCC LS200 16-25	13.9	with cable tie	16-25	1
83251422	FLEXIMARK® Stainless SMC2R FCC 0-15	13.9	without cable tie	0-15	1
83251466	FLEXIMARK® Stainless SMC2R FCC 16-25	13.9	without cable tie	16-25	1
<b>Two-line embossing/with screw hole</b>					
83251451	FLEXIMARK® Stainless SM2R FCC 0-15	13.9	with screw hole	0-15	1
83251479	FLEXIMARK® Stainless SM2R FCC 16-25	13.9	with screw hole	16-25	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Blank markers could be found on the product page "SP Metalprint" (article no. 83251575 und 83251576).

#### Similar products

- FLEXIMARK® Stainless steel kit refer to page 956
- SP Metal print refer to page 992

#### Accessories

- STEEL GUN HT-338 cable tie pliers refer to page 1068
- LS steel cable ties refer to page 1066



FLEXIMARK® Cablelabel PUR FCC

**i** Info

- PUR 60-10 contained in FLEXIMARK® sample bag (article number M3251010)



**Benefits**

- Halogen-free and flame-retardant cable marking
- Good UV-resistance
- Good chemical resistance
- Highly flexible material

**Application range**

- For cable and conduit marking
- Can be mounted directly on the cable together with plastic cable ties
- Markers will be delivered with the desired text (printing service is included in the price)
- Food and beverage industry
- Can be used in many applications from different industries due to its mechanical, thermal and chemical properties

**Product features**

- One or two-line printing possible
- Text is automatically centered if not explicitly asked for another text alignment
- Extremely flame-retardant according to UL 94 V0
- No fixed maximum number of characters, but text size adapts according to the characters

**Norm references / Approvals**

- MIL 81531 and MIL-STD-202G

**Note**

- **Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column B or C: Amount of each text
- Please specify the desired text colour and other requirements (e.g. text alignments) with your order

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- RAL** **Colour delivered**  
Standard is black text (black labels: white text)
- Material**  
Halogen-free polyurethane
- Temperature range**  
-50°C to +80°C  
Could also withstand higher temperatures in the short run

Article number	Article designation	Colour	Halogen-free	Width x length (mm)	Number of markers per PU	Contents (unit)
<b>FLEXIMARK® Cablelabel PUR FCC</b>						
61800391	FLEXIMARK® Cablelabel PUR 60-10 YE FCC	yellow	no	60.0 x 10.0	1	1
61800392	FLEXIMARK® Cablelabel PUR 75-15 YE FCC	yellow	no	75.0 x 15.0	1	1
61800393	FLEXIMARK® Cablelabel PUR 75-25 YE FCC	yellow	no	75.0 x 25.0	1	1
61800394	FLEXIMARK® Cablelabel PUR 60-10 WH FCC	white	no	60.0 x 10.0	1	1
61800395	FLEXIMARK® Cablelabel PUR 75-15 WH FCC	white	no	75.0 x 15.0	1	1
61800396	FLEXIMARK® Cablelabel PUR 75-25 WH FCC	white	no	75.0 x 25.0	1	1
61800397	FLEXIMARK® Cablelabel PUR 60-10 RD FCC	red	no	60.0 x 10.0	1	1
61800398	FLEXIMARK® Cablelabel PUR 75-15 RD FCC	red	no	75.0 x 15.0	1	1
61800399	FLEXIMARK® Cablelabel PUR 75-25 RD FCC	red	no	75.0 x 25.0	1	1
61800400	FLEXIMARK® Cablelabel PUR 60-10 OG FCC	orange	no	60.0 x 10.0	1	1
61800401	FLEXIMARK® Cablelabel PUR 75-15 OG FCC	orange	no	75.0 x 15.0	1	1
61800402	FLEXIMARK® Cablelabel PUR 75-25 OG FCC	orange	no	75.0 x 25.0	1	1
61800403	FLEXIMARK® Cablelabel PUR 60-10 BU FCC	blue	no	60.0 x 10.0	1	1
61800404	FLEXIMARK® Cablelabel PUR 75-15 BU FCC	blue	no	75.0 x 15.0	1	1
61800412	FLEXIMARK® Cablelabel PUR 75-25 BU FCC	blue	no	75.0 x 25.0	1	1
61800406	FLEXIMARK® Cablelabel PUR 60-10 BK FCC	black	no	60.0 x 10.0	1	1
61800407	FLEXIMARK® Cablelabel PUR 75-15 BK FCC	black	no	75.0 x 15.0	1	1
61800413	FLEXIMARK® Cablelabel PUR 75-25 BK FCC	black	no	75.0 x 25.0	1	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

**Similar products**

- FLEXIMARK® Cablelabel PUR refer to page 952



### FLEXIMARK® Cable marking FCC



#### Benefits

- Customised plastic cable labelling
- Markers are sorted prior to delivery
- No time-consuming preparation and installation
- Good UV-resistance
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A 15)

#### Application range

- For Cable Marking
- Markers will be delivered with the desired text (printing service is included in the price)

#### Product features

- One or two-line printing possible
- Text is automatically centered if not explicitly asked for another text alignment
- Holder for up to 46 characters
- No fixed maximum number of characters, but text size adapts according to the characters

#### Note

- **Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column B or C: Amount of each text

#### Included

- Markers (including cable ties) are pre-assembled prior to delivery
- Marking consists of FLEXIMARK® character holder PTEF printed FLEXIMARK® plastic markers (not-halogenfree) or Flexilabel LFL (halogen-free) and two standard cable ties in PA 6.6 (black)
- 1 PU= 1 marker, there is no minimum purchase quantity

#### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material



**Dimensions**  
Length text: 35 mm  
Length plate: 50 mm  
Max. length: 200 mm



**Note**  
Standard cable tie: black (142, x 2.4 mm)



**Colour delivered**  
Standard colour: black lettering against yellow or white background also available in green, blue and red



**Material**  
Character holder: halogen-free PE  
Labels: Not halogen-free PVC or halogenfree polyester (LFL version)



**Temperature range**  
-25°C to +70°C

Article number	Article designation	Colour	Height (mm)	Halogen-free	Number of markers per PU	PU
<b>With yellow PVC markers (not halogenfree)</b>						
83251300	FLEXIMARK® Cable marker FCC 6 YE	yellow	6.0	no	1	1
83251320	FLEXIMARK® Cable marker FCC 9.5 YE	yellow	9.5	no	1	1
83251350	FLEXIMARK® Cable marker FCC 19 YE	yellow	19.0	no	1	1
<b>With yellow LFL labels made of polyester (halogenfree)</b>						
83274670	FLEXIMARK Cable Marker LFL 9,5-35 YE FCC	yellow	9.5	yes	1	1
<b>With white PVC markers (not halogenfree)</b>						
83251301	FLEXIMARK® Cable marker FCC 6 WH	white	6.0	no	1	1
83251321	FLEXIMARK® Cablemarker FCC 9,5 WH	white	9.5	no	1	1
83251351	FLEXIMARK® Cablemarker FCC 19 WH	white	19.0	no	1	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

#### Similar products

- FLEXIMARK® PTEF/ CAB refer to page 983



## FLEXIMARK® Shrink Mark FCC

### Info

- Shrink Mark FK 12,7 RD 5-7 contained in FLEXIMARK® sample bag (article number M3251010)



### Benefits

- Personalised printing of the shrinking tube segments according to customer specifications
- Markers are sorted prior to delivery
- Flame retardant according to ASTM D635-HB

### Application range

- For Cable Marking
- Markers will be delivered with the desired text (printing service is included in the price)
- Protection of the cable insulation
- For applications where space is tight
- For the wind energy market

### Product features

- One or two-line printing possible
- Text is automatically centered if not explicitly asked for another text alignment
- Delivery either in cutted pieces or in one piece (already perforated)
- No fixed maximum number of characters, but text size adapts according to the characters

### Design

- Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column C: Amount of each text
- Please specify the desired text colour, mode of delivery (perforation or cut, lengths) and other requirements (e.g. text alignments) with your order

### Included

- 1 PU= 1 marker, there is no minimum purchase quantity

### Technical data

<b>ETIM</b>	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
<b>RAL</b>	<b>Colour delivered</b> Black Also available in blue, red, yellow, white
<b>Material</b>	Polyolefin
<b>Shrinking ratio</b>	2:1
<b>Temperature range</b>	-55°C to +125°C

Article number	Article designation	Colour	Ø before shrinking (mm)	Ø after shrinking (mm)	Number of characters	Number of markers per PU	PU
<b>FLEXIMARK® Shrink Mark FCC</b>							
83280029	FLEXIMARK® Shrink Mark FCC-FK 3,2	black	3.2	1.6	1-7	1	1
83280030	FLEXIMARK® Shrink Mark FCC-FK 3,2	black	3.2	1.6	8-12	1	1
83280031	FLEXIMARK® Shrink Mark FCC-FK 3,2	black	3.2	1.6	13-17	1	1
83280032	FLEXIMARK® Shrink Mark FCC-FK 4,8	black	4.8	2.4	1-7	1	1
83280033	FLEXIMARK® Shrink Mark FCC-FK 4,8	black	4.8	2.4	8-12	1	1
83280034	FLEXIMARK® Shrink Mark FCC-FK 4,8	black	4.8	2.4	13-17	1	1
83280035	FLEXIMARK® Shrink Mark FCC-FK 6,4	black	6.4	3.2	1-7	1	1
83280036	FLEXIMARK® Shrink Mark FCC-FK 6,4	black	6.4	3.2	8-12	1	1
83280037	FLEXIMARK® Shrink Mark FCC-FK 6,4	black	6.4	3.2	13-17	1	1
83280038	FLEXIMARK® Shrink Mark FCC-FK 9,5	black	9.5	4.75	1-7	1	1
83280039	FLEXIMARK® Shrink Mark FCC-FK 9,5	black	9.5	4.75	8-12	1	1
83280040	FLEXIMARK® Shrink Mark FCC-FK 9,5	black	9.5	4.75	13-17	1	1
83280041	FLEXIMARK® Shrink Mark FCC-FK 12,7	black	12.7	6.35	1-7	1	1
83280042	FLEXIMARK® Shrink Mark FCC-FK 12,7	black	12.7	6.35	8-12	1	1
83280043	FLEXIMARK® Shrink Mark FCC-FK 12,7	black	12.7	6.35	13-17	1	1
83280044	FLEXIMARK® Shrink Mark FCC-FK 19,1	black	19.1	9.55	1-7	1	1
83280045	FLEXIMARK® Shrink Mark FCC-FK 19,1	black	19.1	9.55	8-12	1	1
83280046	FLEXIMARK® Shrink Mark FCC-FK 19,1	black	19.1	9.55	13-17	1	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® Organized shrink tube refer to page 953
- FLEXIMARK® Heat shrinkable tubing refer to page 954

### Accessories

- HG 2320 hot-air pistol refer to page 1052





### FLEXIMARK® Wrapping labels LCK



**Info**

- LCK 32 YE contained in FLEXIMARK® sample bag (article number M3251010)

#### Benefits

- A transparent foil is wrapped around the cable and pasted over the printed field, that the printing is protected against abrasion and pollution
- Resistant to chemicals, UV-radiation, moisture and some oils
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

#### Application range

- For Cable Marking
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)

#### Note

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- Optimum printing results from laser printers are achieved with straight sheet feed-in with no deflection over rollers and little heat build-up

#### Included

- 10 or 100 perforated DIN A4 label sheets (dependent on the chosen packaging size)

#### Technical data

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- Adhesive** Acrylic-based permanent adhesive
- RAL** **Colour delivered** White or yellow
- Material** Halogen-free polyester  
Thickness: 0.025 mm
- Temperature range** -40°C to +125°C  
Minimum working temperature: +10°C

Article number	Article designation	Colour	Width x length (mm)	Labelling surface (mm)	For outer Ø (mm)	Number of markers per PU	Labels per side	PU
<b>Small packaging- 10 sheets</b>								
83256143	FLEXIMARK® Label LCK 32 WH	white	25.0 x 33.5	25 x 12	4 - 7	640	64	1
83256142	FLEXIMARK® Label LCK 32 YE	yellow	25.0 x 33.5	25 x 12	4 - 7	640	64	1
83256145	FLEXIMARK® Label LCK 35 WH	white	25.0 x 55.0	25 x 19	6 - 12	400	40	1
83256144	FLEXIMARK® Label LCK 35 YE	yellow	25.0 x 55.0	25 x 19	6 - 12	400	40	1
83256147	FLEXIMARK® Label LCK 40 WH	white	25.0 x 94.0	25 x 25	8 - 21	240	24	1
83256146	FLEXIMARK® Label LCK 40 YE	yellow	25.0 x 94.0	25 x 25	8 - 21	240	24	1
83256149	FLEXIMARK® Label LCK 45 WH	white	25.0 x 142.5	25 x 25	8 - 36	160	16	1
83256148	FLEXIMARK® Label LCK 45 YE	yellow	25.0 x 142.5	25 x 25	8 - 36	160	16	1
83256160	FLEXIMARK® Label LCK 48 WH	white	34.0 x 93.0	34 x 25	8 - 21	180	18	1
83256161	FLEXIMARK® Label LCK 48 YE	yellow	34.0 x 93.0	34 x 25	8 - 21	180	18	1
83256151	FLEXIMARK® Label LCK 60 WH	white	50.0 x 56.0	50 x 19	6 - 12	200	20	1
83256150	FLEXIMARK® Label LCK 60 YE	yellow	50.0 x 56.0	50 x 19	6 - 12	200	20	1
83256153	FLEXIMARK® Label LCK 65 WH	white	50.0 x 94.0	50 x 25	8 - 21	120	12	1
83256152	FLEXIMARK® Label LCK 65 YE	yellow	50.0 x 94.0	50 x 25	8 - 21	120	12	1
83256155	FLEXIMARK® Label LCK 70 WH	white	50.0 x 142.5	50 x 25	8 - 36	80	8	1
83256154	FLEXIMARK® Label LCK 70 YE	yellow	50.0 x 142.5	50 x 25	8 - 36	80	8	1
<b>Large packaging- 100 sheets</b>								
83256542	FLEXIMARK® Label LCK 32 YE-100	yellow	25.0 x 33.5	25 x 12	4 - 7	6400	64	1
83256545	FLEXIMARK® Label LCK 35 WH-100	white	25.0 x 55.0	25 x 19	6 - 12	4000	40	1
83256544	FLEXIMARK® Label LCK 35 YE-100	yellow	25.0 x 55.0	25 x 19	6 - 12	4000	40	1
83256546	FLEXIMARK® Label LCK 40 YE-100	yellow	25.0 x 94.0	25 x 25	8 - 21	2400	24	1
83256549	FLEXIMARK® Label LCK 45 WH-100	white	25.0 x 142.5	25 x 25	8 - 36	1600	16	1
83256548	FLEXIMARK® Label LCK 45 YE-100	yellow	25.0 x 142.5	25 x 25	8 - 36	1600	16	1
83256551	FLEXIMARK® Label LCK 60 WH-100	white	50.0 x 56.0	50 x 19	6 - 12	2000	20	1
83256550	FLEXIMARK® Label LCK 60 YE-100	yellow	50.0 x 56.0	50 x 19	6 - 12	2000	20	1
83256553	FLEXIMARK® Label LCK 65 WH-100	white	50.0 x 94.0	50 x 25	8 - 21	1200	12	1
83256555	FLEXIMARK® Label LCK 70 WH-100	white	50.0 x 142.5	50 x 25	8 - 36	800	8	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

#### Similar products

- FLEXIMARK® Wrapping labels TCK refer to page 955

#### Accessories

- FLEXIMARK® Software 10.0 refer to page 979



## FLEXIMARK® Cablelabel LFL

### Benefits

- Can be mounted directly on the cable together with plastic cable ties
- No character holder necessary
- Printable on both sides
- Resistant to chemicals, UV-radiation, moisture and some oils
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

### Application range

- For Cable Marking
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)

### Note

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- Optimum printing results from laser printers are achieved with straight sheet feed-in with no deflection over rollers and little heat build-up
- Dimensions refer to the marking area of the labels

### Product Make-up

- One (LFL 1H) or two-sided (LFL2H) fastening with cable ties (up to 4.5 mm in width)

### Included

- Label sheets for laser printers

### Info

- LFL2H 9,9-26 contained in FLEXIMARK® sample bag (article number M3251010)

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC001288 <b>ETIM 5.0 Class-Description:</b> Labelling material
	<b>Colour delivered</b> Yellow/White (could be printed on both sides)
	<b>Material</b> Halogen-free polyester Thickness: 0.175 mm
	<b>Temperature range</b> -40°C to +125°C



Article number	Article designation	Width x length (mm)	Labelling surface (mm)	Number of markers per PU	Labels per side	PU
<b>FLEXIMARK® Cablelabel LFL</b>						
83254750	FLEXIMARK® Label LFL2H9.9-26 YEWH	9,9 x 48.0	9,9 x 26	400	40	1
83254760	FLEXIMARK® Label LFL1H9.9-35 YEWH	9,9 x 48.0	9,9 x 35	400	40	1
83254765	FLEXIMARK® Label LFL2H 66-9.9 YEWH	9,9 x 89.0	9,9 x 66	560	56	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- MS Marker pens refer to page 961
- Basic Tie cable tie refer to page 1057
- FLEXIMARK® Software 10.0 refer to page 979
- TY - FAST® cable ties refer to page 1058



## FLEXIMARK® Flexilabel LFL



### Benefits

- Suitable labels for PTE, PTEF and CAB character holders (see chapter “Character holders and accessories”)
- Printable on both sides
- Resistant to chemicals, UV-radiation, moisture and some oils
- Halogen-free

### Application range

- For Cable Marking
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markings-software.html>)

### Note

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- Optimum printing results from laser printers are achieved with straight sheet feed-in with no deflection over rollers and little heat build-up

### Included

- Perforated DINA 4 sheets (please check out the quantities per label in the table)



### Info

- LFL 9,5-28 contained in FLEXIMARK® sample bag (article number M3251010)

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material



#### Colour delivered

Yellow/White (could be printed on both sides)



#### Material

Halogen-free polyester  
Thickness: 0.175 mm



#### Temperature range

-40°C to +125°C

Article number	Article designation	Width x height (mm)	Number of markers per PU	Labels per side	PU
<b>FLEXIMARK® Flexilabel LFL</b>					
83254620	FLEXIMARK® Label LFL 6-35 YEWH	35.0 x 6.0	2350	235	1
83254650	FLEXIMARK® Label LFL 9.5-17.5 YEWH	17.5 x 9.5	3190	319	1
83254660	FLEXIMARK® Label LFL 9.5-28 YEWH	28.0 x 9.5	2030	203	1
83254670	FLEXIMARK® Label LFL 9.5-35 YEWH	35.0 x 9.5	1450	145	1
83254701	FLEXIMARK® Label LFL 9.9-66 YEWH	66.0 x 9.9	840	84	1
83254690	FLEXIMARK® Label LFL 9.5-196 YEWH	196.0 x 9.5	290	29	1
83254710	FLEXIMARK® Label LFL 12-38 YEWH	38.0 x 12.0	1150	115	1
83254714	FLEXIMARK® Label LFL 15-45 YEWH	45.0 x 15.0	720	72	1
83254718	FLEXIMARK® Label LFL 19-50 YEWH	50.0 x 19.0	560	56	1
83254719	FLEXIMARK® Label LFL 19-100 YEWH	100.0 x 19.0	280	28	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® Flexilabel TFL

### Accessories

- FLEXIMARK® Character holders PTE refer to page 982
- FLEXIMARK® PTEF/ CAB refer to page 983
- FLEXIMARK® Character holders PGS refer to page 984
- FLEXIMARK® Software 10.0 refer to page 979



FLEXIMARK® Label LMB



**Benefits**

- Suitable labels for SNAP ON collar, collars halogenfree and collars for cable ties (see chapter “Character holders and accessories”)
- Printable on both sides
- Resistant to chemicals, UV-radiation, moisture and some oils
- Halogen-free

**Application range**

- For Cable Marking
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem-software.html>)

**Note**

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- Optimum printing results from laser printers are achieved with straight sheet feed-in with no deflection over rollers and little heat build-up

**Included**

- Perforated DINA 5 sheets (please check out the quantities per label in the table)

**Info**

- Contained in FLEXIMARK® sample bag (article number M3251010)

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- On request** Also available as rolls for thermal transfer printers (TMB)
- RAL** **Colour delivered** Standard colour: Yellow/White
- Material** Halogen-free polyester  
Thickness: 0.175 mm
- Temperature range** -40°C to +125°C

Article number	Article designation	Colour	Number of markers per PU	PU
<b>Suitable labels</b>				
83254680	FLEXIMARK® Label LMB 30-4,7 YEWH	yellow/white	480	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

**Accessories**

- FLEXIMARK® Software 10.0 refer to page 979



## FLEXIMARK® Cablelabel PUR



### Info

- PUR 60-10 contained in FLEXIMARK® sample bag (article number M3251010)

### Benefits

- Halogen-free and flame-retardant cable marking
- Good UV-resistance
- Good chemical resistance
- Highly flexible material

### Application range

- For cable and conduit marking
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)
- Can be used in many applications from different industries due to its mechanical, thermal and chemical properties
- Can be mounted directly on the cable together with plastic cable ties

### Product features

- Recommended ribbon: FLEXIMARK® Ribbon FTI-X 60-360 BK (article no, 83260206), but could be also printed with FTI-Y 60-360 BK (article no. 83260201)
- Extremely flame-retardant according to UL 94 V0

### Norm references / Approvals

- Extremely flame-retardant according to UL 94 V0
- MIL 81531 and MIL-STD-202G

### Note

- Customised printing is available upon request

### Product Make-up

- Delivered as a roll of labels

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material



#### Colour delivered

Standard colour: Yellow/White  
also available in red, orange, blue, green and black



#### Material

Halogen-free polyurethane



#### Temperature range

-25°C to +80°C

Article number	Article designation	Colour	Width x length (mm)	Number of markers per PU	PU
<b>FLEXIMARK® Cablelabel PUR</b>					
83260191	FLEXIMARK® Cablelabel PUR 60-10 YE	yellow	10.0 x 60.0	1000	1
83260192	FLEXIMARK® Cablelabel PUR 75-15 YE	yellow	15.0 x 75.0	1000	1
83260193	FLEXIMARK® Cablelabel PUR 75-25 YE	yellow	25.0 x 75.0	500	1
83260194	FLEXIMARK® Cablelabel PUR 60-10 WH	white	10.0 x 60.0	1000	1
83260195	FLEXIMARK® Cablelabel PUR 75-15 WH	white	15.0 x 75.0	1000	1
83260196	FLEXIMARK® Cablelabel PUR 75-25 WH	white	25.0 x 75.0	500	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- Basic Tie cable tie refer to page 1057
- FLEXIMARK® Software 10.0 refer to page 979
- FLEXIMARK® Thermoprint A4+M and EOS4\* refer to page 980



## FLEXIMARK® Organized shrink tube



### Benefits

- Covers a wide range of cable diameters, even applicable for single core marking
- Already cut to the exact length
- Reduced working time
- UV-resistant, resistant against fluids (SAE-AMS-DTL-23053 tested)

### Application range

- For single core and cable marking
- Railway applications
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem-software.html>)

### Product features

- Recommended ribbon: FLEXIMARK® Ribbon FTI-X 60-360 BK (article no. 83260206), but could be also printed with FTI-Y 60-360 BK (article no. 83260201)

### Norm references / Approvals

- UL 224 approved- E file number: E 228117

### Product Make-up

- Delivered as a roll of labels

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>On request</b> Also available as halogen-free und diesel-resistant (with SNCF-NF F00-608 approval) version
	<b>Colour delivered</b> Yellow White and other colours available on request Also available in white
	<b>Material</b> Polyolefin Shrinking ratio: 3:1
	<b>Temperature range</b> -55°C to +135°C

Article number	Article designation	Colour	Shrinkage range (mm)	Length (mm)	Amount in width	Number of markers per PU	PU
<b>FLEXIMARK® Organized shrink tube</b>							
83260026	FLEXIMARK® Org.shr. 2.4/0.8-50(1) YE	yellow	0.8 - 2.4	50	1	1000	1
83260027	FLEXIMARK® Org.shr. 3.2/1.0-50(1) YE	yellow	1.0 - 3.2	50	1	1000	1
83260028	FLEXIMARK® Org.shr. 4.8/1.6-50(1) YE	yellow	1.6 - 4.8	50	1	1000	1
83260029	FLEXIMARK® Org.shr. 6.4/2.0-50(1) YE	yellow	2.0 - 6.4	50	1	1000	1
83260030	FLEXIMARK® Org.shr. 9.5/3.0-50(1) YE	yellow	3.0 - 9.5	50	1	500	1
83260031	FLEXIMARK® Org.shr.12.7/4.0-50(1)YE	yellow	4.0 - 12.7	50	1	500	1
83260032	FLEXIMARK® Org.shr.19.0/6.0-50(1)YE	yellow	6.0 - 19.0	50	1	500	1
83260033	FLEXIMARK® Org.shr. 25.4/8.0-50(1)YE	yellow	8.0 - 25.4	50	1	300	1
83260034	FLEXIMARK® Org.shr. 38.1/12.7-75(1)YE	yellow	12.7 - 38.1	75	1	100	1
83260035	FLEXIMARK® Org.shr. 2.4/0.8-38(1) YE	yellow	0.8 - 2.4	38	1	1000	1
83260036	FLEXIMARK® Org.shr. 3.2/1.0-38(1) YE	yellow	1.0 - 3.2	38	1	1000	1
83260037	FLEXIMARK® Org.shr. 4.8/1.6-38(1) YE	yellow	1.6 - 4.8	38	1	1000	1
83260038	FLEXIMARK® Org.shr. 6.4/2.0-38(1) YE	yellow	2.0 - 6.4	38	1	1000	1
83260039	FLEXIMARK® Org.shr. 9.5/3.0-38(1) YE	yellow	3.0 - 9.5	38	1	500	1
83260040	FLEXIMARK® Org.shr.12.7/4.0-38(1)YE	yellow	4.0 - 12.7	38	1	500	1
83260041	FLEXIMARK® Org.shr. 19.0/6.0-38(1)YE	yellow	6.0 - 9.0	38	1	500	1
83260042	FLEXIMARK® Org.shr.25.4/8.0-38(1)YE	yellow	8.0 - 25.4	38	1	300	1
83260043	FLEXIMARK® Org.shr. 38.1/12.7-38(1)YE	yellow	12.7 - 38.1	38	1	100	1
83260044	FLEXIMARK® Org.shr. 2.4/0.8-25(2) YE	yellow	0.8 - 2.4	25	2	2000	1
83260045	FLEXIMARK® Org.shr. 3.2/1.0-25(2) YE	yellow	1.0 - 3.2	25	2	2000	1
83260046	FLEXIMARK® Org.shr. 4.8/1.6-25(2) YE	yellow	1.6 - 4.8	25	2	2000	1
83260047	FLEXIMARK® Org.shr. 6.4/2.0-25(2) YE	yellow	2.0 - 6.4	25	2	2000	1
83260048	FLEXIMARK® Org.shr. 9.5/3.0-25(2) YE	yellow	3.0 - 9.5	25	2	1000	1
83260049	FLEXIMARK® Org.shr. 12.7/4.0-25(2)YE	yellow	4.0 - 12.7	25	2	1000	1
83260050	FLEXIMARK® Org. shr.19.0/6.0-25(2)YE	yellow	6.0 - 19.0	25	2	1000	1
83260051	FLEXIMARK® Org.shr. 5.4/8.0-25(2)YE	yellow	8.0 - 25.4	25	2	600	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® Organized shrink tube FCC refer to page 963

### Accessories

- HG 2320 hot-air pistol refer to page 1052



## FLEXIMARK® Heat shrinkable tubing



### Benefits

- Flat shrink tube can be cut individually to the required length
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4

### Application range

- For Cable Marking
- For applications where space is tight
- Protection of the cable insulation
- Especially suitable for repair purposes
- Indoor applications

### Product features

- Recommended ribbon: FLEXIMARK® Ribbon FTI-X 60-360 BK (article no. 83260206), but could be also printed with FTI-Y 60-360 BK (article no. 83260201)

### Norm references / Approvals

- UL 224 approved- E file number: E 228117

### Technical data

ETIM	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
RAL	<b>Colour delivered</b> black, yellow and white
	<b>Material</b> Polyolefin Shrinking ratio: 3:1
	<b>Temperature range</b> -55°C to +135°C

Article number	Article designation	Colour	Shrinkage range (mm)	Contents (m)	PU
<b>FLEXIMARK® Heat shrinkable tubing</b>					
83251670	FLEXIMARK® Shrinking tube 3/1 BK	black	1.0 - 3.0	30	1
83251671	FLEXIMARK Shrinking tube 6/2 BK	black	2.0 - 6.0	25	1
83251672	FLEXIMARK Shrinking tube 9/3 BK	black	3.0 - 9.0	20	1
83251673	FLEXIMARK® Shrinking tube 12/4 BK	black	4.0 - 12.0	20	1
83251674	FLEXIMARK® Shrinking tube 18/6 BK	black	6.0 - 18.0	20	1
83251680	FLEXIMARK Shrinking tube 3/1 YE	yellow	1.0 - 3.0	30	1
83251681	FLEXIMARK Shrinking tube 6/2 YE	yellow	2.0 - 6.0	25	1
83251682	FLEXIMARK Shrinking tube 9/3 YE	yellow	3.0 - 9.0	20	1
83251683	FLEXIMARK® Shrinking tube 12/4 YE	yellow	4.0 - 12.0	20	1
83251684	FLEXIMARK Shrinking tube 18/6 YE	yellow	6.0 - 18.0	20	1
83251690	FLEXIMARK® Shrinking tube 3/1 WH	white	1.0 - 3.0	30	1
83251691	FLEXIMARK Shrinking tube 6/2 WH	white	2.0 - 6.0	25	1
83251692	FLEXIMARK Shrinking tube 9/3 WH	white	3.0 - 9.0	20	1
83251693	FLEXIMARK® Shrinking tube 12/4 WH	white	4.0 - 12.0	20	1
83251694	FLEXIMARK® Shrinking tube 18/6 WH	white	6.0 - 18.0	20	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® Organized shrink tube refer to page 953

### Accessories

- FLEXIMARK® Software 10.0 refer to page 979
- HG 2320 hot-air pistol refer to page 1052



## FLEXIMARK® Wrapping labels TCK

### Benefits

- A transparent foil is wrapped around the cable and pasted over the printed field, that the printing is protected against abrasion and pollution
- Resistant to chemicals, UV-radiation, moisture and some oils


### Application range

- For Cable Marking
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)

### Note

- Attention: The sizes changes and are now corresponding with the wrapping labels LCK

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Label rolls</b> Core diameter: 38 mm
	<b>Adhesive</b> Acrylic-based permanent adhesive
	<b>Colour delivered</b> White or yellow
	<b>Material</b> Halogen-free polyester Thickness: 0.025 mm
	<b>Temperature range</b> -40°C to +125°C Minimum working temperature: +10°C



Article number	Article designation	Colour	Width x length (mm)	Printable surface (W x H mm)	For Ø (mm)	Number of markers per PU	PU
<b>White edition</b>							
83259874	FLEXIMARK® Label TCK 32 WH	white	25.0 x 33.5	25.0 x 12.7	4.0 - 7.0	1200	1
83259875	FLEXIMARK® Label TCK 35 WH	white	25.0 x 55.0	25.0 x 19.0	6.0 - 12.0	1200	1
83259876	FLEXIMARK® Label TCK 40 WH	white	25.0 x 94.0	25.0 x 25.0	8.0 - 21.0	600	1
83259877	FLEXIMARK® Label TCK 45 WH	white	25.0 x 142.5	25.0 x 25.0	8.0 - 36.0	600	1
83259890	FLEXIMARK® Label TCK 48 WH	white	34.0 x 93.0	34.0 x 93.0	8.0 - 21.0	600	1
83259878	FLEXIMARK® Label TCK 60 WH	white	50.0 x 56.0	50.0 x 19.0	6.0 - 12.0	600	1
83259879	FLEXIMARK® Label TCK 65 WH	white	50.0 x 94.0	50.0 x 25.4	8.0 - 21.0	600	1
83259881	FLEXIMARK® Label TCK 70 WH	white	50.0 x 142.5	50.0 x 25.4	8.0 - 36.0	600	1
<b>Yellow edition</b>							
83259882	FLEXIMARK® Label TCK 32 YE	yellow	25.0 x 33.5	25.0 x 12.7	4.0 - 7.0	1200	1
83259883	FLEXIMARK® Label TCK 35 YE	yellow	25.0 x 55.0	25.0 x 19.0	6.0 - 12.0	1200	1
83259884	FLEXIMARK® Label TCK 40 YE	yellow	25.0 x 94.0	25.0 x 25.0	8.0 - 21.0	600	1
83259885	FLEXIMARK® Label TCK 45 YE	yellow	25.0 x 142.5	25.0 x 25.0	8.0 - 36.0	600	1
83259889	FLEXIMARK® Label TCK 48 YE	yellow	34.0 x 93.0	34.0 x 93.0	8.0 - 21.0	600	1
83259886	FLEXIMARK® Label TCK 60 YE	yellow	50.0 x 56.0	50.0 x 19.0	6.0 - 12.0	600	1
83259887	FLEXIMARK® Label TCK 65 YE	yellow	50.0 x 94.0	50.0 x 25.4	8.0 - 21.0	600	1
83259888	FLEXIMARK® Label TCK 70 YE	yellow	50.0 x 142.5	50.0 x 25.4	8.0 - 36.0	600	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- MS Marker pens refer to page 961
- FLEXIMARK® Software 10.0 refer to page 979
- FLEXIMARK® Thermoprint A4+M and EOS4\* refer to page 980





## FLEXIMARK® Stainless steel kit



### Benefits

- The basic equipment of the FLEXIMARK® stainless steel system in a handy box
- Recommended for harsh environments
- Acid-resistant

### Application range

- Cable and component marking system
- Quick and easy on-site assembly
- Markers could be used in any industry with a demanding environment (e.g. oil & gas, railways)

### Norm references / Approvals

- Achilles JQS certified

### Note

- Single parts included in the box could be purchased separately (e.g. special pliers= article no. 61790180)

### Included

- Characters A-Ö/0-9: 40 pieces (2 strips of each character containing 20 characters)
- Special characters +-.:ü and sign for earthing: 40 pieces (2 strips with 20 markers for each sign)
- Characters blank: 40 pieces (2 character strips with 20 markers)
- 10 character holders (5 for cable ties and 5 with boreholes) with lengths of 286; 109; 83.1, 60.4; und 48.8 mm
- Stainless Steel Cable ties: 10 pieces LS 4.6x200

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Dimensions</b> Character strips: 9.5 x 6 x 0.75 mm Box: 400 x 300 x 45 mm
	<b>Material</b> Acid resistant stainless steel EN 1.4404 (SS2348, AISI 316L)
	<b>Temperature range</b> -80 °C to +500 °C

Article number	Article designation	Version	Contents (unit)	PU
<b>FLEXIMARK® Stainless steel kit</b>				
83254222	FLEXIMARK® Kit Stainless Steel without pliers	without pliers	1	1
83254223	FLEXIMARK® Kit Stainless Steel with special pliers	with special pliers for preventing the signs falling off	1	1
83254224	FLEXIMARK® Kit Stainless Steel with cable tie pliers	With cable tie pliers	1	1

Photographs are not to scale and do not represent detailed images of the respective products. Please request our data sheet for further clarification on the different types of kits.

### Accessories

- FLEXIMARK® NM Stainless steel - character holders refer to page 958
- FLEXIMARK® MR Stainless steel character refer to page 957
- STEEL GUN HT-338 cable tie pliers refer to page 1068



# FLEXIMARK® MR Stainless steel character / FLEXIMARK® Stainless steel - character Set



**Info**

- Contained in FLEXIMARK® sample bag (article number M3251010)



**Benefits**

- For assembly, the character strips are pushed into the NM stainless steel character holders

**Norm references / Approvals**

- Achilles JQS certified

**Note**

- MR stainless steel character strips are also available with Cyrillic characters upon request.

**Included**

- FLEXIMARK® MR Stainless steel character**
  - Every character strip contains 20 pre-stamped single markers
- FLEXIMARK® Stainless steel - character Set**
  - Set contains 200 markers of each character

**Technical data**

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- Dimensions**  
Height x width: approx. 9.5 x 6 mm  
Character height: approx. 6.8 mm
- Material**  
Acid resistant stainless steel  
EN 1.4404 (SS2348, AISI 316L)
- Temperature range**  
-80°C to +500°C

Article number	Article designation	Number of markers per PU	Contents (unit)	PU
<b>Numbers</b>				
83254179	FLEXIMARK® Character Strip MR 10-20 1	20	10	1
83254180	FLEXIMARK® Character Strip MR 10-20 2	20	10	1
83254181	FLEXIMARK® Character Strip MR 10-20 3	20	10	1
83254182	FLEXIMARK® Character Strip MR 10-20 4	20	10	1
83254183	FLEXIMARK® Character Strip MR 10-20 5	20	10	1
83254184	FLEXIMARK® Character Strip MR 10-20 6/9	20	10	1
83254185	FLEXIMARK® Character Strip MR 10-20 7	20	10	1
83254186	FLEXIMARK® Character Strip MR 10-20 8	20	10	1
<b>Letters</b>				
83254150	FLEXIMARK® Character Strip MR 10-20 A	20	10	1
83254151	FLEXIMARK® Character Strip MR 10-20 B	20	10	1
83254152	FLEXIMARK® Character Strip MR 10-20 C	20	10	1
83254153	FLEXIMARK® Character Strip MR 10-20 D	20	10	1
83254154	FLEXIMARK® Character Strip MR 10-20 E	20	10	1
83254155	FLEXIMARK® Character Strip MR 10-20 F	20	10	1
83254156	FLEXIMARK® Character Strip MR 10-20 G	20	10	1
83254157	FLEXIMARK® Character Strip MR 10-20 H	20	10	1
83254158	FLEXIMARK® Character Strip MR 10-20 I	20	10	1
83254159	FLEXIMARK® Character Strip MR 10-20 J	20	10	1
83254160	FLEXIMARK® Character Strip MR 10-20 K	20	10	1
83254161	FLEXIMARK® Character Strip MR 10-20 L	20	10	1
83254162	FLEXIMARK® Character Strip MR 10-20 M	20	10	1
83254163	FLEXIMARK® Character Strip MR 10-20 N	20	10	1
83254164	FLEXIMARK® Character Strip MR 10-20 O/0	20	10	1
83254165	FLEXIMARK® Character Strip MR 10-20 P	20	10	1
83254166	FLEXIMARK® Character Strip MR 10-20 Q	20	10	1
83254167	FLEXIMARK® Character Strip MR 10-20 R	20	10	1
83254168	FLEXIMARK® Character Strip MR 10-20 S	20	10	1
83254169	FLEXIMARK® Character Strip MR 10-20 T	20	10	1
83254170	FLEXIMARK® Character Strip MR 10-20 U	20	10	1
83254171	FLEXIMARK® Character Strip MR 10-20 V	20	10	1
83254172	FLEXIMARK® Character Strip MR 10-20 W	20	10	1
83254173	FLEXIMARK® Character Strip MR 10-20 X	20	10	1
83254174	FLEXIMARK® Character Strip MR 10-20 Y	20	10	1
83254175	FLEXIMARK® Character Strip MR 10-20 Z	20	10	1
83254177	FLEXIMARK® Character Strip MR 10-20 Ä	20	10	1
83254178	FLEXIMARK® Character Strip MR 10-20 Ö	20	10	1
83254201	FLEXIMARK® Character Strip MR 10-20 Ü	20	10	1
<b>Symbols</b>				
83254192	FLEXIMARK® Character Strip MR 10-20 +	20	10	1
83254191	FLEXIMARK® Character Strip MR 10-20 -	20	10	1
83254194	FLEXIMARK® Character Strip MR 10-20 /	20	10	1
83254195	FLEXIMARK® Character Strip MR 10-20 .	20	10	1
83254199	FLEXIMARK® Character Strip MR 10-20 :	20	10	1
83254198	FLEXIMARK® Character Strip MR 10-20 ~	20	10	1
83254193	FLEXIMARK® Character Strip MR 10-20 =	20	10	1
83254200	FLEXIMARK® Character Strip MR 10-20 Earth	20	10	1
83254196	FLEXIMARK® Character Strip MR 10-20 .	20	10	1
83254202	FLEXIMARK® Character Strip MR 10-20 (	20	10	1
83254189	FLEXIMARK® Character Strip MR 10-20P blank	20	10	1
<b>Sets</b>				
83254122	FLEXIMARK® Character strip MR SET 0-9	20	100	1
83254120	FLEXIMARK® Character strip MR SET A-Z	20	260	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.



## FLEXIMARK® NM Stainless steel - character holders



### Benefits

- For mounting MR stainless steel characters
- Mounted with cable ties (maximum 7.9 mm width) or screws (up to 3 mm Ø)
- Acid-resistant

### Application range

- Cable and component marking system
- For outdoor applications
- Markers could be used in any industry with a demanding environment (e.g. oil & gas, railways)

### Product features

- Holder for up to 46 characters

### Norm references / Approvals

- Achilles JQS certified

### Info

- PR 10 NM 7 contained in FLEXIMARK® sample bag (article number M3251010)

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**Dimensions**  
The tolerance of the dimensions is +/-1,5 mm.

**Info**  
Height: approx. 11 mm  
Screw hole Ø: 3 mm

**Material**  
Acid resistant stainless steel  
EN 1.4404 (SS2348, AISI 316L)

**Temperature range**  
-80°C to +500°C

Article number	Article designation	Length (mm)	Number of markers per PU	Characters/unit	PU
<b>FLEXIMARK® NM Stainless steel - character holders</b>					
83254214	FLEXIMARK® PR 10 NM4	48,8	50	4	1
83254213	FLEXIMARK® PR 10 NM5	60,4	50	8	1
83254212	FLEXIMARK® PR 10 NM7	84	50	12	1
83254211	FLEXIMARK® PR 10 NM9	109	50	16	1
83254210	FLEXIMARK® PR 10 NM24	286	50	46	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® MR Stainless steel character refer to page 957
- LS steel cable ties refer to page 1066



## FLEXIMARK® Micro Kit



### Technical data

**Dimensions**  
Micro Kit: 170 x 210 x 75 mm  
Width of the TRASP™ strips: 2,3 mm

**On request**  
Further collars available on request

**Colour delivered**  
Character strips: White  
On request: Yellow character strips

**Temperature range**  
-50°C to +80°C

**Benefits**

- One system for different applications
- Quick, effective and user-friendly, with vast reductions in stock holding
- Durable PVC sleeves protect character elements from wear and degradation
- Reduced installation time
- Possibility to switch marking text without removing the marker

**Application range**

- For single core and cable marking
- Marking before and after assembly
- Quick and easy on-site assembly
- Indoor applications

**Product features**

- Pre-printed alphanumeric character elements are loaded into clear sleeves to mark wire, cable assemblies, terminal blocks and devices inside panels
- Fire behaviour according to UL 94V-0

**Note**

- Marking elements can be added or removed as required with removal hook (article no. 83290201)

**Included**

- Micro Kit:
  - 1x character strip with the text 1-9 and A B C E L N R S T V + -/ (1 character strip contains 24 markers)
  - 1x blank character strip in white and red
  - 50x transparent marking collars 3-4/15 mm
  - 20x transparent marking collars 8-10/15 mm
  - 50x transparent collars for cable tie 23 mm
  - 50x snap-on marking collars 2-3,5/15 mm
  - 50x snap-on marking collars 2,8-5/15 mm
  - 50x spark pins 1,5 mm<sup>2</sup>, 9 mm, red
  - 20x spark pins 2,5 mm<sup>2</sup>, 12 mm, blue
  - 20x spark pins 4 mm<sup>2</sup>, 12 mm, green
  - 50x self-adhesive component marking collar, 15 mm
  - 1x mounting tool (article no. 83290199)
- Each Trasp™ contains 50 strips with 24 single markers (so in total there are 1.200 markers in one PU)

Article number	Article designation	Number of markers per PU	PU
<b>FLEXIMARK® Micro Kit</b>			
83290100	FLEXIMARK® Micro Kit WH		1
<b>Trasp™ strips letters</b>			
83290120	Trasp strips A WH	1200	1
83290121	Trasp strips B WH	1200	1
83290122	Trasp strips C WH	1200	1
83290123	Trasp strips D WH	1200	1
83290124	Trasp strips E WH	1200	1
83290125	Trasp strips F WH	1200	1
83290126	Trasp strips G WH	1200	1
83290127	Trasp strips H WH	1200	1
83290128	Trasp strips I WH	1200	1
83290129	Trasp strips J WH	1200	1
83290130	Trasp strips K WH	1200	1
83290131	Trasp strips L WH	1200	1
83290132	Trasp strips M WH	1200	1
83290133	Trasp strips N WH	1200	1
83290134	Trasp strips O WH	1200	1
83290135	Trasp strips P WH	1200	1
83290136	Trasp strips Q WH	1200	1
83290137	Trasp strips R WH	1200	1
83290138	Trasp strips S WH	1200	1
83290139	Trasp strips T WH	1200	1
83290140	Trasp strips U WH	1200	1
83290141	Trasp strips V WH	1200	1
83290142	Trasp strips W WH	1200	1
83290143	Trasp strips X WH	1200	1
83290144	Trasp strips Y WH	1200	1
83290145	Trasp strips Z WH	1200	1
<b>Trasp™ strips numbers</b>			
83290102	Trasp™ strips 0 WH	1200	1
83290103	Trasp strips 1 WH	1200	1
83290104	Trasp strips 2 WH	1200	1
83290105	Trasp strips 3 WH	1200	1
83290106	Trasp strips 4 WH	1200	1
83290107	Trasp strips 5 WH	1200	1
83290108	Trasp strips 6 WH	1200	1
83290109	Trasp strips 7 WH	1200	1
83290110	Trasp strips 8 WH	1200	1
83290111	Trasp strips 9 WH	1200	1
<b>Trasp™ strips symbols</b>			
83290112	Trasp™ strips + WH	1200	1
83290113	Trasp strips - WH	1200	1
83290116	Trasp strips . WH	1200	1
83290115	Trasp strips / WH	1200	1
83290118	Trasp strips Ø WH	1200	1
83290114	Trasp strips earthing symbol WH	1200	1
83290117	Trasp strips* WH	1200	1
83290119	Trasp strips : WH	1200	1

Trasp TM ist ein eingetragenes Warenzeichen der Firma 3M.  
Photographs are not to scale and do not represent detailed images of the respective products.



## FLEXIMARK® Marking Kit MINI



### Benefits

- The basic equipment of the FLEXIMARK® MINI system in a handy box

### Application range

- Cable and component marking system
- Quick and easy on-site assembly

### Included

- Characters A-Ö/0-9: 40 pieces (2 strips of each character containing 20 characters)
- Special characters +/./:ü and sign for earthing: 40 pieces (2 strips with 20 markers for each sign)
- Characters blank: 40 pieces (2 character strips with 20 markers)
- Character holder: 1 pc. of PGS 10-285 in black and white, 8 pc of PTE 9,5-285
- 40 pc clamping poppets, 20 pc end pieces, punching tool FL52-ERA (article number 83252047), 100 pc plastic cable ties

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Dimensions</b> Box: 400 x 300 x 45 mm Character strips: 9.5 x 6 x 0,5 mm
	<b>Temperature range</b> -20°C to +65°C

Article number	Article designation	Contents (unit)	PU
<b>FLEXIMARK® Marking Kit MINI</b>			
83251995	FLEXIMARK® Marking Kit Mini with pliers F52-ERA	1	1

Photographs are not to scale and do not represent detailed images of the respective products.



## WM BW Blank cable marker



### Benefits

- Wrapping label with protective foil
- When the cover is applied onto the cable, the transparent foil covers the writing area, thus protecting it against abrasion, humidity, oil and light solvents.
- Easy to label

### Application range

- For Cable Marking
- Indoor applications
- The designations can be written with a pencil, a ballpoint pen, or other marker on the white writing area
- **Outer diameter:**  
BW 3: 25,4-127 mm  
BW 15: 19,1- 57,1 mm  
BW 12: 15,85-15,9 mm  
BW 14: 15,85-15,9 mm  
BW 34: 12,7-31,57 mm

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Material</b> Vinyl strips, silicone-treated lining, halogen-free
	<b>Temperature range</b> -35°C to +70°C

Article number	Article designation	Labelling surface (mm)	For cable Ø (mm)	Number of markers per brochure	Contents (unit)
<b>WM BW Blank cable marker</b>					
61726150	WM brochure BW 3	25 x 25	8 - 40	30	1
61726160	WM brochure BW 5	25 x 20	6 - 18.1	50	1
61726170	WM brochure BW 12	12 x 15	5 - 5.4	200	1
61726180	WM brochure BW 14	6 x 15	5 - 5.4	400	1
61726190	WM brochure BW 34	18 x 14	5 - 10	140	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- MS Marker pens refer to page 961



## FLEXIMARK® Cablelabel LAM

### Benefits

- Laminated foil protects text area against different strains
- Could be used in different ways e.g. in combination with our marking pens or in combination with DYMO® ID 1 tapes (width: 6 or 9 mm)
- Delivered in a handy box with 100 marking labels in each package. The box can also be attached onto your belt.

### Application range

- For Cable Marking
- For marking on site
- Indoor applications
- Can be mounted directly on the cable together with plastic cable ties

### Product features

- Long-term heat-and/or UV-exposure may result in discoloration of the product

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Adhesive</b> Acrylic-based permanent adhesive
	<b>Colour delivered</b> yellow
	<b>Material</b> Label: UV Stabilized halogen-free polypropylene (PP) Laminated foil: Halogen-free and 'UV-resistant polyester (0-PET)
	<b>Temperature range</b> -10°C to +60°C Minimum working temperature: +10°C



Article number	Article designation	Colour	Width x length (mm)	Number of markers per PU	PU
<b>FLEXIMARK® Cablelabel LAM</b>					
83260197	FLEXIMARK® Cablelabel LAM 48-10 YE	yellow	48.0 x 10.0	100	1
83260198	FLEXIMARK® Cablelabel LAM 55-15 YE	yellow	55.0 x 15.0	100	1
83260199	FLEXIMARK® Cablelabel LAM 85-15 YE	yellow	85.0 x 15.0	100	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- MS Marker pens refer to page 961
- Basic Tie cable tie refer to page 1057
- DYMO® ID1 - Industry tape D1 refer to page 991

### Benefits

- For individual, durable marking of blank MINI character and text strips and labels

### Product features

- The marking is water, smudge and weather-resistant.
- For CD, glass, plastic, metal, foil and more
- Line width: 0.4 mm
- Integrated eraser

### Technical data

	ETIM 5.0 Class-ID: EC000610 ETIM 5.0 Class-Description: Label maker
--	--



## MS Marker pens

Article number	Article designation	Colour	Contents (unit)
<b>MS Marker pens</b>			
61784650	MS-S marker pen	black	10
61784660	MS-R marker pen	red	10
61784670	MS-B marker pen	blue	10

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- KMK Label holders refer to page 989
- ETB Label holders refer to page 989
- Basic Tie Ident BTI-I Cable tie



## FLEXIMARK® Flexiprint TF FCC



### Benefits

- FLEXIMARK® single core marking system for individual application areas
- Customised printed labels in various sizes
- Easy to install
- Resistant to UV radiation

### Application range

- For Single core marking
- Marking of optical fibre cables
- Marking before assembly
- Markers will be delivered with the desired text (printing service is included in the price)

### Note

- **Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column B or C: Amount of each text
- Normal version: Up to 7 characters
- Dimensions are the same as for Flexiprint LF/TF

### Included

- 1 PU= 1 marker, there is no minimum purchase quantity

### Technical data

ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**Colour delivered**  
White  
also available in yellow, green, blue and red

**Material**  
Halogen-free polyester  
Thickness: 0.175 mm

**Temperature range**  
-40°C to +125°C

Article number	Article designation	Marking	For mm <sup>2</sup>	Number of markers per PU	PU
<b>FLEXIMARK® Flexiprint TF FCC</b>					
83251101	FLEXIMARK® TF FC F0 0,25-0,75 WH	customised	0.25 - 0.75	1	1
83251111	FLEXIMARK® TF FCC F1 0,75-1,5 WH	customised	0.75 - 1.5	1	1
83251121	FLEXIMARK® TF FCC F1B1,5-2,5 WH	customised	1.5 - 2.5	1	1
83251131	FLEXIMARK® TF FCC F2 2,5-6 WH	customised	2.5 - 6	1	1
83251141	FLEXIMARK® TF FCC F3 6-16 WH	customised	6 - 16	1	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® Flexiprint LF/TF 953



## FLEXIMARK® Organized shrink tube FCC

### Benefits

- Halogenfree shrink tubes with customized text
- Benefit in comparison with marking rings: You do not have to mount every single character at a time, just order and mount whole series at once

### Application range

- For Single core marking
- Marking before assembly
- Markers will be delivered with the desired text (printing service is included in the price)

### Note

- **Ordering process:** Customised data will be emailed as an Excel file to the responsible Lapp employee when the order is made
  - Column A: Text for the first row
  - Column B: Text for the second row
  - Column B or C: Amount of each text

### Included

- 1 PU= 1 marker, there is no minimum purchase quantity

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material
- On request**  
Also available as version with a 3:1 shrink ratio (not halogen-free, UL 224 approved)
- RAL** **Colour delivered**  
yellow
- Material**  
Polyolefin (halogen-free)  
Shrinking ratio: 2:1
- Temperature range**  
-30 °C to +105 °C  
Shrinking temperature: +90 °C



Article number	Article designation	Min. diameter	Max. diameter	Length (mm)	Number of markers per PU	PU
<b>FLEXIMARK® Organized shrink tube FCC</b>						
83280249	FLEXIMARK® O.shr FCC 2,4 / 1,2-12,5 YE	1,2	2,4	12,5	1	1
83280250	FLEXIMARK® O.shr FCC 3,2 / 1,6-12,5 YE	1,6	3,2	12,5	1	1
83280251	FLEXIMARK® O.shr FCC 4,8 / 1,6- 12,5 YE	2,4	4,8	12,5	1	1
83280252	FLEXIMARK® O.shr FCC 2,4 / 0,8-16,6 YE	1,2	2,4	16,6	1	1
83280253	FLEXIMARK® O.shr FCC 3,2 / 1-16,6 YE	1,6	3,2	16,6	1	1
83280254	FLEXIMARK® O.shr FCC 4,8 / 1,6-16,6 YE	2,4	4,8	16,6	1	1

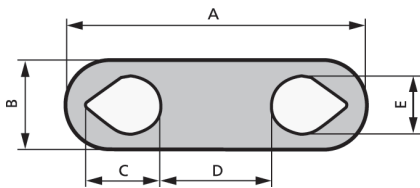
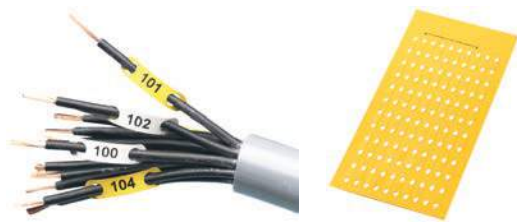
Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX





## FLEXIMARK® Flexiprint LF



### Benefits

- Easy to install
- Resistant to acids, alkali, distilled water, salt water and transformer oil according to SP 2171 Methode
- Resistant to UV radiation
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A 15)

### Application range

- For Single core marking
- Marking of optical fibre cables
- Marking before assembly
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem.html>)

### Note

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- For cable cross-sections over 16.00 mm<sup>2</sup>, cable ties can be used for installing single markers
- Normal version: Up to 7 characters
- L Version (e.g. LF1L): Up to 15 characters

### Included

- 1 PU contains 75 label sheets
- One label sheet consists of 20-60 perforated markers, depending on the size

### Info

- LF1 contained in FLEXIMARK® sample bag (article number M3251010)

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material



**Note**  
Dimensions of the label sheet:  
80-100 x 210 mm



**Colour delivered**  
yellow  
also available in green, blue and red in two different packaging sizes (10 or 75 sheets)



**Material**  
Halogen-free polyester  
Thickness: 0.175 mm



**Temperature range**  
-40°C to +125°C

Article number	Article designation	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	For mm <sup>2</sup>	Number of markers per PU	PU
<b>Yellow edition</b>									
83280005	FLEXIMARK® Flexiprint LF0 YE	22.9	5.2	3.9	13.1	2.4	0.25 - 0.75	4500	1
83254420	FLEXIMARK® Flexiprint LF1 YE	23	5.2	4.9	11.2	3.5	0.75 - 1.5	4500	1
83254440	FLEXIMARK® Flexiprint LF1L YE	34	5.2	5	22	3.5	0.75 - 1.5	2250	1
83254460	FLEXIMARK® Flexiprint LF1B YE	25	5.7	5.9	11.2	4.2	1.5 - 2.5	4500	1
83254480	FLEXIMARK® Flexiprint LF1BL YE	36	5.7	6	22	4.2	1.5 - 2.5	2250	1
83254500	FLEXIMARK® Flexiprint LF2 YE	26	7	6.5	11	5.5	2.5 - 6	4500	1
83254520	FLEXIMARK® Flexiprint LF3 YE	41	11	10.5	17	8.4	6 - 16	1500	1
<b>White edition</b>									
83254406	FLEXIMARK® Flexiprint LF0 WH	22.9	5.2	3.9	13.1	2.4	0.25 - 0.75	4500	1
83254426	FLEXIMARK® Flexiprint LF1 WH	23	5.2	4.9	11.2	3.5	0.75 - 1.5	4500	1
83254446	FLEXIMARK® Flexiprint LF1L WH	34	5.2	5	22	3.5	0.75 - 1.5	2250	1
83254466	FLEXIMARK® Flexiprint LF1B WH	25	5.7	5.9	11.2	4.2	1.5 - 2.5	4500	1
83254486	FLEXIMARK® Flexiprint LF1BL WH	36	5.7	6	22	4.2	1.5 - 2.5	2250	1
83254506	FLEXIMARK® Flexiprint LF2 WH	26	7	6.5	11	5.5	2.5 - 6	4500	1
83254526	FLEXIMARK® Flexiprint LF3 YE	41	11	10.5	17	8.4	6 - 16	1500	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- Basic Tie cable tie refer to page 1057
- FLEXIMARK® Software 10.0 refer to page 979



**FLEXIMARK® Flexiprint TF**

**Benefits**

- Easy to install
- Resistant to acids, alkali, distilled water, salt water and transformer oil according to SP 2171 Methode
- Resistant to UV radiation

**Application range**

- For Single core marking
- Marking of optical fibre cables
- Marking before assembly
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markings-software.html>)

**Note**

- Normal version: Up to 7 characters
- L Version (e.g. TF1L): Up to 15 characters

**Info**

- TF 1 contained in FLEXIMARK® sample bag (article number M3251010)

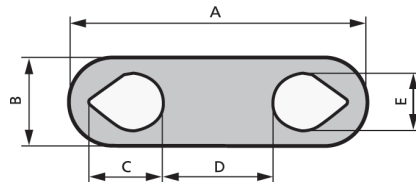
**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**RAL** **Colour delivered**  
yellow  
also available in green, blue and red

**Material**  
Halogen-free polyester  
Thickness: 0.175 mm

**Temperature range**  
-40°C to +125°C



Article number	Article designation	For mm <sup>2</sup>	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Number of markers per PU	PU
<b>FLEXIMARK® Flexiprint TF</b>									
83254372	FLEXIMARK® Flexiprint TF0 YE	0.25 - 0.75	22.9	5.2	3.9	13.1	2.4	2000	1
83255011	FLEXIMARK® Flexiprint TF0 0.25-0.75 WH	0.25 - 0.75						600	1
83254378	FLEXIMARK® Flexiprint TF1 YE	0.75 - 1.5	23	5.2	4.9	11.2	3.5	2000	1
83255012	FLEXIMARK® Flexiprint TF1 0.75-1.5 WH	0.75 - 1.5						600	1
83254354	FLEXIMARK® Flexiprint TF1L YE	0.75 - 1.5	34	5.2	5	22	3.5	2000	
83254374	FLEXIMARK® Flexiprint TF1B YE	1.5 - 2.5	25	5.7	5.9	11.2	4.2	2000	1
83255013	FLEXIMARK® Flexiprint TF1B 1.5-2.5 WH	1.5 - 2.5						600	1
83254359	FLEXIMARK® Flexiprint TF1BL YE	1.5 - 2.5	36	5.7	6	22	4.2	2000	
83254375	FLEXIMARK® Flexiprint TF2 YE	2.5 - 6	26	7	6.5	11	5.5	2000	1
83255014	FLEXIMARK® Flexiprint TF2 2.5-6.0 WH	2.5 - 6						600	1
83254376	FLEXIMARK® Flexiprint TF3 YE	6 - 16	41	11	10.5	17	8.4	1000	1
83255015	FLEXIMARK® Flexiprint TF3 6.0-16.0 WH	6 - 16						200	1

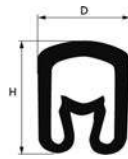
Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

**Accessories**

- FLEXIMARK® Software 10.0 refer to page 979
- FLEXIMARK® Thermoprint A4+M and EOS4\* refer to page 980



### Marking rings PA



#### Benefits

- Closed marking rings with pre-printed number or character
- Anti-rotation protection
- Due to its special profile with spring effects, the 4 different sizes can cover a range of cross-sections from 0.2 to 70 mm<sup>2</sup>
- Resistant to UV radiation

#### Application range

- For Single core marking
- Marking before assembly
- These closed collars are intended for cables that are not connected yet
- Cross-section in mm<sup>2</sup>:
  - PA 02: 0,75 mm<sup>2</sup>
  - PA 1: 0,75-4 mm<sup>2</sup>
  - PA 2: 2,5-16 mm<sup>2</sup>
  - PA 3: 16-70 mm<sup>2</sup>

#### Product features

- Extremely flame-retardant according to UL 94 V0

#### Note

##### Marking rings PA02

- Also available as collector's box (article number 61833050, contains 600 rings with inscription 0-9)

##### Marking rings PA 1

- Also available as collector's box (article number 61833060, contains 500 rings with inscription 0-9)

#### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Colour delivered</b> yellow
	<b>Material</b> Cadmium-free and silicon-free soft PVC
	<b>Temperature range</b> -30°C to +60°C

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
<b>PA 02</b>					
61817800	PA 02 / 0	3.5 x 3.6	3	1.3 - 3.0	200
61817820	PA 02 / 2	3.5 x 3.6	3	1.3 - 3.0	200
61817830	PA 02 / 3	3.5 x 3.6	3	1.3 - 3.0	200
61817840	PA 02 / 4	3.5 x 3.6	3	1.3 - 3.0	200
61817850	PA 02 / 5	3.5 x 3.6	3	1.3 - 3.0	200
61817860	PA 02 / 6	3.5 x 3.6	3	1.3 - 3.0	200
61817870	PA 02 / 7	3.5 x 3.6	3	1.3 - 3.0	200
61817880	PA 02 / 8	3.5 x 3.6	3	1.3 - 3.0	200
61817890	PA 02 / 9	3.5 x 3.6	3	1.3 - 3.0	200
61817900	PA 02 / blank	3.5 x 3.6	3	1.3 - 3.0	200
61817910	PA 02 / A	3.5 x 3.6	3	1.3 - 3.0	200
61817920	PA 02 / B	3.5 x 3.6	3	1.3 - 3.0	200
61817930	PA 02 / C	3.5 x 3.6	3	1.3 - 3.0	200
61817940	PA 02 / D	3.5 x 3.6	3	1.3 - 3.0	200
61817950	PA 02 / E	3.5 x 3.6	3	1.3 - 3.0	200
61817960	PA 02 / F	3.5 x 3.6	3	1.3 - 3.0	200
61817970	PA 02 / G	3.5 x 3.6	3	1.3 - 3.0	200
61817980	PA 02 / H	3.5 x 3.6	3	1.3 - 3.0	200
61817990	PA 02 / I	3.5 x 3.6	3	1.3 - 3.0	200
61818000	PA 02 / J	3.5 x 3.6	3	1.3 - 3.0	200
61818011	PA 02 / K	3.5 x 3.6	3	1.3 - 3.0	200
61818020	PA 02 / L	3.5 x 3.6	3	1.3 - 3.0	200
61818030	PA 02 / M	3.5 x 3.6	3	1.3 - 3.0	200
61818040	PA 02 / N	3.5 x 3.6	3	1.3 - 3.0	200
61818050	PA 02 / O	3.5 x 3.6	3	1.3 - 3.0	200
61818060	PA 02 / P	3.5 x 3.6	3	1.3 - 3.0	200
61818070	PA 02 / Q	3.5 x 3.6	3	1.3 - 3.0	200
61818080	PA 02 / R	3.5 x 3.6	3	1.3 - 3.0	200
61818090	PA 02 / S	3.5 x 3.6	3	1.3 - 3.0	200
61819100	PA 02 / T	3.5 x 3.6	3	1.3 - 3.0	200
61819110	PA 02 / U	3.5 x 3.6	3	1.3 - 3.0	200
61819120	PA 02 / V	3.5 x 3.6	3	1.3 - 3.0	200
61819130	PA 02 / W	3.5 x 3.6	3	1.3 - 3.0	200
61819140	PA 02 / X	3.5 x 3.6	3	1.3 - 3.0	200
61819150	PA 02 / Y	3.5 x 3.6	3	1.3 - 3.0	200
61819160	PA 02 / Z	3.5 x 3.6	3	1.3 - 3.0	200
61819170	PA 02 / /	3.5 x 3.6	3	1.3 - 3.0	200
61819180	PA 02 / .	3.5 x 3.6	3	1.3 - 3.0	200
61819190	PA 02 / ,	3.5 x 3.6	3	1.3 - 3.0	200
61819200	PA 02 / :	3.5 x 3.6	3	1.3 - 3.0	200
61819210	PA 02 / =	3.5 x 3.6	3	1.3 - 3.0	200
61819220	PA 02 / earth	3.5 x 3.6	3	1.3 - 3.0	200
61819260	PA 02 / +	3.5 x 3.6	3	1.3 - 3.0	200
61819270	PA 02 / -	3.5 x 3.6	3	1.3 - 3.0	200
61819280	PA 02 / ~	3.5 x 3.6	3	1.3 - 3.0	200

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
<b>PA 1</b>					
61819300	PA 1 / 0	4.2 x 5.5	3	2.5 - 5.0	200
61819310	PA 1 / 1	4.2 x 5.5	3	2.5 - 5.0	200
61819320	PA 1 / 2	4.2 x 5.5	3	2.5 - 5.0	200
61819330	PA 1 / 3	4.2 x 5.5	3	2.5 - 5.0	200
61819360	PA 1 / 6	4.2 x 5.5	3	2.5 - 5.0	200
61819340	PA 1 / 4	4.2 x 5.5	3	2.5 - 5.0	200
61819350	PA 1 / 5	4.2 x 5.5	3	2.5 - 5.0	200
61819370	PA 1 / 7	4.2 x 5.5	3	2.5 - 5.0	200
61819380	PA 1 / 8	4.2 x 5.5	3	2.5 - 5.0	200
61819390	PA 1 / 9	4.2 x 5.5	3	2.5 - 5.0	200
61819400	PA 1 /blank	4.2 x 5.5	3	2.5 - 5.0	200
61819410	PA 1 / A	4.2 x 5.5	3	2.5 - 5.0	200
61819420	PA 1 / B	4.2 x 5.5	3	2.5 - 5.0	200
61819430	PA 1 / C	4.2 x 5.5	3	2.5 - 5.0	200
61819440	PA 1 / D	4.2 x 5.5	3	2.5 - 5.0	200
61819450	PA 1 / E	4.2 x 5.5	3	2.5 - 5.0	200
61819460	PA 1 / F	4.2 x 5.5	3	2.5 - 5.0	200
61819470	PA 1 / G	4.2 x 5.5	3	2.5 - 5.0	200
61819480	PA 1 / H	4.2 x 5.5	3	2.5 - 5.0	200
61819490	PA 1 / I	4.2 x 5.5	3	2.5 - 5.0	200
61819500	PA 1 / J	4.2 x 5.5	3	2.5 - 5.0	200
61819510	PA 1 / K	4.2 x 5.5	3	2.5 - 5.0	200
61819520	PA 1 / L	4.2 x 5.5	3	2.5 - 5.0	200
61819530	PA 1 / M	4.2 x 5.5	3	2.5 - 5.0	200
61819540	PA 1 / N	4.2 x 5.5	3	2.5 - 5.0	200
61819550	PA 1 / O	4.2 x 5.5	3	2.5 - 5.0	200
61819560	PA 1 / P	4.2 x 5.5	3	2.5 - 5.0	200
61819570	PA 1 / Q	4.2 x 5.5	3	2.5 - 5.0	200
61819580	PA 1 / R	4.2 x 5.5	3	2.5 - 5.0	200
61819590	PA 1 / S	4.2 x 5.5	3	2.5 - 5.0	200
61819600	PA 1 / T	4.2 x 5.5	3	2.5 - 5.0	200
61819610	PA 1 / U	4.2 x 5.5	3	2.5 - 5.0	200
61819620	PA 1 / V	4.2 x 5.5	3	2.5 - 5.0	200
61819630	PA 1 / W	4.2 x 5.5	3	2.5 - 5.0	200
61819640	PA 1 / X	4.2 x 5.5	3	2.5 - 5.0	200
61819650	PA 1 / Y	4.2 x 5.5	3	2.5 - 5.0	200
61819660	PA 1 / Z	4.2 x 5.5	3	2.5 - 5.0	200
61819670	PA 1 / /	4.2 x 5.5	3	2.5 - 5.0	200
61819680	PA 1 / .	4.2 x 5.5	3	2.5 - 5.0	200
61819690	PA 1 / ,	4.2 x 5.5	3	2.5 - 5.0	200
61819700	PA 1 / :	4.2 x 5.5	3	2.5 - 5.0	200
61819710	PA 1 / =	4.2 x 5.5	3	2.5 - 5.0	200
61819720	PA 1 /earth	4.2 x 5.5	3	2.5 - 5.0	200
61819760	PA 1 / +	4.2 x 5.5	3	2.5 - 5.0	200
61819770	PA 1 / -	4.2 x 5.5	3	2.5 - 5.0	200
61819780	PA 1 / ~	4.2 x 5.5	3	2.5 - 5.0	200
<b>PA 2</b>					
61819800	PA 2 / 0	6.6 x 9.5	4	4.0 - 10.0	100
61819810	PA 2 / 1	6.6 x 9.5	4	4.0 - 10.0	100
61819820	PA 2 / 2	6.6 x 9.5	4	4.0 - 10.0	100
61819830	PA 2 / 3	6.6 x 9.5	4	4.0 - 10.0	100
61819840	PA 2 / 4	6.6 x 9.5	4	4.0 - 10.0	100
61819850	PA 2 / 5	6.6 x 9.5	4	4.0 - 10.0	100
61819860	PA 2 / 6	6.6 x 9.5	4	4.0 - 10.0	100
61819870	PA 2 / 7	6.6 x 9.5	4	4.0 - 10.0	100
61819880	PA 2 / 8	6.6 x 9.5	4	4.0 - 10.0	100
61819890	PA 2 / 9	6.6 x 9.5	4	4.0 - 10.0	100
61819900	PA 2 /blank	6.6 x 9.5	4	4.0 - 10.0	100
61819910	PA 2 / A	6.6 x 9.5	4	4.0 - 10.0	100
61819920	PA 2 / B	6.6 x 9.5	4	4.0 - 10.0	100
61819930	PA 2 / C	6.6 x 9.5	4	4.0 - 10.0	100
61819940	PA 2 / D	6.6 x 9.5	4	4.0 - 10.0	100
61819950	PA 2 / E	6.6 x 9.5	4	4.0 - 10.0	100
61819960	PA 2 / F	6.6 x 9.5	4	4.0 - 10.0	100
61819970	PA 2 / G	6.6 x 9.5	4	4.0 - 10.0	100
61819980	PA 2 / H	6.6 x 9.5	4	4.0 - 10.0	100
61819990	PA 2 / I	6.6 x 9.5	4	4.0 - 10.0	100
61820000	PA 2 / J	6.6 x 9.5	4	4.0 - 10.0	100
61820010	PA 2 / K	6.6 x 9.5	4	4.0 - 10.0	100
61820020	PA 2 / L	6.6 x 9.5	4	4.0 - 10.0	100
61820030	PA 2 / M	6.6 x 9.5	4	4.0 - 10.0	100
61820040	PA 2 / N	6.6 x 9.5	4	4.0 - 10.0	100
61820050	PA 2 / O	6.6 x 9.5	4	4.0 - 10.0	100
61820060	PA 2 / P	6.6 x 9.5	4	4.0 - 10.0	100
61820070	PA 2 / Q	6.6 x 9.5	4	4.0 - 10.0	100
61820080	PA 2 / R	6.6 x 9.5	4	4.0 - 10.0	100
61820090	PA 2 / S	6.6 x 9.5	4	4.0 - 10.0	100
61820100	PA 2 / T	6.6 x 9.5	4	4.0 - 10.0	100
61820110	PA 2 / U	6.6 x 9.5	4	4.0 - 10.0	100
61820120	PA 2 / V	6.6 x 9.5	4	4.0 - 10.0	100
61820130	PA 2 / W	6.6 x 9.5	4	4.0 - 10.0	100
61820140	PA 2 / X	6.6 x 9.5	4	4.0 - 10.0	100
61820150	PA 2 / Y	6.6 x 9.5	4	4.0 - 10.0	100

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
61820160	PA 2 / Z	6.6 x 9.5	4	4.0 - 10.0	100
61820170	PA 2 / /	6.6 x 9.5	4	4.0 - 10.0	100
61820180	PA 2 / .	6.6 x 9.5	4	4.0 - 10.0	100
61820190	PA 2 / ,	6.6 x 9.5	4	4.0 - 10.0	100
61820200	PA 2 / :	6.6 x 9.5	4	4.0 - 10.0	100
61820210	PA 2 / =	6.6 x 9.5	4	4.0 - 10.0	100
61820220	PA 2 / earth	6.6 x 9.5	4	4.0 - 10.0	100
61820260	PA 2 / +	6.6 x 9.5	4	4.0 - 10.0	100
61820270	PA 2 / -	6.6 x 9.5	4	4.0 - 10.0	100
61820280	PA 2 / ~	6.6 x 9.5	4	4.0 - 10.0	100
<b>PA 3</b>					
61820300	PA 3 / 0	11.0 x 16.5	6	8.0 - 16.0	20
61820310	PA 3 / 1	11.0 x 16.5	6	8.0 - 16.0	20
61820320	PA 3 / 2	11.0 x 16.5	6	8.0 - 16.0	20
61820330	PA 3 / 3	11.0 x 16.5	6	8.0 - 16.0	20
61820340	PA 3 / 4	11.0 x 16.5	6	8.0 - 16.0	20
61820350	PA 3 / 5	11.0 x 16.5	6	8.0 - 16.0	20
61820360	PA 3 / 6	11.0 x 16.5	6	8.0 - 16.0	20
61820370	PA 3 / 7	11.0 x 16.5	6	8.0 - 16.0	20
61820380	PA 3 / 8	11.0 x 16.5	6	8.0 - 16.0	20
61820390	PA 3 / 9	11.0 x 16.5	6	8.0 - 16.0	20
61820400	PA3/Blank	11.0 x 16.5	6	8.0 - 16.0	20
61820410	PA 3 / A	11.0 x 16.5	6	8.0 - 16.0	20
61820420	PA 3 / B	11.0 x 16.5	6	8.0 - 16.0	20
61820430	PA 3 / C	11.0 x 16.5	6	8.0 - 16.0	20
61820440	PA 3 / D	11.0 x 16.5	6	8.0 - 16.0	20
61820450	PA 3 / E	11.0 x 16.5	6	8.0 - 16.0	20
61820460	PA 3 / F	11.0 x 16.5	6	8.0 - 16.0	20
61820470	PA 3 / G	11.0 x 16.5	6	8.0 - 16.0	20
61820480	PA 3 / H	11.0 x 16.5	6	8.0 - 16.0	20
61820490	PA 3 / I	11.0 x 16.5	6	8.0 - 16.0	20
61820500	PA 3 / J	11.0 x 16.5	6	8.0 - 16.0	20
61820510	PA 3 / K	11.0 x 16.5	6	8.0 - 16.0	20
61820520	PA 3 / L	11.0 x 16.5	6	8.0 - 16.0	20
61820530	PA 3 / M	11.0 x 16.5	6	8.0 - 16.0	20
61820540	PA 3 / N	11.0 x 16.5	6	8.0 - 16.0	20
61820550	PA 3 / O	11.0 x 16.5	6	8.0 - 16.0	20
61820560	PA 3 / P	11.0 x 16.5	6	8.0 - 16.0	20
61820570	PA 3 / Q	11.0 x 16.5	6	8.0 - 16.0	20
61820580	PA 3 / R	11.0 x 16.5	6	8.0 - 16.0	20
61820590	PA 3 / S	11.0 x 16.5	6	8.0 - 16.0	20
61820600	PA 3 / T	11.0 x 16.5	6	8.0 - 16.0	20
61820610	PA 3 / U	11.0 x 16.5	6	8.0 - 16.0	20
61820620	PA 3 / V	11.0 x 16.5	6	8.0 - 16.0	20
61820630	PA 3 / W	11.0 x 16.5	6	8.0 - 16.0	20
61820640	PA 3 / X	11.0 x 16.5	6	8.0 - 16.0	20
61820650	PA 3 / Y	11.0 x 16.5	6	8.0 - 16.0	20
61820660	PA 3 / Z	11.0 x 16.5	6	8.0 - 16.0	20
61820670	PA 3 / /	11.0 x 16.5	6	8.0 - 16.0	20
61820680	PA 3 / .	11.0 x 16.5	6	8.0 - 16.0	20
61820720	PA 3 / earth	11.0 x 16.5	6	8.0 - 16.0	20
61820760	PA 3 / +	11.0 x 16.5	6	8.0 - 16.0	20
61820770	PA 3 / -	11.0 x 16.5	6	8.0 - 16.0	20
61820780	PA 3 / ~	11.0 x 16.5	6	8.0 - 16.0	20

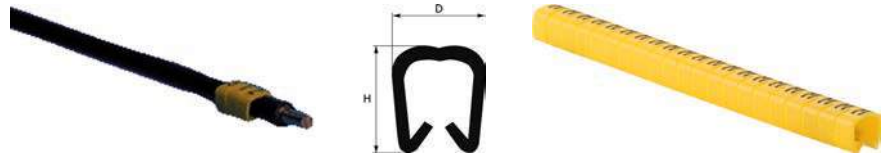
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Storage box refer to page 972
- Storage box refer to page 972
- PAV Mounting tool refer to page 972



**Marking rings PC**



**Benefits**

- Open marking rings with pre-printed number or character
- The shape ensures secure fixation to the cable, while the anti-rotation feature allows for a secure combination marking.
- Resistant to UV radiation
- Easy mounting through clipping

**Application range**

- For Single core marking
- Marking after assembly
- Also possible to use for marking wires before assembly
- Cross-section in mm<sup>2</sup>:  
PC 10: 0,5 mm<sup>2</sup>  
PC 20: 0,75 und 1 und 1,5 mm<sup>2</sup>  
PC 30: 2,5 und 4 mm<sup>2</sup>  
PC 40: 6 mm<sup>2</sup>

**Product features**

- Extremely flame-retardant according to UL 94 V0

**Technical data**

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Colour delivered</b> yellow
	<b>Material</b> Cadmium-free and silicon-free hard PVC
	<b>Temperature range</b> -30°C to +60°C

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
<b>PC 10</b>					
61820900	PC 10 / O	3.7 x 3.6	3	2.4 - 3.0	200
61820910	PC 10 / 1	3.7 x 3.6	3	2.4 - 3.0	200
61820920	PC 10 / 2	3.7 x 3.6	3	2.4 - 3.0	200
61820930	PC 10 / 3	3.7 x 3.6	3	2.4 - 3.0	200
61820940	PC 10 / 4	3.7 x 3.6	3	2.4 - 3.0	200
61820950	PC 10 / 5	3.7 x 3.6	3	2.4 - 3.0	200
61820960	PC 10 / 6	3.7 x 3.6	3	2.4 - 3.0	200
61820970	PC 10 / 7	3.7 x 3.6	3	2.4 - 3.0	200
61820980	PC 10 / 8	3.7 x 3.6	3	2.4 - 3.0	200
61820990	PC 10 / 9	3.7 x 3.6	3	2.4 - 3.0	200
61821000	PC 10/blank	3.7 x 3.6	3	2.4 - 3.0	200
61821010	PC 10 / A	3.7 x 3.6	3	2.4 - 3.0	200
61821020	PC 10 / B	3.7 x 3.6	3	2.4 - 3.0	200
61821030	PC 10 / C	3.7 x 3.6	3	2.4 - 3.0	200
61821040	PC 10 / D	3.7 x 3.6	3	2.4 - 3.0	200
61821050	PC 10 / E	3.7 x 3.6	3	2.4 - 3.0	200
61821060	PC 10 / F	3.7 x 3.6	3	2.4 - 3.0	200
61821070	PC 10 / G	3.7 x 3.6	3	2.4 - 3.0	200
61821080	PC 10 / H	3.7 x 3.6	3	2.4 - 3.0	200
61821090	PC 10 / I	3.7 x 3.6	3	2.4 - 3.0	200
61821100	PC 10 / J	3.7 x 3.6	3	2.4 - 3.0	200
61821110	PC 10 / K	3.7 x 3.6	3	2.4 - 3.0	200
61821120	PC 10 / L	3.7 x 3.6	3	2.4 - 3.0	200
61821130	PC 10 / M	3.7 x 3.6	3	2.4 - 3.0	200
61821140	PC 10 / N	3.7 x 3.6	3	2.4 - 3.0	200
61821150	PC 10 / O	3.7 x 3.6	3	2.4 - 3.0	200
61821160	PC 10 / P	3.7 x 3.6	3	2.4 - 3.0	200
61821170	PC 10 / Q	3.7 x 3.6	3	2.4 - 3.0	200
61821180	PC 10 / R	3.7 x 3.6	3	2.4 - 3.0	200
61821190	PC 10 / S	3.7 x 3.6	3	2.4 - 3.0	200
61821200	PC 10 / T	3.7 x 3.6	3	2.4 - 3.0	200
61821210	PC 10 / U	3.7 x 3.6	3	2.4 - 3.0	200
61821220	PC 10 / V	3.7 x 3.6	3	2.4 - 3.0	200
61821230	PC 10 / W	3.7 x 3.6	3	2.4 - 3.0	200
61821240	PC 10 / X	3.7 x 3.6	3	2.4 - 3.0	200
61821250	PC 10 / Y	3.7 x 3.6	3	2.4 - 3.0	200
61821260	PC 10 / Z	3.7 x 3.6	3	2.4 - 3.0	200
61821270	PC 10 / /	3.7 x 3.6	3	2.4 - 3.0	200
61821280	PC 10 / .	3.7 x 3.6	3	2.4 - 3.0	200
61821290	PC 10 / ,	3.7 x 3.6	3	2.4 - 3.0	200
61821300	PC 10 / :	3.7 x 3.6	3	2.4 - 3.0	200
61821310	PC 10 / =	3.7 x 3.6	3	2.4 - 3.0	200
61821320	PC 10/earth	3.7 x 3.6	3	2.4 - 3.0	200
61821360	PC 10 / +	3.7 x 3.6	3	2.4 - 3.0	200
61821370	PC 10 / -	3.7 x 3.6	3	2.4 - 3.0	200
61821380	PC 10 / ~	3.7 x 3.6	3	2.4 - 3.0	200
<b>PC 20</b>					
61821400	PC 20 / 0	4.5 x 4.2	3	3.0 - 4.0	200
61821410	PC 20 / 1	4.5 x 4.2	3	3.0 - 4.0	200
61821420	PC 20 / 2	4.5 x 4.2	3	3.0 - 4.0	200
61821430	PC 20 / 3	4.5 x 4.2	3	3.0 - 4.0	200
61821440	PC 20 / 4	4.5 x 4.2	3	3.0 - 4.0	200

## FLEXIMARK® Single core marking • Basic System Single Core Marking

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
61821450	PC 20 / 5	4.5 x 4.2	3	3.0 - 4.0	200
61821460	PC 20 / 6	4.5 x 4.2	3	3.0 - 4.0	200
61821470	PC 20 / 7	4.5 x 4.2	3	3.0 - 4.0	200
61821480	PC 20 / 8	4.5 x 4.2	3	3.0 - 4.0	200
61821490	PC 20 / 9	4.5 x 4.2	3	3.0 - 4.0	200
61821500	PC 20/blank	4.5 x 4.2	3	3.0 - 4.0	200
61821510	PC 20 / A	4.5 x 4.2	3	3.0 - 4.0	200
61821520	PC 20 / B	4.5 x 4.2	3	3.0 - 4.0	200
61821530	PC 20 / C	4.5 x 4.2	3	3.0 - 4.0	200
61821540	PC 20 / D	4.5 x 4.2	3	3.0 - 4.0	200
61821550	PC 20 / E	4.5 x 4.2	3	3.0 - 4.0	200
61821560	PC 20 / F	4.5 x 4.2	3	3.0 - 4.0	200
61821570	PC 20 / G	4.5 x 4.2	3	3.0 - 4.0	200
61821580	PC 20 / H	4.5 x 4.2	3	3.0 - 4.0	200
61821590	PC 20 / I	4.5 x 4.2	3	3.0 - 4.0	200
61821600	PC 20 / J	4.5 x 4.2	3	3.0 - 4.0	200
61821610	PC 20 / K	4.5 x 4.2	3	3.0 - 4.0	200
61821620	PC 20 / L	4.5 x 4.2	3	3.0 - 4.0	200
61821630	PC 20 / M	4.5 x 4.2	3	3.0 - 4.0	200
61821640	PC 20 / N	4.5 x 4.2	3	3.0 - 4.0	200
61821650	PC 20 / O	4.5 x 4.2	3	3.0 - 4.0	200
61821660	PC 20 / P	4.5 x 4.2	3	3.0 - 4.0	200
61821670	PC 20 / Q	4.5 x 4.2	3	3.0 - 4.0	200
61821680	PC 20 / R	4.5 x 4.2	3	3.0 - 4.0	200
61821690	PC 20 / S	4.5 x 4.2	3	3.0 - 4.0	200
61821700	PC 20 / T	4.5 x 4.2	3	3.0 - 4.0	200
61821710	PC 20 / U	4.5 x 4.2	3	3.0 - 4.0	200
61821720	PC 20 / V	4.5 x 4.2	3	3.0 - 4.0	200
61821730	PC 20 / W	4.5 x 4.2	3	3.0 - 4.0	200
61821740	PC 20 / X	4.5 x 4.2	3	3.0 - 4.0	200
61821750	PC 20 / Y	4.5 x 4.2	3	3.0 - 4.0	200
61821760	PC 20 / Z	4.5 x 4.2	3	3.0 - 4.0	200
61821770	PC 20 / /	4.5 x 4.2	3	3.0 - 4.0	200
61821780	PC 20 / .	4.5 x 4.2	3	3.0 - 4.0	200
61821790	PC 20 / ,	4.5 x 4.2	3	3.0 - 4.0	200
61821800	PC 20 / :	4.5 x 4.2	3	3.0 - 4.0	200
61821810	PC 20 / =	4.5 x 4.2	3	3.0 - 4.0	200
61821820	PC 20/earth	4.5 x 4.2	3	3.0 - 4.0	200
61821860	PC 20 / +	4.5 x 4.2	3	3.0 - 4.0	200
61821870	PC 20 / -	4.5 x 4.2	3	3.0 - 4.0	200
61821880	PC 20 / ~	4.5 x 4.2	3	3.0 - 4.0	200
<b>PC 30</b>					
61821900	PC 30 / 0	5.7 x 5.5	3	4.0 - 5.0	200
61821910	PC 30 / 1	5.7 x 5.5	3	4.0 - 5.0	200
61821920	PC 30 / 2	5.7 x 5.5	3	4.0 - 5.0	200
61821930	PC 30 / 3	5.7 x 5.5	3	4.0 - 5.0	200
61821940	PC 30 / 4	5.7 x 5.5	3	4.0 - 5.0	200
61821950	PC 30 / 5	5.7 x 5.5	3	4.0 - 5.0	200
61821960	PC 30 / 6	5.7 x 5.5	3	4.0 - 5.0	200
61821970	PC 30 / 7	5.7 x 5.5	3	4.0 - 5.0	200
61821980	PC 30 / 8	5.7 x 5.5	3	4.0 - 5.0	200
61821990	PC 30 / 9	5.7 x 5.5	3	4.0 - 5.0	200
61822000	PC 30/blank	5.7 x 5.5	3	4.0 - 5.0	200
61822010	PC 30 / A	5.7 x 5.5	3	4.0 - 5.0	200
61822020	PC 30 / B	5.7 x 5.5	3	4.0 - 5.0	200
61822030	PC 30 / C	5.7 x 5.5	3	4.0 - 5.0	200
61822040	PC 30 / D	5.7 x 5.5	3	4.0 - 5.0	200
61822050	PC 30 / E	5.7 x 5.5	3	4.0 - 5.0	200
61822060	PC 30 / F	5.7 x 5.5	3	4.0 - 5.0	200
61822070	PC 30 / G	5.7 x 5.5	3	4.0 - 5.0	200
61822080	PC 30 / H	5.7 x 5.5	3	4.0 - 5.0	200
61822090	PC 30 / I	5.7 x 5.5	3	4.0 - 5.0	200
61822100	PC 30 / J	5.7 x 5.5	3	4.0 - 5.0	200
61822110	PC 30 / K	5.7 x 5.5	3	4.0 - 5.0	200
61822120	PC 30 / L	5.7 x 5.5	3	4.0 - 5.0	200
61822130	PC 30 / M	5.7 x 5.5	3	4.0 - 5.0	200
61822140	PC 30 / N	5.7 x 5.5	3	4.0 - 5.0	200
61822150	PC 30 / O	5.7 x 5.5	3	4.0 - 5.0	200
61822160	PC 30 / P	5.7 x 5.5	3	4.0 - 5.0	200
61822170	PC 30 / Q	5.7 x 5.5	3	4.0 - 5.0	200
61822180	PC 30 / R	5.7 x 5.5	3	4.0 - 5.0	200
61822190	PC 30 / S	5.7 x 5.5	3	4.0 - 5.0	200
61822200	PC 30 / T	5.7 x 5.5	3	4.0 - 5.0	200
61822210	PC 30 / U	5.7 x 5.5	3	4.0 - 5.0	200
61822220	PC 30 / V	5.7 x 5.5	3	4.0 - 5.0	200
61822230	PC 30 / W	5.7 x 5.5	3	4.0 - 5.0	200
61822240	PC 30 / X	5.7 x 5.5	3	4.0 - 5.0	200
61822250	PC 30 / Y	5.7 x 5.5	3	4.0 - 5.0	200
61822260	PC 30 / Z	5.7 x 5.5	3	4.0 - 5.0	200
61822270	PC 30 / /	5.7 x 5.5	3	4.0 - 5.0	200
61822280	PC 30 / .	5.7 x 5.5	3	4.0 - 5.0	200
61822290	PC 30 / ,	5.7 x 5.5	3	4.0 - 5.0	200
61822300	PC 30 / :	5.7 x 5.5	3	4.0 - 5.0	200
61822310	PC 30 / =	5.7 x 5.5	3	4.0 - 5.0	200
61822320	PC 30/earth	5.7 x 5.5	3	4.0 - 5.0	200

Article number	Article designation	Width x height (mm)	Sleeve length (mm)	Area of application Ø (mm)	Contents (unit)
61822360	PC 30 / +	5.7 x 5.5	3	4.0 - 5.0	200
61822370	PC 30 / -	5.7 x 5.5	3	4.0 - 5.0	200
61822380	PC 30 / ~	5.7 x 5.5	3	4.0 - 5.0	200
<b>PC 40</b>					
61822400	PC 40 / 0	6.9 x 6.7	4	5.0 - 6.2	200
61822410	PC 40 / 1	6.9 x 6.7	4	5.0 - 6.2	200
61822420	PC 40 / 2	6.9 x 6.7	4	5.0 - 6.2	200
61822430	PC 40 / 3	6.9 x 6.7	4	5.0 - 6.2	200
61822440	PC 40 / 4	6.9 x 6.7	4	5.0 - 6.2	200
61822450	PC 40 / 5	6.9 x 6.7	4	5.0 - 6.2	200
61822460	PC 40 / 6	6.9 x 6.7	4	5.0 - 6.2	200
61822470	PC 40 / 7	6.9 x 6.7	4	5.0 - 6.2	200
61822480	PC 40 / 8	6.9 x 6.7	4	5.0 - 6.2	200
61822490	PC 40 / 9	6.9 x 6.7	4	5.0 - 6.2	200
61822500	PC 40/blank	6.9 x 6.7	4	5.0 - 6.2	200
61822510	PC 40 / A	6.9 x 6.7	4	5.0 - 6.2	200
61822520	PC 40 / B	6.9 x 6.7	4	5.0 - 6.2	200
61822530	PC 40 / C	6.9 x 6.7	4	5.0 - 6.2	200
61822540	PC 40 / D	6.9 x 6.7	4	5.0 - 6.2	200
61822550	PC 40 / E	6.9 x 6.7	4	5.0 - 6.2	200
61822560	PC 40 / F	6.9 x 6.7	4	5.0 - 6.2	200
61822570	PC 40 / G	6.9 x 6.7	4	5.0 - 6.2	200
61822580	PC 40 / H	6.9 x 6.7	4	5.0 - 6.2	200
61822590	PC 40 / I	6.9 x 6.7	4	5.0 - 6.2	200
61822600	PC 40 / J	6.9 x 6.7	4	5.0 - 6.2	200
61822610	PC 40 / K	6.9 x 6.7	4	5.0 - 6.2	200
61822620	PC 40 / L	6.9 x 6.7	4	5.0 - 6.2	200
61822630	PC 40 / M	6.9 x 6.7	4	5.0 - 6.2	200
61822640	PC 40 / N	6.9 x 6.7	4	5.0 - 6.2	200
61822650	PC 40 / O	6.9 x 6.7	4	5.0 - 6.2	200
61822660	PC 40 / P	6.9 x 6.7	4	5.0 - 6.2	200
61822670	PC 40 / Q	6.9 x 6.7	4	5.0 - 6.2	200
61822680	PC 40 / R	6.9 x 6.7	4	5.0 - 6.2	200
61822690	PC 40 / S	6.9 x 6.7	4	5.0 - 6.2	200
61822700	PC 40 / T	6.9 x 6.7	4	5.0 - 6.2	200
61822710	PC 40 / U	6.9 x 6.7	4	5.0 - 6.2	200
61822720	PC 40 / V	6.9 x 6.7	4	5.0 - 6.2	200
61822730	PC 40 / W	6.9 x 6.7	4	5.0 - 6.2	200
61822740	PC 40 / X	6.9 x 6.7	4	5.0 - 6.2	200
61822750	PC 40 / Y	6.9 x 6.7	4	5.0 - 6.2	200
61822760	PC 40 / Z	6.9 x 6.7	4	5.0 - 6.2	200
61822770	PC 40 / /	6.9 x 6.7	4	5.0 - 6.2	200
61822780	PC 40 / .	6.9 x 6.7	4	5.0 - 6.2	200
61822790	PC 40 / ,	6.9 x 6.7	4	5.0 - 6.2	200
61822800	PC 40 / :	6.9 x 6.7	4	5.0 - 6.2	200
61822810	PC 40 / =	6.9 x 6.7	4	5.0 - 6.2	200
61822820	PC 40/earth	6.9 x 6.7	4	5.0 - 6.2	200
61822860	PC 40 / +	6.9 x 6.7	4	5.0 - 6.2	200
61822870	PC 40 / -	6.9 x 6.7	4	5.0 - 6.2	200
61822880	PC 40 / ~	6.9 x 6.7	4	5.0 - 6.2	200

Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- Marking rings Pliosnap refer to page 973

**Accessories**

- Storage box refer to page 972





### PAD Mounting rod



#### Benefits

- Long cylindrical PAD mounting rod
- Tool for marking cables after assembly with PA marking rings
- Reduced installation time

#### Application range

- PA marking rings
- Marking before assembly

#### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material

Article number	Article designation	Up to cable diameter (mm)	Suitable for:	Contents (unit)
<b>PAD Mounting rod</b>				
61822920	PAD 3 installation tool	3.1	PA 02	1
61822930	PAD 4 installation tool	3.5	PA 1	1
61822940	PAD 5 installation tool	4.5	PA 1	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

#### Accessories

- Marking rings PA02 refer to page 966



### PAV Mounting tool



#### Benefits

- This U-shaped stainless steel mounting tool makes marking considerably easier
- Can be mounted from both the left and right sides of the conductor

#### Application range

- PA marking rings
- Marking before assembly

#### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material

Article number	Article designation	Up to cable diameter (mm)	Suitable for:	Contents (unit)
<b>PAV Mounting tool</b>				
61822960	PAV 02 installation tool	3	PA 02	1
61822970	PAV 10 installation tool	4	PA 1	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

#### Accessories

- Marking rings PA02 refer to page 966

### Storage box



#### Benefits

- Simple assignment
- With 12 or 18 storage compartments

#### Application range

- PA marking rings
- PC marking rings

#### Technical data



ETIM 5.0 Class-ID: EC001530  
ETIM 5.0 Class-Description:  
Cable coding system



**Colour delivered**  
Transparent (also separators)

Article number	Article designation	Dimensions W x H x D (mm)	Contents (unit)
<b>Storage box</b>			
61794911	Storage box 12 compartments	250.0 x 46.0 x 175.0	1
61794910	Storage box 18 compartments	240.0 x 42.0 x 195.0	1

Photographs are not to scale and do not represent detailed images of the respective products.



## Marking rings Pliosnap

### Benefits

- Fast and easy assembly
- The mounting wands have a support so that when they are in an horizontal position the markings can be easily identified.
- PLIOSNAP markers grip the conductor tightly without the risk of damaging the insulation.
- Due to chevrons on both sides the markers take up correct orientation.

### Application range

- Marking of single cores and cables in terminal blocks, also with limited space
- Marking after assembly
- **Cross-section in mm<sup>2</sup>**  
 Pliosnap 0: optical fibre cables  
 Pliosnap 1: 0,32  
 Pliosnap 2: 0,50  
 Pliosnap 3: 0,75  
 Pliosnap 6: 1-1,5  
 Pliosnap 9: 2,5  
 Pliosnap 12: 4-6

### Technical data

	<b>Colour delivered</b> White
	<b>Material</b> Polyoxymethylen (POM)
	<b>Temperature range</b> -40 °C to +90 °C

### Norm references / Approvals

- Fire behaviour according to UL 94 HB

### Note

- Tensile strength at yield: 54 N/mm<sup>2</sup>
- Elongation at break: 30 %
- Elasticity: 2100 N /mm<sup>2</sup>
- Dielectric strength: 28 kV/mm

### Included

- 1 PU= 300 markers on 10 (Pliosnap 0-6) or 12 (Pliosnap 9 + 12) carriers



Article number	Article designation	Colour carrier	Area of application Ø (mm)	Contents (unit)	PU
<b>Pliosnap 0</b>					
61919400	Marking rings Pliosnap 0/0 WH	black	0.8 - 1.0	300	1
61919401	Marking rings Pliosnap 0/1 WH	black	0.8 - 1.0	300	1
61919402	Marking rings Pliosnap 0/2 WH	black	0.8 - 1.0	300	1
61919403	Marking rings Pliosnap 0/3 WH	black	0.8 - 1.0	300	1
61919404	Marking rings Pliosnap 0/4 WH	black	0.8 - 1.0	300	1
61919405	Marking rings Pliosnap 0/5 WH	black	0.8 - 1.0	300	1
61919406	Marking rings Pliosnap 0/6 WH	black	0.8 - 1.0	300	1
61919407	Marking rings Pliosnap 0/7 WH	black	0.8 - 1.0	300	1
61919408	Marking rings Pliosnap 0/8 WH	black	0.8 - 1.0	300	1
61919409	Marking rings Pliosnap 0/9 WH	black	0.8 - 1.0	300	1
61919410	Marking rings Pliosnap 0/A WH	black	0.8 - 1.0	300	1
61919411	Marking rings Pliosnap 0/B WH	black	0.8 - 1.0	300	1
61919412	Marking rings Pliosnap 0/C WH	black	0.8 - 1.0	300	1
61919413	Marking rings Pliosnap 0/D WH	black	0.8 - 1.0	300	1
61919414	Marking rings Pliosnap 0/E WH	black	0.8 - 1.0	300	1
61919415	Marking rings Pliosnap 0/F WH	black	0.8 - 1.0	300	1
61919416	Marking rings Pliosnap 0/G WH	black	0.8 - 1.0	300	1
61919417	Marking rings Pliosnap 0/H WH	black	0.8 - 1.0	300	1
61919418	Marking rings Pliosnap 0/I WH	black	0.8 - 1.0	300	1
61919419	Marking rings Pliosnap 0/J WH	black	0.8 - 1.0	300	1
61919420	Marking rings Pliosnap 0/K WH	black	0.8 - 1.0	300	1
61919421	Marking rings Pliosnap 0/L WH	black	0.8 - 1.0	300	1
61919422	Marking rings Pliosnap 0/M WH	black	0.8 - 1.0	300	1
61919423	Marking rings Pliosnap 0/N WH	black	0.8 - 1.0	300	1
61919424	Marking rings Pliosnap 0/O WH	black	0.8 - 1.0	300	1
61919425	Marking rings Pliosnap 0/P WH	black	0.8 - 1.0	300	1
61919426	Marking rings Pliosnap 0/Q WH	black	0.8 - 1.0	300	1
61919427	Marking rings Pliosnap 0/R WH	black	0.8 - 1.0	300	1
61919428	Marking rings Pliosnap 0/S WH	black	0.8 - 1.0	300	1
61919429	Marking rings Pliosnap 0/T WH	black	0.8 - 1.0	300	1
61919430	Marking rings Pliosnap 0 U WH	black	0.8 - 1.0	300	1
61919431	Marking rings Pliosnap 0/V WH	black	0.8 - 1.0	300	1
61919432	Marking rings Pliosnap 0/W WH	black	0.8 - 1.0	300	1

Article number	Article designation	Colour carrier	Area of application Ø (mm)	Contents (unit)	PU
61919433	Marking rings Pliosnap 0/X WH	black	0.8 - 1.0	300	1
61919434	Marking rings Pliosnap 0/Y WH	black	0.8 - 1.0	300	1
61919435	Marking rings Pliosnap 0/Z WH	black	0.8 - 1.0	300	1
61919436	Marking rings Pliosnap 0/+ WH	black	0.8 - 1.0	300	1
61919437	Marking rings Pliosnap 0/- WH	black	0.8 - 1.0	300	1
61919438	Marking rings Pliosnap 0/. WH	black	0.8 - 1.0	300	1
61919439	Marking rings Pliosnap 0/ : WH	black	0.8 - 1.0	300	1
<b>Pliosnap 1</b>					
61919440	Marking rings Pliosnap 1/0 WH	brown	1.0 - 1.4	300	1
61919441	Marking rings Pliosnap 1/1 WH	brown	1.0 - 1.4	300	1
61919442	Marking rings Pliosnap 1/2 WH	brown	1.0 - 1.4	300	1
61919443	Marking rings Pliosnap 1/3 WH	brown	1.0 - 1.4	300	1
61919444	Marking rings Pliosnap 1/4 WH	brown	1.0 - 1.4	300	1
61919445	Marking rings Pliosnap 1/5 WH	brown	1.0 - 1.4	300	1
61919446	Marking rings Pliosnap 1/6 WH	brown	1.0 - 1.4	300	1
61919447	Marking rings Pliosnap 1/7 WH	brown	1.0 - 1.4	300	1
61919448	Marking rings Pliosnap 1/8 WH	brown	1.0 - 1.4	300	1
61919449	Marking rings Pliosnap 1/9 WH	brown	1.0 - 1.4	300	1
61919450	Marking rings Pliosnap 1/A WH	brown	1.0 - 1.4	300	1
61919451	Marking rings Pliosnap 1/B WH	brown	1.0 - 1.4	300	1
61919452	Marking rings Pliosnap 1/C WH	brown	1.0 - 1.4	300	1
61919453	Marking rings Pliosnap 1/D WH	brown	1.0 - 1.4	300	1
61919454	Marking rings Pliosnap 1/E WH	brown	1.0 - 1.4	300	1
61919455	Marking rings Pliosnap 1/F WH	brown	1.0 - 1.4	300	1
61919456	Marking rings Pliosnap 1/G WH	brown	1.0 - 1.4	300	1
61919457	Marking rings Pliosnap 1/H WH	brown	1.0 - 1.4	300	1
61919458	Marking rings Pliosnap 1/I WH	brown	1.0 - 1.4	300	1
61919459	Marking rings Pliosnap 1/J WH	brown	1.0 - 1.4	300	1
61919460	Marking rings Pliosnap 1/K WH	brown	1.0 - 1.4	300	1
61919461	Marking rings Pliosnap 1/L WH	brown	1.0 - 1.4	300	1
61919462	Marking rings Pliosnap 1/M WH	brown	1.0 - 1.4	300	1
61919463	Marking rings Pliosnap 1/N WH	brown	1.0 - 1.4	300	1
61919464	Marking rings Pliosnap 1/O WH	brown	1.0 - 1.4	300	1
61919465	Marking rings Pliosnap 1/P WH	brown	1.0 - 1.4	300	1
61919466	Marking rings Pliosnap 1/Q WH	brown	1.0 - 1.4	300	1
61919467	Marking rings Pliosnap 1/R WH	brown	1.0 - 1.4	300	1
61919468	Marking rings Pliosnap 1/S WH	brown	1.0 - 1.4	300	1
61919469	Marking rings Pliosnap 1/T WH	brown	1.0 - 1.4	300	1
61919470	Marking rings Pliosnap 1 U WH	brown	1.0 - 1.4	300	1
61919471	Marking rings Pliosnap 1/V WH	brown	1.0 - 1.4	300	1
61919472	Marking rings Pliosnap 1/W WH	brown	1.0 - 1.4	300	1
61919473	Marking rings Pliosnap 1/X WH	brown	1.0 - 1.4	300	1
61919474	Marking rings Pliosnap 1/Y WH	brown	1.0 - 1.4	300	1
61919475	Marking rings Pliosnap 1/Z WH	brown	1.0 - 1.4	300	1
61919476	Marking rings Pliosnap 1/+ WH	brown	1.0 - 1.4	300	1
61919477	Marking rings Pliosnap 1/- WH	brown	1.0 - 1.4	300	1
61919478	Marking rings Pliosnap 1. WH	brown	1.0 - 1.4	300	1
61919479	Marking rings Pliosnap 1/ :	brown	1.0 - 1.4	300	1
<b>Pliosnap 2</b>					
61919480	Marking rings Pliosnap 2/0 WH	grey	1.0 - 1.4	300	1
61919481	Marking rings Pliosnap 2/1 WH	grey	1.0 - 1.4	300	1
61919482	Marking rings Pliosnap 2/2 WH	grey	1.0 - 1.4	300	1
61919483	Marking rings Pliosnap 2/3 WH	grey	1.0 - 1.4	300	1
61919484	Marking rings Pliosnap 2/4 WH	grey	1.0 - 1.4	300	1
61919485	Marking rings Pliosnap 2/5 WH	grey	1.0 - 1.4	300	1
61919486	Marking rings Pliosnap 2/6 WH	grey	1.0 - 1.4	300	1
61919487	Marking rings Pliosnap 2/7 WH	grey	1.0 - 1.4	300	1
61919488	Marking rings Pliosnap 2/8 WH	grey	1.0 - 1.4	300	1
61919489	Marking rings Pliosnap 2/9 WH	grey	1.0 - 1.4	300	1
61919490	Marking rings Pliosnap 2/A WH	grey	1.0 - 1.4	300	1
61919491	Marking rings Pliosnap 2/B WH	grey	1.0 - 1.4	300	1
61919492	Marking rings Pliosnap 2/C WH	grey	1.0 - 1.4	300	1
61919493	Marking rings Pliosnap 2/D WH	grey	1.0 - 1.4	300	1
61919494	Marking rings Pliosnap 2/E WH	grey	1.0 - 1.4	300	1
61919495	Marking rings Pliosnap 2/F WH	grey	1.0 - 1.4	300	1
61919496	Marking rings Pliosnap 2/G WH	grey	1.0 - 1.4	300	1
61919497	Marking rings Pliosnap 2/H WH	grey	1.0 - 1.4	300	1
61919498	Marking rings Pliosnap 2/I WH	grey	1.0 - 1.4	300	1
61919499	Marking rings Pliosnap 2/J WH	grey	1.0 - 1.4	300	1
61919500	Marking rings Pliosnap 2/K WH	grey	1.0 - 1.4	300	1
61919501	Marking rings Pliosnap 2/L WH	grey	1.0 - 1.4	300	1
61919502	Marking rings Pliosnap 2/M WH	grey	1.0 - 1.4	300	1
61919503	Marking rings Pliosnap 2/N WH	grey	1.0 - 1.4	300	1
61919504	Marking rings Pliosnap 2/O WH	grey	1.0 - 1.4	300	1
61919505	Marking rings Pliosnap 2/P WH	grey	1.0 - 1.4	300	1
61919506	Marking rings Pliosnap 2/Q WH	grey	1.0 - 1.4	300	1
61919507	Marking rings Pliosnap 2/R WH	grey	1.0 - 1.4	300	1
61919508	Marking rings Pliosnap 2/S WH	grey	1.0 - 1.4	300	1
61919509	Marking rings Pliosnap 2/T WH	grey	1.0 - 1.4	300	1
61919510	Marking rings Pliosnap 2 U WH	grey	1.0 - 1.4	300	1
61919511	Marking rings Pliosnap 2/V WH	grey	1.0 - 1.4	300	1
61919512	Marking rings Pliosnap 2/W WH	grey	1.0 - 1.4	300	1
61919513	Marking rings Pliosnap 2/X WH	grey	1.0 - 1.4	300	1
61919514	Marking rings Pliosnap 2/Y WH	grey	1.0 - 1.4	300	1
61919515	Marking rings Pliosnap 2/Z WH	grey	1.0 - 1.4	300	1

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

Article number	Article designation	Colour carrier	Area of application Ø (mm)	Contents (unit)	PU
61919516	Marking rings Pliosnap 2/+ WH	grey	1.0 - 1.4	300	1
61919517	Marking rings Pliosnap 2/- WH	grey	1.0 - 1.4	300	1
61919518	Marking rings Pliosnap 2/. WH	grey	1.0 - 1.4	300	1
61919519	Marking rings Pliosnap 2/ : WH	grey	1.0 - 1.4	300	1
<b>Pliosnap 3</b>					
61919520	Marking rings Pliosnap 3/0 WH	green	1.4 - 1.8	300	1
61919521	Marking rings Pliosnap 3/1 WH	green	1.4 - 1.8	300	1
61919522	Marking rings Pliosnap 3/2 WH	green	1.4 - 1.8	300	1
61919523	Marking rings Pliosnap 3/3 WH	green	1.4 - 1.8	300	1
61919524	Marking rings Pliosnap 3/4 WH	green	1.4 - 1.8	300	1
61919525	Marking rings Pliosnap 3/5 WH	green	1.4 - 1.8	300	1
61919526	Marking rings Pliosnap 3/6 WH	green	1.4 - 1.8	300	1
61919527	Marking rings Pliosnap 3/7 WH	green	1.4 - 1.8	300	1
61919528	Marking rings Pliosnap 3/8 WH	green	1.4 - 1.8	300	1
61919529	Marking rings Pliosnap 3/9 WH	green	1.4 - 1.8	300	1
61919530	Marking rings Pliosnap 3/A WH	green	1.4 - 1.8	300	1
61919531	Marking rings Pliosnap 3/B WH	green	1.4 - 1.8	300	1
61919532	Marking rings Pliosnap 3/C WH	green	1.4 - 1.8	300	1
61919533	Marking rings Pliosnap 3/D WH	green	1.4 - 1.8	300	1
61919534	Marking rings Pliosnap 3/E WH	green	1.4 - 1.8	300	1
61919535	Marking rings Pliosnap 3/F WH	green	1.4 - 1.8	300	1
61919536	Marking rings Pliosnap 3/G WH	green	1.4 - 1.8	300	1
61919537	Marking rings Pliosnap 3/H WH	green	1.4 - 1.8	300	1
61919538	Marking rings Pliosnap 3/I WH	green	1.4 - 1.8	300	1
61919539	Marking rings Pliosnap 3/J WH	green	1.4 - 1.8	300	1
61919540	Marking rings Pliosnap 3/K WH	green	1.4 - 1.8	300	1
61919541	Marking rings Pliosnap 3/L WH	green	1.4 - 1.8	300	1
61919542	Marking rings Pliosnap 3/M WH	green	1.4 - 1.8	300	1
61919543	Marking rings Pliosnap 3/N WH	green	1.4 - 1.8	300	1
61919544	Marking rings Pliosnap 3/O WH	green	1.4 - 1.8	300	1
61919545	Marking rings Pliosnap 3/P WH	green	1.4 - 1.8	300	1
61919546	Marking rings Pliosnap 3/Q WH	green	1.4 - 1.8	300	1
61919547	Marking rings Pliosnap 3/R WH	green	1.4 - 1.8	300	1
61919548	Marking rings Pliosnap 3/S WH	green	1.4 - 1.8	300	1
61919549	Marking rings Pliosnap 3/T WH	green	1.4 - 1.8	300	1
61919550	Marking rings Pliosnap 3 U WH	green	1.4 - 1.8	300	1
61919551	Marking rings Pliosnap 3/V WH	green	1.4 - 1.8	300	1
61919552	Marking rings Pliosnap 3/W WH	green	1.4 - 1.8	300	1
61919553	Marking rings Pliosnap 3/X WH	green	1.4 - 1.8	300	1
61919554	Marking rings Pliosnap 3/Y WH	green	1.4 - 1.8	300	1
61919555	Marking rings Pliosnap 3/Z WH	green	1.4 - 1.8	300	1
61919556	Marking rings Pliosnap 3/+ WH	green	1.4 - 1.8	300	1
61919557	Marking rings Pliosnap 3/- WH	green	1.4 - 1.8	300	1
61919558	Marking rings Pliosnap 3/. WH	green	1.4 - 1.8	300	1
61919559	Marking rings Pliosnap 3/ : WH	green	1.4 - 1.8	300	1
<b>Pliosnap 6</b>					
61919560	Marking rings Pliosnap 6/0 WH	red	1.9 - 2.6	300	1
61919561	Marking rings Pliosnap 6/1 WH	red	1.9 - 2.6	300	1
61919562	Marking rings Pliosnap 6/2 WH	red	1.9 - 2.6	300	1
61919563	Marking rings Pliosnap 6/3 WH	red	1.9 - 2.6	300	1
61919564	Marking rings Pliosnap 6/4 WH	red	1.9 - 2.6	300	1
61919565	Marking rings Pliosnap 6/5 WH	red	1.9 - 2.6	300	1
61919566	Marking rings Pliosnap 6/6 WH	red	1.9 - 2.6	300	1
61919567	Marking rings Pliosnap 6/7 WH	red	1.9 - 2.6	300	1
61919568	Marking rings Pliosnap 6/8 WH	red	1.9 - 2.6	300	1
61919569	Marking rings Pliosnap 6/9 WH	red	1.9 - 2.6	300	1
61919570	Marking rings Pliosnap 6/A WH	red	1.9 - 2.6	300	1
61919571	Marking rings Pliosnap 6/B WH	red	1.9 - 2.6	300	1
61919572	Marking rings Pliosnap 6/C WH	red	1.9 - 2.6	300	1
61919573	Marking rings Pliosnap 6/D WH	red	1.9 - 2.6	300	1
61919574	Marking rings Pliosnap 6/E WH	red	1.9 - 2.6	300	1
61919575	Marking rings Pliosnap 6/F WH	red	1.9 - 2.6	300	1
61919576	Marking rings Pliosnap 6/G WH	red	1.9 - 2.6	300	1
61919577	Marking rings Pliosnap 6/H WH	red	1.9 - 2.6	300	1
61919578	Marking rings Pliosnap 6/I WH	red	1.9 - 2.6	300	1
61919579	Marking rings Pliosnap 6/J WH	red	1.9 - 2.6	300	1
61919580	Marking rings Pliosnap 6/K WH	red	1.9 - 2.6	300	1
61919581	Marking rings Pliosnap 6/L WH	red	1.9 - 2.6	300	1
61919582	Marking rings Pliosnap 6/M WH	red	1.9 - 2.6	300	1
61919583	Marking rings Pliosnap 6/N WH	red	1.9 - 2.6	300	1
61919584	Marking rings Pliosnap 6/O WH	red	1.9 - 2.6	300	1
61919585	Marking rings Pliosnap 6/P WH	red	1.9 - 2.6	300	1
61919586	Marking rings Pliosnap 6/Q WH	red	1.9 - 2.6	300	1
61919587	Marking rings Pliosnap 6/R WH	red	1.9 - 2.6	300	1
61919588	Marking rings Pliosnap 6/S WH	red	1.9 - 2.6	300	1
61919589	Marking rings Pliosnap 6/T WH	red	1.9 - 2.6	300	1
61919590	Marking rings Pliosnap 6 U WH	red	1.9 - 2.6	300	1
61919591	Marking rings Pliosnap 6/V WH	red	1.9 - 2.6	300	1
61919592	Marking rings Pliosnap 6/W WH	red	1.9 - 2.6	300	1
61919593	Marking rings Pliosnap 6/X WH	red	1.9 - 2.6	300	1
61919594	Marking rings Pliosnap 6/Y WH	red	1.9 - 2.6	300	1
61919595	Marking rings Pliosnap 6/Z WH	red	1.9 - 2.6	300	1
61919596	Marking rings Pliosnap 6/+ WH	red	1.9 - 2.6	300	1
61919597	Marking rings Pliosnap 6/- WH	red	1.9 - 2.6	300	1
61919598	Marking rings Pliosnap 6/. WH	red	1.9 - 2.6	300	1

## FLEXIMARK® Single core marking • Basic System Single Core Marking

Article number	Article designation	Colour carrier	Area of application Ø (mm)	Contents (unit)	PU
61919599	Marking rings Pliosnap 6/ : WH	red	1.9 - 2.6	300	1
<b>Pliosnap 9</b>					
61919600	Marking rings Pliosnap 9/0 WH	blue	2.6 - 3.5	300	1
61919601	Marking rings Pliosnap 9/1 WH	blue	2.6 - 3.5	300	1
61919602	Marking rings Pliosnap 9/2 WH	blue	2.6 - 3.5	300	1
61919603	Marking rings Pliosnap 9/3 WH	blue	2.6 - 3.5	300	1
61919604	Marking rings Pliosnap 9/4 WH	blue	2.6 - 3.5	300	1
61919605	Marking rings Pliosnap 9/5 WH	blue	2.6 - 3.5	300	1
61919606	Marking rings Pliosnap 9/6 WH	blue	2.6 - 3.5	300	1
61919607	Marking rings Pliosnap 9/7 WH	blue	2.6 - 3.5	300	1
61919608	Marking rings Pliosnap 9/8 WH	blue	2.6 - 3.5	300	1
61919609	Marking rings Pliosnap 9/9 WH	blue	2.6 - 3.5	300	1
61919610	Marking rings Pliosnap 9/A WH	blue	2.6 - 3.5	300	1
61919611	Marking rings Pliosnap 9/B WH	blue	2.6 - 3.5	300	1
61919612	Marking rings Pliosnap 9/C WH	blue	2.6 - 3.5	300	1
61919613	Marking rings Pliosnap 9/D WH	blue	2.6 - 3.5	300	1
61919614	Marking rings Pliosnap 9/E WH	blue	2.6 - 3.5	300	1
61919615	Marking rings Pliosnap 9/F WH	blue	2.6 - 3.5	300	1
61919616	Marking rings Pliosnap 9/G WH	blue	2.6 - 3.5	300	1
61919617	Marking rings Pliosnap 9/H WH	blue	2.6 - 3.5	300	1
61919618	Marking rings Pliosnap 9/I WH	blue	2.6 - 3.5	300	1
61919619	Marking rings Pliosnap 9/J WH	blue	2.6 - 3.5	300	1
61919620	Marking rings Pliosnap 9/K WH	blue	2.6 - 3.5	300	1
61919621	Marking rings Pliosnap 9/L WH	blue	2.6 - 3.5	300	1
61919622	Marking rings Pliosnap 9/M WH	blue	2.6 - 3.5	300	1
61919623	Marking rings Pliosnap 9/N WH	blue	2.6 - 3.5	300	1
61919624	Marking rings Pliosnap 9/O WH	blue	2.6 - 3.5	300	1
61919625	Marking rings Pliosnap 9/P WH	blue	2.6 - 3.5	300	1
61919626	Marking rings Pliosnap 9/Q WH	blue	2.6 - 3.5	300	1
61919627	Marking rings Pliosnap 9/R WH	blue	2.6 - 3.5	300	1
61919628	Marking rings Pliosnap 9/S WH	blue	2.6 - 3.5	300	1
61919629	Marking rings Pliosnap 9/T WH	blue	2.6 - 3.5	300	1
61919630	Marking rings Pliosnap 9 U WH	blue	2.6 - 3.5	300	1
61919631	Marking rings Pliosnap 9/V WH	blue	2.6 - 3.5	300	1
61919632	Marking rings Pliosnap 9/W WH	blue	2.6 - 3.5	300	1
61919633	Marking rings Pliosnap 9/X WH	blue	2.6 - 3.5	300	1
61919634	Marking rings Pliosnap 9/Y WH	blue	2.6 - 3.5	300	1
61919635	Marking rings Pliosnap 9/Z WH	blue	2.6 - 3.5	300	1
61919636	Marking rings Pliosnap 9/+ WH	blue	2.6 - 3.5	300	1
61919637	Marking rings Pliosnap 9/- WH	blue	2.6 - 3.5	300	1
61919638	Marking rings Pliosnap 9/. WH	blue	2.6 - 3.5	300	1
61919639	Marking rings Pliosnap 9/ : WH	blue	2.6 - 3.5	300	1
<b>Pliosnap 12</b>					
61919640	Marking rings Pliosnap 12/0 WH	yellow	4.5 - 6.0	300	1
61919641	Marking rings Pliosnap 12/1 WH	yellow	4.5 - 6.0	300	1
61919642	Marking rings Pliosnap 12/2 WH	yellow	4.5 - 6.0	300	1
61919643	Marking rings Pliosnap 12/3 WH	yellow	4.5 - 6.0	300	1
61919644	Marking rings Pliosnap 12/4 WH	yellow	4.5 - 6.0	300	1
61919645	Marking rings Pliosnap 12/5 WH	yellow	4.5 - 6.0	300	1
61919646	Marking rings Pliosnap 12/6 WH	yellow	4.5 - 6.0	300	1
61919647	Marking rings Pliosnap 12/7 WH	yellow	4.5 - 6.0	300	1
61919648	Marking rings Pliosnap 12/8 WH	yellow	4.5 - 6.0	300	1
61919649	Marking rings Pliosnap 12/9 WH	yellow	4.5 - 6.0	300	1
61919650	Marking rings Pliosnap 12/A WH	yellow	4.5 - 6.0	300	1
61919651	Marking rings Pliosnap 12/B WH	yellow	4.5 - 6.0	300	1
61919652	Marking rings Pliosnap 12/C WH	yellow	4.5 - 6.0	300	1
61919653	Marking rings Pliosnap 12/D WH	yellow	4.5 - 6.0	300	1
61919654	Marking rings Pliosnap 12/E WH	yellow	4.5 - 6.0	300	1
61919655	Marking rings Pliosnap 12/F WH	yellow	4.5 - 6.0	300	1
61919656	Marking rings Pliosnap 12/G WH	yellow	4.5 - 6.0	300	1
61919657	Marking rings Pliosnap 12/H WH	yellow	4.5 - 6.0	300	1
61919658	Marking rings Pliosnap 12/I WH	yellow	4.5 - 6.0	300	1
61919659	Marking rings Pliosnap 12/J WH	yellow	4.5 - 6.0	300	1
61919660	Marking rings Pliosnap 12/K WH	yellow	4.5 - 6.0	300	1
61919661	Marking rings Pliosnap 12/L WH	yellow	4.5 - 6.0	300	1
61919662	Marking rings Pliosnap 12/M WH	yellow	4.5 - 6.0	300	1
61919663	Marking rings Pliosnap 12/N WH	yellow	4.5 - 6.0	300	1
61919664	Marking rings Pliosnap 12/O WH	yellow	4.5 - 6.0	300	1
61919665	Marking rings Pliosnap 12/P WH	yellow	4.5 - 6.0	300	1
61919666	Marking rings Pliosnap 12/Q WH	yellow	4.5 - 6.0	300	1
61919667	Marking rings Pliosnap 12/R WH	yellow	4.5 - 6.0	300	1
61919668	Marking rings Pliosnap 12/S WH	yellow	4.5 - 6.0	300	1
61919669	Marking rings Pliosnap 12/T WH	yellow	4.5 - 6.0	300	1
61919670	Marking rings Pliosnap 12 U WH	yellow	4.5 - 6.0	300	1
61919671	Marking rings Pliosnap 12/V WH	yellow	4.5 - 6.0	300	1
61919672	Marking rings Pliosnap 12/W WH	yellow	4.5 - 6.0	300	1
61919673	Marking rings Pliosnap 12/X WH	yellow	4.5 - 6.0	300	1
61919674	Marking rings Pliosnap 12/Y WH	yellow	4.5 - 6.0	300	1
61919675	Marking rings Pliosnap 12/Z WH	yellow	4.5 - 6.0	300	1
61919676	Marking rings Pliosnap 12/+ WH	yellow	4.5 - 6.0	300	1
61919677	Marking rings Pliosnap 12/- WH	yellow	4.5 - 6.0	300	1
61919678	Marking rings Pliosnap 12/. WH	yellow	4.5 - 6.0	300	1
61919679	Marking rings Pliosnap 12/ : WH	yellow	4.5 - 6.0	300	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.



FLEXIMARK® LA Labels



Benefits

- Self-adhesive labels made from polyester film for laser printers
- Better grip due to rounded-corners
- Resistant to chemicals, UV-radiation, moisture and some oils
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

Application range

- For component marking e.g. for marking cabinets
- Printing with commercial laser printers
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markingsystem-software.html>)

Product features

- Adhesive needs up to 24 hours to bond

Note

- Insert sheet in manual paper feed compartment
- The use of the cartridges of the printer supplier is recommended
- Optimum printing results from laser printers are achieved with straight sheet feed-in with no deflection over rollers and little heat build-up

**Info**

- LA 16,9-9 YE contained in FLEXIMARK® sample bag (article number M3251010)
- New sizes are available

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**Adhesive** Acrylic-based permanent adhesive

**RAL** **Colour delivered**  
White or yellow  
Also available in silver

**Material**  
Halogen-free polyester  
Thickness: 0.05 mm

**Temperature range**  
-40 °C to +125 °C  
Mounting temperature: min. +10 °C

Article number	Article designation	Colour	Width x height (mm)	Number of markers per PU	Labels per side	PU
<b>FLEXIMARK® LA Labels</b>						
83256198	FLEXIMARK® label LA 7-8 WH	white	7.0 x 8.0	5600	560	1
83256199	FLEXIMARK® label LA 7-8 YE	yellow	7.0 x 8.0	5600	560	1
83256200	FLEXIMARK® label LA 7-8 SR	silver	7.0 x 8.0	5600	560	1
83256228	FLEXIMARK® label LA 11.0x8.0 WH	white	11.0 x 8.0	4200	420	1
83256229	FLEXIMARK® label LA 11.0x8.0 YE	yellow	11.0 x 8.0	3850	385	1
83256230	FLEXIMARK® label LA 11.0x8.0 SR	silver	11.0 x 8.0	6110	611	1
83256231	FLEXIMARK® Label LA 12.0x6.0 WH	white	12.0 x 6.0	6110	611	1
83256233	FLEXIMARK® Label LA 12.0x6.0 SR	silver	12.0 x 6.0	3150	315	1
83256232	FLEXIMARK® Label LA 12.0x6.0 YE	yellow	12.0 x 6.0	6110	611	1
83256203	FLEXIMARK® label LA 15-6 WH	white	15.0 x 6.0	5170	517	1
83256204	FLEXIMARK® label LA 15-6 YE	yellow	15.0 x 6.0	5170	517	1
83256234	FLEXIMARK® label LA 16.0x8.0 YE	yellow	16.0 x 8.0	3150	315	1
83256235	FLEXIMARK® label LA 16.0x8.0 YE	yellow	16.0 x 8.0	3150	315	1
83256236	FLEXIMARK® label LA 16.0x8.0 SR	silver	16.0 x 8.0	740	74	1
83256206	FLEXIMARK® label LA 16.9-7 WH	white	16.9 x 7.0	4000	400	1
83256207	FLEXIMARK® label LA 16.9-7 YE	yellow	16.9 x 7.0	4000	400	1
83256209	FLEXIMARK® Label LA 16.9x9 WH 3100	white	16.9 x 9.0	3100	310	1
83256210	FLEXIMARK® Label LA 16.9-9 YE	yellow	16.9 x 9.0	3100	310	1
83256212	FLEXIMARK® label LA 20-8 WH	white	20.0 x 8.0	2800	280	1
83256213	FLEXIMARK® label LA 20-8 YE	yellow	20.0 x 8.0	2800	280	1
83256215	FLEXIMARK® label LA 25-12 WH	white	25.0 x 12.0	1610	161	1
83256216	FLEXIMARK® label LA 25-12 YE	yellow	25.0 x 12.0	1610	161	1
83256218	FLEXIMARK® label LA 25.6-10 WH	white	25.6 x 10.0	1960	196	1
83256219	FLEXIMARK® label LA 25.6-10 YE	yellow	25.6 x 10.0	1960	196	1
83256221	FLEXIMARK® label LA 46.9-9 WH	white	46.9 x 9.0	1240	124	1
83256222	FLEXIMARK® label LA 46.9-9 YE	yellow	46.9 x 9.0	1240	124	1
83256224	FLEXIMARK® label LA 56-21.8 WH	white	56.0 x 21.8	390	39	1
83256243	FLEXIMARK® label LA 60-30 WH	white	60.0 x 30.0	270	27	1
83256225	FLEXIMARK® label LA 56-21.8 YE	yellow	56.0 x 21.8	390	39	1
83256096	FLEXIMARK® Label LA 30 30.5-12.7 WH	white	30.5 x 12.7	110	110	1
83256240	FLEXIMARK® label LA 30.5x12.7 YE	yellow	30,5 x 12,7	1100	110	1
83256241	FLEXIMARK® Label LA 30 30.5-12.7 YE	yellow	30,5 x 12,7	1100	110	1
83256242	FLEXIMARK® label LA 30.5x12.7 SR	silver	30,5 x 12,7	270	27	1
83256097	FLEXIMARK® Label LA 50 60-30 WH	white	60.0 x 30.0	240	24	1
83256244	FLEXIMARK® label LA 60-30 YE	yellow	60.0 x 30.0	270	27	1
83256245	FLEXIMARK® label LA 60-30 SR	silver	60.0 x 30.0	180	18	1
83256237	FLEXIMARK® label LA 80-7,5 WH	white	80.0 x 7,5	740	74	1
83256238	FLEXIMARK® label LA 80.0x7.5 YE	yellow	80.0 x 7,5	740	74	1
83256239	FLEXIMARK® label LA 80-7,5 SR	silver	80.0 x 7,5	1110	110	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

**Similar products**

- FLEXIMARK® TA Labels Component marking

**Accessories**

- FLEXIMARK® Software 10.0 refer to page 979



## FLEXIMARK® TA foam Component marking



**Info**

- Contained in FLEXIMARK® sample bag (article number M3251010)

### Benefits

- Cost-efficient alternative to traditionally used engraved plastic signs
- Self-adhesive on many surfaces
- Good UV-resistance

### Application range

- For component and cabinet identification, CE marking and logotypes
- Components in switch cabinet construction and push buttons
- Information signs etc.
- Can be printed with the FLEXIMARK® thermal transfer printer as CAB A4+M and EOS4
- Printing with FLEXIMARK® Software (Download: <http://www.lappkabel.com/service/downloadcenter/markingsystem/markings-software.html>)

### Product features

- Recommended ribbon: FTI-Y 60-360 BK (article no. 83260201)

### Product Make-up

- Delivered as a roll of labels

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**Dimensions**  
Core-Ø: 76 mm

**On request**  
Other sizes are available upon request

**Adhesive**  
Acrylic-based permanent adhesive

**Colour delivered**  
White and silver

**Material**  
Polyester foam

**Temperature range**  
-40 °C to +90 °C

Article number	Article designation	Colour	Width x length (mm)	Contents (unit)	PU
<b>Rectangular shape</b>					
83260164	FLEXIMARK® TA foam 27-8 WH	white	8.0 x 27.0	1000	1
83260165	FLEXIMARK® TA foam 27-12.5 WH	white	12.5 x 27.0	1000	1
83260166	FLEXIMARK® TA foam 27-12.5 SR	silver	12.5 x 27.0	1000	1
83260167	FLEXIMARK® TA foam 27-15 SR	silver	15.0 x 27.0	1000	1
83260168	FLEXIMARK® TA foam 27-18 SR	silver	18.0 x 27.0	1000	1
83260169	FLEXIMARK® TA foam 27-18 WH	white	18.0 x 27.0	1000	1
83260170	FLEXIMARK® TA foam 30-40 SR	silver	40.0 x 30.0	1000	1
83260171	FLEXIMARK® TA foam 35-15 SR	silver	15.0 x 35.0	1000	1
83260172	FLEXIMARK® TA foam 35-18 SR	silver	18.0 x 35.0	1000	1
83260173	FLEXIMARK® TA foam 45-15 SR	silver	15.0 x 45.0	1000	1
83260174	FLEXIMARK® TA foam 45-15 WH	white	15.0 x 45.0	1000	1
83260175	FLEXIMARK® TA foam 48-19 WH	white	19.0 x 48.0	750	1
83260176	FLEXIMARK® TA foam 50-15 SR	silver	15.0 x 50.0	750	1
83260177	FLEXIMARK® TA foam 50-25 SR	silver	25.0 x 50.0	750	1
83260178	FLEXIMARK® TA foam 60-30 WH	white	30.0 x 60.0	500	1
83260179	FLEXIMARK® TA foam 60-30 SR	silver	30.0 x 60.0	500	1
83260180	FLEXIMARK® TA foam 70-18 SR	silver	18.0 x 70.0	500	1
83260181	FLEXIMARK® TA foam 90-30 WH	white	30.0 x 90.0	250	1
83260182	FLEXIMARK® TA foam 90-30 SR	silver	30.0 x 90.0	250	1
83260183	FLEXIMARK® TA foam 90-45 SR	silver	45.0 x 90.0	250	1
83260184	FLEXIMARK® TA foam 90-45 WH	white	45.0 x 90.0	250	1
83260185	FLEXIMARK® TA foam 100-30 SR	silver	30.0 x 100.0	250	1
83260186	FLEXIMARK® TA foam 100-50 SR	silver	50.0 x 100.0	250	1
83260187	FLEXIMARK® TA foam 100-50 WH	white	50.0 x 100.0	250	1
83260188	FLEXIMARK® TA foam 105-140 SR	silver	140.0 x 105.0	500	1
<b>Rectangular shape with a round cut-out for the marking of push buttons</b>					
83260189	FLEXIMARK® TA foam 40-30 Ø 24mm SR	silver	30.0 x 40.0	1000	1
83260190	FLEXIMARK® TA foam 40-30 Ø 24mm WH	white	30.0 x 40.0	1000	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® TA Labels Component marking

### Accessories

- FLEXIMARK® Software 10.0 refer to page 979
- FLEXIMARK® Thermoprint A4+M and EOS4\* refer to page 980

ÖLFLEX® UNITRONIC® ETHERLINE® HITRONIC® EPIC® SKINTOP® SILVYN® FLEXIMARK® ACCESSORIES APPENDIX

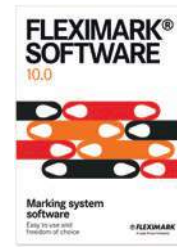
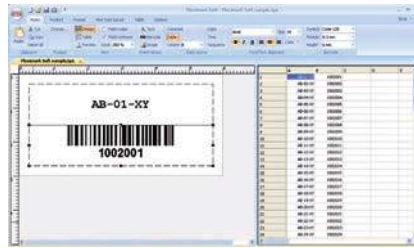


## FLEXIMARK® Software 10.0



### Info

- Free trial version available on LappKabel homepage
- Technical support in English free of charge (Phone: +46 155 777 64, E-Mail: support@fleximark.se)



### Benefits

- For ease of use, the interface has been designed to be familiar to users of Microsoft® Office applications
- Enables printing of barcodes, logos and other pictures, serial codes and import of excel files
- Online update service for new labels via Internet
- Image library including symbols used in electrical engineering
- Integrated product catalogue for all labels and markers

### Application range

- Marking software that enables you to print all kinds of FLEXIMARK® labels easily and quickly

### Product features

- System requirements:
  - 20 MB free hard disk space
  - Printer and driver for Microsoft® Windows 2000 or higher
- Suitable for Windows 7
- Printer: laser, thermal transfer
- Available languages: German, English, Swedish and French
- Available barcodes: EAN-8, EAN-13, EAN-128, Code-128, Code-39, interleaved 2/5, UPC-A

### Note

- The full version is available for download free of charge, with a trial period of 30 days
- Light version is available for download free-of-charge
- Download [www.lappkabel.com](http://www.lappkabel.com) : Service - Downloadcenter -Marking system FLEXIMARK®- Suitable Marking software
- Technical support in English free of charge (Phone: +46 155 777 64, E-Mail: support@fleximark.se)

### Included

- CD-ROM
- Operating manual and help function in the program

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

Article number	Article designation	Language	PU
<b>FLEXIMARK® Software 10.0</b>			
83251080	FLEXIMARK® Software 10.0	DE / EN / SE / FR	1

Photographs are not to scale and do not represent detailed images of the respective products.





## FLEXIMARK® Thermoprint A4+M and EOS4\*



### Info

- FLEXIMARK® EOS4 ensures excellent print quality for a fair price
- Technical support in English free of charge (Phone: +46 155 777 64, E-Mail: support@fleximark.se)

### Benefits

- High print speed (up to 125 mm/sec)
- High print resolution: 300 dpi
- Easy integration into existing IT environments
- Simple communication with FLEXIMARK® marking software 10.0
- Basic maintenance such as cleaning the label sensor, changing the print head or print roller, can be easily done by yourself

### Application range

- Printing on a variety of different materials (among others FLEXIMARK® shrink tube, cablelabel PUR and TA foam component marking)
- The thermal transfer printing method increases the smudge and scratch resistance of the printed surface, and provides increased resistance to oils and chemicals as well

### Note

- Technical support in English free of charge (Phone: +46 155 777 64, E-Mail: support@fleximark.se)
- A 4+M recommended for flat shrink tube as cutter can also be used for perforations
- Other thermal transfer printing systems are available upon request

### Included

- FLEXIMARK® Thermoprint A4+M/300 or EOS4 with operation manual and service manual on CD-ROM
- Marking software FLEXIMARK® Software 10.0
- Windows® driver
- FLEXIMARK® Ribbon R71 55/360 resin BK (article number 83259604)
- Power supply USB cable (length 1.8 m)

### Technical data



ETIM 5.0 Class-ID: EC000610  
ETIM 5.0 Class-Description:  
Label maker



**Dimensions**  
FLEXIMARK® Thermal printer A4+M:  
274x242x446 mm (HxBxT)  
FLEXIMARK® thermoprint EOS4:  
245x264x412mm (HxWxD)

#### Label rolls

Material thickness: 0,055-1,2 mm (A4+M), 0,055-0,7 mm (EOS4)  
Carrier width: 10-120 mm (A4+M), 10-116 mm (EOS4)  
Max. core diameter Ø: 38.0 - 100.0 mm (A4+M), 38-76 mm (EOS4)

#### Ribbons

Ribbon length: up to 500 m (A4+M) or 360m (EOS4)

#### Speed

Up to 125.00 mm/s



#### Weight

FLEXIMARK® Thermoprint A4+M:  
9.0 kg  
FLEXIMARK® Thermoprint EOS4: 5 kg



#### Material

Labels or continuous material on coils

Article number	Article designation	Colour	PU
<b>Printer</b>			
83259598	FLEXIMARK® Thermoprint EOS4/300		1
83259602	FLEXIMARK® Thermoprint A4+M/300		1
<b>Perforation-cutter and cutter for labels</b>			
83259584	FLEXIMARK® Cutter EOS4	metallic	1
83259603	FLEXIMARK® Perforation cutter A4+M	metallic	1

\* Trade product, no Lapp product

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Heat shrinkable tubing refer to page 954
- FLEXIMARK® Flexilabel TFL
- FLEXIMARK® Wrapping labels TCK refer to page 955
- FLEXIMARK® Software 10.0 refer to page 979
- FLEXIMARK® Ribbons Transfer Printer A4+M/300 and EOS4\* refer to page 981
- FLEXIMARK® Flexiprint TF refer to page 965
- FLEXIMARK® TA Labels Component marking



## FLEXIMARK® Ribbons Transfer Printer A4+M/300 and EOS4\*

### Benefits

- Suitable for each label width and surface. Resistant to scratching and abrasion (also in colour) - available in various qualities
- Use the right ribbon for the particular application
- With the cutter for FLEXIMARK® thermal printer EOS 4 diverse labels and shrink tubes can be cut
- The perforation cutter for the thermal printer FLEXIMARK® A4+M cuts as well as perforates holes

### Technical data



ETIM 5.0 Class-ID: EC000610  
ETIM 5.0 Class-Description:  
Label maker



### Application range

- Resin ribbons R 71: Solely for plastic labels with smooth and shiny surface
- FTI-Y: Excellent printing results on PUR cablelabels, TA foam labels and halogen-free shrink tube (not recommended for diesel-resistant shrink tube and TA labels)
- FTI-X: Particular recommended for shrink tubes, also for diesel resistant shrink tubes

### Note

- Other versions are available upon request

Article number	Article designation	Colour	Width (mm) x length (m)	Material	PU
<b>Ribbons</b>					
83259604	Ribbon R71 55-360 resin BK	black	55.0 x 360.0	resin	1
83259609	Ribbon R71 110-360 resin BK	black	110.0 x 360.0	resin	1
83260201	Ribbon FTI-Y 60-360 BK	black	60.0 x 300.0	wax	1
83260200	Ribbon FTI-Y 110-360 BK	black	110.0 x 360.0	wax	1
83260206	Ribbon FTI-X 60-300 BK	black	60.0 x 300.0	wax	1
83260205	Ribbon FTI-X 100-300 BK	black	100.0 x 300.0	wax	1
83260262	Ribbon Y501P 30-450 WH	white	30.0 x 450.0	wax	1
83260260	Ribbon FTI-X 55-300 WH	white	55.0 x 300.0	wax	1
83260261	Ribbon FTI-X 110-300 WH	white	110.0 x 300.0	wax	1

\* Trade product, no Lapp product

Other colours, sizes and materials are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Thermoprint A4+M and EOS4\* refer to page 980



## FLEXIMARK® Character holders PTE



### Benefits

- Ensure high flexibility:
  - Character holders can be cut to the desired length
  - Suitable for FLEXIMARK® Flexilabels LFL, MINI character strips as well as for DYMO® industry tapes
- Additional protection against UV- radiation and diverse chemicals

### Application range

- For cable/conduit marking
- Suitable for holding text and character strips, printable LFL labels, and e.g. DYMO or Brother label strips
- Assembly with 2.6 mm cable ties or fasten with screws and rivets when using end caps

### Product features

- LABS-free

### Included

- Delivery in a plastic bag or in a box (see picture): Character holders in plastic bag are already pre-cut to a particular size

### Suitable tools

- FLEXIMARK® Pliers FL52ERA for character holders refer to page 988
- FLEXIMARK® Pliers FL52A for character holders refer to page 988

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Material</b> Halogen-free polyethylene
	<b>Temperature range</b> -75°C up to +80°C

Article number	Article designation	Length (mm)	Max. height of holder (mm)	Contents (unit)	PU
<b>FLEXIMARK® Character holders PTE</b>					
83253012	FLEXIMARK® PTE 6-1000 mm TR (Plastic bag)	1,000	6	10	1
83259950	FLEXIMARK® PTE 6-10 m TR (Box)	10,000	6	1	1
83252081	FLEXIMARK® PTE 9,5-285 mm TR (Plastic bag)	285	9.5	10	1
83252084	FLEXIMARK® PTE 9,5-1000 mm TR (Plastic bag)	1,000	9.5	10	1
83259951	FLEXIMARK® PTE 9.5-10 m TR (Box)	10,000	9.5	1	1
83252028	FLEXIMARK® PTE 12-285 mm TR (Plastic bag)	285	12	10	1
83252027	FLEXIMARK® PTE 12-1000 mm TR (Plastic bag)	1,000	12	10	1
83259952	FLEXIMARK® PTE 12-10 m TR (Box)	10,000	12	1	1
83251060	FLEXIMARK® PTE 19-285 mm TR (Plastic bag)	285	19	10	1
83259953	FLEXIMARK® PTE 19-5 m TR (Box)	5,000	19	1	1
83251061	FLEXIMARK® PTE 19-1000 mm TR (Plastic bag)	1,000	19	10	1
83259954	FLEXIMARK® PTE 25-5 m TR (Box)	5,000	25	1	1
<b>Accessories for PTE character holder 9,5 mm</b>					
83252005	FLEXIMARK® Lock Button Mini FLKA 5206 YE			500	1
83252020	FLEXIMARK® End clap Mini FLG 5242 YE			100	1

Photographs are not to scale and do not represent detailed images of the respective products. FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Similar products

- FLEXIMARK® PTEF/ CAB refer to page 983

### Accessories

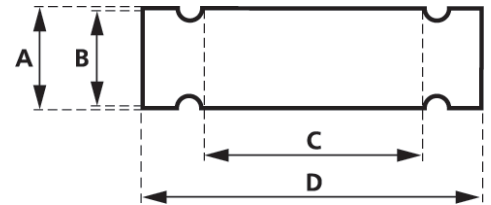
- FLEXIMARK® Pliers FL52ERA for character holders refer to page 988
- Basic Tie cable tie refer to page 1057
- DYMO® ID1 - Industry tape D1 refer to page 991
- FLEXIMARK® Pliers FL52A for character holders refer to page 988



**FLEXIMARK® PTEF/ CAB**

**Info**

- PTEF 9,5-35 contained in FLEXIMARK® sample bag (article number M3251010)



**Benefits**

- PC labels LFL are adapted to be pushed into different sizes of character-holder
- Cost-saving, as you save the time for cutting
- Additional protection against UV- radiation and diverse chemicals

**Application range**

- For cable/conduit marking
- Suitable for holding text and character strips, printable LFL labels, and e.g. DYMO or Brother label strips
- Assembly with 2.6 mm cable ties or fasten with screws and rivets when using end caps

**Product features**

- LABS-free

**Included**

- PTEF without cable ties  
CAB: with cable ties (135x2,6 mm)

**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

**Material**  
Halogen-free polyethylene

**Temperature range**  
-75°C up to +80°C

Article number	Article designation	A (mm)	B (mm)	C (mm)	D (mm)	Contents (unit)	PU
<b>PTEF character-holder - without cable tie</b>							
83254974	FLEXIMARK® PTEF 6-35 TR	8.7	6	35	47.0	50	1
83254960	FLEXIMARK® PTEF 9.5-18 TR	12.2	9.5	18	30.0	50	1
83254961	FLEXIMARK® PTEF 9.5-28 TR	12.2	9.5	28	40.0	50	1
83254963	FLEXIMARK® PTEF 9.5-35 TR	12.2	9.5	35	47.0	50	1
83254964	FLEXIMARK® PTEF 9.5-58 TR	12.2	9.5	58	70.0	50	1
83254965	FLEXIMARK® PTEF 9.5-70 TR	12.2	9.5	70	82.0	50	1
83280006	FLEXIMARK® PTEF 12-18 TR	14.8	12	18	30.0	50	1
83254976	FLEXIMARK® PTEF 12-28 TR	14.8	12	28	40.0	50	1
83254977	FLEXIMARK® PTEF 12-38 TR	14.8	12	38	50.0	50	1
83254978	FLEXIMARK® PTEF 12-58 TR	14.8	12	58	70.0	50	1
83254982	FLEXIMARK® PTEF 19-50 TR	21.7	19	50	62.0	50	1
<b>CAB character-holder - with cable tie</b>							
83259091	FLEXIMARK® CAB 6-35 TR	8.7	6	35	47.0	50	1
83259087	FLEXIMARK® CAB 9.5-18 TR	12.2	9.5	18	30.0	50	1
83259084	FLEXIMARK® CAB 9.5-28 TR	12.2	9.5	28	40.0	50	1
83259088	FLEXIMARK® CAB 9.5-35 TR	12.2	9.5	35	47.0	50	1
83259086	FLEXIMARK® CAB 9.5-58 TR	12.2	9.5	58	70.0	50	1
83259078	FLEXIMARK® CAB 12-18 TR	14.8	12	18	30.0	50	1
83259079	FLEXIMARK® CAB 12-28 TR	14.8	12	28	40.0	50	1
83259080	FLEXIMARK® CAB 12-38 TR	14.8	12	38	50.0	50	1
83259081	FLEXIMARK® CAB 12-58 TR	14.8	12	58	70.0	50	1
83259070	FLEXIMARK® CAB 19-50 TR	21.7	19	50	62.0	50	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

**Accessories**

- Basic Tie cable tie refer to page 1057
- Detectable Cable ties refer to page 1059
- DYMO® ID1 - Industry tape D1 refer to page 991
- TY - FAST® cable ties refer to page 1058



## FLEXIMARK® Character holders PGS



### Info

- PGS 10-285 BK contained in FLEXIMARK® sample bag (article number M3251010)

### Benefits

- Easy to label
- Flexible
- Self-adhesive on many surfaces
- Transparent cover MT ensures an additional protection of the label or the character strips
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A 15)

### Application range

- For marking component groups in the manufacturing of control cabinets
- Suitable for FLEXIMARK® Flexilabels LFL, MINI character strips as well as for DYMO® industry tapes
- Fastening: bonding, or at temperatures > +45°C with screws or rivets

### Product features

- Extremely flame-retardant according to UL 94 V0

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Colour delivered</b> Black, white, grey
	<b>Material</b> ABS plastic
	<b>Temperature range</b> -20 °C to +45 °C

Article number	Article designation	Colour	Length x height (mm)	Contents (unit)	PU
<b>FLEXIMARK® Character holders PGS</b>					
83252010	FLEXIMARK® PGS 10-285 WH	white	285.0 x 10.0	10	1
83250002	FLEXIMARK® PGS 10-285 BK	black	285.0 x 10.0	10	1
83252011	FLEXIMARK® PGS 10-1000 WH	white	1,000.0 x 10.0	10	1
83250003	FLEXIMARK® PGS 10-1000 BK	black	1,000.0 x 10.0	10	1
83252014	FLEXIMARK® PGS 10-1000 GY	grey	1,000.0 x 10.0	10	1
<b>Transparent cover/label protection</b>					
83250043	FLEXIMARK® Label cover 10-100 PGS 10	transparent	1,000.0 x 10.0	10	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Pliers FL52ERA for character holders refer to page 988
- DYMO® ID1 - Industry tape D1 refer to page 991



## FLEXIMARK® Collar Snap-on



### Info

- Snap-On 2-3,5/15 contained in FLEXIMARK® sample bag (article number M3251010)



### Benefits

- Efficient way of marking cables that are already installed
- Enhanced scratch-protection
- Resistant and flexible protection
- Halogen-free and flame-retardant
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

### Application range

- For Single core marking
- Marking of optical fibre cables
- Marking of UNITRONIC® Fieldbus sensor-/actuator wiring
- Marking after assembly

### Product features

- Extremely flame-retardant according to UL 94 V0

### Note

- Suitable marking collar for LMB labels

### Included

- Marking collars without labels

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Colour delivered</b> transparent
	<b>Material</b> Halogen-free polyethylene
	<b>Temperature range</b> -40°C to +80°C

Article number	Article designation	Length (mm)	For cable Ø (mm)	Contents (unit)	PU
<b>FLEXIMARK® Collar Snap-on</b>					
83252650	FLEXIMARK® collar SnapOn 2-3.5/10 TR	10	2.0 - 3.5	1000	1
83252651	FLEXIMARK® collar SnapOn 2-3.5/15 TR	15	2.0 - 3.5	1000	1
83252695	FLEXIMARK® collar SnapOn 2-3.5/23 TR	23	2.0 - 3.5	500	1
83252653	FLEXIMARK® collar SnapOn 2.8-5/10 TR	10	2.8 - 5.0	1000	1
83252654	FLEXIMARK® collar SnapOn 2.8-5/15 TR	15	2.5 - 5.0	1000	1
83252656	FLEXIMARK® collar SnapOn 5-8/10 TR	10	5.0 - 8.0	500	1
83252657	FLEXIMARK® collar SnapOn 5-8/15 TR	15	5.0 - 8.0	500	1
83252660	FLEXIMARK® collar SnapOn 8-10/15 TR	15	8.0 - 10.0	500	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Label LMB refer to page 951
- FLEXIMARK® Label LMB 30-4,7 YEWH



## FLEXIMARK® Collar closed



### Benefits

- Enhanced scratch-protection
- Durable grip
- Version made of PUR is halogen-free and flame-retardant
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A 15)

### Application range

- For Single core marking
- Marking of UNITRONIC® Fieldbus sensor-/actuator wiring
- Marking before assembly

### Product features

- Extremely flame-retardant according to UL 94 V0

### Note

- Suitable marking collar for LMB labels

### Included

- Marking collars without labels

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material



**On request**  
Further collars available on request



**Colour delivered**  
transparent



**Material**  
Halogen-free polyurethane or PVC  
(not halogen-free)



**Temperature range**  
-50°C to +80°C

Article number	Article designation	Length (mm)	For cable Ø (mm)	Contents (unit)	PU
<b>Halogen-free</b>					
83252670	FLEXIMARK® collar halogen-free 1.4-5/10 TR	10	1.4 - 5.0	1000	1
83252671	FLEXIMARK® collar halogen-free 1.4-5/15 TR	15	1.4 - 5.0	1000	1
83252693	FLEXIMARK® collar halogenfree 1,4-5/23 TR	23	1.4 - 5.0	500	1
83252672	FLEXIMARK® collar halogen-free 1.4-5/30 TR	30	1.4 - 5.0	500	1
83252673	FLEXIMARK collar halogen-free 5-11/10 TR	10	11.0 - 5.0	500	1
83252674	FLEXIMARK® collar halogen-free 5-11/15 TR	15	11.0 - 5.0	500	1
83252694	FLEXIMARK® collar halogen-free 5-11/23 TR	23	11.0 - 5.0	200	1
83252675	FLEXIMARK® collar halogen-free 5-11/30 TR	30	11.0 - 5.0	200	1
<b>Not halogen-free</b>					
83252887	FLEXIMARK® collar 1-2/30 TR	30	2.0 - 1.0	500	1
83252889	FLEXIMARK® collar 2-3/30 TR	30	3.0 - 2.0	500	1
83252642	FLEXIMARK® marking collar 2-4/15 TR	15	4.0 - 2.0	1000	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Label LMB refer to page 951



## FLEXIMARK® Collar for cable tie



### Benefits

- Enhanced scratch-protection
- Continuous usage due to the assembly with cable ties
- Resistant and flexible protection
- Diverse criteria as ageing resistance and chemical resistance are tested by the independent SP Technical Research Institute of Sweden according to SP 2171 Test Method (see selection table A15)

### Application range

- For cable marking (suitable for large cross-sections)
- Marking of UNITRONIC® Fieldbus sensor-/actuator wiring
- Marking before assembly

### Product features

- Extremely flame-retardant according to UL 94 V0

### Note

- Suitable marking collar for LMB labels

### Included

- Marking collars without labels

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC001288 <b>ETIM 5.0 Class-Description:</b> Labelling material
	<b>Dimensions</b> Height sleeve: 3 mm Width sleeve: 5 mm Total width cable tie area: 20 mm
	<b>On request</b> Further collars available on request
	<b>Info</b> Dimensions: 9,3 x 20 mm
	<b>Colour delivered</b> transparent
	<b>Material</b> Halogen-free polyurethane
	<b>Temperature range</b> -50°C to +80°C

Article number	Article designation	Length (mm)	Contents (unit)	PU
<b>FLEXIMARK® Collar for cable tie</b>				
83252676	FLEXIMARK® collar for cable ties	30	200	1

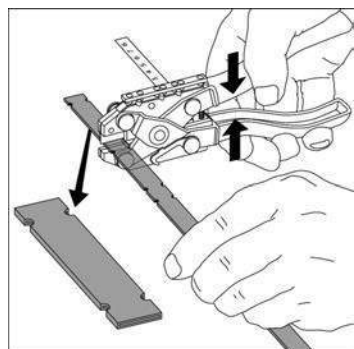
Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- Basic Tie cable tie refer to page 1057
- Detectable Cable ties refer to page 1059
- TY - FAST® cable ties refer to page 1058
- FLEXIMARK® Label LMB refer to page 951



## FLEXIMARK® Pliers FL52ERA for character holders



### Benefits

- Creating a centred hole
- New puncher creates accurate hole-punching on cable ties
- Can also be used as a knife for shortening character holders
- Lightweight model suitable for all hand sizes


### Application range

- Special hole pliers for character-holders PTE and PGS with 6-12 mm width

### Note

- Further spare parts are available
- Single parts (cutting and punching device) can be exchanged
- For characters with 19 mm width please use the tool FL 52 A (article no. 83250024)

### Technical data

 ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

Article number	Article designation	Character holder	Contents (unit)
<b>FLEXIMARK® Pliers FL52ERA for character holders</b>			
83252047	FLEXIMARK® Plier FL52ERA	6 / 9.5 / 12	1

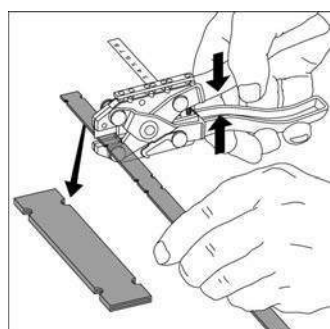
Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Marking Kit MINI refer to page 960

## FLEXIMARK® Pliers FL52A for character holders



### Application range

- Special hole pliers for character-holders PTE and PGS with 6-12 mm width
- Can also be used as a knife for shortening character holders
- Cuts and punches MINI standard PTE character holders (6 to 25)

### Product features

- The pliers can hold 6-25 mm character holders


### Note

- Single parts (cutting and punching device) can be exchanged
- Further spare parts are available

### Product Make-up

- Lightweight model suitable for all hand sizes
- Pocket-size

### Technical data

 ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description: Labelling material

Article number	Article designation	Suitable for:	Contents (unit)
<b>FLEXIMARK® Pliers FL52A for character holders</b>			
83252024	FLEXIMARK® Plier FL52A	MINI	1

Photographs are not to scale and do not represent detailed images of the respective products.

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

### Accessories

- FLEXIMARK® Marking Kit MINI refer to page 960



## KMK Label holders



### Benefits

- Printed insert strips are placed inside the label-holder and enclosed by a dust-proof cap

### Application range

- Suitable for both marking and bundling several conductors and cables in indoor areas
- For bundle diameters from 10 to 31 mm

### Product features

- Labelling options: by hand, typewriter, or laser/ink-jet printer

### Norm references / Approvals

- Smudge-proof: DIN 30646:1993-11, DIN VDE 0611-1:1977-11

### Product Make-up

- Strap width of KMK: 5 mm
- Bundling area of KMK: 10-25 mm
- Strap width of KMK3: 10 mm
- Bundling area of KMK3: 16-31 mm
- Fastening loops KMK2/KMK4: 5 mm

### Included

- Please order labels separately
- Labels: 10 sheets with 150 (61742922) or 50 labels (61742926)

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>Colour delivered</b> transparent
	<b>Material</b> Label-holder: PE, halogen-free Labels: cardboard, DIN A4 perforated, silicon free and halogen-free
	<b>Temperature range</b> -40°C to +80°C

Article number	Article designation	Width x height (mm)	Equipment per piece	Suitable for:	Contents (unit)
<b>KMK Label holders</b>					
61742820	KMK 1 label-holder	29.0 x 8.0	with strap	ES/LP-BW-GB	100
61742822	KMK 2 label-holder	29.0 x 8.0	without strap	ES/LP-BW-GB	100
61742824	KMK 3 label-holder	40.0 x 17.0	with strap	ES/KMK 3 GB	50
61742826	KMK 4 label-holder	40.0 x 17.0	without strap	ES/KMK 3 GB	50
61742922	ES/LP-BW-GB labels	29.0 x 8.0	1500 labels	KMK 1, KMK 2	10
61742926	ES/KMK 3 GB labels	40.0 x 17.0	500 labels	KMK 3, KMK 4	10

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.



## ETB Label holders

### Benefits

- Suitable for binding and bundling
- The marking sign can be opened and closed easily for replacement of the label
- Good UV-resistance

### Application range

- Marking cables, tubes, items, or as advertising media, baggage labels and any other kind of labelling

### Product features

- The label is folded in a way that can be reduced to a quarter of its size, matching the visible part of the printing field in the label holder

### Technical data

	ETIM 5.0 Class-ID: EC001288 ETIM 5.0 Class-Description: Labelling material
	<b>General</b> Available characters: A-Z, 0-9
	<b>Material</b> Polypropylene (PP)
	<b>Temperature range</b> -30°C to +110°C

### Product Make-up

- Perforated sheets, approx. DIN A5 (colour: white)
- Cable tie dimensions: 200 x 5 mm

### Included

- 61742810: including marking labels (2 sheets with 14 labels each)



Article number	Article designation	Width x height (mm)	Labels per side	Contents (unit)
<b>ETB Label holders</b>				
61742810	ETB holder, transparent	60.0 x 33.0	10	50
61742900	ETB labels	52.0 x 17.5	14	1

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.



## DYMO® Industry Rhino Pro 4200



### Benefits

- Compact, easy to use, time-saving label printer for on-the-go pros
- Marking kit consists of all elements you need for marking cables on site

### Application range

- Labelling of cables and wires
- Labelling of terminal blocks
- Labelling of modules and components
- Labelling of patch panels and protective sockets

### Product features

- Familiar computer-style QWERTZ keyboard for fast and easy text entry
- Large back-lit display is easy to read, even in dimly-lit work areas
- Prints 6mm (1/4"), 9mm (3/8"), 12mm (1/2") and 19mm (3/4") wide industrial strength labels in a variety of materials and colours plus print directly on heat-shrink tubes
- "Favourites" key provides single-key access to your most commonly used labels, symbols and terms
- Integrated rubber bumpers help prevent damage from accidental drops and falls

### Note

- Supply cord is not included in the scope of delivery and can be ordered with article no. 61800150

### Product Make-up

- **FLEXIMARK Kit DYMO® RHINO PL 150**  
-Ready packed set in hard case-

#### Content:

- 1x label printer DYMO® Rhino PL 150
- 1x vinyl labels 9mm (or 12mm) in yellow and white
- 1x special hole pliers FL52-ERA
- 1x character holders PTE 9,5-1000

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material



#### Colour delivered

black, yellow and white



#### Material

The thermal transfer printing technology ensures the labels are highly durable and resistant  
Li-Ion storage battery

Article number	Article designation	Contents (unit)
<b>DYMO® Rhino Pro 4200</b>		
61800337	DYMO RHINO PRO 4200	1
<b>FLEXIMARK® Kit PL 150</b>		
83257103	FLEXIMARK® Kit PL 150 9 mm	1
83257104	FLEXIMARK® Kit PL 150 12mm	1

DYMO® is a registered trademark of Sanford GmbH, a Newell Rubbermaid Company  
In the FLEXIMARK® DYMO® Set DYMO PL 150 is included (same functions as DYMO® 4200, just another branding)  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Portable labeler PL 300 and 200

### Accessories

- DYMO® ID1 - Industry tape D1 refer to page 991



## DYMO® ID1 - Industry tape D1



### Benefits

- Highly resistant to wear and tear, fluctuating temperatures, chemicals, solvents, water and UV-light

### Application range

- Label or shrink tube tapes for following DYMO®series 4200/PL 150, 200 und 300

### Product Make-up

- Permanent polyester tape: Ideal for heavily-textured and powder-coated surfaces where extremely good adhesion and a long service life are required; for identification of junction boxes, buttons and patch panels.
- Coloured vinyl strips: The permanent adhesive connection; a flexible coloured vinyl; and a tape that is resistant to UV, oil, scratches and solvents; provide the ideal solution for every type of labelling. For indoor and outdoor applications. Ideal for warning and safety markings and for cable labelling.


### Shrink tube tape:


For single core and cable labelling. The combination of shrinking tube and special coloured tape gives a smudge-proof and scratch-proof lettering which is resistant to solvents, oils and UV light.

### Non-adhesive insert label:

Ideal as an insert for label-holders (e.g. PTEF/ CAB), attached to the cable by a cable tie. Material: polypropylene

### Technical data

 ETIM 5.0 Class-ID: EC000608  
ETIM 5.0 Class-Description: Labelling tape

 **Temperature range**  
-18°C bis +90°C

Article number	Article designation	Colour of lettering / tape	Width W (mm)	Length (m)	For cable Ø (mm)	Contents (unit)
<b>Transparent polyester labels</b>						
61800285	RP/ID1 9mm POLYESTER SW/ TRANSP	black-transparent	9	5.5		1
<b>Flexible VINYL labels</b>						
61800274	RP/ID1 9mm VINYL SW/WS	black-white	9	5.5		1
61800275	RP/ID1 12mm VINYL SW/GELB	black-yellow	12	5.5		1
61800276	RP/ID1 12mm VINYL SW/ORANGE	black-orange	12	5.5		1
61800277	RP/ID1 12mm VINYL SW/ROT	black-red	12	5.5		1
61800278	RP/ID1 12mm VINYL SW/GRÜN	black-green	12	5.5		1
61800279	RP/ID1 12mm VINYL SW/WS	black-white	12	5.5		1
61800280	RP/ID1 19mm VINYL SW/GELB	black-yellow	19	5.5		1
61800281	RP/ID1 19mm VINYL SW/ORANGE	black-orange	19	5.5		1
61800282	RP/ID1 19mm VINYL SW/ROT	black-red	19	5.5		1
61800283	RP/ID1 19mm VINYL SW/GRÜN	black-green	19	5.5		1
61800284	RP/ID1 19mm VINYL SW/WS	black-white	19	5.5		1
<b>Shrink tube tape</b>						
61800290	RP/ID1 Shrink 1-6-1400	black-white	6	1.5	1.18 - 2.33	1
61800291	RP/ID1 Shrink 1-9-1400	black-white	9	1.5	1.73 - 3.73	1
61800295	RP/ID1 Shrink 1-9-1400YL	black-yellow	9	1.5	1.73 - 3.73	1
61800292	RP/ID1 Shrink 1-12-1400	black-white	12	1.5	2.97 - 5.13	1
61800296	RP/ID1 Shrink 1-12-1400YL	black-yellow	12	1.5	2.97 - 5.13	1
61800293	RP/ID1 Shrink 1-19-1400	black-white	19	1.5	4.64 - 8.70	1
61800297	RP/ID1 Shrink 1-19-1400YL	black-yellow	19	1.5	4.64 - 8.70	1
<b>Non-adhesive inserts</b>						
61800340	RP/ID1 insertion plate 1-6-1600	black-white	6	5.5		1
61800344	RP/ID1 insertion plate 1-12-1600	black-white	12	5.5		1

DYMO® is a registered trademark of Sanford GmbH, a Newell Rubbermaid Company  
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- TY - FAST® cable ties refer to page 1058
- DYMO® Industry Rhino Pro 4200 refer to page 990



### M1011 Manual embossing machine



#### Benefits

- Tough cast-metal labeler
- Imprints 12 mm wide metal tapes that withstand chemicals, extreme weather conditions, very high and low temperatures, salty water and abrasion
- Features a front scissor cut-off and a built-in hole-punching device that makes a hole for hanging and tacking
- Quick, simple and permanent marking on site

#### Application range

- Cable and component marking system
- For outdoor applications

#### Note

- The M 1011 embossing machine could be only used with the suitable embossing tape which you find below in the table.
- Number 1 is not included on the embossing wheel- please use the character "l" instead
- Spare parts could be requested dialing following hotline: +4969 9999 15354

#### Included

- M 1011: embossing machine, embossing wheels, aluminium tape without adhesive, steel tape without adhesive, softcase

#### Technical data

	ETIM 5.0 Class-ID: EC000610 ETIM 5.0 Class-Description: Label maker
	<b>General</b> Lettering height: 4.7 mm
	<b>Note</b> Punching hole diameter: 2 mm Available characters: A-Z, 0-9
	<b>Material</b> Stainless steel: 14.301 (EN Standard), SAE Grade 304 Thickness of the tapes: 0,12 mm

Article number	Article designation	Lettering height (mm)	Width W (mm)	Length (m)	Contents (unit)
<b>Embossing machine in a case</b>					
61742670	M 1011 embosser	4.7			1
<b>Suitable embossing tapes</b>					
61742710	Aluminium embossing tape without adhesive coating		12	4.8	1
61742720	Aluminium embossing tape with adhesive layer		12	3.65	1
61742700	Stainless steel embossing tape		12	6.4	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Warranty period is 1 year but could be elongated with the registration of your product on the DYMO® homepage  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### SP Metal print



#### Benefits

- Easy to handle
- One or two-hand operation
- Small and space-saving for narrow available space

#### Application range

- Stand embossing machine for metal plates
- SP Metallprint is a manually operated machine for embossing metal plates quickly and easily. The device is particularly suitable for batch production with changing data and different type plates. The sign is clamped and the desired characters are set on the embossing wheel, visible in front of the device. The adjustable automatic feed of the work table ensures that the correct distances are achieved between the characters.

#### Product features

- Lettering sizes: 2, 3, 4, 5 mm (replaceable embossing wheels)
- Character set: uppercase A-Z, numbers 0-9, characters +/-,
- Max. label size: 140 x 90 mm

#### Technical data

	ETIM 5.0 Class-ID: EC000610 ETIM 5.0 Class-Description: Label maker
	<b>General</b> Max. depth: 90 mm Weight: 6.5 kg
	<b>Note</b> Equipment dimensions: H = 303 mm; footprint 145 x 120 mm

- Pressure limit for uniform embossing depth
- Adjustable stop through terminal strip

#### Included

- Embossing machine incl. embossing wheel for selected font size.
- Blank markers: 50 markers/PU

Article number	Article designation	Text height (mm)	Contents (unit)
<b>SP Metal print</b>			
61725991	SP 2 embosser	2	1
61725990	SP 3 embosser	3	1
61725992	SP 4 embosser	4	1
61725993	SP 5 embosser	5	1
61726000	PK 2 spare embossing wheel	2	1
61726001	PK 3 spare embossing wheel	3	1
61726002	PK 4 spare embossing wheel	4	1
61726003	PK 5 spare embossing wheel	5	1
<b>Suitable blank markers</b>			
83251576	FLEXIMARK® SMC blank 9,9-110		50
83251575	FLEXIMARK® SMC blank 9,9-75		50

Photographs are not to scale and do not represent detailed images of the respective products.  
FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

#### Accessories

- FLEXIMARK® Stainless steel marking FCC refer to page 944

# Tools and cable accessories



**Cutting, Stripping, Skinning**

COMBINOX cable shears		998
Multipurpose shears A and B		998
BULLI cable shears		998
<b>Cutting tools for large diameters</b>		
KS 20 cable shears	New	999
KT cable shears		999
<b>Stripping tools</b>		
STAR STRIP stripping tool		1000
DATA STRIP stripping tool		1001
FC STRIP stripping tool		1002
AS-I STRIP special stripping tool		1002
SENSOR STRIP stripping tool	New	1003
EASY STRIP stripping and cutting tool		1004
BASIC STRIP stripping and cutting tool		1005
UNIVERSAL STRIP stripping tool		1006

**Connection and crimping**

<b>Conductor end sleeves</b>		
Conductor end sleeves insulated		1007
Deciband AHIB		1008
Conductor end sleeves AHK, insulated		1008
DIN-Coil conductor end sleeves		1009
DIN-strips for QUADRO		1009
TWIN conductor end sleeves		1010
DIN-assorted boxes conductor end sleeves / AHI assorted boxes / TWIN assorted boxes		1011
Conductor end sleeves XL, insulated		1012
Conductor end sleeves AH, not insulated		1013
<b>Crimping tools for conductor end sleeves</b>		
QUADRO multifunction tool		1014
PEW 8.185 crimping pliers / PEW 8.186 crimping pliers	New	1015
PEW 8.87 crimping pliers		1016
KEB 1025 crimping pliers / KEB 3550 crimping pliers		1016
CK 90 crimping pliers		1017
KEBS 0560 TWIN crimping pliers		1017
<b>Cable Lugs</b>		
Insulated cable lugs		1018
Solderless cable lugs KB		1019
<b>Panel Connectors</b>		
Panel connectors insulated		1021
Panel connectors non-insulated		1022
Panel connectors with latch		1023
Panel connector sockets Type M / Type F		1023
<b>Crimping tools for insulated connections</b>		
DSA 0110 + DSA 0725 crimping pliers		1024
CSA 0760 + KSA 0760 crimping pliers		1024
<b>Crimping tools for uninsulated connections</b>		
DRB 0505 + DRB 0115 crimping pliers		1025
KRB 0560 crimping pliers		1025
DKB 0325 + DKB 0360 crimping pliers		1026
KWB 4099 crimping pliers		1026
<b>Tube cable lugs</b>		
Tube cable lugs KR/ KRT/ KRF		1027
Tube cable lugs KRFN	New	1029
<b>Pressing pliers for CU connections</b>		
T 2288 pressing pliers		1030
V 1311-A pressing pliers, hydraulic		1030
PVL 1300 pressing pliers battery-operated		1031
Die holders for system 1311		1032
Dies for system 1311 and 1300		1032
Mobile crimp tool crimping pliers		1033
Mobile crimp tool - crimping inserts		1033
<b>Universal crimping tools and appliances</b>		
PEW 12 universal tool		1034
EPEW 12 universal tool		1034
Crimping inserts for PEW 12 system		1035
Pneumatic crimping machine UP 35	New	1036
Crimping inserts for the UP 35 machine		1036
<b>EMC protection</b>		
RSK one-piece screen connector		1037
RSK gauge		1038
RSK-FLAG connector		1038
ERG 740 manual pressing tool		1039
crimping inserts for ERG 740		1039
SHIELD-KON® two-part screen connector		1040
SHIELD-KON® two-part screen connector crimping accessories		1041

**Insulating, protecting, shrinking**

<b>Insulating tapes and insulating sheaths</b>		
Temflex™ 1500 insulating tape		1042
TI insulating tape		1042
Insulating tube ISS		1043
Insulating tube ISY		1043
Copper braid		1044
3M Scotch™ 1183 screening tape		1044
<b>Heat-shrinking products</b>		
HOTY heat-shrink tube		1045
Shrink tube PROTECT Box		1046
Shrink tube PROTECT		1047
Shrink tube PROTECT GN/YE		1048
Shrink tube PROTECT Set		1049
Shrink tube PROTECT-C		1049
Shrink tube PROTECT-M/PROTECT-T		1050
TEC sealing cap		1051
TEB branch muff		1051
HG 2320 hot-air pistol		1052

**Binding, bundling, fastening**

<b>Ground straps</b>		
Ground Straps / Flat Ground Straps		1053
<b>Cable bundling engineering</b>		
KW plastic coil		1054
Cable-Eater bunched cable conduit		1055
Flexible wiring duct	New	1056
Spare tool Cable - Eater		1057
Basic Tie cable tie		1057
<b>Standard Cable ties</b>		
TY - FASTI® cable ties		1058
<b>Detectable Cable ties</b>		
Detectable Cable ties	New	1059
<b>Premium cable ties with steel nose</b>		
Standard cable ties with steel nose	New	1060
UV-stabilised cable ties with steel nose		1061
Heat-resistant cable ties with steel nose		1062
Cable tie with steel nose for screwing on		1062
Cable ties with steel nose with labelling area		1063
<b>Releasable cable tie</b>		
Quick tie cable ties		1064
TY-GRIP® FOL/ FO cable tie		1064
Mille-Tie™ cable ties		1065
<b>Steel cable ties</b>		
LS steel cable ties		1066
<b>Assembly tool for cable ties</b>		
TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers		1067
BASIC cable tie pliers		1068
STEEL GUN HT-338 cable tie pliers		1068
<b>Fastening systems</b>		
Plug socket		1069
Tie socket self-adhesive		1069
Mounting socket with saddle		1070
Tie small socket		1070
Tie screw socket		1071
Aluminium screw socket		1071
AS-I clip clamp / AS-I end sealing		1072
CC cord clips		1072

**Cable guiding and fixing**














<b>Cable trolley systems</b>		
Cable trolley system for round and flat cables		1073
<b>Cable ducts</b>		
ST steel cable tunnel		1074
STY plastic cable tunnel		1074
<b>Cable wedge clamps</b>		
RKK 01-06 round cable wedge clamps		1075
FKK 08 Flat cable wedge clamp, small		1075
FKK 07 cable wedge clamp, large		1076
MP 11/13/12/14 installation sheets		1076
MP 18/28 installation sheets		1076
MP 21/22 installation sheets		1077
EKK single clamp / DKK double clamp		1077

**Installation, processing, maintenance**

<b>Processing and installation tools</b>		
Kraftform® adjustable torque screwdriver/Kraftform Kompakt® Set		1078





Overview Table Connector technology	Pressing tools for end sleeves										Universal crimping tools*	
												
	<b>QUADRO<sup>1</sup></b> 0.5 – 2.5 mm <sup>2</sup>	<b>PEW 8.186<sup>1</sup></b> 0.08 – 10 mm <sup>2</sup>	<b>PEW 8.185<sup>1</sup></b> 0.08 – 16 mm <sup>2</sup>	<b>PEW 8.87<sup>1</sup></b> 0.08 – 10 mm <sup>2</sup>	<b>PEW 8.87<sup>1</sup> plus</b> 0.08 – 16 mm <sup>2</sup>	<b>KEB 1025<sup>1</sup></b> 10 – 25 mm <sup>2</sup>	<b>KEB 3550<sup>1</sup></b> 35 – 50 mm <sup>2</sup>	<b>CK 90<sup>1</sup></b> 50 – 95 mm <sup>2</sup>	<b>KEBS 0560<sup>1</sup> Front pressing</b> 0.1 – 6 mm <sup>2</sup> + Twin 2 x 0.5 – 2 x 4 mm <sup>2</sup>	<b>KEBC 4010<sup>2</sup></b> Twin 2 x 4 mm <sup>2</sup> – 2 x 10 mm <sup>2</sup>	<b>PEW 12<sup>1</sup></b> Crimping inserts for 0.08 – 50 mm <sup>2</sup>	<b>MCT Mobile Crimp Tool</b> Crimping inserts for 0.1 – 10 mm <sup>2</sup>
Page	1014	1015	1015	1016	1016	1016	1016	1017	1017	-	1034	1033

End sleeves

0.25 mm <sup>2</sup>		•	•	•	•				•			•
0.34 mm <sup>2</sup>		•	•	•	•				•			•
0.50 mm <sup>2</sup>	•	•	•	•	•				•		•	•
0.75 mm <sup>2</sup>	•	•	•	•	•				•		•	•
1.00 mm <sup>2</sup>	•	•	•	•	•				•		•	•
1.50 mm <sup>2</sup>	•	•	•	•	•				•		•	•
2.50 mm <sup>2</sup>	•	•	•	•	•				•		•	•
4.00 mm <sup>2</sup>		•	•	•	•				•		•	•
6.00 mm <sup>2</sup>		•	•	•	•				•		•	•
10.00 mm <sup>2</sup>		•	•	•	•	•					•	•
16.00 mm <sup>2</sup>			•		•	•					•	•
25.00 mm <sup>2</sup>						•					•	
35.00 mm <sup>2</sup>							•				•	
50.00 mm <sup>2</sup>							•	•			•	
70.00 mm <sup>2</sup>								•				
95.00 mm <sup>2</sup>								•				
120.00 mm <sup>2</sup>												
150.00 mm <sup>2</sup>												















Insulated TWIN end sleeves

2 x 0.50 mm <sup>2</sup>									•			
2 x 0.75 mm <sup>2</sup>									•			
2 x 1.00 mm <sup>2</sup>									•			
2 x 1.50 mm <sup>2</sup>									•			
2 x 2.50 mm <sup>2</sup>									•			
2 x 4.00 mm <sup>2</sup>									•	•		
2 x 6.00 mm <sup>2</sup>										•		
2 x 10.00 mm <sup>2</sup>										•		

<sup>1)</sup> insulated + not insulated

<sup>2)</sup> insulated

\*with variable crimping inserts (also for flat plugs, cable lugs and other connectors)

Overview Table Connector technology	Pressing tools for insulated connectors				Pressing tools for non-insulated connectors						Pressing tools for CU connectors			Universal crimping tools*
														
	<b>DSA 0110</b> 0.1 – 1.5 mm <sup>2</sup>	<b>DSA 0725</b> 0.5 – 2.5 mm <sup>2</sup>	<b>CSA 0760</b> 0.5 – 6 mm <sup>2</sup>	<b>KSA 0760</b> 0.5 – 6 mm <sup>2</sup>	<b>DRB 0505</b> 0.05 – 0.5 mm <sup>2</sup>	<b>DRB 0115</b> 0.15 – 1.5 mm <sup>2</sup>	<b>KRB 0560</b> 0.50 – 6 mm <sup>2</sup>	<b>DKB 0325</b> 0.35 – 2.5 mm <sup>2</sup>	<b>DKB 0360</b> 0.25 – 6.0 mm <sup>2</sup>	<b>KWB 4099</b> 4 – 10 mm <sup>2</sup>	<b>T 2288</b> 10 – 25 mm <sup>2</sup>	<b>V 1311</b> 10 – 400 mm <sup>2</sup>	<b>PVL 1300</b> 10 – 400 mm <sup>2</sup>	<b>PEW 12</b> Crimping inserts for 0.08 – 50 mm <sup>2</sup>
Page	1024	1024	1024	1024	1025	1025	1025	1026	1026	1026	1030	1030	1031	1034

**Insulated flat plug connectors, cable lugs and other connectors**

0.25 mm <sup>2</sup>	•														•
0.50 mm <sup>2</sup>	•	•	•	•											•
0.75 mm <sup>2</sup>	•	•	•	•											•
1.00 mm <sup>2</sup>	•	•	•	•											•
1.50 mm <sup>2</sup>	•	•	•	•											•
2.50 mm <sup>2</sup>		•	•	•											•
4.00 mm <sup>2</sup>			•	•											•
6.00 mm <sup>2</sup>			•	•											•

**Non-insulated flat plug connectors, cable lugs and other connectors**

0.50 mm <sup>2</sup>					•	•	•	•							•
0.75 mm <sup>2</sup>						•	•	•	•						•
1.00 mm <sup>2</sup>						•	•	•	•						•
1.50 mm <sup>2</sup>						•	•	•	•						•
2.50 mm <sup>2</sup>							•	•	•						•
4.00 mm <sup>2</sup>							•		•	•					•
6.00 mm <sup>2</sup>							•		•	•					•

**KB/KR tube cable lugs**

0.75 mm <sup>2</sup>								•	•						
1.00 mm <sup>2</sup>								•	•						
1.50 mm <sup>2</sup>								•	•						
2.50 mm <sup>2</sup>								•	•						
4.00 mm <sup>2</sup>									•	•					
6.00 mm <sup>2</sup>									•	•					
10.00 mm <sup>2</sup>										•	•	•			

**KR/KRT/KRF tube cable lugs**

10.00 mm <sup>2</sup>											•	•	•		
16.00 mm <sup>2</sup>											•	•	•		
25.00 mm <sup>2</sup>											•	•	•		
35.00 mm <sup>2</sup>												•	•		
50.00 mm <sup>2</sup>												•	•		
70.00 mm <sup>2</sup>												•	•		
95.00 mm <sup>2</sup>												•	•		
120.00 mm <sup>2</sup>												•	•		
150.00 mm <sup>2</sup>												•	•		
185.00 mm <sup>2</sup>												•	•		
240.00 mm <sup>2</sup>												•	•		
300.00 mm <sup>2</sup>												•	•		
400.00 mm <sup>2</sup>												•	•		

\*with variable crimping inserts

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

## COMBINOX cable shears



### Benefits

- Wire guide integrated into blade

### Product Make-up

- Stainless steel shears

### Included

- Included: stripping device

### Technical data



ETIM 5.0 Class-ID: EC000142  
ETIM 5.0 Class-Description:  
Cable shears

Article number	Article designation	Weight (kg)	Length (mm)	Pieces / PU
<b>COMBINOX cable shears</b>				
61735980	Combinox	0.121	193	1

COMBINOX® is a registered trademark of Bessey&Sohn GmbH&Co.KG  
Photographs are not to scale and do not represent detailed images of the respective products.

## Multipurpose shears A and B



### Application range

- Suitable for separating steel-wire screen braiding
- Suitable for cutting cables, lines, single cores, flat cables, bands, thin sheet metal, paper, cardboard and wires

### Product Make-up

- Multipurpose shears A: With forged blades, spring and frames
- Multipurpose shears B: With forged blades

### Technical data



ETIM 5.0 Class-ID: EC000160  
ETIM 5.0 Class-Description:  
Shears

Article number	Article designation	Weight (kg)	Length (mm)	Pieces / PU
<b>Multipurpose shears A and B</b>				
62120010	Multipurpose shears A: With forged blades, spring and frames	0.12	180	1
62120020	Multipurpose shears B: With forged blades	0.095	175	1

Photographs are not to scale and do not represent detailed images of the respective products.

## BULLI cable shears



### Benefits

- Ergonomic handles
- Drawing cut is possible due to the special shape of the blades
- Lightweight shears with locking bolt and spring return

### Application range

- For fine-wire conductors up to max. outer diameter of 16 mm

### Technical data

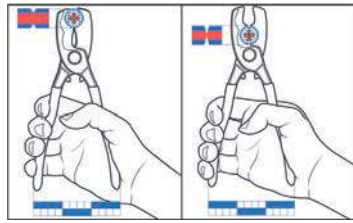


ETIM 5.0 Class-ID: EC000142  
ETIM 5.0 Class-Description:  
Cable shears

Article number	Article designation	For outer diameter (mm)	Weight (kg)	Length (mm)	Pieces / PU
<b>BULLI cable shears</b>					
61744160	BULLI	16	0.135	185	1
61744161	Spare spring BULLI	-	-	-	1

Photographs are not to scale and do not represent detailed images of the respective products.

## KS 20 cable shears



### Benefits

- Less force required due to favourable transmission ratio and new blade geometry
- High ergonomics thanks to multi-component-handles
- Particular two-blades-system (see drawings)
- Cutting with precision grinding
- Easy and clean cut by using only one hand


### Application range

- Cuts copper and aluminium cables with up to 20 mm outer diameter
- Not suitable for steel wire and hard-drawn copper conductors

### Product features

- Material: special tool steel, forged, burnished head
- Made in Germany

### Technical data

 ETIM 5.0 Class-ID: EC000142  
ETIM 5.0 Class-Description: Cable shears

Article number	Article designation	For outer diameter (mm)	Weight (kg)	Length (mm)	Pieces / PU
<b>KS 20 cable shears</b>					
62120045	KS 20	20	0.3	200	1

Photographs are not to scale and do not represent detailed images of the respective products.



## KT cable shears



### Benefits

- Trouble-free cutting with lightweight and optimum transmission ratio
- One-hand operation through ratchet principle
- Less power required due to wave-like polished blades
- Optimum leverage due to 2-way gear rim drive (KT 6: 3-way gear rim drive)

### Application range

- Not suitable for steel wire / hard aluminium alloys / hard-drawn copper conductors


### Product features

- Swivel knife can be unlocked in any cutting position with a press of the thumb
- Cuts smoothly and cleanly without crushing

### Note

- Also suitable for stripping wires

### Technical data

 ETIM 5.0 Class-ID: EC000142  
ETIM 5.0 Class-Description: Cable shears

Article number	Article designation	For outer diameter (mm)	Weight (kg)	Length (mm)	Pieces / PU
<b>KT cable shears</b>					
61813750	KT 4	32	0.545	250	1
61813760	Spare blade KT 4		-	-	1
61813770	KT 5	52	0.74	280	1
61813775	Spare blade KT 5		-	-	1
61813751	KT 6	60	0.825	320	1
61813752	Cable Shears spare knife KT 6		-	-	1
61813753	Cable shears fixed knife KT 6		-	-	1

Photographs are not to scale and do not represent detailed images of the respective products.

## STAR STRIP stripping tool



### Info

- Special polished stripping knife is suitable for problematical insulation materials such as PUR, fluoropolymers, glass fibre, TPE and rubber

### Benefits

- Large application range thanks to the interchangeable hooks
- Suitable for circular, longitudinal and spiral cuts
- High quality of the blade ensures a good stripping result also for tough insulation materials
- Robust body, long durability- tested for more than 100.000 stripping operations
- High ergonomics and user-friendliness (inter alias due to a lightweight construction)

### Application range

- Adjustable stripping tool for round cables made with various insulation materials (as PVC, PTFE, rubber or PUR)
- Through the interchangeable hooks, the tool can be used for cables with a diameter of 4.5 - 25 mm and 20 - 40 mm

### Product features

- The depth of the blade is adjustable by rotating the upper part of the tool.
- Specific locking positions for circular, longitudinal or spiral cuts
- The blade automatically returns to its start position at the end of a stripping process, thus reducing the possibility of breaking the blade.
- No special tool is required to replace the hook (other hook is used for releasing the assembled hook)

### Note

- Spare blades are available and can be stored in a compartment of the tool

### Included

- 61735820: Tool with blade, small and large hook without spare blade

### Technical data



ETIM 5.0 Class-ID: EC000163  
ETIM 5.0 Class-Description:  
Cable stripping tool



#### Weight

STAR STRIP with large hook: 116 g



#### Length

##### Dimensions LxHxB:

Small hook: 150x42x30.5 mm

Big hook: 167x52x30.5 mm



#### Colour delivered

Black

Article number	Article designation	For outer diameter (mm)	Length (mm)	Pieces / PU
<b>STAR STRIP with one blade, small and big hook (but without replacement blade)</b>				
61735820	STAR STRIP	4,5 - 40.0	150	1
<b>Spare parts</b>				
61735821	STAR STRIP spare blade			1
61735822	STAR STRIP spare hook, small	4,5 - 25.0		1
61735823	STAR STRIP spare hook, large	20.0 - 40.0		1

Photographs are not to scale and do not represent detailed images of the respective products.

Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>



## DATA STRIP stripping tool



### Benefits

- Precise due to 9 adjustable positions on the setting wheel
- Easy handling-open the stripping shaft by simply pressing the tool together, insert the cable, turn the tool and open the tool again
- Lightweight and handy design- for your trouser pocket or belt
- Long durability-tested for 50.000 insulation processes
- High safety for the user due to rounded shape, no open blades, "X-position" for blade changes, replacement blade is embedded in plastic surrounding

### Application range

- Precision stripping tool for stripping signal, telephone, AV, control and data transmission cables made up of copper and glass fibres.
- Dismantles most multi-core data cables and glass-fibre cables with a diameter of up to 11 mm (also power cable with PVC sheating could be dismantled)

### Product features

- The tool is adjustable up to 1.00 mm (0,04") in steps of 0.1 mm:  
9= 1.0 mm  
8= 0.9 mm  
7= 0.8 mm  
6= 0.7 mm  
5= 0.6 mm  
4= 0.5 mm  
3= 0.4 mm  
2= 0.3 mm  
1= 0.2 mm

### Note

- The "x" position on the wheel enables the tool to close so that the attached blade cartridge can be ejected and replaced with a new one quickly and safely

### Suitable cables

- UNITRONIC® LiYY Page 278

### Technical data

	ETIM 5.0 Class-ID: EC000163 ETIM 5.0 Class-Description: Cable stripping tool
	<b>General</b> Insulation thickness: up to 1 mm
	<b>Diameter in</b> For outer diameter: 2.5 - 11 mm
	<b>Weight</b> 28 g
	<b>Length</b> Dimensions: L 90.5 x W 39.5 x H 19 mm

Article number	Article designation	For outer diameter (mm)	Weight (kg)	Pieces / PU
<b>DATA STRIP stripping tool</b>				
61735810	DATA STRIP	2,5 - 11.0	0.028	1
61735811	DATA STRIP spare blade			1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>



## FC STRIP stripping tool



### Benefits

- Ready-to-connect stripping - outer sheath and copper screening braid are stripped in one simple step
- Prevents cable damage
- Adjusting screws enable the tool to be adjusted for all Fast Connect cables

### Application range

- Two-level dismantling tool for Fast Connect conductors with an outer diameter 2,5 - 8,0 mm

### Suitable cables

- UNITRONIC® BUS PB FRNC FC Page 333

### Technical data



ETIM 5.0 Class-ID: EC001583  
ETIM 5.0 Class-Description:  
Accessories for bus system

Article number	Article designation	Suitable for:	Pieces / PU
<b>FC STRIP stripping tool</b>			
21124030	FC STRIP incl. blade	Fast Connect cables	1
21124040	FC STRIP without blade		1
21124041	FC STRIP blade cartridge		1

Photographs are not to scale and do not represent detailed images of the respective products.



## AS-I STRIP special stripping tool



### Benefits

- Automatic setting of blades
- No damage to single cores

### Application range

- For AS-I cables with TPE, rubber and PUR sheathing

### Product features

- Robust tool body is made of glass fibre-reinforced polyamide
- Special shape of the cable is reflected in the blades

### Suitable cables

- UNITRONIC® BUS ASI Page 325

### Technical data



ETIM 5.0 Class-ID: EC000163  
ETIM 5.0 Class-Description:  
Cable stripping tool

Article number	Article designation	Suitable for:	For insulation	Length (mm)	Weight (kg)	Pieces / PU
<b>AS-I STRIP special stripping tool</b>						
61735831	AS-I STRIP special	AS-Interface	TPE, rubber, PUR	160	0.12	1

Photographs are not to scale and do not represent detailed images of the respective products.



## SENSOR STRIP stripping tool



### Benefits

- Focussed to the needs of stripping the sheathing of sensor / actuator cables
- With their new blade design the tools strip PVC / PUR cable sheathings precisely from cables without causing damage to the individual conductors or shielding inside
- Fully automated adjustments to the diverse cable diameters
- Push-through opening inside handles- to strip any lengths
- Ergonomic design- user friendly, ease of use, lightweight

### Application range

- PUR halogen-free sensor/actuator cables
- Highly flexible TPE-U-cables
- PUR-cables
- PUR/PVC-cables
- Multi-stranded cables, shielded and non-shielded cables

### Product features

- Exchangeable blades-longer lifetime, efficient

### Technical data

	ETIM 5.0 Class-ID: EC000163 ETIM 5.0 Class-Description: Cable stripping tool
	<b>Diameter in</b> Sensor Mini: For outer diameter: 3,2-4,4 mm Sensor Special: For outer diameter: 4,4-7 mm
	<b>Length</b> Dimensions LxHxB: 16,6x2,8x10,2 mm

Article number	Article designation	For outer diameter (mm)	Length (mm)	Pieces / PU
<b>SENSOR STRIP stripping tool</b>				
61735833	SENSOR STRIP Mini stripping tool	3,2 - 4,4	165	1
61735993	SENSOR STRIP Special stripping tool	4,4 - 7.0	165	1
61718790	SENSOR STRIP Mini replacement blade set	3,2 - 4,4		1
61718800	SENSOR STRIP Special replacement blade set	4,4 - 7.0		1

Photographs are not to scale and do not represent detailed images of the respective products.



## EASY STRIP stripping and cutting tool



### Benefits

- Easy to handle due to the automatic adjustment for the different crimping cross-sections
- Broad application range thanks to changeable stripping cartridges
- Adjusting lever for fine-adjustments ensures that the insulation (particular small dimensions) can be removed without damaging the conductors
- Long durability- tested for more than 150.000 stripping operations
- Ergonomic design due to the soft handle, optimised grip-width, angled-head and light construction

### Application range

- Stripping cassettes enable precise stripping of different insulation materials (e.g. PVC/PTFE) and diameters with a single tool
- For standard cables and conductors (90 % of all applications can be stripped without setting the tool manually)

### Product Make-up

- Two different designs available- pistol shaped (RA) or standard version

### Note

- No MTW single wires 16 mm<sup>2</sup> can be machined



### Info

- Now also available as right-angled version (RA)

### Technical data



ETIM 5.0 Class-ID: EC000163  
ETIM 5.0 Class-Description:  
Cable stripping tool



#### General

Stripping range: 0.02 - 16.0 mm<sup>2</sup>



#### Weight

136 g



#### Length

Overall dimensions: L x H x W:  
Standard version: 191x123x20 mm  
RA version: 144x186x23 mm



#### Info

Cutting capacity:  
Solid cables - 1.5 mm<sup>2</sup>  
Flexible conductors - up to 10 mm<sup>2</sup>

Article number	Article designation	For mm <sup>2</sup>	Colour	For insulation	Cartridge shape	Pieces / PU
<b>Tool standard version with cartridge</b>						
61735800	EASY STRIP incl.straight cartridge	0.02 - 10	black	PVC etc.	straight	1
61735805	EASY STRIP incl. V-cartridge	0.1 - 4	blue	PTFE etc.	V-form	1
61735807	EASY STRIP incl. O-cartridge	4 - 16	red	PVC etc.	round	1
<b>Tool RA version with cartridge</b>						
61735813	EASY STRIP RA incl.straight cartridge	0.02 - 10	black	PVC etc.	straight	1
61735814	EASY STRIP RA incl. V-cartridge	0.1 - 4	blue	PTFE etc.	V-form	1
61735815	EASY STRIP RA incl. O-cartridge	4 - 16	red	PVC etc.	round	1
<b>Cartridges and replacement items</b>						
61735801	Straight cartridge	0.02 - 10	black	PVC etc.	straight	1
61735803	V-cartridge	0.1 - 4	blue	PTFE etc.	V-form	1
61735802	O-cartridge	4 - 16	red	PVC etc.	round	1
61735806	EASY STRIP support jaws					1

Photographs are not to scale and do not represent detailed images of the respective products.

Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>



## BASIC STRIP stripping and cutting tool

### Benefits

- Easy to handle due to the automatic adjustment for the different crimping cross-sections
- Enables easy, quick and uniform stripping of solid and flexible conductors
- Ergonomic plastic handles
- Adjustable length gauge from 5-12 mm
- Removable blade head

### Application range

- Self-adjusting stripping and cutting tool
- Stripping wires and strands from 0.2 - 6 mm<sup>2</sup>
- Cutting of wires up to a diameter of 2 mm
- For wires with PVC core insulation

### Product features

- Made in Germany

### Norm references / Approvals

- GS-logo for proven safety

### Technical data



ETIM 5.0 Class-ID: EC000163  
ETIM 5.0 Class-Description:  
Cable stripping tool



Article number	Article designation	For mm <sup>2</sup>	For insulation	Length (mm)	Pieces / PU
<b>BASIC STRIP stripping and cutting tool</b>					
61725960	BASIC STRIP	0.2 - 6	PVC	165	1

Photographs are not to scale and do not represent detailed images of the respective products.

## UNIVERSAL STRIP stripping tool



### Benefits

- No pinching or deforming of cable ends thanks to a special cutting mode
- Interchangeable blades for different cable cross sections
- For use with a great variety of insulation with differing hardness and dimension
- Automatic release after operation

### Application range

- Universal stripping pliers with interchangeable stripping blades for special applications
- Suitable for fluoropolymer & PVC cores, AS-I, Solar, POF cables
- For stripping of sheath and insulation from all single wires and multi-wire cables from 0.03 to 16 mm<sup>2</sup> (Please check the application range of each blade)

### Product features

- Design: chrome-plated with plastic handle cover

### Included

- Tool and blades could be ordered separately or in a set, where the tool and one blade is included (but please note that the blade is not already assembled in the tool)
- Tool is always delivered with a length stop

### Technical data

	ETIM 5.0 Class-ID: EC000163 ETIM 5.0 Class-Description: Cable stripping tool
	<b>Colour delivered</b> Orange

Article number	Article designation	For mm <sup>2</sup>	For insulation	Length (mm)	Weight (kg)	Pieces / PU
<b>Tool without blades</b>						
21920005	Universal Strip without stripping knife			194	0.41	1
<b>Interchangeable blade</b>						
21920009	Blade DIN single cores	0.14 - 6	PVC			1
21920122	Solar stripping knife	1.5 - 6				1
21920126	POF 1, 2, 4-wire stripping knife		PVC/PUR			1
21920006	Fluoropolymer stripping knife	0.03 - 2	Fluoropolymer			1
21920004	Fluoropolymer stripping knife	2.5 - 10	Fluoropolymer			1
21920008	Fluoropolymer stripping knife	16	Fluoropolymer			1
21920135	AS I stripping knife		rubber/TPE/PVC			1
<b>Complete tool (incl. assembled blade)</b>						
21920141	Universal Strip DIN single wires	0.14 - 6	PVC			1
21920125	Universal Strip POF 1, 2, 4-wire		PVC/PUR			1
21920129	Universal Strip Fluoropolymer 0,03-2,08	0.03 - 2.08	Fluoropolymer			1
21920130	Universal Strip Fluoropolymer 2,5-10 mm <sup>2</sup>	2.5 - 10	Fluoropolymer			1
21920131	Universal Strip Fluoropolymer 16	16	Fluoropolymer			1
21920140	Universal Strip AS-I		rubber/TPE/PVC			1
21920120	Universal Strip Solar	1.5 - 6				1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- Additional blades are available upon request

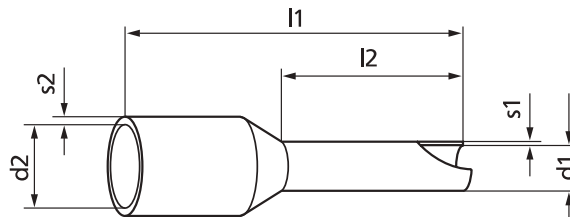


**Technical data**

- ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description: Cable end sleeve
- Note**  
Halogen-free
- Material**  
Copper/PP  
Surface: tin-plated
- Temperature range**  
-5°C to +105°C\*



**Conductor end sleeves insulated**



**Benefits**

- Funnel-shaped opening makes it easy to slip them onto the strands
- The conductor is permanently connected to the collar by crimping

**Application range**

- Control cabinets and equipment wiring
- For cables with category 2,5 and 6 conductors
- Not suitable for solid conductors

**Suitable tools**

- PEW 8.185 crimping pliers refer to page 1015
- PEW 8.186 crimping pliers refer to page 1015
- PEW 8.87 crimping pliers refer to page 1016
- CK 90 crimping pliers refer to page 1017

**Norm references / Approvals**

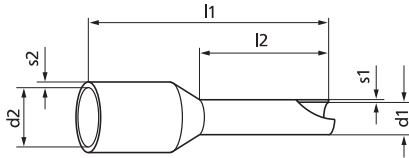
- All DIN conductor end-sleeves are in accordance with DIN 46228 Part 4
- CSA approved, File-Number: LR 105629-1

Article number	Article designation	For mm <sup>2</sup>	AWG	Colour	l1 mm	l2 mm	d 1 mm	s 1 mm	d 2 mm	s 2 mm	Pieces / PU
<b>Conductor end sleeves insulated</b>											
61721866	AHI N 0,25/6	0.25	24	light blue	10.5	6	0.8	0.25	1.8	0.25	500
61721867	AHI L 0,25/8	0.25	24	light blue	12.5	8	0.8	0.25	1.8	0.25	500
61721868	AHI N 0,34/6	0.34	24	turquoise	10.5	6	0.8	0.25	2	0.25	500
61721869	AHI L 0,34/8	0.34	24	turquoise	12.5	8	0.8	0.25	2	0.25	500
61801580	AHI DIN K 0,5/6	0.50	20	white	11.5	6	1.1	0.15	2.5	0.25	500
61801590	AHI DIN N 0,5/8	0.50	20	white	13.5	8	1.1	0.15	2.5	0.25	500
61801600	AHI DIN HL 0,5/10	0.50	20	white	15.5	10	1.1	0.15	2.5	0.25	500
61721871	AHI N 0,5/8	0.50	20	orange	13.5	8	1.1	0.15	2.5	0.25	500
61801620	AHI DIN K 0,75/6	0.75	20	grey	12	6	1.3	0.15	2.8	0.25	500
61801630	AHI DIN N 0,75/8	0.75	20	grey	14	8	1.3	0.15	2.8	0.25	500
61801640	AHI DIN HL 0,75/10	0.75	20	grey	16	10	1.3	0.15	2.8	0.25	500
61801650	AHI DIN L 0,75/12	0.75	20	grey	18	12	1.3	0.15	2.8	0.25	500
61721880	AHI N 0,75/8	0.75	20	white	14	8	1.3	0.15	2.8	0.25	500
61801660	AHI DIN K 1/6	1.00	18	red	12.5	6	1.5	0.15	3	0.3	500
61801670	AHI DIN N 1/8	1.00	18	red	14.5	8	1.5	0.15	3	0.3	500
61801680	AHI DIN HL 1/10	1.00	18	red	16.5	10	1.5	0.15	3	0.3	500
61801690	AHI DIN L 1/12	1.00	18	red	18.5	12	1.5	0.15	3	0.3	500
61721890	AHI N 1/8	1.00	18	yellow	14.5	8	1.5	0.15	3	0.3	500
61801700	AHI K 1,5/6	1.50	16	black	12.5	6	1.8	0.15	3.4	0.3	500
61801710	AHI DIN N 1,5/8	1.50	16	black	14.5	8	1.8	0.15	3.4	0.3	500
61801720	AHI DIN HL 1,5/10	1.50	16	black	16.5	10	1.8	0.15	3.4	0.3	500
61801730	AHI DIN L 1,5/18	1.50	16	black	24.5	18	1.8	0.15	3.4	0.3	500
61721900	AHI N 1,5/8	1.50	16	red	14.5	8	1.8	0.15	3.4	0.3	500
61721910	AHI HL 1,5/10	1.50	16	red	16.5	10	1.8	0.15	3.4	0.3	500
61746720	AHI L 1,5/18	1.50	16	red	24.5	18	1.8	0.15	3.4	0.3	500
61801750	AHI DIN N 2,5/8	2.50	14	blue	15	8	2.3	0.15	4.2	0.3	500
61801760	AHI DIN HL 2,5/12	2.50	14	blue	19	12	2.3	0.15	4.2	0.3	500
61801770	AHI DIN L 2,5/18	2.50	14	blue	25	18	2.3	0.15	4.2	0.3	500
61801780	AHI DIN N 4/10	4.00	12	grey	17.5	10	2.9	0.2	4.8	0.3	500
61801790	AHI DIN HL 4/12	4.00	12	grey	20	12	2.9	0.2	4.8	0.3	500
61801800	AHI DIN L 4/18	4.00	12	grey	26	18	2.9	0.2	4.8	0.3	100
61801810	AHI DIN N 6/12	6.00	10	yellow	20	12	3.6	0.2	6.2	0.3	100
61801820	AHI DIN L 6/18	6.00	10	yellow	25	18	3.6	0.2	6.2	0.3	100
61721940	AHI N 6/12	6.00	10	black	20	12	3.6	0.2	6.2	0.3	100
61721950	AHI L 6/18	6.00	10	black	26	18	3.6	0.2	6.2	0.3	100
61801830	AHI DIN N 10/12	10.00	8	red	21	12	4.6	0.2	7.5	0.3	100
61801840	AHI DIN L 10/18	10.00	8	red	27	18	4.6	0.2	7.5	0.3	100
61721960	AHI N 10/12	10.00	8	ivory	21	12	4.6	0.2	7.5	0.3	100
61721970	AHI L 10/18	10.00	8	ivory	27	18	4.6	0.2	7.5	0.3	100
61801850	AHI DIN N 16/12	16.00	6	blue	23	12	6	0.2	8.8	0.4	100
61801860	AHI DIN L 16/18	16.00	6	blue	29	18	6	0.2	8.8	0.4	100
61721980	AHI N 16/12	16.00	6	green	23	12	6	0.2	8.8	0.4	100
61721990	AHI L 16/18	16.00	6	green	29	18	6	0.2	8.8	0.4	100
61801870	AHI DIN N 25/16	25.00	4	yellow	29	16	7.5	0.2	11	0.5	50
61801890	AHI DIN L 25/22	25.00	4	yellow	35	22	7.5	0.2	11	0.5	50
61746770	AHI N 25/16	25.00	4	brown	29	16	7.5	0.2	11	0.5	50
61746780	AHI L 25/22	25.00	4	brown	35	22	7.5	0.2	11	0.5	50
61801900	AHI DIN N 35/16	35.00	2	red	30	16	8.5	0.2	12.5	0.5	50
61801920	AHI DIN L 35/25	35.00	2	red	39	25	8.5	0.2	12.5	0.5	50
61746790	AHI N 35/16	35.00	2	beige	30	16	8.5	0.2	12.5	0.5	50
61746800	AHI L 35/25	35.00	2	beige	39	25	8.5	0.2	12.5	0.5	50
61801930	AHI DIN N 50/20	50.00	1	blue	36	20	10.5	0.3	15	0.6	50
61801940	AHI DIN L 50/25	50.00	1	blue	41	25	10.5	0.3	15	0.6	50
61801950	AHI N 70/20	70.00	2/0	yellow	37	20	13.5	0.4	16	0.6	25
61801960	AHI L 70/27	70.00	2/0	yellow	44	27	12.7	0.4	16	0.6	25
61801970	AHI N 95/25	95.00	3/0	red	44	25	14.7	0.4	18	0.6	25
61801980	AHI N 120/27	120.00	4/0	blue	48	27	16.7	0.5	21	0.7	25
61801990	AHI N 150/32	150.00	300	yellow	58	32	19.5	0.5	23	1	25

K = short; N = medium; HL = large; L = extra large; Other sizes and colours are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. \*Under some circumstances the end sleeves withstand temperatures under -5°C. Please contact Lapp Kabel to clarify the specific application area. The manufacturing tolerance is +/- 0,4 mm.



## Deciband AHIB



### Application range

- Packs of insulated conductor end sleeves with mini-crimp seal

### Note

- For processing tools see the keyword index “crimping pliers for conductor end sleeves”

### Included

- Insulated conductor end sleeves in standard length in strips with 10 linked mini-crimp bags of 100 conductor end sleeves
- Mini crimp lock for individual separation of bags

### Technical data

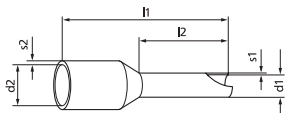
- ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description: Cable end sleeve
- General**  
Halogen-free
- Material**  
Copper/PP  
Surface: tin-plated
- Temperature range**  
-5°C to +105°C

Article number	Article designation	For mm <sup>2</sup>	Colour	l1 mm	l2 mm	d1 mm	s1 mm	d2 mm	s2 mm	Content	Pieces / PU
<b>Deciband AHIB</b>											
61794760	Deciband AHIB	0.34	turquoise	10.5	6	0.8	0.25	2	0.25	10 x 100	1
61794770	Deciband AHIB	0.50	orange	13.5	8	1.1	0.15	2.5	0.25	10 x 100	1
61794780	Deciband AHIB	0.75	white	14	8	1.3	0.15	2.8	0.25	10 x 100	1
61794790	Deciband AHIB	1.00	yellow	14.5	8	1.5	0.15	3	0.3	10 x 100	1
61794800	Deciband AHIB	1.50	red	14.5	8	1.8	0.15	3.4	0.3	10 x 100	1
61794810	Deciband AHIB	2.50	blue	15	8	2.3	0.15	4.2	0.3	10 x 100	1

Other sizes and colours are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Conductor end sleeves AHK, insulated



### Benefits

- Thicker insulation and greater wall thickness for higher loads
- Suitable for all short circuit and earth fault-resistant cables up to 3 kV due to enlarged insulation sleeves

### Application range

- For cables with thick insulation
- Special conductor end sleeve model with large plastic collar for thick insulation cables (e.g. NSGAFÖU).
- Suitable for unprotected connections on control and distribution panels, rail vehicles, solar systems, ignition cables etc.

### Note

- For processing tools see the keyword index “crimping pliers for conductor end sleeves”

### Suitable cables

- NSGAFÖU 1,8/3 kV Page 97

### Technical data

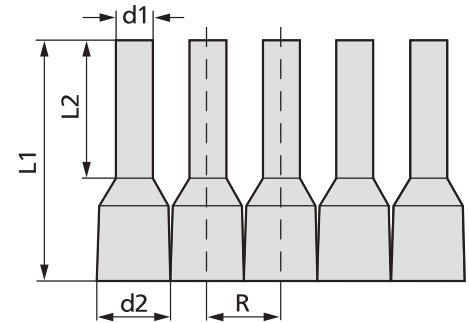
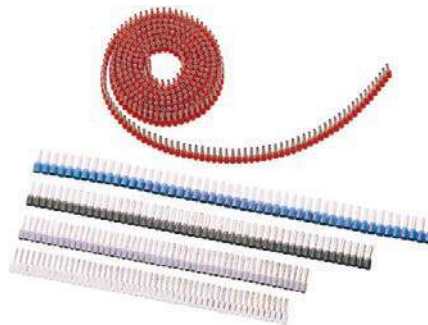
- ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description: Cable end sleeve
- Material**  
Copper/PP  
Surface: tin-plated
- Temperature range**  
-5°C to +105°C

Article number	Article designation	For mm <sup>2</sup>	AWG	Colour	l1 mm	l2 mm	d 1 mm	s1 mm	d 2 mm	s2 mm	Pieces / PU
<b>Conductor end sleeves AHK, insulated</b>											
61746500	AHK 1,5/8	1.50	16	black	17.5	8	1.8	0.15	7.5	0.3	100
61746501	AHK 1,5/10	1.50	16	black	19.5	10	1.8	0.15	7.5	0.3	100
61746502	AHK 2,5/8	2.50	14	blue	17.5	8	2.3	0.15	8	0.3	100
61746503	AHK 2,5/12	2.50	14	blue	21.5	12	2.3	0.15	8	0.3	100
61746504	AHK 4/10	4.00	12	grey	19.5	10	2.9	0.2	9.5	0.3	100
61746505	AHK 6/12	6.00	10	yellow	23	12	3.6	0.2	10	0.3	100
61746506	AHK 10/12	10.00	8	red	24	12	4.6	0.2	11.5	0.3	100
61746507	AHK 16/12	16.00	6	blue	25.5	12	6	0.2	13.5	0.3	100

Photographs are not to scale and do not represent detailed images of the respective products.



## DIN-Coil conductor end sleeves



### Application range

- Insulated conductor end sleeves in strips, DIN 46228, Part 4
- DIN strips, available in coils of up to 3000 items for working with automatic crimping machines

### Included

- Coil diameter: approx. 25 cm

### Technical data

	ETIM 5.0 Class-ID: EC000005 ETIM 5.0 Class-Description: Cable end sleeve
	<b>Material</b> Copper/PP Surface: tin-plated
	<b>Temperature range</b> Permanent load -5°C up to +105°C, temporary load +120°C

Article number	Article designation	For mm <sup>2</sup>	Colour	l1 mm	l2 mm	d1 mm	d2 mm	R mm	Contents (unit)
<b>DIN-Coil conductor end sleeves</b>									
61802052	DIN coil 0.5	0.50	white	14.5	8	1.1	2.6	3.5	3,000 x 1
61802054	DIN coil 0.75	0.75	grey	14.5	8	1.3	2.8	3.6	3,000 x 1
61802056	DIN coil 1.0	1.00	red	14.5	8	1.5	3	3.9	3,000 x 1
61802058	DIN coil 1.5	1.50	black	14.5	8	1.8	3.4	4.2	2,500 x 1
61802060	DIN coil 2.5	2.50	blue	14.5	8	2.3	4.2	5	1,500 x 1

Photographs are not to scale and do not represent detailed images of the respective products.

## DIN-strips for QUADRO



### Benefits

- Insulated conductor end sleeves in strips, DIN 46228, Part 4 for QUADRO

### Suitable tools

- QUADRO multifunction tool refer to page 1014

### Technical data

	ETIM 5.0 Class-ID: EC000005 ETIM 5.0 Class-Description: Cable end sleeve
--	--

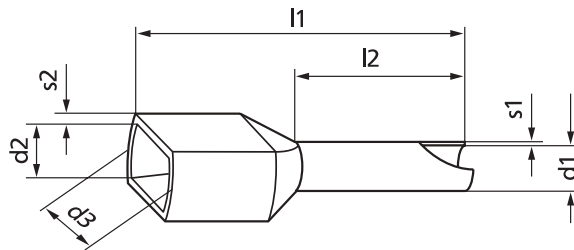
Article number	Article designation	For mm <sup>2</sup>	AWG	Colour	l1 mm	l2 mm	d1 mm	d2 mm	R mm	Pieces / PU
<b>DIN-strips for QUADRO</b>										
61805170	DIN Strips 0,50	0.50	20	white	14	8	1.1	2.6	3.5	500
61805180	DIN Strips 0,75	0.75	20	grey	14	8	1.3	2.8	3.6	500
61805190	DIN Strips 1,00	1.00	18	red	14	8	1.5	3	3.9	500
61805200	DIN Strips 1,50	1.50	16	black	14	8	1.8	3.4	4.2	500
61805210	DIN Strips 2,50	2.50	14	blue	14	8	2.3	4.2	5	500

Other sizes and colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## TWIN conductor end sleeves



### Benefits

- Special shape of plastic collar enables simultaneous holding of two strand conductors
- Correct crimping of two conductors in a TWIN conductor end sleeve achieves a proper electrical and mechanical connection

### Note

- For processing tools see the keyword index "crimping pliers for conductor end sleeves"

### Suitable tools

- KEBS 0560 TWIN crimping pliers refer to page 1017

### Technical data

- ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description: Cable end sleeve
- Info**  
Halogen-free
- Material**  
Copper/PP  
Surface: tin-plated
- Temperature range**  
Permanent load -5°C up to +105°C,  
temporary load +120°C

Article number	Article designation	For mm <sup>2</sup>	AWG	Colour	l1 mm	l2 mm	d 1 mm	s1 mm	d 2 mm	d 3 mm	s2 mm	Pieces / PU
<b>TWIN conductor end sleeves</b>												
61801999	AHI-TWIN	2.00 x 0.50	2 x 20	white	15	8	1.5	0.15	2.3	4.5	0.25	500
61802000	AHI-TWIN	2.00 x 0.75	2 x 20	grey	15	8	1.8	0.15	2.6	5.1	0.25	500
61802010	AHI-TWIN	2.00 x 1.00	2 x 18	red	15	8	2.05	0.15	3	5.1	0.3	500
61802020	AHI-TWIN	2.00 x 1.50	2 x 16	black	16	8	2.3	0.15	3.5	6.4	0.3	500
61802030	AHI-TWIN	2.00 x 2.50	2 x 14	blue	18.5	10	2.9	0.2	4	7.5	0.3	500
61802032	AHI-TWIN	2.00 x 4.00	2 x 12	grey	23	12	3.8	0.2	4.9	8.6	0.3	100
61802033	AHI-TWIN	2.00 x 6.00	2 x 10	yellow	25	14	4.6	0.2	5.8	9.6	0.4	100
61802034	AHI-TWIN	2.00 x 10.00	2 x 8	red	26	14	6.5	0.2	7	12.6	0.4	100
61802035	AHI-TWIN	2.00 x 16.00	2 x 6	blue	30	14	8.2	0.2	9.6	18.4	0.4	50

Other sizes and colours are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



**DIN-assorted boxes conductor end sleeves /  
AHI assorted boxes /  
TWIN assorted boxes**



DIN-assorted boxes conductor end sleeves



AHI assorted boxes



TWIN assorted boxes

**Benefits**

- Convenient assortment boxes - several diameters always at your fingertips

**Application range**

**DIN-assorted boxes conductor end sleeves**

- DIN conductor end sleeves
- Manufacturing of control cabinets and equipment

**AHI assorted boxes**

- AHI assortment box
- Manufacturing of control cabinets and equipment

**TWIN assorted boxes**

- TWIN assortment box
- Manufacturing of control cabinets and equipment

**Norm references / Approvals**

- The insulated conductor end sleeves are in accordance with DIN 46228, part 4 (0.25 mm<sup>2</sup> and 0.34 mm<sup>2</sup> not standardised) in assortment boxes

**Note**

- For processing tools see the keyword index "crimping pliers for conductor end sleeves"

**Product Make-up**

**DIN-assorted boxes conductor end sleeves**

- DIN assortment box I: 30 x 0.25 - 6 mm BU, 30 x 0.34 - 6 mm YE, 30 x 0.5 - 8 mm WH, 30 x 0.75 - 8 mm GY, 30 x 1.00 - 8 mm RD
- DIN assortment box II: 50 x 0.5 - 8 mm WH, 100 x 0.75 - 8 mm GY, 100 x 1.00 - 8 mm RD, 100 x 1.5 - 8 mm BK, 50 x 2.5 - 8 mm BU
- DIN assortment box III: 40 x 4.00 - 10 mm GY, 20 x 6.0 - 12 mm YE, 20 x 10.00 - 12 mm RD, 10 x 16.00 - 12 mm BU

**AHI assorted boxes**

- AHI assortment box I (yellow): 30 x 0.25 - 6 mm LBU, 30 x 0.34 - 6 mm TO, 30 x 0.5 - 8 mm ON, 30 x 0.75 - 8 mm WH, 30 x 1.00 - 8 mm YE
- AHI assortment box II (orange): 50 x 0.5 - 8 mm OG, 100 x 0.75 - 8 mm WH, 100 x 1.00 - 8 mm YE, 100 x 1.5 - 8 mm RD, 50 x 2.5 - 8 mm BU
- AHI assortment box III (blue): 50 x 4.00 - 10 mm GY, 20 x 6.0 - 12 mm BK, 20 x 10.00 - 12 mm WH, 10 x 16.00 - 12 mm GN

**TWIN assorted boxes**

- 2x0,75 - 8mm, 2x1,00 - 8mm, 2x1,05 - 8mm, 2x2,50 - 10mm

**Technical data**



ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description: Cable end sleeve

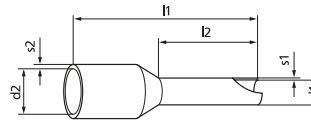
Article number	Article designation	For mm <sup>2</sup>	Contents (unit)	PU
<b>DIN assortment box</b>				
61802040	DIN assortment box I	0.25 - 1.00	150 x 1	1
61802041	DIN assortment box II	0.50 - 2.50	400 x 1	1
61802042	DIN assortment box III	4.00 - 16.00	100 x 1	1
<b>Black, grey, orange, yellow, white</b>				
61794720	AHI assortment box I	0.25 - 1.00	150 x 1	1
61794730	AHI assortment box II	0.50 - 2.50	400 x 1	1
61794740	AHI assortment box III	4.00 - 16.00	100 x 1	1
<b>TWIN assortment box</b>				
61802046	TWIN assortment box	2 x 0,75 - 2 x 2,5	200 x 1	1

Photographs are not to scale and do not represent detailed images of the respective products.





## Conductor end sleeves XL, insulated



### Info

- Suitable conductor end sleeves for UL(MTW)-CSA-HAR multi-standard single cores

### Benefits

- The specially produced conductor end sleeves with funnel-shaped insulation sleeve opening make it significantly easier to slip on the strands.

### Application range

- Suitable conductor end sleeves for UL(MTW)-CSA-HAR multi-standard single cores
- Because of their certifications for numerous markets, special conductor end sleeves with the cross sections listed below are needed for our multi-standard single cores.
- The conductor is permanently connected to the collar by crimping

### Norm references / Approvals

- All DIN conductor end-sleeves are in accordance with DIN 46228 Part 4
- CSA approved, File-Number: 2110332
- A CSA mark with the indication "C" and "US" means that the product is certified both for the U.S. and Canadian markets, to the applicable U.S. and Canadian standards.

### Note

- For 0,25 mm<sup>2</sup>, 4 mm<sup>2</sup>, 6 mm<sup>2</sup> and 10 mm<sup>2</sup> the standard AHI end sleeves could be used as the insulation thickness does only vary slightly from "standard cables".

### Suitable cables

- MULTI-STANDARD SC 1 Page 211
- MULTI-STANDARD SC 2.2
- MULTI-STANDARD SC 2.1

### Suitable tools

- PEW 8.186 crimping pliers refer to page 1015
- MULTICRIMP 6 crimping pliers
- PEW 8.87 crimping pliers refer to page 1016

### Technical data



ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description:  
Cable end sleeve



**Certifications**  
In accordance with DIN 46228



**Note**  
For processing tools see the keyword index "crimping pliers for conductor end sleeves"



**Info**  
Halogen-free and silicone-free



**Material**  
Sleeve made of tin-plated electrolytic copper  
Polypropylene plastic collar



**Temperature range**  
Permanent load -5°C up to +105°C,  
temporary load +120°C

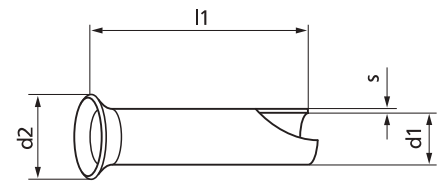
Article number	Article designation	For mm <sup>2</sup>	AWG	Colour	l1 mm	l2 mm	d 1 mm	s1 mm	d 2 mm	s2 mm	Pieces / PU
<b>Conductor end sleeves XL, insulated</b>											
61802061	Conductor end sleeves XL 0.5 WH 8	0.50	20	white	13.5	8	1.1	0.15	3	0.25	500
61802062	Conductor end sleeves XL 0.5 WH 10	0.50	20	white	15.5	10	1.1	0.15	3	0.25	500
61802063	Conductor end sleeves XL 0.75 GY 8	0.75	18	grey	14	8	1.3	0.15	3.4	0.3	500
61802064	Conductor end sleeves XL 0.75 GY 10	0.75	18	grey	16	10	1.3	0.15	3.4	0.3	500
61802065	Conductor end sleeves XL 1.0 RD 8	1.00	18	red	14	8	1.5	0.15	3.4	0.3	500
61802066	Conductor end sleeves XL 1.0 RD 10	1.00	18	red	16	10	1.5	0.15	3.4	0.3	500
61802067	Conductor end sleeves XL 1.5 BK 8	1.50	16	black	14	8	1.8	0.15	3.8	0.3	500
61802068	Conductor end sleeves XL 1.5 BK 10	1.50	16	black	16	10	1.8	0.15	3.8	0.3	500
61802069	Conductor end sleeves XL 16.0 BU 12	16.00	6	blue	23	12	6	0.2	9.5	0.4	100

Sleeves are available in 8 and 10 mm lengths, depending on the type of application.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Conductor end sleeves insulated refer to page 1007

## Conductor end sleeves AH, not insulated



### Benefits

- Slightly funnel-shaped opening makes it easy to slip it onto the core

### Application range

- Control cabinet wiring

### Norm references / Approvals

- In accordance with DIN 46228


### Note


- For processing tools see the keyword index "crimping pliers for conductor end sleeves"
- Other sizes are available upon request
- Assortment box 0,5-2,5 mm<sup>2</sup> (article no.61802048) available upon request

### Suitable tools

- PEW 8.185 crimping pliers refer to page 1015
- PEW 8.186 crimping pliers refer to page 1015
- PEW 8.87 crimping pliers refer to page 1016
- KEB 1025 crimping pliers refer to page 1016
- KEB 3550 crimping pliers refer to page 1016
- CK 90 crimping pliers refer to page 1017

### Technical data

 ETIM 5.0 Class-ID: EC000005  
ETIM 5.0 Class-Description:  
Cable end sleeve

 **Material**  
Tinned electrolyte copper

 **Temperature range**  
- 55°C up to +200 °C

Article number	Article designation	For mm <sup>2</sup>	AWG	l1 mm	d 1 mm	d 2 mm	s mm	Pieces / PU
<b>Conductor end sleeves AH, not insulated</b>								
62120200	AH DIN 0,5/6	0.50	20	6	1	2.1	0.15	500
62120210	AH DIN 0,75/6	0.75	20	6	1.2	2.3	0.15	500
61721530	AH DIN 0,75/10	0.75	20	10	1.2	2.3	0.15	500
62120220	AH DIN 1/6	1.00	18	6	1.4	2.5	0.15	500
61721540	AH DIN 1/10	1.00	18	10	1.4	2.5	0.15	500
62120230	AH DIN 1,5/7	1.50	16	7	1.7	2.8	0.15	500
61721550	AH DIN 1,5/10	1.50	16	10	1.7	2.8	0.15	500
62120240	AH DIN 2,5/7	2.50	14	7	2.2	3.4	0.15	500
61721560	AH DIN 2,5/12	2.50	14	12	2.2	3.4	0.15	500
62120250	AH DIN 4/9	4.00	12	9	2.8	4	0.2	500
62120260	AH DIN 6/10	6.00	10	10	3.5	4.7	0.2	500
62120270	AH DIN 10/12	10.00	8	12	4.5	5.8	0.2	500
62120280	AH DIN 16/12	16.00	6	12	5.8	7.5	0.2	500

Other sizes are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.



## QUADRO multifunction tool



### Benefits

- Integration of four key functions: cutting - insulation stripping - twisting - crimping- in one tool
- Perfect synthesis of ergonomics and functionality
- High mechanical advantage assures easy crimping.
- Changing the magazine for another cross-section takes only seconds
- No adjustment necessary for different cross-sections

### Application range

- Multi-function tool
- Twisting
- Crimping
- Cutting
- Connection and crimping of insulated end sleeves

### Product features

- Cutting of wires up to 2.5 mm diameter
- Fanning out of strands is prevented by the integrated twist device

### Norm references / Approvals

- Trapezoidal pressing in accordance with VDE 0609 Part I
- GS-logo for proven safety

### Note

- Only use the end sleeves which are particular meant for the QUADRO tool

### Included

- Article no. 61805300: Case with tool and three magazines
- Article no. 61805301: Tool without case and magazine
- Article no. 61805302: Storage box for conductor end sleeves

### Technical data



ETIM 5.0 Class-ID: EC000163  
ETIM 5.0 Class-Description:  
Cable stripping tool

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Pieces / PU
<b>QUADRO multifunction tool</b>					
61805300	QUADRO Set	0.50 - 2.50	Similar to trapezoid	-	1
61805301	QUADRO pliers	0.50 - 2.50	Similar to trapezoid	0.22	1
61805302	QUADRO magazine	0.50 - 2.50	Similar to trapezoid	-	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- DIN-strips for QUADRO refer to page 1009



**PEW 8.185 crimping pliers / PEW 8.186 crimping pliers**



**PEW 8.185 crimping pliers**



**PEW 8.186 crimping pliers**

**Benefits**

- Improved versions of the predecessors PEW 8.84/MULTICRIMP 6:
  - Expanded capacity
  - Average hand force reduced by approx. 20 % compared to previous model
  - Reduced opening width and improved ergonomics
  - High-precision die geometry leads to a clearly defined crimp shape of the ferrule
- Uniform feed on the crimp die guarantees exact crimping profiles
- DIN compliant crimping quality due to integral lock (self-releasing mechanism)
- Automatic self-adjustment to requested wire size

**Application range**

- Could be used up to a sleeve length of 20 mm (for sleeves longer than 12 mm at least 2 crimps are necessary)
- For pressing insulated and non-insulated conductor end sleeves

**PEW 8.185 crimping pliers**

- Cross-section range from 0.08 - 16 mm<sup>2</sup> with square pressing

**PEW 8.186 crimping pliers**

- Cross-section range from 0.08 - 10 mm<sup>2</sup> with hexagonal pressing

**Product features**

- Made of chromium-plated tool steel
- Made in Germany

**Note**

- End sleeves up to 12 mm only needs to be pressed once, longer end sleeves (up to a 20 mm lengths) needs to be pressed at least twice

**Technical data**



ETIM 5.0 Class-ID: EC000168  
 ETIM 5.0 Class-Description:  
 Crimp tool cable lugs, cable end sleeves, screen connection

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>PEW 8.185 crimping pliers</b>						
61813736	PEW 8.185	0.08 - 16.00	square	0.38	180	1
<b>PEW 8.186 crimping pliers</b>						
61813737	PEW.8.186	0.08 - 10.00	hexagon	0.38	180	1

Photographs are not to scale and do not represent detailed images of the respective products.  
 Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

**Similar products**

- PEW 8.87 crimping pliers refer to page 1016

**Accessories**

- Conductor end sleeves insulated refer to page 1007
- Conductor end sleeves AH, not insulated refer to page 1013

## PEW 8.87 crimping pliers



### Benefits

- For the simplest handling where space is limited (control cabinets, machinery/ internal wiring)
- Covers a wide range of diameters: 0,08 - 10 mm<sup>2</sup> (PEW 8.87) 0,08-16 mm<sup>2</sup> (PEW 8.87 Plus)
- Made in Germany
- Leverage grip boosts crimp power for tireless working

### Application range

- Crimping tool for end sleeves (square form)
- Self-adjusts to the desired ferrule size
- Square crimping profile with four profiled crimping surfaces

### Product features

- Burnished

### Product Make-up


- PEW 8.87: With front and side feed (up to 2,5 mm<sup>2</sup>)
- PEW 8.87 Plus: With front feed


### Note

- Recommended for end sleeves up to 16 mm length- for longer end sleeves we recommend the use of the PEW 8.185/8.186 (several crimps necessary) or the use of the PEW 12 tool with the suitable insert

End sleeves up to 12 mm only needs to be pressed once, longer end sleeves (up to a 20 mm lengths) needs to be pressed at least twice

### Technical data

 ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

 **General**  
Pressing length: up to 16 mm  
Crimping profile: Square

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>PEW 8.87 crimping pliers</b>						
61813742	PEW 8.87	0.08 - 10.00	square	0.475	190	1
61813744	PEW 8.87 Plus	0.08 - 16.00	square	0.475	190	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- Conductor end sleeves insulated refer to page 1007

## KEB 1025 crimping pliers / KEB 3550 crimping pliers



**KEB 1025 crimping pliers**

**KEB 3550 crimping pliers**

### Benefits

- Unique mechanism reduces the manual force from 450 N to 250 N
- Handles suit both large and small hands
- Locking function that is released only after completion of the pressing operation
- Tested for a minimum of 80,000 pressings

### Application range

#### KEB 1025 crimping pliers

- Mini-force tools for pressing insulated and non-insulated conductor end sleeves from 10 - 25 mm<sup>2</sup>

### KEB 3550 crimping pliers

- Mini-force tools for pressing insulated and non-insulated conductor end sleeves from 35 - 50 mm<sup>2</sup>

### Product features


- Emergency release, if the pressing operation needs to be interrupted


### Norm references / Approvals

#### KEB 1025 crimping pliers

- Tested in accordance with DIN standard EN 60352-2

### Technical data

 ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

 **Note**  
Crimping profile: Particular developed form in the style of a W-crimp

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>KEB 1025 crimping pliers</b>						
61791065	KEB 1025	10.00 - 25.00	trapezoid	0.5	220	1
<b>KEB 3550 crimping pliers</b>						
61791095	KEB 3550	35.00 - 50.00	trapezoid	0.5	220	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

#### KEB 1025 Crimpzange

- Conductor end sleeves insulated refer to page 1007



## CK 90 crimping pliers



### Benefits

- Forced locking guarantees complete pressing

### Application range

- Crimping tool for very large conductor end sleeves from 50 - 95 mm<sup>2</sup>
- For pressing insulated and non-insulated conductor end sleeves

### Product features

- 3 pressing matrices with side insertion: 50/ 70/ 95 mm<sup>2</sup>

### Technical data

ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

**General**  
Width: 90 mm

**Note**  
Crimping profile: Trapezoid

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>CK 90 crimping pliers</b>						
62120189	CK 90	50.00 - 90.00	trapezoid	0.18	300	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Conductor end sleeves insulated refer to page 1007



## KEBS 0560 TWIN crimping pliers



### Benefits

- Locking function that is released only after completion of the pressing operation
- Unique mechanism reduces the manual force from 450 N to 250 N
- Handles suit both large and small hands
- Tested for a minimum of 80,000 pressings

### Application range

- Pliers with front pressing for insulated/ non-insulated conductor end sleeves and TWIN conductor end sleeves

### Product features

- Pressing length: up to 16 mm
- Front feed

### Technical data

ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

**General**  
Adjustable crimping pressure

**Note**  
Crimping profile: Trapezoid

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>KEBS 0560 TWIN crimping pliers</b>						
61791055	KEBS 0560 TWIN	2x0,5 - 2x4 (0,1 - 6)	trapezoid	0.5	220	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- TWIN conductor end sleeves refer to page 1010



## Insulated cable lugs



### Benefits

- EASY-ENTRY funnel shape of the plastic sleeve enables simple, fast and safe insertion of the conductor
- No risk of bent and crushed cables
- For good strength and improved current conduction

### Application range

- Manufacturing of control cabinets and equipment

### Product features

- Hard-soldered cable lug that can be pressed in any position
- For first-class connection with simple operating principle
- Electrolytic tinning for max. corrosion protection
- Flat receptacle material in contact pressing is double-folded and hard-soldered
- Metal sleeves with internal corrugation

### Norm references / Approvals

- Tested in accordance with DIN IEC 60352 / SEN 245010 / BS 4579
- Design 1+2: DIN 46237
- Design 7: DIN 46228
- File Number E334109, see table

### Note

- Butt connector: Solid conductors and fine stranded wires and diverse cross-sections can be crimped together

### Design

- 1 = ring cable lugs
- 2 = forked cable lugs
- 3 = pin cable lugs
- 4 = circular connector
- 5 = connector sleeve
- 6 = butt connector
- 7 = end connector (see pictures- from left to right)

### Suitable tools

- DSA 0110 + DSA 0725 crimping pliers refer to page 1024
- CSA 0760 + KSA 0760 crimping pliers refer to page 1024

### Technical data

ETIM 5.0 Class-ID: EC001052  
ETIM 5.0 Class-Description: Solderless copper terminals for copper conductors

**General**  
Other sizes and colours (also DIN) are available upon request  
Halogen-free

**Note**  
For processing tools see the keyword index "crimping pliers for other connections"

**Material**  
High-quality electrolytic copper for good conductivity  
Polyamide insulation

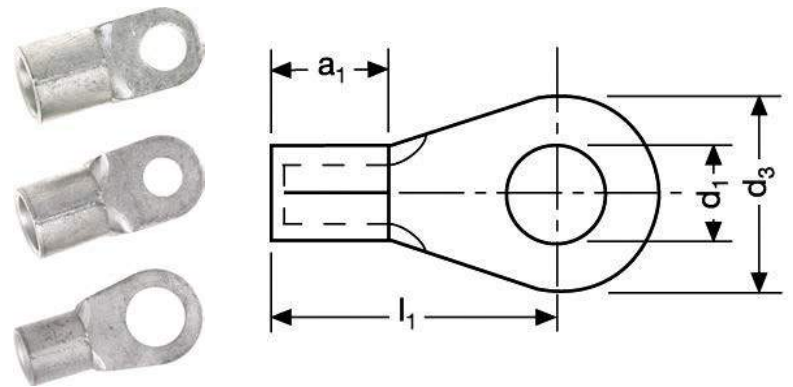
**Temperature range**  
-20°C to +105°C  
Short-term: up to +120°C

Article number	Article designation	For mm <sup>2</sup>	UL certification	Connection bolt	Core colour	Pieces / PU
<b>Ring cable lugs</b>						
63104010	L-RZ 3	0.25 - 0.75	no	M 3	green	100
63104020	L-RZ 4	0.25 - 0.75	no	M 4	green	100
63104030	L-RZ 5	0.25 - 0.75	no	M 5	green	100
63104040	L-RA 3	0.5 - 1.5	yes	M 3	red	100
63104050	L-RA 3.5	0.5 - 1.5	yes	M 3.5	red	100
63104060	L-RA 4	0.5 - 1.5	yes	M 4	red	100
63104070	L-RA 5	0.5 - 1.5	yes	M 5	red	100
63104080	L-RA 6	0.5 - 1.5	yes	M 6	red	100
63104160	L-RB 3	1.5 - 2.5	yes	M 3	blue	100
63104170	L-RB 4	1.5 - 2.5	yes	M 4	blue	100
63104180	L-RB 5	1.5 - 2.5	yes	M 5	blue	100
63104190	L-RB 6	1.5 - 2.5	yes	M 6	blue	100
63104200	L-RB 8	1.5 - 2.5	yes	M 8	blue	100
63104340	L-RC 4	4 - 6	yes	M 4	yellow	100
63104350	L-RC 5	4 - 6	yes	M 5	yellow	50
63104360	L-RC 6	4 - 6	yes	M 6	yellow	50
63104370	L-RC 8	4 - 6	yes	M 8	yellow	100
63104380	L-RC 10	4 - 6	yes	M 10	yellow	50
<b>Fork cable lugs</b>						
63105010	L-RZ 3 F	0.25 - 0.75	no	M 3	green	100
63105020	L-RZ 4 F	0.25 - 0.75	no	M 4	green	100
63105050	L-RA 4 F	0.5 - 1.5	yes	M 4	red	100
63105060	L-RA 5 F	0.5 - 1.5	yes	M 5	red	100
63105070	L-RA 6 F	0.5 - 1.5	yes	M 6	red	100
63105130	L-RB 4 F	1.5 - 2.5	yes	M 4	blue	100
63105140	L-RB 5 F	1.5 - 2.5	yes	M 5	blue	100
63105150	L-RB 6 F	1.5 - 2.5	yes	M 6	blue	100
63105210	L-RC 4 F	4 - 6	yes	M 4	yellow	100
63105220	L-RC 5 F	4 - 6	yes	M 5	yellow	100
63105230	L-RC 6 F	4 - 6	yes	M 6	yellow	50
63105040	L-RA 3.5 F	0.5 - 1.5	yes	M 3.5	red	100
63105110	L-RB 3 F	1.5 - 2.5	yes	M 3	blue	100
63105120	L-RB 3.5 F	1.5 - 2.5	yes	M 3.5	blue	100
<b>Flange fork cable lugs</b>						
63108010	L-RA 3.5 FF	0.5 - 1.5	no	M 3.5	red	100
63108040	L-RB 4 FF	1.5 - 2.5	no	M 4	blue	100
63108050	L-RB 5 FF	1.5 - 2.5	no	M 5	blue	100

Article number	Article designation	For mm <sup>2</sup>	UL certification	Connection bolt	Core colour	Pieces / PU
<b>Pin cable lugs</b>						
63107010	L-RZP	0.25 - 0.75	no		green	100
63107020	L-RAP	0.5 - 1.5	yes		red	100
63107040	L-RBP	1.5 - 2.5	yes		blue	100
63107070	L-RCP	4 - 6	yes		yellow	100
<b>Circular connector</b>						
63110010	L-RABM	0.5 - 1.5	no		red	100
63110020	L-RB 5 BM	1.5 - 2.5	no		blue	100
<b>Connector sleeve</b>						
63111010	L-RAB	0.5 - 1.5	no		red	100
63111020	L-RB 5 B	1.5 - 2.5	no		blue	100
<b>Butt connector</b>						
63106020	L-RAA 15	0.5 - 1.5	yes		red	100
63106040	L-RBB 25	1.5 - 2.5	yes		blue	100
63106080	L-RCC 6	4 - 6	yes		yellow	50
<b>End joint</b>						
63112010	L-RBJ	1.5 - 2.5	no		transparent	100
63112020	L-RCJ	4 - 6	no		transparent	50

Other sizes and colours are available upon request.  
 Photographs are not to scale and do not represent detailed images of the respective products.  
 Production tolerance ± 0,5 mm

### Solderless cable lugs KB



#### Benefits

- For first-class connection with simple operating principle
- Thus providing the best electrical conductivity (least resistance)

#### Application range

- For cables with category 2,5 and 6 conductors
- Manufacturing of control cabinets and equipment
- Trains and buses

#### Norm references / Approvals

- In accordance with VG 88710
- Coil form DIN 46234, non-insulated

#### Note

- For processing tools see the keyword index "crimping pliers for other connections"

#### Suitable tools

- PEW 12 universal tool refer to page 1034
- V 1311-A pressing pliers, hydraulic refer to page 1030
- DKB 0325 + DKB 0360 crimping pliers refer to page 1026

#### Technical data

- ETIM 5.0 Class-ID: EC001052  
ETIM 5.0 Class-Description: Solderless copper terminals for copper conductors
- Note**  
s = thickness of material
- Material**  
High-quality electrolytic copper for good conductivity
- Temperature range**  
Max. temperature: +120°C (short-term)  
Temperature range up to +90°C

Article number	Article designation	For mm <sup>2</sup>	UL certification	AWG	Nominal size	d1	d3	l1	a1	s	Pieces / PU
<b>Solderless cable lugs KB</b>											
63204015	KB1-2,5R DIN 46234	0.5 - 1.5	no	22-16	2.5-1.0	2.8	6	11	5		100
63204025	KB1-3R DIN 46234	0.5 - 1.5	no	22-16	3.2-1.0	3.2	6	11	5	0.8	100
63204035	KB1-3,5R DIN 46234	0.5 - 1.5	no	22-16	3.5-1.0	3.7	6	11	5	0.8	100
63204045	KB1-4R DIN 46234	0.5 - 1.5	no	22-16	4.0-1.0	4.3	8	12	5	0.8	100
63204055	KB1-5R DIN 46234	0.5 - 1.5	no	22-16	5.0-1.0	5.3	10	13	5	0.8	100
63204065	KB1-6R DIN 46234	0.5 - 1.5	no	22-16	6.0-1.0	6.5	10	13	5	0.8	100
63204075	KB1-8R DIN 46234	0.5 - 1.5	no	22-16	8.0-1.0	8.4	14	17	5	0.8	100
63204085	KB1-10R DIN 46234	0.5 - 1.5	no	22-16	10.0-1.0	10.5	14	17	5	0.8	100
63204095	KB2,5-3R DIN 46234	1.5 - 2.5	no	16-14	3.0-2.5	3.2	6	11	5	0.8	100
63204105	KB2,5-3,5R DIN 46234	1.5 - 2.5	no	16-14	3.5-2.5	3.7	6	11	5	0.8	100
63204115	KB2,5-4R DIN 46234	1.5 - 2.5	no	16-14	4.0-2.5	4.3	8	12	5	0.8	100
63204125	KB2,5-5R DIN 46234	1.5 - 2.5	no	16-14	5.0-2.5	5.3	10	14	5	0.8	100
63204135	KB2,5-6R DIN 46234	1.5 - 2.5	no	16-14	6.0-2.5	6.5	11	16	5	0.8	100
63204145	KB2,5-8R DIN 46234	1.5 - 2.5	no	16-14	8.0-2.5	8.4	14	17	5	0.8	100
63204155	KB2,5-10R DIN 46234	1.5 - 2.5	no	16-14	10.0-2.5	10.5	14	17	5	0.8	100
63204165	KB2,5-12R DIN 46234	1.5 - 2.5	no	16-14	12.0-2.5	13	18	20	5	0.8	100
63204175	KB6-4R DIN 46234	2.5 - 6	no	12-10	4.0-6.0	4.3	8	14	6	1	100
63204185	KB6-5R DIN 46234	2.5 - 6	no	12-10	5.0-6.0	5.3	10	15	6	1	100

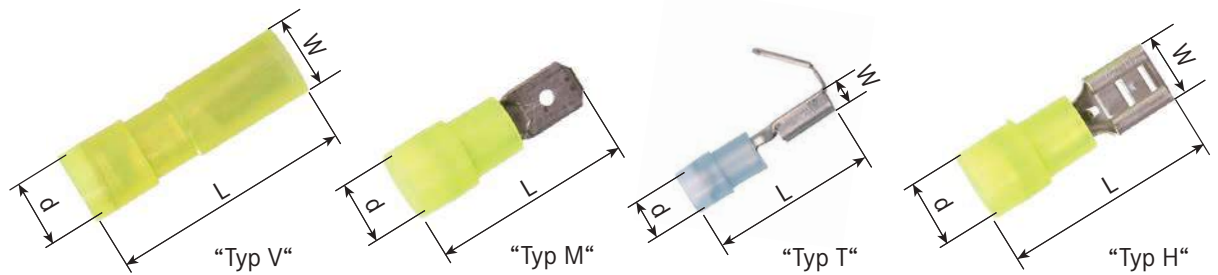


Article number	Article designation	For mm <sup>2</sup>	UL certification	AWG	Nominal size	d1	d3	l1	a1	s	Pieces / PU
63204195	KB6-6R DIN 46234	2.5 - 6	no	12-10	6.0-6.0	6.5	11	16	6	1	100
63204205	KB6-8R DIN 46234	2.5 - 6	no	12-10	8.0-6.0	8.4	14	19	6	1	100
63204215	KB6-10R DIN 46234	2.5 - 6	no	12-10	10.0-6.0	10.5	18	21	6	1	100
63204225	KB6-12R DIN 46234	2.5 - 6	no	12-10	12.0-6.0	13	18	21	6	1	100
63204235	KB10-5R DIN 46234	10	no	8	5.0-10.0	5.3	10	16	8	1.1	100
63204245	KB10-6R DIN 46234	10	no	8	6.0-10.0	6.5	11	17	8	1.1	100
63204255	KB10-8R DIN 46234	10	no	8	8.0-10.0	8.4	14	20	8	1.1	100
63204265	KB10-10R DIN 46234	10	no	8	10.0-10.0	10.5	18	21	8	1.1	100
63204275	KB10-12R DIN 46234	10	no	8	12.0-10.0	13	22	23	8	1.1	100
63204285	KB16-5R DIN 46234	16	no	6	5.0-16.0	5.3	11	20	10	1.2	100
63204295	KB16-6R DIN 46234	16	no	6	6.0-16.0	6.5	11	20	10	1.2	100
63204305	KB16-8R DIN 46234	16	no	6	8.0-16.0	8.4	14	22	10	1.2	100
63204315	KB16-10R DIN 46234	16	no	6	10.0-16.0	10.5	18	24	10	1.2	100
63204325	KB16-12R DIN 46234	16	no	6	12.0-16.0	13	22	26	10	1.2	100
63204335	KB25-5R DIN 46234	25	no	4	5.0-25.0	5.3	12	25	11	1.5	100
63204345	KB25-6R DIN 46234	25	no	4	6.0-25.0	6.5	12	25	11	1.5	100
63204355	KB25-8R DIN 46234	25	no	4	8.0-25.0	8.4	16	25	11	1.5	100
63204365	KB25-10R DIN 46234	25	no	4	10.0-25.0	10.5	18	26	11	1.5	100
63204375	KB25-12R DIN 46234	25	no	4	12.0-25.0	13	31	31	11	1.5	100
63204385	KB25-16R DIN 46234	25	no	4	16.0-25.0	17	35	36	11	1.5	100
63204395	KB35-6R DIN 46234	35	no	2	6.0-35.0	6.5	15	26	12	1.6	100
63204405	KB35-8R DIN 46234	35	no	2	8.0-35.0	8.4	16	26	12	1.6	100
63204415	KB35-10R DIN 46234	35	no	2	10.0-35.0	10.5	18	27	12	1.6	100
63204425	KB35-12R DIN 46234	35	no	2	12.0-35.0	13	22	31	12	1.6	100
63204435	KB35-16R DIN 46234	35	no	2	16.0-35.0	17	28	36	12	1.6	100
63204445	KB50-6R DIN 46234	50	no	1/0	6.0-50.0	6.5	18	34	16	1.8	100
63204455	KB50-8R DIN 46234	50	no	1/0	8.0-50.0	8.4	18	34	16	1.8	100
63204465	KB50-10R DIN 46234	50	no	1/0	10.0-50.0	10.5	18	34	16	1.8	100
63204475	KB50-12R DIN 46234	50	no	1/0	12.0-50.0	13	22	36	16	1.8	100
63204485	KB50-16R DIN 46234	50	no	1/0	16.0-50.0	17	28	40	16	1.8	100
63204495	KB70-6R DIN 46234	70	no	2/0	6.0-70.0	6.5	22	38	18	2	100
63204505	KB70-8R DIN 46234	70	no	2/0	8.0-70.0	8.4	22	38	18	2	100
63204515	KB70-10R DIN 46234	70	no	2/0	10.0-70.0	10.5	22	38	18	2	100
63204525	KB70-12R DIN 46234	70	no	2/0	12.0-70.0	13	22	38	18	2	100
63204535	KB70-16R DIN 46234	70	no	2/0	16.0-70.0	17	28	42	18	2	100
63204545	KB95-8R DIN 46234	95	no	3/0	8.0-95.0	8.4	24	42	20	2.5	50
63204555	KB95-10R DIN 46234	95	no	3/0	10.0-95.0	10.5	24	42	20	2.5	50
63204565	KB95-12R DIN 46234	95	no	3/0	12.0-95.0	13	24	42	20	2.5	50
63204575	KB95-16R DIN 46234	95	no	3/0	16.0-95.0	17	28	44	20	2.5	50
63204585	KB120-8R DIN 46234	120	no	4/0	8.0-120.0	8.4	24	44	22	3	25
63204595	KB120-10R DIN 46234	120	no	4/0	10.0-120.0	10.5	24	44	22	3	25
63204605	KB120-12R DIN 46234	120	no	4/0	12.0-120.0	13	24	44	22	3	25
63204615	KB120-16R DIN 46234	120	no	4/0	16.0-120.0	17	28	48	22	3	25
63204625	KB150-10R DIN 46234	150	no	5/0	10.0-150.0	10.5	30	50	24	3.2	25
63204635	KB150-12R DIN 46234	150	no	5/0	12.0-150.0	13	30	50	24	3.2	25
63204645	KB150-16R DIN 46234	150	no	5/0	16.0-150.0	17	30	50	24	3.2	25
63204655	KB185-10R DIN 46234	185	no	6/0	10.0-185.0	10.5	36	50	28	3.5	20
63204665	KB185-12R DIN 46234	185	no	6/0	12.0-185.0	13	36	50	28	3.5	20
63204675	KB185-16R DIN 46234	185	no	6/0	16.0-185.0	17	36	50	28	3.5	20
63204685	KB240-10R DIN 46234	240	no	7/0	10.0-240.0	10.5	38	56	32	4	10
63204695	KB240-12R DIN 46234	240	no	7/0	12.0-240.0	13	38	56	32	4	10
63204705	KB240-16R DIN 46234	240	no	7/0	16.0-240.0	17	38	56	32	4	10

Photographs are not to scale and do not represent detailed images of the respective products.



## Panel connectors insulated



### Benefits

- For first-class connection with simple operating principle
- Hard-soldered cable lug that can be pressed in any position
- Thus providing the best electrical conductivity (least resistance)
- No risk of bent and crushed cables

### Application range

- Control cabinet manufacturing
- Cable assembly

### Norm references / Approvals

- File Number E334111, see table

### Design

- For higher tensile strength
- For good strength and improved current conduction
- Flat receptacle material in contact pressing is double-folded and hard-soldered
- EASY-ENTRY funnel shape of the plastic sleeve enables simple, fast and safe insertion of the conductor
- 1 = push-on female terminal, type H  
2 = push-on piggyback terminal, type T  
3 = push-on male terminal, type M  
4 = push-on female terminal (fully insulated), type V

### Suitable tools

- DSA 0110 + DSA 0725 crimping pliers refer to page 1024
- CSA 0760 + KSA 0760 crimping pliers refer to page 1024

### Technical data

- ETIM 5.0 Class-ID: EC000516  
ETIM 5.0 Class-Description: Round plug/flat receptacle
- Material**  
Brass tin-plated  
Polycarbonate insulation
- Temperature range**  
-20°C to +105°C  
Short-term: up to +120°C

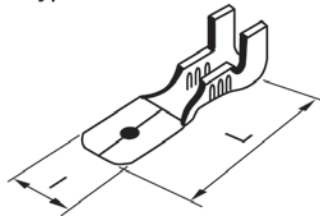
Article number	Article designation	For mm <sup>2</sup>	UL certification	Footnote	Colour	Blade connection	d mm	L	W mm	Pieces / PU
<b>Blade receptacle according to DIN 46245 and similar (type H)</b>										
63101020	L-RA 29 H	0.50 - 1.50	yes		red	2.8 x 0.5	3.3	18.5	3.5	100
63101010	L-RA 28 H	0.50 - 1.50	yes		red	2.8 x 0.8	3.3	18.5	3.5	100
63101030	L-RA 49 H	0.50 - 1.50	yes	1.3	red	4.8 x 0.5	3.7	19	5.7	100
63101040	L-RA 48 H	0.50 - 1.50	yes	1.3	red	4.8 x 0.8	3.7	19	5.7	100
63101050	L-RA 63 H	0.50 - 1.50	yes		red	6.3 x 0.8	4	20	7.6	100
63101060	L-RB 48 H	1.50 - 2.50	yes	1.3	blue	4.8 x 0.5	4.4	19	5.7	100
63101070	L-RB 49 H	1.50 - 2.50	yes	1.3	blue	4.8 x 0.8	4.4	19	5.7	100
63101080	L-RB 63 H	1.50 - 2.50	yes		blue	6.3 x 0.8	4.5	20	7.6	100
63101110	L-RC 63 H	4.00 - 6.00	yes		yellow	6.3 x 0.8	6.4	24	7.6	100
63101120	L-RC 95 H	4.00 - 6.00	no		yellow	9.5 x 1.2	6.2	31	11	100
<b>Blade connector (type M)</b>										
63103010	L-RA 63 M	0.50 - 1.50	yes		red	6.3 x 0.8	4	22		100
63103020	L-RB 63 M	1.50 - 2.50	yes		blue	6.3 x 0.8	4.5	22		100
63103040	L-RC 63 M	4.00 - 6.00	yes	1.3	yellow	6.3 x 0.8	6.3	25		100
<b>Blade receptacle branch (type T)</b>										
63102010	L-RA 63 T	0.50 - 1.50	no	1.3	red	6.3 x 0.8	3.7	22	7.4	100
63102020	L-RB 63 T	1.50 - 2.50	no	1.3	blue	6.3 x 0.8	4.3	22	7.5	50
<b>Fully insulated blade receptacle (type V)</b>										
61794951	L-RA 29 V	0.50 - 1.50	yes	2.3	red	2.8 x 0.5	3.8	19.3	5	100
61794952	L-RA 28 V	0.50 - 1.50	yes	2.3	red	2.8 x 0.8	3.8	19.3	5	100
61794953	L-RA 49 V	0.50 - 1.50	yes	2.3	red	4.8 x 0.5	3.6	20.2	7.4	100
61794955	L-RA 48 V	0.50 - 1.50	yes	2.3	red	4.8 x 0.8	3.6	20.2	7.4	100
61794960	L-RA 63 V	0.50 - 1.50	yes		red	6.3 x 0.8	4.4	21	8.8	100
61794969	L-RB 48 V	1.50 - 2.50	yes	2.3	blue	4.8 x 0.8	4.3	20	7.4	100
61794970	L-RB 63 V	1.50 - 2.50	yes		blue	6.3 x 0.8	4.5	21	8.8	100
61794971	L-RC 63 V	4.00 - 6.00	yes	2.3	yellow	6.3 x 0.8	5.3	26	9	100

1 = PVC insulation, not easy-entry; 2 = polyamide (nylon) insulation, not easy-entry; 3 = unsoldered, with additional brass sleeve  
Photographs are not to scale and do not represent detailed images of the respective products.

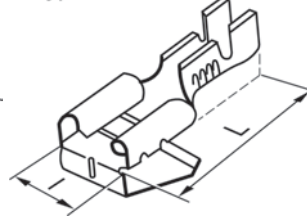
## Panel connectors non-insulated



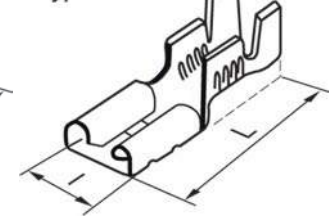
Type M



Type T



Type F



### Benefits

- For electrical connection of different components
- Maximum corrosion protection due to electrolytically tinned brass


### Note

- The choice of the correct tool is depending on the cross-section of the conductor and on the blade connection


### Suitable tools


- DRB 0505 + DRB 0115 crimping pliers refer to page 1025
- KRB 0560 crimping pliers refer to page 1025

### Technical data

 ETIM 5.0 Class-ID: EC000516

ETIM 5.0 Class-Description: Round plug/flat receptacle

 **Material**  
Brass tin-plated

 **Temperature range**  
Temperature range up to +90°C

Article number	Article designation	For mm <sup>2</sup>	UL certification	Tool	Blade connection	I	L	Pieces / PU
<b>Blade receptacle according to DIN 46247</b>								
63501060	L-BA 285 F	0.50 - 1.00	no	DRB 0155	2.8 x 0.5	5	12.7	100
63501070	L-BA 288 F	0.50 - 1.00	no	DRB 0155	2.8 x 0.8	5	12.7	100
63501080	L-BA 485 F	0.75 - 1.50	no	KRB 0560	4.8 x 0.5	6.4	16	100
63501090	L-BA 488 F	0.75 - 1.50	no	KRB 0560	4.8 x 0.8	6.4	16	100
63501120	L-BA 638 F	0.75 - 1.50	no	KRB 0560	6.3 x 0.8	7.6	19	100
63501130	L-BB 638 F	1.50 - 2.50	no	KRB 0560	6.3 x 0.8	7.6	19	100
63501140	L-BC 638 F	4.00 - 6.00	no	KRB 0560	6.3 x 0.8	7.6	19	100
<b>Blade receptacle with branching</b>								
63501150	L-BA 638 T	0.50 - 1.50	no	KRB 0560	6.3 x 0.8	7.5	19	100
<b>Panel connectors (Plugs)</b>								
63501071	L-BA 288 M	0.50 - 1.00	no	DRB 0155	2.8 x 0.8	5.5	13	100
63501520	L-BA 638 M	0.50 - 1.00	no	KRB 0560	6.3 x 0.8	8	19	100
63501530	L-BB 638 M	1.50 - 2.50	no	KRB 0560	6.3 x 0.8	8	19	100

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Panel connectors with latch refer to page 1023

### Accessories

- ISO sleeve

## Panel connectors with latch

### Benefits

- For first-class connection with simple operating principle

### Suitable tools

- KRB 0560 crimping pliers refer to page 1025

### Technical data



ETIM 5.0 Class-ID: EC000516  
ETIM 5.0 Class-Description:  
Round plug/flat receptacle



**Material**  
Brass



**Temperature range**  
Typ M: max. +90 °C  
Typ F: max. +110 °C



Article number	Article designation	For mm <sup>2</sup>	UL certification	Blade connection	I	L	Pieces / PU
<b>Blade connector with locking notch (type M)</b>							
63501020	BM 638 M	1.00 - 2.50	no	6.3 x 0.8	16	28	100
63501022	BM-C 638 M	4.00 - 6.00	no	6.3 x 0.8	16	28	100
<b>Blade receptacle (type F)</b>							
63501010	B 638 F	1.50 - 2.50	no	6.3 x 0.8	7.5	19	100
63501012	B-C 638 F	4.00 - 6.00	no	6.3 x 0.8	7.5	19	100

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Panel connectors, non-insulated

## Panel connector sockets Type M / Type F

### Benefits

- Quick and easy separation of connection
- Together with blade connectors, these blade connector strips enable secure and easy assembly
- New connections can be made easily without any confusion

### Application range

- Replace terminal blocks or connectors in some occasions

### Note

- Only holding function

### Technical data



ETIM 5.0 Class-ID: EC000516  
ETIM 5.0 Class-Description:  
Round plug/flat receptacle



**Material**  
Polyamide



**Temperature range**  
max. +105 °C



Article number	Article designation	UL certification	Number of pins	Width W (mm)	Height (mm)	Depth (mm)	Pieces / PU
<b>Blade connector strips (type M)</b>							
63300100	408-2 M	no	2	15.3	13.2	32.2	100
63300110	408-4 M	no	4	27.5	16.8	32.6	100
63300120	408-6 M	no	6	31.2	18.8	32.9	100
63300130	408-8 M	no	8	40.4	18.8	33.1	100
<b>Panel connector-sockets (type F)</b>							
63300140	408-2 F	no	2	12.6	10	23.2	100
63300150	408-4 F	no	4	24.5	14.1	24	100
63300160	408-6 F	no	6	28.2	14.9	24.3	100
63300170	408-8 F	no	8	37.4	15.4	24.4	100

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Panel connectors non-insulated refer to page 1022



## DSA 0110 + DSA 0725 crimping pliers



### Benefits

- Suitable for left and right-handed users
- Less force required for perfect pressing
- Clearly marked press moulds
- Cross-section of press matrix is embossed in the cable lugs for checking
- Pressing according to the forced finish system

### Application range

- Safety pressing pliers for insulated connections
- For insulated cable lugs, blade connectors and other connectors

### Product features

- Emergency release, if the pressing operation needs to be interrupted

### Norm references / Approvals

- Tested in accordance with DIN standards

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



#### General

Adjustable crimping pressure



#### Note

Crimping profile: Oval

Article number	Article designation	For mm <sup>2</sup>	Weight (kg)	Length (mm)	Pieces / PU
<b>DSA 0110 + DSA 0725 crimping pliers</b>					
61722050	DSA 0110	0,1 - 1,5	0.35	225	1
61722060	DSA 0725	0,5 - 2,5	0.35	192	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Panel connectors insulated refer to page 1021
- Insulated cable lugs refer to page 1018



## CSA 0760 + KSA 0760 crimping pliers



### Benefits

- Clearly marked press moulds
- Less power required due to special mechanism
- Tested for a minimum of 80,000 pressings
- Pressing according to the forced finish system
- Cross-section of press matrix is embossed in the cable lugs for checking

### Product features

- Emergency release, if the pressing operation needs to be interrupted

### Norm references / Approvals

- Tested in accordance with DIN standard EN 60352-2

### Product Make-up

- CSA 0760: With C-frame, old design
- KSA 0760: With K-frame- extremely long handles for two-handed operation, improved ergonomics

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



#### Note

Crimping profile: Oval

### Application range

- The Miniforce tool for insulated connections of 0.5 - 6 mm<sup>2</sup>

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>CSA 0760 + KSA 0760 crimping pliers</b>						
61722070	CSA 0760	0,5 - 6.00	oval	0.5	220	1
61790910	KSA 0760	0,5 - 6.00	oval	0.54	255	1
61751950	Spare spring CSA/KSA/DSA 0760	-				1
61722071	Crimping insert for CSA + KSA 0760	-				1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Panel connectors insulated refer to page 1021
- Insulated cable lugs refer to page 1018



## DRB 0505 + DRB 0115 crimping pliers



### Benefits

- Less force required for perfect pressing
- Locking function for faultless pressing
- Clearly marked press moulds
- Tested for a minimum of 50,000 pressings

### Application range

- Roll pressing pliers for non-insulated flat connectors with 2.8 connection
- Also suitable for blade receptacles with latch

### Product features

- Emergency release, if the pressing operation needs to be interrupted

### Norm references / Approvals

- Tested in accordance with DIN standard EN 60352-2

### Product Make-up

- DRB 0505: Cross-section range: 0.05 - 0.5 mm<sup>2</sup>
- DRB 0115: Cross-section range: 0.1 - 1.5 mm<sup>2</sup>

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



**General**  
Adjustable crimping pressure



**Note**  
Crimping profile: Roller pressing

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	For blade connectors	Weight (kg)	Length (mm)	Pieces / PU
<b>DRB 0505 + DRB 0115 crimping pliers</b>							
61790930	DRB 0505	0,05 - 0,5	roller pressing	2.8	0.35	192	1
61790940	DRB 0115	0,1 - 1,5	roller pressing	2.8	0.35	192	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Panel connectors non-insulated refer to page 1022



## KRB 0560 crimping pliers



### Benefits

- Clearly marked press moulds
- Locking function for faultless pressing
- Handles suit both large and small hands
- Unique mechanism reduces the manual force from 450 N to 250 N
- Tested for a minimum of 80,000 pressings

### Application range

- The convenient roll pressing pliers for non-insulated blade connectors of 0.5 - 6 mm<sup>2</sup> with connection 4.8 and 6.3

### Norm references / Approvals

- Tested in accordance with DIN standard EN 60352-2

### Note

- The locator ensures the right positioning of the insulation and wire crimp which is particular important for the crimp quality of blade connectors.

### Included

- Article number 61790950 is delivered without locator
- Article number 61791100 contains locator

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



**General**  
Adjustable crimping pressure



**Note**  
Crimping profile: Roller pressing

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	For blade connectors	Weight (kg)	Length (mm)	Pieces / PU
<b>KRB 0560 crimping pliers</b>							
61790950	KRB 0560 without locator	0,5 - 6,00	roller pressing	4.8 + 6.3	0.54	255	1
61791100	KRB 0560 with locator	0,5 - 6,00	roller pressing	4.8 + 6.3	0.54	255	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Panel connectors non-insulated refer to page 1022



## DKB 0325 + DKB 0360 crimping pliers



### Benefits

- Locking function for faultless pressing
- Clearly marked press moulds
- Less force required for perfect pressing
- Tested for a minimum of 80,000 pressings

### Application range

- Safety pressing pliers for non-insulated connections
- For non-insulated cable lugs, other connectors and tubular cable lugs KR

### Product features

- Emergency release, if the pressing operation needs to be interrupted

### Norm references / Approvals

- Tested in accordance with DIN standard EN 60352-2

### Product Make-up

- DKB 0325: Cross-section range: 0.25 - 2.5 mm<sup>2</sup>
- DKB 0360: Cross-section range: 0.25 - 6.0 mm<sup>2</sup>

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection



#### General

Adjustable crimping pressure



#### Note

Crimping profile: Mandrel pressing

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>DKB 0325 + DKB 0360 crimping pliers</b>						
61722110	DKB 0325	0,25 - 2,5	mandrel pressing	0.35	192	1
61790920	DKB 0360	0,25 - 6.00	mandrel pressing	0.35	192	1

Photographs are not to scale and do not represent detailed images of the respective products.

Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- Solderless cable lugs KB refer to page 1019



## KWB 4099 crimping pliers



### Benefits

- Clearly marked press moulds
- Locking function for faultless pressing
- Handles suit both large and small hands
- Unique mechanism reduces the manual force from 450 N to 250 N
- Tested for a minimum of 80,000 pressings

### Application range

- The Miniforce tool for non-insulated connections of 4 - 10 mm<sup>2</sup>
- For non-insulated cable lugs, other connectors and tubular cable lugs KR

### Product features

- Emergency release, if the pressing operation needs to be interrupted

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection



#### General

Adjustable crimping pressure



#### Note

Crimping profile: W-pressing

Article number	Article designation	For mm <sup>2</sup>	Weight (kg)	Length (mm)	Pieces / PU
<b>KWB 4099 crimping pliers</b>					
61722130	KWB 4099	4.00 - 10.00	0.5	220	1

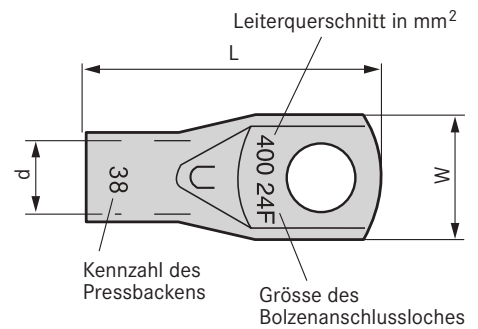
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Tube cable lugs KR/ KRT/ KRF refer to page 1027
- Solderless cable lugs KB refer to page 1019



Tube cable lugs KR/ KRT/ KRF



Benefits

- With inspection hole (starting from 4 mm<sup>2</sup>)
- High-quality electrolytic copper ensures a good crimping quality

Application range

- **KR:** For fine and multi-wire copper conductors (class 2 an 5) with a cross-sectional range of 0.75 - 10.00 mm<sup>2</sup>
- **KRT:** For multi-wire copper conductors (class 2)with a cross-sectional range of 10 - 1000 mm<sup>2</sup>
- **KRF:** For fine wire copper conductors (class 2 and 5) with a cross-sectional range of 16 - 800 mm<sup>2</sup>
- Mainly for connection to rails and to copper connectors
- Max. 48 kV

Norm references / Approvals

- In combination with recommended crimp tool fulfill requirements of SS-EN 61238-1, BS 4579:1, VDE 0220:1, EN-IEC 61238:1
- UL file number: E205350 (see table)

Technical data

**ETIM** ETIM 5.0 Class-ID: EC001051  
 ETIM 5.0 Class-Description: Tube cable lug for copper conductors

**Material**  
 Tinned electrolyte copper (Cu/Sn4, tin surface of 4µ)

**Temperature range**  
 Temperature range up to +90°C  
 Working temperature: 110°C, max. +140°C

Article number	Article designation	Screw hole Ø (mm)	UL certification	Length (mm)	Pressing dies	d mm	W mm	Pieces / PU
<b>KR</b>								
61796480	KR 0,75/3	3	no	16		1.3	6	100
61796490	KR 0,75/4	4	no	17		1.3	6	100
61796500	KR 1,5/3	3	yes	16		1.8	6.5	100
61796510	KR 1,5/4	4	yes	17		1.8	6.5	100
61796520	KR 1,5/5	5	yes	18		1.8	7.5	100
61796530	KR 2,5/3	3	yes	17		2.3	7.5	100
61796540	KR 2,5/4	4	yes	18		2.3	7.5	100
61796550	KR 2,5/5	5	yes	19		2.3	8.5	100
61796560	KR 2,5/6	6	yes	19		2.3	8.5	100
61796570	KR 4/4	4	yes	21		3	8.5	100
61796580	KR 4/5	5	yes	22		3	9	100
61796590	KR 4/6	6	yes	23		3	10	100
61796600	KR 6/4	4	yes	22		4	9.5	100
61796610	KR 6/5	5	yes	22		4	9.5	100
61796620	KR 6/6	6	yes	23		4	10	100
61796630	KR 6/8	8	yes	30		4	13.5	100
61796631	KR 10/5	5	yes	29	B 7/ B 8	5	11.5	100
61796632	KR 10/6	6	yes	29	B 7/ B 8	5	11.5	100
61796633	KR 10/8	8	yes	33	B 7/ B 8	5	13.5	100
<b>KRT</b>								
61796640	KRT 10/5	5	yes	29	B 7	4.5	10	100
61796650	KRT 10/6	6	yes	29	B 7	4.5	10	100
61796660	KRT 10/8	8	yes	34	B 7	4.5	13	100
61796670	KRT 10/10	10	yes	34	B 7	4.5	16	100
61796680	KRT 10/12	12	yes	41	B 7	4.5	19	100
61796690	KRT 16/5	5	yes	34	B 8.5	5.5	12	100
61796700	KRT 16/6	6	yes	34	B 8.5	5.5	12	100
61796710	KRT 16/8	8	yes	39	B 8.5	5.5	15	100
61796720	KRT 16/10	10	yes	39	B 8.5	5.5	16	100
61796730	KRT 16/12	12	yes	47	B 8.5	5.5	19	100
61796740	KRT 25/6	6	yes	43	B 10	7	14	100
61796750	KRT 25/8	8	yes	43	B 10	7	15	100
61796760	KRT 25/10	10	yes	43	B 10	7	16	100
61796770	KRT 25/12	12	yes	48	B 10	7	19	100
61796780	KRT 35/6	6	yes	49	B 12	8.5	17	100
61796790	KRT 35/8	8	yes	49	B 12	8.5	17	100
61796800	KRT 35/10	10	yes	49	B 12	8.5	19	100
61796810	KRT 35/12	12	yes	53	B 12	8.5	22	100
61796820	KRT 50/6	6	yes	53	B 14	10	20	50



Article number	Article designation	Screw hole Ø (mm)	UL certification	Length (mm)	Pressing dies	d mm	W mm	Pieces / PU
61796830	KRT 50/8	8	yes	53	B 14	10	20	50
61796840	KRT 50/10	10	yes	53	B 14	10	20	50
61796850	KRT 50/12	12	yes	56	B 14	10	22	50
61796860	KRT 70/8	8	yes	55	B 16	12	23	50
61796870	KRT 70/10	10	yes	55	B 16	12	23	50
61796880	KRT 70/12	12	yes	58	B 16	12	23	50
61796890	KRT 95/8	8	yes	60	B 18	13.5	26	50
61796900	KRT 95/10	10	yes	60	B 18	13.5	26	50
61796910	KRT 95/12	12	yes	63	B 18	13.5	26	50
61796920	KRT 95/16	16	yes	69	B 18	13.5	28	50
61796930	KRT 120/10	10	yes	64	B 19	15	28	50
61796940	KRT 120/12	12	yes	64	B 19	15	28	50
61796950	KRT 120/16	16	yes	70	B 19	15	28	50
61796960	KRT 150/12	12	no	76	B 22	17	32	25
61796970	KRT 150/16	16	no	76	B 22	17	32	25
61796990	KRT 185/12	12	no	79	13 B 24	19	35	25
61797000	KRT 185/16	16	no	79	13 B 24	19	35	25
61797020	KRT 240/12	12	no	86	13 B 26	21	38	25
61797030	KRT 240/16	16	no	86	13 B 26	21	38	25
61797050	KRT 300/16	16	no	100	13 B 30	24	44	10
61797080	KRT 400/20	20	no	114	13 B 32	26	48	10
<b>KRF</b>								
61803020	KRF 16/6	6	yes	34	B 9	6	13	100
61803030	KRF 16/8	8	yes	34	B 9	6	13	100
61803040	KRF 16/10	10	yes	38	B 9	6	16	100
61803050	KRF 16/12	12	yes	47	B 9	6	22	100
61803060	KRF 25/6	6	yes	39	B 11	8	16	100
61803070	KRF 25/8	8	yes	39	B 11	8	16	100
61803080	KRF 25/10	10	yes	42	B 11	8	17	100
61803090	KRF 25/12	12	yes	47	B 11	8	22	100
61803110	KRF 35/6	6	yes	47	B 13	9	18	100
61803120	KRF 35/8	8	yes	47	B 13	9	18	100
61803130	KRF 35/10	10	yes	47	B 13	9	18	100
61803140	KRF 35/12	12	yes	52	B 13	9	22	100
61803160	KRF 50/8	8	yes	50	B 14.4	11	21	100
61803170	KRF 50/10	10	yes	50	B 14.5	11	21	100
61803180	KRF 50/12	12	yes	53	B 14.5	11	21	100
61803190	KRF 50/16	16	yes	59	B 14.5	11	27	100
61803200	KRF 70/8	8	yes	55	B 17	13	25	50
61803210	KRF 70/10	10	yes	55	B 17	13	25	50
61803220	KRF 70/12	12	yes	58	B 17	13	25	50
61803230	KRF 70/16	16	yes	64	B 17	13	28	50
61803240	KRF 95/10	10	yes	69	B 20	15	29	50
61803250	KRF 95/12	12	yes	69	B 20	15	29	50
61803260	KRF 95/16	16	yes	69	B 20	15	29	50
61803270	KRF 120/10	10	yes	73	B 22	17	32	25
61803280	KRF 120/12	12	yes	73	B 22	17	32	25
61803290	KRF 120/16	16	yes	73	B 22	17	32	25
61803300	KRF 150/12	12	yes	80	B 25/13 B 25	19	36	25
61803310	KRF 150/16	16	yes	80	B 25/13 B 25	19	36	25
61803330	KRF 185/12	12	yes	86	13 B 27	21	39	20
61803340	KRF 185/16	16	yes	86	13 B 27	21	39	20
61803350	KRF 185/20	20	yes	93	13 B 27	21	39	20
61803360	KRF 240/12	12	yes	96	13 B 30	22.5	42	10
61803370	KRF 240/16	16	yes	96	13 B 30	22.5	42	10
61803380	KRF 240/20	20	yes	95	13 B 30	22.5	42	10
61803390	KRF 300/16	16	yes	99	13 B 32	24.5	46	10
61803400	KRF 300/20	20	yes	99	13 B 32	24.5	46	10
61803420	KRF 400/16	16	yes	111	13 B 38	30	56	10
61803430	KRF 400/20	20	yes	126	13 B 38	30	56	10
61803440	KRF 400/24	24	yes	118	13 B 38	30	56	10

Photographs are not to scale and do not represent detailed images of the respective products.

#### Similar products

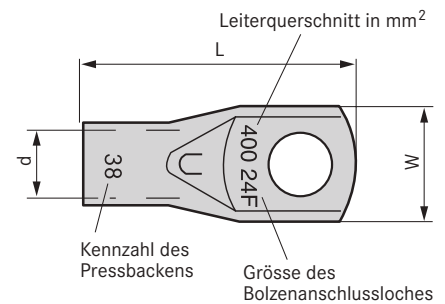
- Solderless cable lugs KB refer to page 1019

#### Accessories

- T 2288 pressing pliers refer to page 1030
- V 1311-A pressing pliers, hydraulic refer to page 1030
- DKB 0325 + DKB 0360 crimping pliers refer to page 1026
- PVL 1300 pressing pliers battery-operated refer to page 1031



## Tube cable lugs KRFN



### Benefits

- Can be installed via cable glands, allowing pre-assembly
- High-quality electrolytic copper ensures a good crimping quality
- With inspection hole

### Application range

- Narrow tube cable lugs for stranded and flexible CU-conductors 50-240 mm<sup>2</sup>, suitable for class 2 and class 5
- Adapted for narrow spaces

### Norm references / Approvals

- In combination with recommended crimp tool fulfill requirements of SS-EN 61238-1, BS 4579:1, VDE 0220:1, EN-IEC 61238:1

### Suitable tools

- V 1311-A pressing pliers, hydraulic

### Technical data

- ETIM 5.0 Class-ID: EC001051  
ETIM 5.0 Class-Description: Tube cable lug for copper conductors
- Material**  
Tinned electrolyte copper
- Temperature range**  
Temperature range up to +90°C  
Working temperature: 110°C, max. +140°C

Article number	Article designation	Screw hole Ø (mm)	UL certification	Length (mm)	Pressing dies	d mm	W mm	Pieces / PU
<b>Tube cable lugs KRFN</b>								
61797400	KRFN 50/6	6	no	51	B 14.5	11	18	100
61797401	KRFN 50/8	8	no	51	B 14.5	11	18	100
61797402	KRFN 50/10	10	no	51	B 14.5	11	18	100
61797403	KRFN 70/6	6	no	56	B 14.5	13	20	50
61797404	KRFN 70/8	8	no	56	B 17	13	20	50
61797405	KRFN 70/10	10	no	56	B 17	13	20	50
61797406	KRFN 95/8	8	no	61	B 20	15	24	50
61797407	KRFN 95/10	10	no	62	B 20	15	24	50
61797408	KRFN 95/12	12	no	64	B 20	15	24	50
61797409	KRFN 120/8	8	no	65	B 22	17	26	50
61797410	KRFN 120/10	10	no	66	B 22	17	26	50
61797411	KRFN 120/12	12	no	68	B 22	17	26	50
61797412	KRFN 150/10	10	no	73	B 25/13 B 25	19	30	50
61797413	KRFN 150/12	12	no	75	B 25/13 B 25	19	30	50
61797414	KRFN 185/10	10	no	80	13 B 27	21	32	25
61797415	KRFN 185/12	12	no	82	13 B 27	21	32	25
61797416	KRFN 185/16	16	no	86	13 B 27	21	32	25
61797417	KRFN 240/10	10	no	84	13 B 30	22.5	38	50
61797418	KRFN 240/12	12	no	84	13 B 30	22.5	38	50

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Tube cable lugs KR/ KRT/ KRF refer to page 1027
- Solderless cable lugs KB refer to page 1019

### Accessories

- T 2288 pressing pliers refer to page 1030
- V 1311-A pressing pliers, hydraulic refer to page 1030
- DKB 0325 + DKB 0360 crimping pliers refer to page 1026
- PVL 1300 pressing pliers battery-operated refer to page 1031

## T 2288 pressing pliers



### Benefits

- Forced locking guarantees complete pressing
- Handy for on-site electric fitters
- Small size

### Application range

- For pressing copper connections of 10 - 25 mm<sup>2</sup>
- For pressing tube cable lugs (KRT) and butt connectors

### Norm references / Approvals

- Tested in accordance with standard SS-EN61238-1

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



**Note**  
Crimping profile: Hexagonal

Article number	Article designation	For mm <sup>2</sup>	Crimping profile	Weight (kg)	Length (mm)	Pieces / PU
<b>T 2288 pressing pliers</b>						
61790961	T 2288	10.0 - 25.0	hexagon	0.6	300	1

Photographs are not to scale and do not represent detailed images of the respective products.

## V 1311-A pressing pliers, hydraulic



### Benefits

- Automatic quick feed of pressing dies and mandrels
- Requires low hand force, about 245 N at max. force
- Ergonomic handles
- Pressing head rotates by 180 degrees
- Few tool parts, easy to change

### Application range

- System 1311 for pressing copper connections of 10 - 400 mm<sup>2</sup>

### Included

- Complete unit, no external pump required
- Supplied with wooden carry box
- Pressing dies and die holders need to be ordered separately

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



**On request**  
Battery powered tool on request



**Note**  
Crimping profile: Hexagonal and mandrel  
Pressing force: 130 kN (13 t)

Article number	Article designation	For mm <sup>2</sup>	Inner die holders	Outer die holders	Weight (kg)	Length (mm)	Pieces / PU
<b>V 1311-A pressing pliers, hydraulic</b>							
61795925	V 1311-A	10.0 - 400.0	V 1316	V 1318	4.9	590	1

Photographs are not to scale and do not represent detailed images of the respective products.

Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Similar products

- PVL 1300 pressing pliers battery-operated refer to page 1031

### Accessories

- Die holders for system 1311 refer to page 1032
- Dies for system 1311 and 1300 refer to page 1032



## PVL 1300 pressing pliers battery-operated

### Benefits

- Ergonomic design that optimizes the balance of the tool in the users hand
- Buzzing signal and flashing light if right pressure is not achieved
- LED lightning for the work in dark environments
- Possibility to document each crimp for service control

### Application range

- Battery powered crimp tool for crimping of CU terminals KRF/KSF, KRD/KSD, KRT/KST 10-400 mm<sup>2</sup> und C-sleeves up to 120 mm<sup>2</sup>
- Same accessories as V1311-A pliers

### Product features

- Crimps/charge: 60-120 depending on size and temperature
- Crimp time: 4-12 sec, depending on the size
- Environmental friendly battery, Li-Ion Makita 3.0 Ah 18 V
- 230 VAC battery charger Li-ion Makita, charging time: 22 min
- LED indication of the charge status

### Included

- Supplied with robust plastic case, battery charger and instruction manual
- Pressing dies and die holders need to be ordered seperately

### Technical data

	<b>ETIM 5.0 Class-ID:</b> EC000168 <b>ETIM 5.0 Class-Description:</b> Crimp tool cable lugs, cable end sleeves, screen connection
	<b>General</b> Dimensions: 412 x 319 x 75 mm Weight: 5.4 kg
	<b>On request</b> DUAL Crimping tool (ensures a good crimping quality also for compacted conductors) is available upon request
	<b>Note</b> Crimping profile: Hexagonal and mandrel Pressing force: 124 kN (13 t)
	<b>Temperature range</b> -20°C to +40°C



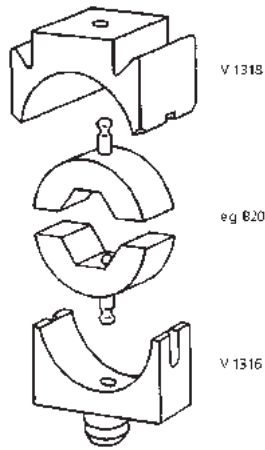
Article number	Article designation	Weight (kg)	Pieces / PU
<b>PVL 1300 pressing pliers battery-operated</b>			
61813821	Crimping tool PVL 1300	5.4	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- Die holders for system 1311 refer to page 1032
- Dies for system 1311 and 1300 refer to page 1032

## Die holders for system 1311



### Benefits

- For the V1311 pliers, both the inner die holder V1316 and the outer die holder V1318 is needed

### Application range

- Systems 1311 for pressing copper connections of 10 - 400 mm<sup>2</sup>

### Note

- Only needed for dies which have no “13” in article designation

### Suitable tools

- V 1311-A pressing pliers, hydraulic refer to page 1030
- PVL 1300 pressing pliers battery-operated refer to page 1031

### Technical data

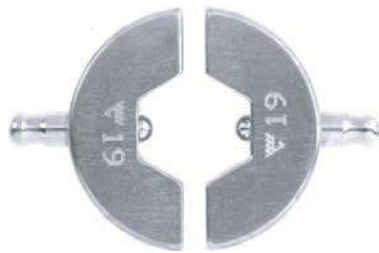


ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection

Article number	Article designation	For crimping tools	Dies per PU	PU
<b>Die holders for system 1311</b>				
61795941	V 1316 inner die-holder	V 1311	1	1
61795942	V 1318 outer die-holder	V 1311	1	1

Component composition: First specify the pressing dies. Note that die holders are not needed for all pressing dies (depending on the cross section of the tube cable lugs to be pressed) Photographs are not to scale and do not represent detailed images of the respective products.

## Dies for system 1311 and 1300



### Application range

- Pressing dies for V 1311 and PVL 1300 for crimping cable lugs (KR/KRT/KRF) and butt connectors (KS/KST/KSF)

### Note

- Pressing dies for copper branch terminals are available upon request

### Included

- Press inserts are delivered in pairs
- For pressing dies where the article designation begins with “13B” no extra die holders are needed, for all other dies you need to order the die holders separately.

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection

### Suitable tools

- V 1311-A pressing pliers, hydraulic refer to page 1030
- PVL 1300 pressing pliers battery-operated refer to page 1031

Article number	Article designation	For KR/KS mm <sup>2</sup>	For KRT/KST mm <sup>2</sup>	For KRF/KSF mm <sup>2</sup>	PU
<b>Pressing dies - in pairs</b>					
61795950	B7	10	10		1
61795951	B8	10		10	1
61795960	B8,5		16		1
61795970	B9			16	1
61795971	B10		25		1
61795972	B11			25	1
61795980	B12		35		1
61795981	B13			35	1
61795990	B14		50		1
61795991	B14,5			50	1
61796000	B16		70		1
61796001	B17			70	1
61796010	B18		95		1
61796021	B20			95	1
61796020	B19		120		1
61796030	B22		150	120	1
61796032	B25			150	1
61796031	B24		185		1
61796042	13B25			150	1
61796043	13B26		240		1
61796044	13B30		300	240	1
61796045	13B32		400	300	1
61796046	13B38			400	1

Component composition: First specify the pressing dies. Note that die holders are not needed for all pressing dies (depending on the cross section of the tube cable lugs to be pressed) Photographs are not to scale and do not represent detailed images of the respective products.



**Info**

- Inserts can be quickly changed

**Technical data**

ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

- Benefits**
- Reliable crimping performance is consistent and accurate with a parallel action stroke
  - Diverse crimping inserts can be changed easily and quick
  - Lightweight
  - Ergonomic plastic grips

- Application range**
- Ideal service tool

- Note**
- Please close tool while inserting new dies

## Mobile crimp tool crimping pliers



- Included**
- Article no. 62000100: Mobile Crimp Tool with 1 insert for end sleeves 0,25-10<sup>2</sup> (62000100)
  - Article no. 62000105: Only Service tool (without case or insert)
  - Article no.62000102: Convenient plastic case for storing the service tool and various inserts

Article number	Article designation	Crimping insert	PU
<b>Mobile crimp tool crimping pliers</b>			
62000100	MCT incl. insert for end sleeves	Conductor end sleeves 0.25 - 10 mm <sup>2</sup>	1
62000105	MCT without insert		1
62000102	MCT case, empty		1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

**Accessories**

- Mobile crimp tool - crimping inserts refer to page 1033

## Mobile crimp tool - crimping inserts

- Benefits**
- Crimping inserts are clearly labelled which minimises the risk of confusion
  - Stored in the practical module boxes which can be joined together
  - Particular durable: Tested for over 20.000 crimping operations

**Technical data**

ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



- Note**
- MCT crimping insert RJ45 can only be used for unscreened connectors

- Suitable tools**
- Mobile crimp tool crimping pliers refer to page 1033

Article number	Article designation	Suitable for:	Specification	Specification GB	Crimping profile	PU
<b>Insulated cable lugs</b>						
62000110	MCT insert cable lugs insul. 4300-3129	insulated cable lugs	0.5 - 1.5/1.5 - 2.5 mm <sup>2</sup>	AWG 22-16 / 16-14	oval	1
62000111	MCT insert cable lugs insul. 4300-3128	insulated cable lugs	0.1 - 0.4/4 - 6 mm <sup>2</sup>	AWG 26-22 / 12-10	oval	1
<b>Cable Lugs</b>						
62000112	MCT insert cable lugs non-insul. 4300-3142	uninsulated cable lugs	0.5 - 2.5/4 - 6 mm <sup>2</sup>	AWG 12-10 / 22-14	mandrel	1
62000113	MCT insert cable lugs non-insul. 4300-3137	uninsulated cable lugs	0.75/1.5/2.5 mm <sup>2</sup>	AWG 20-14	mandrel	1
62000114	MCT insert cable lugs non-insul. 4300-3139	uninsulated cable lugs	4 / 6 / 10 mm <sup>2</sup>	AWG 12-8	mandrel	1
<b>Conductor end sleeves</b>						
62000115	MCT insert AEH 4300-3127	insul. + non-insul. conductor end sleeves	0.25 - 10 mm <sup>2</sup>	AWG 24-8	trapezoid	1
62000116	MCT insert AEH 4300-3153	insul. + non-insul. conductor end sleeves	16 - 25 mm <sup>2</sup>	AWG 6-4	hexagon	1
62000117	MCT insert AEH 4300-3154	Conductor end sleeves, insulated + non-insulated	35-50 mm <sup>2</sup>	AWG 2-0	hexagon	1
<b>Panel connectors (Plugs)</b>						
62000118	MCT insert blade connectors 4300-3150	uninsulated panel connectors	0.1 - 0.25/0.25 - 0.5/0.5 - 1.0 mm <sup>2</sup>	AWG 26-24 / 24-22 / 22-18	roller pressing	1
62000120	MCT insert blade connectors 4300-3146	uninsulated panel connectors 6.3	0.5 - 1.0/1.5 - 2.5/4 - 6 mm <sup>2</sup>	AWG 22-18 / 16-14 / 12-10	roller pressing	1
62000121	MCT insert LWL 4300-3141	Optic fibre (POF) F-SMA/B-FOC (ST)	4.52/5.41/3.84/3.25 mm	.178/.213/.151/.128 inch	hexagon	1
<b>BNC connectors</b>						
62000122	MCT insert BNC 4300-3140 RG 174/179	BNC plug	4.52/3.25/1.69/0.7 mm	.178/.128/.067/.028 inch	hexagon	1
62000123	MCT insert BNC 4300-3136 RG 58/59/62/71	BNC plug	1.69/5.41/6.48 mm	.067/.213/.255 inch	hexagon	1
62000124	MCT insert BNC 4300-3138 RG 6/59	BNC plug	9.14/8.23 mm	.360/.324 inch	hexagon	1
<b>RJ 45</b>						
62000125	MCT insert RJ45 4300-3144	RJ 45	RJ-45 8/8			1
<b>RJ 11</b>						
62000126	MCT insert RJ11 4300-3132	RJ11	RJ-11 6/6, 6/4, 6/2			1
<b>Turned pin connectors</b>						
62000127	MCT insert turned connectors 4300-3147	turned pin connectors	0.14 - 4 mm <sup>2</sup>	AWG 26-12	square	1
62000128	MCT insert turned connectors 4300-3148	turned pin connectors	6 - 10 mm <sup>2</sup>	AWG 10-8	square	1

Photographs are not to scale and do not represent detailed images of the respective products.

## PEW 12 universal tool



### Benefits

- Ensures exact, solder-free electrical connections
- Parallel jaw closing
- Good handling through ergonomic centre of gravity
- One or two-hand operation
- Many different combination possibilities

### Application range

- Compatible with all crimp dies for the PEW 12 hand crimping tool
- For crimping virtually all crimped connections with conductor cross-sections 0,08-95 mm<sup>2</sup>

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection

### Product features

- Burnished
- Chrome-plated pressing pliers available upon request (article no. 61813800)
- Suitcase is made out of polyethylene
- Each item is packed separately in a plastic bag

### Included

- 61813807: Crimping tool PEW 12 without case and without inserts
- 61813819: Case for 15 crimping dies, 4 locators

Article number	Article designation	Pieces / PU
<b>Pliers</b>		
61813807	PEW 12 burnished without inserts	1
61813819	Case for PEW 12	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Crimping inserts for PEW 12 system refer to page 1035



## EPEW 12 universal tool



### Benefits

- Electromechanical tool with Li-Ion battery
- Dependable, reliable, low maintenance
- Precise tap positioning of contacts
- Quickstop, no overcrimping
- Process monitoring on multifunction display:
  - Battery charge level
  - Service interval display- Overheating/ overload warning

### Application range

- Compatible with all crimp dies for the PEW 12 hand crimping tool
- Crimping of ferrules up to 50 mm<sup>2</sup>
- Manifold applications in the cable assembly

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description:  
Crimp tool cable lugs, cable end sleeves, screen connection



**Colour delivered**  
Black

### Included

- Supplied in plastic case (500 x 420 x 125 mm)
- Tool without crimping dies and locators
- Battery and battery recharger
- Socket wrench

Article number	Article designation	Weight (kg)
<b>EPEW 12 universal tool</b>		
61813817	E-PEW 12	4.7

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Crimping inserts for PEW 12 system refer to page 1035

## Crimping inserts for PEW 12 system

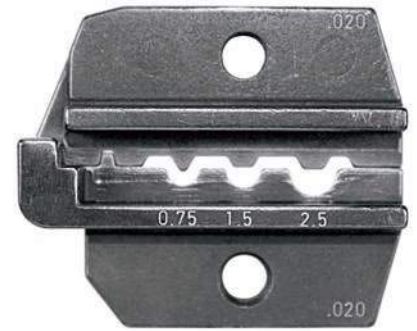
### Benefits

- Ensure high flexibility: All inserts can be used in PEW 12 (article number 61813807) as well as in E-PEW 12 (article number 61813817) and in crimping machine CM 25 (article number: 11147001)
- Comply with DIN 46237, DIN 46234/46235/46267 and DIN 46247, 46 345, 46 346

### Technical data



ETIM 5.0 Class-ID: EC000168  
ETIM 5.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection



### Note

- On request: other inserts available

Article number	Article designation	Suitable for:	Pressing range (mm <sup>2</sup> )	Crimp dimensions (mm)	Crimp sleeve Ø (mm)	Crimping profile	Pieces / PU
<b>Conductor end sleeves</b>							
61813802	PEW 12.090	insul. + non-insul. conductor end sleeves	0.5 - 6.0			trapezoid	1
61813803	PEW 12.091	insul. + non-insul. conductor end sleeves	10.0 - 25.0			square	1
61813804	PEW 12.092	insul. + non-insul. conductor end sleeves	35.0 - 50.0			square	1
<b>Cable Lugs</b>							
61813823	PEW 12.020	uninsulated cable lugs	0.5 - 2.5			mandrel pressing	1
61813824	PEW 12.030	uninsulated cable lugs	4.0 - 10.0			w-pressing	1
61813825	PEW 12.031	uninsulated joint connectors	1.5 - 10.0			Hexagonal pressing	1
61813811	PEW 12.032	uninsulated cable lugs	0.5 - 10			mandrel pressing	1
61813862	PEW 12.033	uninsulated cable lugs	16 - 25			mandrel pressing	1
61814605	PEW 12.691	insulated cable lugs	0.5 - 6.0			conical ISO crimp	1
61813812	PEW 12.060	insulated cable lugs	0.5 - 6.0			conical ISO crimp	1
61813826	PEW 12.063	insulated cable lugs	10.0 - 16.0			mandrel pressing	1
<b>Panel connectors (Plugs)</b>							
61814600	PEW 12.045	uninsulated panel connectors 2.8 + 4.8	0.1 - 2.5			roller pressing	1
61814601	PEW 12.045 Locator	uninsulated panel connectors 2.8 + 4.8	0.1 - 2.5			roller pressing	1
61814606	PEW 12.742	uninsulated panel connectors	0.5 - 2.5			roller pressing	1
61813808	PEW 12.050	uninsulated panel connectors 4.8 + 6.3	0.5 - 6.0			roller pressing	1
61813809	PEW 12.050 Locator	uninsulated panel connectors 4.8 + 6.3	0.5 - 6.0			roller pressing	1
61814607	PEW 12.745	uninsulated panel connectors	1.25-6			roller pressing	1
<b>Coax connectors</b>							
61813813	PEW 12.100	COAX connector		5.4/6.48/1.72	6.4/7.6/2.1	Hexagonal pressing	1
61813814	PEW 12.11	COAX connector	RG 174, 58	5.4/4.52/1.72	6.4/5.4/2.1	Hexagonal pressing	1
61813827	PEW 12.111	COAX connector		8.23/6.48/1.72/1.07	9.4/7.6/2.1/1.3	Hexagonal pressing	1
61813816	PEW 12.114	COAX connector		10.9/2.54	12.0/3.0	Hexagonal pressing	1
61813818	PEW 12.119	COAX connector		1.75/9.73	2.1/10.7	Hexagonal pressing	1
61813852	PEW 12.158	COAX connector		7.0/8.4/8.1	7.7/9.5/9.5	Hexagonal pressing	1
61813853	PEW 12.159	COAX connector		3.25/4.52/5.4/1.72/1.07/0.72	3.9/5.4/6.4/2.1/1.3/0.95	Hexagonal pressing	1
61813861	PEW 12.772	COAX connector		2.67/3.25/3.83	3.1/3.8/4.2	Hexagonal pressing	1
<b>Other connectors</b>							
61813849	PEW 12.155	Optic fibre (POF) F-SMA/B-FOC (ST)		4.20/3.65/5.0	5.4/4.3/6.0	Hexagonal pressing	1
<b>One piece screen connectors RSK</b>							
61813866	PEW 12.354/ 401 M	One-piece RSK screen connectors					1
61813868	PEW 12.373/301 J	One-piece RSK screen connectors					1
61813869	PEW 12.374/301 H	One-piece RSK screen connectors					1
61813865	PEW 12.375 / 401 L	One-piece RSK screen connectors					1
61813864	PEW 12.599/401 K	One-piece RSK screen connectors					1
61813867	PEW 12.619/ 401 N	One-piece RSK screen connectors					1

Photographs are not to scale and do not represent detailed images of the respective products.





## Pneumatic crimping machine UP 35



### Technical data

#### General

Operating pressure: 6 bar/87 psi  
Dimensions: 390 x 175 x 440 mm

#### On request

Safety machine available upon request (can be operated without finger guards thanks to the double-foot pedal)  
Further sizes and designs could be offered upon request.

#### Note

Crimp force: Maximum 35 kN

#### Info

Weight: 20 kg

### Benefits

- New space-saving design
- High ergonomics and user-friendliness thanks to the ergonomic inclination of about 10° on the machine and an integrated LED light source for illuminating the work place
- The machine can be transported easily using the supplied T-handle thanks to its easy-to-handle design and low weight of 20 kg.
- High flexibility: The adapters can be exchanged easily, quickly and without the need for additional tools, which offers the operator a wide range of processing options for loose contacts
- Easy assembly of the adapter thanks to slide in-slide out mechanism

### Application range

- Pneumatic crimp machine with parallel closing mechanism
- Offers maximum user-friendliness with optimal safety and crimp quality for small to medium-sized cross-sections
- For insulated cable lugs up to 6 mm<sup>2</sup>, non-insulated tubular and compression cable lugs up to 16 mm<sup>2</sup>, conductor end sleeves up to 50 mm<sup>2</sup>

### Product features

- Rapid change system due to adapter system
- Forced operation control guarantees highest pressing quality

### Norm references / Approvals

- Corresponds to EC Directive 2011/65/EC (RoHS 2) and is CE compliant

### Product Make-up

- Adapter/die-carriers are not included in the scope of delivery of the UP 35 and must be ordered separately- here you have 3 different options depending on the used die type
- Inserts must be ordered separately.

### Included

- Pneumatic parallel crimping machine
- Pneumatic safety foot pedal
- Air hoses and power supply for 12 Volt illumination
- Electronic piece part counter
- Tool kit

Article number	Article designation	Pieces / PU
<b>Crimping machine (without adapter)</b>		
11148003	Pneumatic crimp machine UP 35	1
<b>Adapter / die-block carrier for different types of inserts</b>		
61743951	Adapter UP 35 for WZ crimping dies	1
61743953	Adapter UP 35 for PEW 12 crimping dies	1
61743952	Adapter UP 35 for W(D)T crimping dies	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Short manual is included- manuals could be also downloaded here: <http://www.lappkabel.com/instructions.html>

### Accessories

- Crimping inserts for PEW 12 system refer to page 1035
- Crimping inserts for the UP 35 machine refer to page 1036

## Crimping inserts for the UP 35 machine



### Benefits

- Easy and accurate exchange and positioning of the crimp die sets

### Application range

- Inserts for the pneumatic crimping machine UP 35 (article no. 11148003)
- Crimping die series is called WZ- series- please use following adapter for the UP 35: Article no. 61743951

### Product features

- Burnished

### Note

- On request: other inserts available

### Suitable tools

- Pneumatic crimp machine UP 35

Article number	Article designation	Suitable for:	Pressing range (mm <sup>2</sup> )	Crimping profile	Pieces / PU
<b>Conductor end sleeves</b>					
61743941	WZ / Set AE 21	insul. + non-insul. conductor end sleeves	0.14 - 10.0	trapezoid	1
61743942	WZ / AE 51	insul. + non-insul. conductor end sleeves	10.0 - 25.0	Similar to trapezoid	1
61743943	WZ / Set AE 5	insul. + non-insul. conductor end sleeves	25.0 - 35.0	Similar to trapezoid	1
61743944	WZ / Set AE 61	insul. + non-insul. conductor end sleeves	35.0 - 50.0	Similar to trapezoid	1
<b>Insulated cable lugs</b>					
61743934	WZ / Set 440	insulated cable lugs	0.1 - 2.5	oval	1
61743933	WZ / Set 441	insulated cable lugs	0.5 - 6.0	oval	1
61743948	WZ / Set 44	insulated cable lugs	0.5 - 6.0	oval	1
<b>Cable Lugs</b>					
61743935	WZ / Set 66 (D)	uninsulated cable lugs	0.1 - 6.0	mandrel pressing	1
61743936	WZ / Set 66 (W)	uninsulated cable lugs	0.25-6	w-pressing	1
61743939	WZ / Set RKS 2	Tubular cable lugs	4.0 - 10.0	w-pressing	1
61743937	WZ / Set RKS 3/10 mm <sup>2</sup>	Tubular cable lugs	10	w-pressing	1
61743938	WZ / Set RKS 3-16 mm <sup>2</sup>	Tubular cable lugs	16	w-pressing	1
<b>Panel connectors (Plugs)</b>					
61743945	WZ / Set F2,8	uninsulated panel connectors 2.8	0.1 - 1.0	roller pressing	1
61743946	WZ / Set F4,8	uninsulated panel connectors 4.8	0.5 - 2.5	roller pressing	1
61743947	WZ / Set F 6,3	uninsulated panel connectors 6.3	0.5 - 6.0	roller pressing	1
61743949	Crimping dies WZ f. UP 35- Set FAHN	uninsulated panel connectors 6.3	0.5 - 2.5	roller pressing	1

Photographs are not to scale and do not represent detailed images of the respective products.



## RSK one-piece screen connector

### Benefits

- The four sizes can be identified by the different colours of the connectors
- Matching tool inserts have the same colour
- Reduced installation time

### Application range

- One-part SHIELD-KON® screen connector allows screened cables to be connected quickly and permanently

### Norm references / Approvals

- Meets and exceeds the performance requirements of MIL-F-21608

### Product Make-up

- To process, insert the connector into the tool, then insert and crimp the screen cable and leads or the earthing clamp
- When crimped, the connector assumes a round shape and both ends are pushed above each other
- When inserting the screened cable to a connector, ensure that the cable insulation overlaps with the connector's MYLAR® insulation
- Inside the connector, there is a suspended cover plate for the leads and an insertion for the screened cable.

### Suitable tools

- ERG 740 manual pressing tool refer to page 1039

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002020  
ETIM 5.0 Class-Description: Shield connection clamp

**Material**  
Tinned electrolyte copper  
Insulation: laminated polyester

**Temperature range**  
-65 °C to +125 °C



Article number	Article designation	Colour	Shield Ø (mm)	Suitable connectors	Pieces / PU
<b>RSK one-piece screen connector</b>					
61721340	RSK 5101	red	1.27-2.28	101 A/B	100
61721350	RSK 5201	blue	2.29-3.65	201 C/D/E/F	100
61721360	RSK 5301	yellow	3.66-5.12	301 G/H/J	100
61743200	RSK 5401	green	5.13-7.62	401 K/L/M/N	100

MYLAR® is a registered trademark of DuPont de Nemours. SHIELD-KON® is a registered trademark of Thomas & Betts. Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- SHIELD-KON® two-part screen connector refer to page 1040

### Accessories

- RSK-FLAG connector refer to page 1038



## RSK gauge



### Benefits

- For easy determination of the appropriate RSK connector and crimping insert
- Appropriate connector and tool insert is indicated by the notches (insert the stripped end of the cable into the slots located around the gauge)

### Application range

- For the one-piece SHIELD-KON® connectors RSK

### Technical data

- ETIM 5.0 Class-ID: EC002020
- ETIM 5.0 Class-Description: Shield connection clamp

Article number	Article designation	Pieces / PU
<b>RSK gauge</b>		
61753760	RSK gauge	1

Photographs are not to scale and do not represent detailed images of the respective products.

## RSK-FLAG connector



### Benefits

- RSK earth clamps are the quick and inexpensive alternative to conventional installation of conductors
- Easy & direct connection of the RSK-FLAG to a piece of earthed equipment thanks to the installation hole

### Application range

- For the one-piece SHIELD-KON® connectors RSK
- Appliance for fixing a shielded cable onto a surface e.g. onto an earthing bar

### Technical data

- ETIM 5.0 Class-ID: EC002020
- ETIM 5.0 Class-Description: Shield connection clamp
- Material**  
Tinned electrolyte copper

Article number	Article designation	Used for	Hole diameter (mm)	Pieces / PU
<b>RSK-FLAG connector</b>				
61753762	RSK-Flag-B3	RSK 5301 / 5401	M3	100
61753763	RSK-Flag-B4	RSK 5301 / 5401	M4	100
61753764	RSK-Flag-B5	RSK 5301 / 5401	M5	100

Photographs are not to scale and do not represent detailed images of the respective products.

## ERG 740 manual pressing tool

### Benefits

- Metal inserts can be changed easily and quick
- No adjustment of the tool necessary
- Ergonomic plastic handles
- Pressing dies move in parallel to each other, which enables the contorting effect of the RSK connectors

### Application range

- Crimping tool for one-screen SHIELD-KON® connectors RSK

### Included

- Pressing pliers ERG 740
- RSK gauge for easy identification of the connector
- Soft case (245x 210 x 55 mm)
- Bench-mount stand for easier use in volume production

### Technical data



ETIM 5.0 Class-ID: EC002020  
ETIM 5.0 Class-Description:  
Shield connection clamp



Article number	Article designation	Suitable inserts	Pieces / PU
<b>ERG 740 manual pressing tool</b>			
61753160	ERG 740 case + hand pliers + gauge	Metal	1

Photographs are not to scale and do not represent detailed images of the respective products.



## crimping inserts for ERG 740

### Benefits

- For medium to high volumes
- Made of hardened steel, therefore no erosion
- Inserts are easy changeable
- Product Ref. is engraved on the upper part and on the lower part of the die set

### Application range

- Tool inserts for SHIELD-KON® one-piece screen connectors RSK, suitable for ERG 740

### Included

- Packaging: 1 die set in a cardboard box with Euroslot (weight: approx. 75 g, packaging size: 45 x 45 x 70 mm)

### Technical data



ETIM 5.0 Class-ID: EC002020  
ETIM 5.0 Class-Description:  
Shield connection clamp



### Suitable tools

- ERG 740 manual pressing tool refer to page 1039

Article number	Article designation	Colour	Shield Ø (mm)	Suitable connectors	Pieces / PU
<b>Metal inserts for ERG 740</b>					
61722835	D-101 A	red	1.27-1.79	RSK 5101	1
61722825	D-101 B	red	1.80-2.28	RSK 5101	1
61722905	D-201 C	blue	2.29-2.55	RSK 5201	1
61722915	D-201 D	blue	2.56-3.00	RSK 5201	1
61722925	D-201 E	blue	3.01-3.34	RSK 5201	1
61743045	D-201 F	blue	3.35-3.65	RSK 5201	1
61722935	D-301 G	yellow	3.66-4.13	RSK 5301	1
61722945	D-301 H	yellow	4.14-4.71	RSK 5301	1
61722875	D-301 J	yellow	4.72-5.12	RSK 5301	1
61743215	D-401 K	green	5.13-5.86	RSK 5401	1
61743225	D-401 L	green	5.87-6.36	RSK 5401	1
61743235	D-401 M	green	6.37-7.00	RSK 5401	1
61743245	D-401 N	green	7.01-7.62	RSK 5401	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Crimping inserts for PEW 12 system refer to page 1035



## SHIELD-KON® two-part screen connector



### Benefits

- A hard, stable inner sleeve absorbs the pressure and protects the conductor on the inside from mechanical stress
- Hexagonal shaped crimping of the soft outer sleeve guarantees a perfect electrical and mechanical connection

### Application range

- For screen cables with a dielectric diameter from 1.1 to 9,4 mm (diameter after removing the screen)
- Telecommunication
- Railway applications

### Norm references / Approvals

- Corrosion test in compliance with IEC 68-2-42
- Test samples were stored for 10 days in a damp SO<sub>2</sub> industrial atmosphere at 25 °C
- This test showed only negligible increases in the contact resistance, which means that the crimped connections can be considered gas-proof

### Suitable tools

- WT 4454 G universal pressing pliers
- SHIELD-KON® two-part screen connector crimping accessories refer to page 1041

### Technical data



ETIM 5.0 Class-ID: EC002020  
ETIM 5.0 Class-Description:  
Shield connection clamp



#### Material

Bronze  
Electrogalvanized



#### Temperature range

Temperature shock test  
100 cycles of temperature changes between -40 °C and +155 °C produced a negligible change in the contact resistance.

Article number	Article designation	Colour	Inner x outer sleeve Ø (mm)	Pieces / PU
<b>Inner sleeves</b>				
61749430	GSB 046	silver	1.17 x 1.90	100
61749440	GSB 058	yellow	1.47 x 2.10	100
61749450	GSB 063	red	1.60 x 2.23	100
61749460	GSB 071	green	1.87 x 2.44	100
61749470	GSB 080	blue	2.00 x 2.63	100
61749480	GSB 090	orange	2.20 x 2.90	100
61749490	GSB 096	purple	2.44 x 3.02	100
61749500	GSB 101	yellow	2.56 x 3.16	100
61749510	GSB 109	red	2.76 x 3.36	100
61749520	GSB 115	silver	2.92 x 3.70	100
61749530	GSB 124	green	3.14 x 3.68	100
61749540	GSB 128	silver	3.25 x 3.86	100
61749550	GSB 134	orange	3.40 x 4.00	100
61749560	GSB 149	blue	3.78 x 4.54	100
61749570	GSB 156	red	3.96 x 4.90	100
61749580	GSB 165	silver	4.20 x 4.92	100
61749590	GSB 175	green	4.44 x 5.46	100
61749600	GSB 187	yellow	4.75 x 5.76	100
61749610	GSB 194	blue	4.93 x 5.76	100
61749620	GSB 205	orange	5.20 x 6.22	100
61749630	GSB 219	silver	5.56 x 6.35	100
61749640	GSB 225	yellow	5.71 x 6.50	100
61749650	GSB 232	red	5.90 x 6.70	100
61749660	GSB 250	green	6.35 x 7.14	100
61749670	GSB 261	blue	6.63 x 7.54	100
61749680	GSB 266	silver	6.75 x 7.54	100
61749690	GSB 275	orange	6.98 x 7.77	100
61749700	GSB 281	yellow	7.14 x 8.40	100
61749710	GSB 287	silver	7.29 x 8.30	100
61749720	GSB 297	red	7.54 x 8.50	100
61749730	GSB 312	purple	7.92 x 9.20	100
61749740	GSB 348	orange	8.84 x 10.20	100
61749750	GSB 375	blue	9.52 x 10.30	100
<b>Outer sleeves</b>				
61749810	GSC 101	silver	2.56 x 3.16	100
61749820	GSC 128	blue	3.25 x 3.86	100
61749830	GSC 149	purple	3.78 x 4.54	100
61749840	GSC 156	yellow	3.96 x 4.90	100
61749850	GSC 175	blue	4.40 x 5.46	100
61749860	GSC 187	orange	4.75 x 5.76	100
61749870	GSC 194	red	4.93 x 5.79	100
61749880	GSC 199	silver	5.05 x 5.97	100
61749890	GSC 205	yellow	5.20 x 6.22	100
61749900	GSC 219	green	5.56 x 6.35	100
61749910	GSC 225	purple	5.71 x 6.50	100
61749920	GSC 232	orange	5.90 x 6.70	100
61749930	GSC 261	yellow	6.63 x 7.54	100
61749940	GSC 275	silver	6.98 x 7.77	100
61749950	GSC 281	purple	7.14 x 8.40	100
61749960	GSC 287	blue	7.29 x 8.30	100
61749970	GSC 297	green	7.54 x 8.50	100
61749980	GSC 312	yellow	7.95 x 9.20	100
61749990	GSC 327	silver	8.30 x 9.45	100
61750000	GSC 348	orange	8.84 x 9.98	100
61750010	GSC 359	purple	9.12 x 10.13	100
61750020	GSC 375	yellow	9.52 x 10.30	100
61750030	GSC 405	red	10.28 x 11.50	100
61750040	GSC 415	blue	10.54 x 11.76	100
61750050	GSC 425	silver	10.80 x 12.06	100
61750060	GSC 460	silver	11.68 x 12.95	100
61750070	GSC 500	green	12.70 x 14.60	100

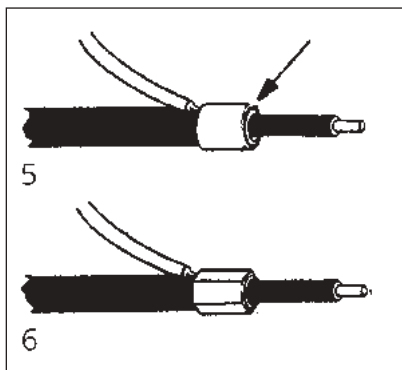
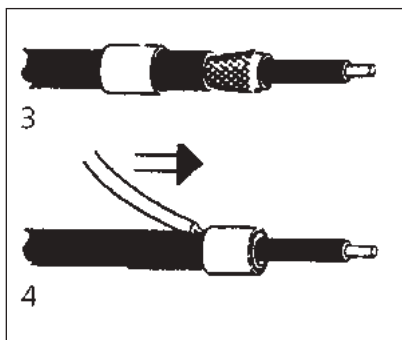
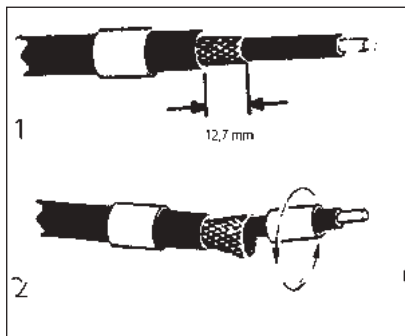
SHIELD-KON® is a registered trademark of ABB.

Photographs are not to scale and do not represent detailed images of the respective products.

**i** SHIELD-KON® two-part screen connector

**Installation:**

1. After stripping the screen (approx. 12.7 mm length), push the outer sleeve onto the outer insulation. If this is too thick, push on the outer sleeve from front after step 3.
2. Extend the screen braiding by rotating the inside conductor slightly and pushing the inner sleeve under the screen braiding.
3. Position the inner sleeve in such a way that about 1.6 mm is still protruding from the end of the screen, and press on the braiding.
4. Push the conductor under the outer sleeve and push the outer sleeve over the braiding.
5. Position outer sleeve and make sure that ends of all wires in the screen braiding and the outer conductor are hidden.
6. Crimp both sleeves.



**Which inner sleeve to which outer sleeve?**

**Inner sleeve GSB:**

Define the maximum outer diameter of the inner sheath under the braid/screen. Select from the chart the matching inner sleeve (outer diameter inner sheath = inner diameter inner sleeve). In case of in-between values, please select the next size.

**Outer sleeve GSC:**

Add 1.5-2 mm to the outer diameter of the selected inner sleeve and then select the outer sleeve (resulting diameter after addition = inner diameter of outer sleeve).

**Press insert:**

By means of the selected outer sleeve, you can now determine the appropriate press insert.

**SHIELD-KON® two-part screen connector crimping accessories**

**Benefits**

- Manual pressing pliers with removable press matrices for two-part SHIELD-KON® connectors
- Integrated forced lock only allows the tool to be opened after it has completely closed (emergency opening possible)
- Appropriate press insert can be determined by using the selected outer sleeve

**Product Make-up**

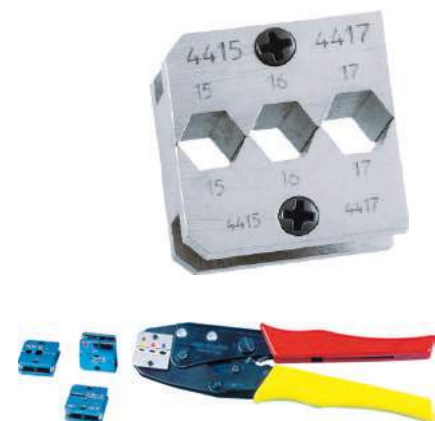
- Crimping profile: Hexagonal

**Technical data**

ETIM 5.0 Class-ID: EC002020  
ETIM 5.0 Class-Description: Shield connection clamp

**Included**

- Article number 61743920: Pliers without case and without pressing dies
- Article number 61792250: Empty case with space for 12 inserts
- Crimping inserts have to be ordered separately



Article number	Article designation	Suitable for outer sheaths	Pieces / PU
<b>Crimping tool</b>			
61743920	WT 4454 G		1
<b>Accessories crimping tool</b>			
61792250	WT case for WT 4454 G		1
<b>Crimping dies</b>			
61789480	4419-4403 G	GSC 101 / 128 / 149 / 156 / 175	1
61789490	4406-4410 G	GSC 187 / 194 / 199 / 205 / 219 / 225 / 232	1
61789500	4411-4414 G	GSC 261 / 275 / 281 / 287 / 297	1
61789510	4415-4417 G	GSC 312 / 327 / 348	1
61789520	5450-5451 G	GSC 359 / 375	1
61789530	5452 G	GSC 405 / 415	1
61789540	5454 G	GSC 425	1
61789550	5456 G	GSC 460	1
61789560	5457 G	GSC 500	1

SHIELD-KON® is a registered trademark of ABB.  
Photographs are not to scale and do not represent detailed images of the respective products.  
Crimping inserts on picture of WT 4454 G are not depicting the SHIELD-KON® inserts, they are depicted in an extra picture



## Temflex™ 1500 insulating tape



### Benefits

- Resistant to most solvents
- Waterproof
- Adhesive on one side


### Application range

- Multipurpose insulating tape made from PVC
- Universal electrical insulating tape for insulating, bundling, marking

### Norm references / Approvals

- Type acc. to VDE: type 5

### Technical data

 ETIM 5.0 Class-ID: EC000128  
ETIM 5.0 Class-Description:  
Adhesive tape

 **Material**  
PVC

 **Temperature range**  
-10 °C to +90 °C

Article number	Article designation	Colour	Length (m) x tape width (mm) x thickness (mm)	Material	Pieces / PU
<b>Temflex™ 1500 insulating tape</b>					
61721040	Temflex 1015	white	10 x 15 x 0.15	PVC	10
61721030	Temflex 1015	black	10 x 15 x 0.15	PVC	10
61721050	Temflex 1015	green	10 x 15 x 0.15	PVC	10
61721060	Temflex 1015	blue	10 x 15 x 0.15	PVC	10
61721070	Temflex 1015	red	10 x 15 x 0.15	PVC	10
61721080	Temflex 1015	GN-YE	10 x 15 x 0.15	PVC	10
61721045	Temflex 1015	yellow	10 x 15 x 0.15	PVC	10
61721090	Temflex 2515	black	25 x 15 x 0.15	PVC	10
61721100	Temflex 2515	white	25 x 15 x 0.15	PVC	10
61721110	Temflex 2515	blue	25 x 15 x 0.15	PVC	10
61721120	Temflex 2515	red	25 x 15 x 0.15	PVC	10
61721130	Temflex 2515	green	25 x 15 x 0.15	PVC	10
61721140	Temflex 2525	black	25 x 25 x 0.15	PVC	10

Temflex™ 1183 is a registered trademark of 3M  
Photographs are not to scale and do not represent detailed images of the respective products.



## TI insulating tape




### Benefits

- Protects against corrosion
- Non-aging
- Chemical resistance
- Not self-adhesive, no residues
- Wide temperature range for applications in harsh climatic environments


### Application range


- Insulating tapes and self-amalgamating tape
- For sealing of transition points where water shouldn't enter
- For bundling several wire harnessings (e.g. automotive industry)
- Problem-free and assured sealing of fine screens up to 3/8" for nearly all materials

### Technical data

 ETIM 5.0 Class-ID: EC000128  
ETIM 5.0 Class-Description:  
Adhesive tape

 **Colour delivered**  
White

 **Material**  
Non-adhesive fluoropolymer tape

 **Temperature range**  
-240 °C to +250 °C

Article number	Article designation	Colour	Length (m) x tape width (mm) x thickness (mm)	Material	Pieces / PU
<b>TI insulating tape</b>					
61713080	TI 1212 insulating tape	white	12 x 12 x 0.1	PTFE	10

Photographs are not to scale and do not represent detailed images of the respective products.



## Insulating tube ISS



### Benefits

- Provides good insulation against heat, cold or temperature fluctuations
- Resistant to most chemicals
- Good weather and UV-resistance

### Application range

- Insulating tube

### Note

- Not suitable for shrinking

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002254  
ETIM 5.0 Class-Description:  
Cable insulation hose

**i** **Note**  
Dielectric strength: 18 kV/mm

**Material**  
Silicone  
UV-resistant

**Temperature range**  
-60°C to +200°C

Article number	Article designation	Colour	Internal Ø x wall thickness (mm)	Material	PU (m)
<b>Insulating tube ISS</b>					
61760060	ISS 2	natural	2.00 x 0.40	Silicone	100
61760070	ISS 3	natural	3.00 x 0.40	Silicone	100
61760080	ISS 4	natural	4.00 x 0.75	Silicone	100
61760090	ISS 5	natural	5.00 x 0.90	Silicone	100
61760100	ISS 6	natural	6.00 x 0.90	Silicone	100
61760110	ISS 7	natural	7.00 x 0.90	Silicone	100
61760120	ISS 8	natural	8.00 x 1.00	Silicone	50
61760130	ISS 9	natural	9.00 x 1.05	Silicone	50
61760140	ISS 10	natural	10.00 x 1.05	Silicone	50

Photographs are not to scale and do not represent detailed images of the respective products.

### Application range

- Insulating tube
- For insulation of connections

### Product features

- Smooth surface

### Norm references / Approvals

- IEC 60684-3-100

### Note

- Not suitable for shrinking

### Design

- Colours: black RAL 9005, white similar to RAL 9003

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC002254  
ETIM 5.0 Class-Description:  
Cable insulation hose

**i** **Note**  
Dielectric strength: 14 kV/mm

**Z<sub>∞</sub>** **Info**  
Without fabric

**RAL** **Colour delivered**  
Black and white

**Material**  
Soft PVC

**Temperature range**  
-20 °C ... +85 °C



Article number	Article designation	Colour	Internal Ø x wall thickness (mm)	Material	PU (m)
<b>Insulating tube ISY</b>					
61793030	ISY 2	black	2.00 x 0.40	PVC	1000
61793040	ISY 3	black	3.00 x 0.40	PVC	750
61793050	ISY 4	black	4.00 x 0.50	PVC	500
61793060	ISY 5	black	5.00 x 0.60	PVC	500
61793070	ISY 6	black	6.00 x 0.60	PVC	400
61793080	ISY 7	black	7.00 x 0.70	PVC	500
61793090	ISY 8	black	8.00 x 0.70	PVC	500
61793100	ISY 9	black	9.00 x 0.70	PVC	400
61793110	ISY 10	black	10.00 x 0.70	PVC	300
61793116	ISY 10	white	10.00 x 0.70	PVC	300
61793119	ISY 16	black	16.00 x 1.00	PVC	150

Photographs are not to scale and do not represent detailed images of the respective products.





### Copper braid



#### Application range

- EMC-compliant screening
- Can be used as earthing tape
- Automotive industry

#### Norm references / Approvals

- ISO-TS approved

#### Design

- Four available sizes: Cover a diameter range from 1 to 50 mm
- Variable diameter by tightening the braid

#### Included

- Are delivered in 2 pieces with 50 m each

#### Suitable conduits

- SILVYN® EMC AS-CU Page 899

#### Technical data

- ETIM 5.0 Class-ID: EC001182  
ETIM 5.0 Class-Description: Braided hose
- General**  
Minor differences are possible depending on the production batch
- Note**  
Degree of coverage: 85 % at maximum opening
- Material**  
Tinned-copper
- Temperature range**  
-30°C to +105°C  
Max. temperature: +120°C (short-term)

Article number	Article designation	mm <sup>2</sup>	Approx. Ø range in mm	Number of wires x Ø (mm)	Weight (kg)	PU (m)
<b>Copper braid</b>						
61721370	CU 14	1.32	1 - 4	24 x 7 x 0,10	1.2	100
61721380	CU 410	4.14	4 - 10	24 x 22 x 0,10	3.9	100
61721390	CU 1020	8.29	10 - 20	48 x 22 x 0,10	7.6	100
61721395	CU 2050	18.1	20 - 50	48 x 12 x 0,10	8.1	100

Photographs are not to scale and do not represent detailed images of the respective products.



### 3M Scotch™ 1183 screening tape



#### Benefits

- Electrically-conductive strip provides exceptional screening of electromagnetic fields
- Uniform foil composition and its good conductivity to the substrate ensures low contact resistance, which is crucial for the degree of screening
- Solderable and corrosion-resistant
- Acrylic adhesive that is resistant to solvents

#### Application range

- Electromagnetic field screening
- Electrostatic discharge

#### Product features

- Copper foil is plated with a thin layer of tin
- Tin-plating is compatible with a wide range of base materials such as aluminium, lead and tin alloys, and galvanised steels

#### Norm references / Approvals

- UL 510 approved
- UL File Number: E17385

#### Technical data

- ETIM 5.0 Class-ID: EC000128  
ETIM 5.0 Class-Description: Adhesive tape
- Caution**  
Adhesion (stripping force) : 3.8 N/10 mm  
Tear strength: 44 N/10 mm
- Note**  
Contact resistance (in acc. with MIL-STD-202): 0.005 ohms
- Info**  
Storage: good stability when stored in a cool and dry location (room temperature and approx. 50% relative humidity)
- Colour delivered**  
Silver grey (RAL 7001)
- Material**  
Smooth tin-plated copper film as a lining with a conductive acrylic adhesive
- Temperature range**  
-10 °C to +80 °C

Article number	Article designation	Width (mm)	PU (m)
<b>3M Scotch™ 1183 screening tape</b>			
61721420	3M Scotch 1183 / 9x16,5	9	16.5
61721421	3M Scotch 1183 / 12x16,5	12	16.5
61721422	3M Scotch 1183 / 19x16,5	19	16.5
61721423	3M Scotch 1183 / 25x16,5	25	16.5

Scotch™ 1183 is a registered trademark of 3M

Photographs are not to scale and do not represent detailed images of the respective products.

#### Accessories

- SKINTOP® MS-SC-M refer to page 732
- SKINTOP® MS-SC refer to page 794



## HOTY heat-shrink tube



### Benefits

- Well-priced
- Good weather and UV-resistance
- Flame-retardant
- Safe transport is secured via light pressure

### Application range

- HOTY heat-shrink tubing is used for protecting and insulating e.g. contacts, cable lugs and connectors

### Norm references / Approvals

- Flame-retardant according to UL94 VO







### Note

- Storage temperature: max. +18°C

### Suitable tools

- HG 2320 hot-air pistol refer to page 1052

### Technical data

	ETIM 5.0 Class-ID: EC000217 ETIM 5.0 Class-Description: Heat-shrink tubing
	<b>Info</b> Shrinking ratio: 2:1
	<b>Colour delivered</b> Black- UV-resistant
	<b>Material</b> PVC
	<b>Test voltage</b> Dielectric strength: 20 kV/mm
	<b>Temperature range</b> -20°C to +90°C Shrinking temperature: +120°C

Article number	Article description	Internal Ø before contraction (mm)	Shrinkage range (mm)	Panel thickness, shrunk +/- 0.1 mm	PU (m)
<b>HOTY heat-shrink tube</b>					
61716700	HOTY 1	2.5	2.5 - 1.2	0.45	100
61716720	HOTY 2	4	4.0 - 2.0	0.5	100
61716740	HOTY 3	6	6.0 - 3.0	0.5	100
61716760	HOTY 4	7	7.0 - 4.0	0.5	100
61716780	HOTY 6	11	11.0 - 6.0	0.6	100
61716800	HOTY 8	14	14.0 - 8.0	0.6	100
61716820	HOTY 10	17	17.0 - 10.0	0.8	100
61716840	HOTY 13	20	20.0 - 13.0	1	100
61716860	HOTY 16	25	25.0 - 16.0	1	50
61716880	HOTY 20	31	31.0 - 20.0	1	50

Photographs are not to scale and do not represent detailed images of the respective products.



## Shrink tube PROTECT Box



### Benefits

- Very flexible, UL 224 flame retardant thin-walled heat shrink tubing with excellent physical and mechanical properties
- Convenient quantity for small consumers
- Stackable boxes for easy storage

### Application range

- General purpose, flexible heat shrink tubing for protection, insulation and bundling

### Product features

- UV-resistant

### Norm references / Approvals

- UL file no.: E476215

### Suitable tools

- HG 2320 hot-air pistol refer to page 1052

### Technical data

	ETIM 5.0 Class-ID: EC000217 ETIM 5.0 Class-Description: Heat-shrink tubing
	<b>Note</b> Dielectric strength: 20 kV/mm Thin walled
	<b>Info</b> Shrinking ratio: 2:1
	<b>Colour delivered</b> Black- UV-resistant Transparent - halogen-free
	<b>Material</b> Cross-linked polyolefin, without silicone, cadmium and lead
	<b>Temperature range</b> -55°C to +135°C Shrinking temperature: +90°C

Article number	Article description	Colour	Shrinkage range (mm)	Panel thickness, shrunk + 0.1 mm	Contents (m)	PU
<b>Black</b>						
61742423	PROTECT Box 1,2/0,6 BK	black	1.2 - 0.6	0.41	12	1
61742424	PROTECT Box 1,6/0,8 BK	black	1.6 - 0.8	0.43	12	1
61742425	PROTECT Box 2,4/1,2 BK	black	2.4 - 1.2	0.51	12	1
61742426	PROTECT Box 3,2/1,6 BK	black	3.2 - 1.6	0.51	12	1
61742427	PROTECT Box 4,8/2,4 BK	black	4.8 - 2.4	0.51	10	1
61742428	PROTECT Box 6,4/3,2 BK	black	6.4 - 3.2	0.64	8	1
61742429	PROTECT Box 9,5/4,7 BK	black	9.5 - 4.7	0.64	7	1
61742430	PROTECT Box 12,7/6,4 BK	black	12.7 - 6.4	0.64	6	1
61742431	PROTECT Box 19,1/9,5 BK	black	19.1 - 9.5	0.7	5	1
61742433	PROTECT Box 25,4/12,7 BK	black	25.4 - 12.7	0.89	3	1
<b>Transparent</b>						
61742434	PROTECT Box 1,2/0,6 TR	transparent	1.2 - 0.6	0.41	12	1
61742435	PROTECT Box 1,6/0,8 TR	transparent	1.6 - 0.8	0.43	12	1
61742436	PROTECT Box 2,4/1,2 TR	transparent	2.4 - 1.2	0.51	12	1
61742437	PROTECT Box 3,2/1,6 TR	transparent	3.2 - 1.6	0.51	12	1
61742438	PROTECT Box 4,8/2,4 TR	transparent	4.8 - 2.4	0.51	10	1
61742439	PROTECT Box 6,4/3,2 TR	transparent	6.4 - 3.2	0.64	8	1
61742440	PROTECT Box 9,5/4,7 TR	transparent	9.5 - 4.7	0.64	7	1
61742441	PROTECT Box 12,7/6,4 TR	transparent	12.7 - 6.4	0.64	6	1
61742442	PROTECT Box 19,1/9,5 TR	transparent	19.1 - 9.5	0.77	5	1
61742443	PROTECT Box 25,4/12,7 TR	transparent	25.4 - 12.7	0.89	3	1

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.



## Shrink tube PROTECT



### Benefits

- Very flexible, UL 224 flame retardant thin-walled heat shrink tubing with excellent physical and mechanical properties
- Approved for the use in North America and Canada

### Application range

- General purpose, flexible heat shrink tubing for protection, insulation and bundling

### Product features

- Dielectric strength: 20 kV/mm
- UV-resistant

### Norm references / Approvals

- UL file no.: E476215
- UL 224 approval

### Note

- Not resistant against engine oils

### Included

- Plastic bag with 1.22 m units

### Suitable tools

- HG 2320 hot-air pistol refer to page 1052

### Technical data

	ETIM 5.0 Class-ID: EC000217 ETIM 5.0 Class-Description: Heat-shrink tubing
	<b>General</b> Thin walled
	<b>On request</b> Other colours are available upon request
	<b>Note</b> Dielectric strength: 20 kV/mm
	<b>Info</b> Shrinking ratio: 2:1
	<b>Colour delivered</b> Black
	<b>Material</b> Cross-linked polyolefin, without silicone, cadmium and lead
	<b>Temperature range</b> -55 °C to +135 °C Shrinking temperature: +90 °C

Article number	Article description	Colour	Shrinkage range (mm)	Panel thickness, shrunk +/- 0.1 mm	PU (m)	PU
<b>Shrink tube PROTECT</b>						
61742400	PROTECT 1,2/0,6 BK	black	1.2 - 0.6	0.41	61	1
61742401	PROTECT 1,6/0,8 BK	black	1.6 - 0.8	0.43	61	1
61742402	PROTECT 2,4/1,2 BK	black	2.4 - 1.2	0.51	61	1
61742403	PROTECT 3,2/1,6 BK	black	3.2 - 1.6	0.51	61	1
61742404	PROTECT 4,8/2,4 BK	black	4.8 - 2.4	0.51	61	1
61742405	PROTECT 6,4/3,2 BK	black	6.4 - 3.2	0.64	61	1
61742406	PROTECT 9,5/4,7 BK	black	9.5 - 4.7	0.64	30.5	1
61742407	PROTECT 12,7/6,4 BK	black	12.7 - 6.4	0.64	30.5	1
61742408	PROTECT 19,1/9,5 BK	black	19.1 - 9.5	0.77	30.5	1
61742409	PROTECT 25,4/12,7 BK	black	25.4 - 12.7	0.89	18.3	1

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.



## Shrink tube PROTECT GN/YE



### Benefits

- Very flexible, UL 224 flame retardant thin-walled heat shrink tubing with excellent physical and mechanical properties
- Approved for the use in North America and Canada

### Application range

- For identifying and marking earthing connectors and cables
- Mechanical and electrical insulation, corrosion protection

### Product features

- Dielectric strength: 20 kV/mm

### Norm references / Approvals

- UL file no.: E476215

### Note

- Non halogen-free

### Design

- Green-yellow polyolefin shrink-tubing

### Included

- Plastic bag with 1.22 m units

### Suitable tools

- HG 2320 hot-air pistol refer to page 1052

### Technical data



ETIM 5.0 Class-ID: EC000217  
ETIM 5.0 Class-Description:  
Heat-shrink tubing



#### General

Dielectric strength: 20 kV/mm



#### Info

Shrinking ratio: 2:1



#### Colour delivered

green/yellow



#### Material

Cross-linked polyolefin, without silicone, cadmium and lead



#### Temperature range

-55°C to +135°C

Shrinking temperature: +90°C

Article number	Article description	Colour	Shrinkage range (mm)	Panel thickness, shrunk +/- 0.1 mm	PU (m)	PU
<b>Shrink tube PROTECT GN/YE</b>						
61742416	PROTECT 3,2/1,6 GN/YE	green-yellow	3.2 - 1.6	0.51	61	1
61742417	PROTECT 4,8/2,4 GN/YE	green-yellow	4.8 - 2.4	0.51	61	1
61742418	PROTECT 6,4/3,2 GN/YE	green-yellow	6.4 - 3.2	0.64	30.5	1
61742419	PROTECT 9,5/4,7 GN/YE	green-yellow	9.5 - 4.7	0.64	30.5	1
61742420	PROTECT 12,7/6,4 GN/YE	green-yellow	12.7 - 6.4	0.64	30.5	1
61742421	PROTECT 19,1/9,5 GN/YE	green-yellow	19.1 - 9.5	0.77	30.5	1
61742422	PROTECT 25,4/12,7 GN/YE	green-yellow	25.4 - 12.7	0.89	18.3	1

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.



**Benefits**

- Convenient plastic kit with PROTECT shrink tubes including small hot air pistol

**Application range**

- For repair and maintenance, for small series production and in research and development

**Product features**

- Dielectric strength: 20 kV/mm

**Norm references / Approvals**

- UL file no.: E476215

**Included**

- The shrink set in a practical case
- Assortment of common shrinking tube sizes of type PROTECT
- **Content:**
  - 50x 50 mm Shrink tube PROTECT 1,6/0,8 BK
  - 50x 50 mm Shrink tube PROTECT 1,6/0,8 TR
  - 50 x 50 mm Shrink tube PROTECT 2,4/1,2 BK
  - 50 x 50 mm Shrink tube PROTECT 2,4/1,2 TR
  - 20 x 50 mm Shrink tube PROTECT 3,2/1,6 BK
  - 20 x 50 mm Shrink tube PROTECT 3,2/1,6 TR
  - 20 x 50 mm Shrink tube PROTECT 3,2/1,6 YE

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC000217 <b>ETIM 5.0 Class-Description:</b> Heat-shrink tubing
	<b>Info</b> Shrinking ratio: 2:1
	<b>Material</b> Cross-linked polyolefin, without silicone, cadmium and lead
	<b>Temperature range</b> -55°C to +135°C Shrinking temperature: +90°C

- 20 x 50 mm Shrink tube PROTECT 3,2/1,6 WH
- 10 x 50 mm Shrink tube PROTECT 4,8/2,4 BK
- 10 x 50 mm Shrink tube PROTECT 4,8/2,4 TR
- 10 x 50 mm Shrink tube PROTECT 4,8/2,4 YE
- 10 x 50 mm Shrink tube PROTECT 4,8/2,4 BU
- 15 x 50 mm Shrink tube PROTECT 6,4/3,2 BK
- 15 x 50 mm Shrink tube PROTECT 6,4/3,2 WH
- 15 x 50 mm Shrink tube PROTECT 6,4/3,2 YE
- 15 x 50 mm Shrink tube PROTECT 6,4/3,2 BU

**Shrink tube PROTECT Set**



- 15 x 50 mm Shrink tube PROTECT 9,5/4,7 BK
- 15 x 50 mm Shrink tube PROTECT 9,5/4,7 BU
- 20 x 50 mm Shrink tube PROTECT 12,7/6,4 BK
- 20 x 50 mm Shrink tube PROTECT 12,7/6,4 RD
- 5 x 100 mm Shrink tube PROTECT 19,1/9,5 BK

Article number	Article description
<b>Shrink tube PROTECT Set</b>	
61742465	PROTECT Set

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.

**Benefits**

- Good chemical resistance
- High mechanical stability
- Good weather-resistance
- High shrink ratio and adhesive coating

**Application range**

- Particularly suitable for corrosion and damp protected casings as well as highly contoured components

**Product features**

- Adhesive lining bonds to plastic, rubber, neoprene, steel and polyethylene
- UV-resistant
- Dielectric strength: 15 kV/mm

**Included**

- Plastic bag with 0.6 m units

**Suitable tools**

- HG 2320 hot-air pistol refer to page 1052

**Technical data**

	<b>ETIM 5.0 Class-ID:</b> EC000217 <b>ETIM 5.0 Class-Description:</b> Heat-shrink tubing
	<b>General</b> Double-walled
	<b>Note</b> Dielectric strength: 15 kV/mm
	<b>Info</b> Shrinking ratio: 3:1
	<b>Colour delivered</b> Black
	<b>Material</b> Cross-linked modified polyolefin, with thermoplastic adhesive coating inside Silicone, Cadmium and Lead free
	<b>Temperature range</b> -55°C to +110°C Shrinking temperature: > 100°C



**Shrink tube PROTECT-C**



Article number	Article description	Shrinkage range (mm)	Panel thickness, shrunk +/- 0.1 mm	PU (m)	PU
<b>Shrink tube PROTECT-C</b>					
61742449	PROTECT-C 3,0/1,0 BK	3.0 - 1.0	1	12	1
61742450	PROTECT-C 6,0/2,0 BK	6.0 - 2.0	1.1	9	1
61742451	PROTECT-C 9,0/3,0 BK	9.0 - 3.0	1.3	6	1
61742452	PROTECT-C 12,0/4,0 BK	12.0 - 4.0	1.7	5.4	1
61742453	PROTECT-C 18,0/6,0 BK	18.0 - 6.0	2	3.6	1
61742454	PROTECT-C 24,0/8,0 BK	24.0 - 8.0	2.5	3	1

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.

Insulating, protecting, shrinking • Heat-shrinking products



## Shrink tube PROTECT-M/PROTECT-T



### Benefits

- Is designed to withstand the severe mechanical requirements of submersible and direct-buried installations
- High resistance to abrasion, corrosion and chemicals
- Good weather-resistance

### Application range

- Thick and medium-wall shrink tubes for 600 V, 90°C low voltage applications in continuous use
- Ideal for the protection of cable joints and terminations in low voltage power applications

### Product features

- UV-resistant
- Dielectric strength:  
PROTECT-M: 15 kV/mm  
PROTECT-T: 14 kV/mm

### Design

- PROTECT-M = medium wall
- PROTECT-T = thick wall

### Included

- Plastic bags with 1.0 m units

### Suitable tools

- HG 2320 hot-air pistol refer to page 1052

### Technical data

	ETIM 5.0 Class-ID: EC000217 ETIM 5.0 Class-Description: Heat-shrink tubing
	<b>Note</b> Non flame-retardant Double-walled
	<b>Info</b> Shrinking ratio: 3:1 Good UV-resistance
	<b>Material</b> Cross-linked modified polyolefin, with thermoplastic adhesive coating inside Halogen-free
	<b>Temperature range</b> -40°C to +120°C Shrinking temperature: +110°C

Article number	Article description	Shrinkage range (mm)	Panel thickness, shrunk +/- 0.1 mm	Pieces / PU	PU
<b>Medium wall</b>					
61742460	PROTECT- M 12/3 BK	12.0 - 3.0	2.2	15	1
61742461	PROTECT- M 33/8 BK	33.0 - 8.0	2.6	10	1
61742462	PROTECT- M 40/12 BK	40.0 - 12.0	2.6	5	1
61742463	PROTECT- M 56/17 BK	56.0 - 17.0	3	3	1
61742464	PROTECT- M 92/26 BK	92.0 - 26.0	3.15	1	1
<b>Thick wall</b>					
61742455	PROTECT- T 13,0/4,0 BK	13.0 - 4.0	2.65	25	1
61742456	PROTECT-T 19/6 BK	19.0 - 6.0	2.65	15	1
61742457	PROTECT- T 45/12 BK	45.0 - 13.0	3.7	5	1
61742458	PROTECT- T 52/16 BK	52.0 - 16.0	4.1	3	1
61742459	PROTECT- T 130/45 BK	130.0 - 45.0	4.2	1	1

Shrink tubes from ABB (former Thomas & Betts) are available upon request  
Photographs are not to scale and do not represent detailed images of the respective products.



## TEC sealing cap

### Benefits

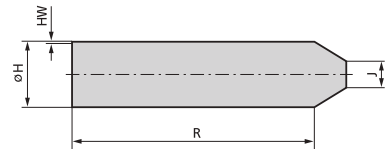
- Secure sealing through thermoplastic adhesive coating on the inside
- Good resistance to chemicals and solvents
- Ensures high tensile strength and mechanical protection

### Application range

- For sealing cable ends against the seepage of moisture and contaminants

### Technical data

	ETIM 5.0 Class-ID: EC000218 ETIM 5.0 Class-Description: Heat-shrink end cap
	<b>General</b> UV-resistant Double-walled
	<b>Colour delivered</b> Black
	<b>Material</b> Cross-linked modified polyolefin, with thermoplastic adhesive coating inside Halogen-free and silicone-free
	<b>Temperature range</b> -55 °C to +100 °C Shrink temperature: 135 °C



Article number	Article description	H max. mm	H min. mm	J max. mm	Cable Ø (mm)	R* after shrinking (mm)	Panel thickness HW* (mm)	Pieces / PU
<b>TEC sealing cap</b>								
61830000	TEC 15/4,5	15	4.5	4	5.0 - 12.0	30	2	10
61830010	TEC 25/9	25	9	6.5	10.0 - 22.0	50	2.3	10
61830020	TEC 36/15	36	15	10.5	17.0 - 30.0	80	3	10
61830040	TEC 55/25	55	25	16	28.0 - 47.0	130	3.3	10
61830050	TEC 80/40	80	40	17	45.0 - 70.0	150	4	10
61830060	TEC 102/60	102	60	26	68.0 - 90.0	140	4	1
61830070	TEC 148/57	148	57	27	80.0 - 133.0	105	3.3	1

1. after shrinking +/- 10%; 2. after shrinking +/- 20%  
Photographs are not to scale and do not represent detailed images of the respective products.



## TEB branch muff

### Benefits

- Secure sealing through thermoplastic adhesive coating on the inside
- Good resistance to chemicals and solvents
- Ensures high tensile strength and mechanical protection

### Application range

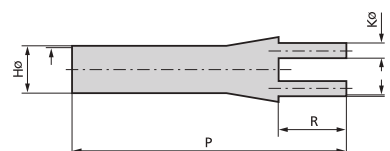
- Insulation and sealing of cable splices

### Design

- Double-walled

### Technical data

	ETIM 5.0 Class-ID: EC001170 ETIM 5.0 Class-Description: Straight-through/transition joint (set)
	<b>General</b> UV-resistant
	<b>Info</b> Shrinking ratio: > 2:1
	<b>Colour delivered</b> Black
	<b>Material</b> Cross-linked modified polyolefin, with thermoplastic adhesive coating inside Halogen-free and silicone-free
	<b>Temperature range</b> -55 °C to +100 °C Shrinking temperature: +120 °C



Article number	Article description	Number of cores	H max. mm	H min. mm	K max. mm	K min. mm	P* mm	R* mm	Pieces / PU
<b>TEB branch muff</b>									
61830110	TEB 2-30/12	2	30	12	14	4	93	23	10
61830120	TEB2-50/21	2	60	23	25	7.5	118	29	10
61830130	TEB3-60/24	3	60	24	27	7	165	50	10
61830140	TEB4-40/15	4	40	15	13	3	105	26	10
61830150	TEB4-55/21	4	55	21	20	5.5	150	40	10
61830160	TEB4-75/26	4	75	26	28	7.5	175	45	10
61830170	TEB4-90/32	4	90	34	32	10	198	58	1

1. after shrinking +/- 10%; 2. after shrinking +/- 20%  
Photographs are not to scale and do not represent detailed images of the respective products.





## HG 2320 hot-air pistol



### Benefits

- One hand operation is possible
- Four memo programs
- Optical LCD temperature and speed display
- High-performance, electronically regulated professional hot-air blower with continuous air flow and temperature regulation and LCD display
- Display of the heat remainders prevents burns

### Application range

- Robust housing for manual and stationary operation.
- Control cabinets and equipment wiring

### Product features

- Adjustable temperature setting
- Double protection against overheating - thermostat and thermal fuse
- Air inlet with mesh to protect against coarse impurities
- Adjustable speed setting

### Note

- Lifetime of the motor: 1.000 h

### Included

- Hot-air pistol, plastic case, reduction nozzle 9 mm, reflector nozzle, variety of different shrink tube pieces (100 pc, Ø 1,6 9,5 mm)



### Info

- New version with improved functions and lifetime

### Technical data



ETIM 5.0 Class-ID: EC001382  
ETIM 5.0 Class-Description:  
Hot glue gun (electric)



### General

Dimensions:  
Without case: 253 x 86,5 x 200 mm  
With case: 395 x 100 x 320 mm  
Weight incl. packaging: 2195 g



### Note

Length power cord: 3 m  
230 V, 50/60 Hz



### Info

Air volume: 150 - 500 l/min,  
stepless adjustable  
2 levels



### Temperature range

80 - 650 °C, stepless adjustable

Article number	Article description	Max. heating capacity	Attainable air temperature	Pieces / PU
<b>HG 2320 hot-air pistol</b>				
61801246	Ho air pistol HG 2320 E	2300	650	1

Photographs are not to scale and do not represent detailed images of the respective products.  
Guarantee is limited to 500 working hours or 1 year

### Accessories

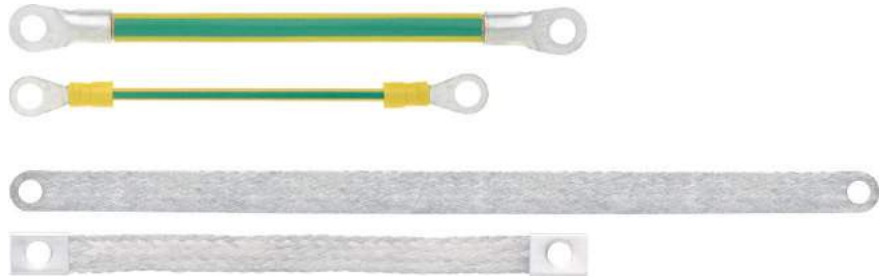
- Shrink tube PROTECT Box refer to page 1046
- Shrink tube PROTECT-C refer to page 1049
- Shrink tube PROTECT-M/PROTECT-T refer to page 1050



**i Info**

- New sizes are available

## Ground Straps / Flat Ground Straps



### Application range

- Control cabinet manufacturing
- The protective earth safety measure is prescribed by standard
- Fixed and moving metal parts, such as doors in switch cabinet construction, must be earthed

### Product features

- Fixed lengths for M6 and M8 screws

### Product Make-up

- Ground straps:
  - Strands of bare copper wires
  - PVC-based core insulation
  - Assembled with ring cable lugs
- Pressure-welded flat ground straps:
  - Strand made of tinned-copper wires
  - Welded ends
- Flat ground straps with sleeves:
  - Strands made of tinned-copper wires
  - Assembled with pressed contact sleeves

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC001182  
ETIM 5.0 Class-Description: Braided hose
- Core identification code**  
Assembled ground straps green/yellow
- Conductor stranding**  
Assembled ground straps IEC 60 228 Class 6  
Assembled flat ground straps IEC 60 228 Class 6, tin-plated Extra-fine wire
- Minimum bending radius**  
Assembled ground straps 7 x outer diameter  
Assembled flat ground straps 5 x outer diameter
- Test voltage**  
Assembled ground straps 2500 V
- Temperature range**  
Assembled ground straps -30°C to +70°C  
Assembled flat ground straps -5°C to +70°C

Article number	Cross-section (mm <sup>2</sup> )	Article designation	For	Length (mm)	PU
<b>Ground straps</b>					
4571120	4	Ground strap 1 x 4/M6/170 mm GN/YE	M6	170	25
4571121	16	Ground straps 1x16/M6/170mm GN/YE	M6	170	25
4571122	25	Ground strap 1x25/M6/170mm GN/YE	M6	170	25
4571123	4	Ground strap 1x4/M8/300mm GN/YE	M8	300	25
4571198	16	Ground strap 1x16/M6/500mm GN/YE	M6	500	25
4571124	16	Ground strap 1x16/M8/300mm GN/YE	M8	300	25
4571125	25	Ground strap 1x25/M8/300mm GN/YE	M8	300	25
<b>Pressure-welded flat ground straps</b>					
4571132	10	Flat ground strap/press. 1X10/M6/200mm	M6	200	25
4571133	16	Flat ground strap/press. 1x16/M8/200mm	M8	200	25
4571134	25	Flat ground strap/terminals 1x25/M8/200mm	M8	200	25
4571135	10	Flat ground strap/press. 1x10/M6/300mm	M6	300	25
70399965	16	Flat ground strap/press. 1X16/M6/200mm	M6	200	25
70399966	16	Flat ground strap/press. 1X16/M6/300mm	M6	300	25
70399967	16	Flat ground strap/press. 1x16/M8/200mm	M8	200	25
4571136	16	Flat ground strap/terminals 1x16/M8/300mm	M8	300	25
4571137	25	Flat ground strap/terminals 1x25/M8/300mm	M8	300	25
70399969	25	Flat ground strap/press. 1X25/M8/500mm	M8	500	25
<b>Flat ground straps with terminals</b>					
4571196	6	Flat Ground Strap/Press. 1x6/M6/200mm	M6	200	25
4571197	6	Flat Ground Strap/Press. 1x6/M6/300mm	M6	300	25
4571126	10	Flat ground straps/terminals 1x10/M6/200mm	M6	200	25
4571127	16	Flat ground strap/terminals 1x16/M8/200mm	M8	200	25
4571128	25	Flat ground strap/terminals 1x25/M8/200mm	M8	200	25
4571129	10	Flat ground strap/terminals 1x10/M6/300mm	M6	300	25
4571130	16	Flat ground strap/terminals 1x16/M8/300mm	M8	300	25
4571131	25	Flat ground strap/terminals 1x25/M8/300mm	M8	300	25

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges. Details of the clamping force are available upon request, halogen-free. Photographs are not to scale and do not represent detailed images of the respective products.



## KW plastic coil



### Benefits

- Flexibility of the cables is largely preserved
- Spiral-shaped cut tube
- For time-saving cable and wire bundling

### Application range

- For the manufacturing of cable harnesses with branch-offs
- For protection against mechanical stress

### Product features

- Black version: Fire behaviour according to UL 94 HB

### Included

- In each PU one coiling tool for spirals is included to avoid time-consuming preparation and installation.

### Technical data



ETIM 5.0 Class-ID: EC000046  
ETIM 5.0 Class-Description: Cable tie



#### General

Black version: UV-resistant



#### Material

Black version: polyamide  
(silikone free and halogene free)  
Nature and coloured version:  
polyethylene



#### Temperature range

Black version: -40°C to +120°C  
Natural and coloured version  
-50°C to 85°C

Article number	Article description	Colour / bundle Ø (mm)	PU (m)
<b>KW plastic coil</b>			
61600010	Plastic spiral KW 2	natural / 2 - 7	50
61600015	Plastic spiral KW 2	black / 2 - 7	50
61722850	Plastic spiral KW 2	blue / 2 - 7	50
61722856	Plastic spiral KW 2	yellow / 2 - 7	50
61600040	Plastic spiral KW 5	natural / 5 - 20	30
61600045	Plastic spiral KW 5	black / 5 - 20	25
61722851	Plastic spiral KW 5	blue / 5 - 20	25
61600050	Plastic spiral KW 5	yellow / 5 - 20	25
61600070	Plastic spiral KW 10	natural / 10 - 40	30
61722840	Plastic spiral KW 10	black / 10 - 40	25
61722852	Plastic spiral KW 10	blue / 10 - 40	25
61600080	Plastic spiral KW 10	yellow / 10 - 40	25

Other sizes and colours are available upon request.

Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- Cable-Eater bunched cable conduit refer to page 1055



## Cable-Eater bunched cable conduit



### Benefits

- Fast and easy assembly through using the cable insertion tools
- Reduced installation time





### Application range

- The main fields of application include the bundling and protection of cables in cable pre-assembly, the electrical industry and switch cabinet and plant construction.

### Included

- Suitable insertion tool
- SHR protective cable conduit

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Note</b> Halogen-free Flame-retardant according to UL 94 HB
	<b>Colour delivered</b> White Black
	<b>Material</b> Polypropylene (PP) LABS-free

Article number	Article description	Colour / bundle Ø (mm)	Inner Ø (mm)	Panel thickness (mm)	Processing tool/ installation tool	PU (m)
<b>Cable-Eater bunched cable conduit</b>						
61830300	SHR-08-PPB	black / 6 - 9	8	0.8	STKP 8	100
61830310	SHR-15-PPB	black / 10 - 16	15	0.8	STKP 15	50
61830320	SHR-20-PPB	black / 17 - 21	20	0.9	STKP 20	30
61830330	SHR-25-PPB	black / 21 - 28	25	1	STKP 25	20
61830302	SHR-08-PPW	white / 6 - 9	8	0.8	STKP 8	100
61830312	SHR-15-PPW	white / 10 - 16	15	0.8	STKP 15	50
61830322	SHR-20-PPW	white / 17 - 21	20	0.9	STKP 20	30
61830332	SHR-25-PPW	white / 21 - 28	25	1	STKP 25	20
61830335	SHR-32-PPB	black / 29 - 32	32	1.3	STKP 32	15
61830333	SHR-32-PPW	white / 29 - 32	32	1.3	STKP 32	15

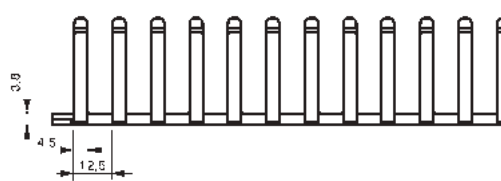
Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Spare tool Cable - Eater refer to page 1057



## Flexible wiring duct



### Benefits

- Fast and easy assembly through using the cable insertion tools
- Reduced installation time

### Application range

- For use in control panels, distribution boards or in areas that are difficult to reach
- Attach the cable trunking: webs turned upwards, connect one cable end and laterally insert the cable up to the requested branch point, connect the opposite cable end

### Product features

- Two or more lengths can be joined by snapping the ends together
- Are delivered in 50 cm pieces

### Norm references / Approvals

- UL 94 V-2

### Note

- Recommended screws: M3 with cheese head DIN85A and washer or M4 with cheese head DIN 85 A and washer

### Suitable tools

- Cable Eater tool (STK 20)

### Technical data



#### On request

Version with self-adhesive layer  
Square form



#### Note

Halogen-free



#### Colour delivered

Light grey (RAL 7035)



#### Material

Polypropylene (PP)



#### Temperature range

-40°C to +70°C

Article number	Article description	Length (mm)	Height (mm)	Width (mm)	Quantity of pieces	PU (m)
<b>Flexible wiring duct</b>						
61830290	GMF HF-20 GY	23	24	19	60	30
61830291	GMF HF-30 GY	33	35	28	36	18
61830292	GMF HF-40 GY	44	46	37	24	12

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Spare tool Cable - Eater refer to page 1057

## Spare tool Cable - Eater




### Application range

- Cable pull-in tool for SILVYN® RILL PA6 SINUS and for the Cable-Eater

### Suitable conduits

- SILVYN® SINUS PA6 Page 895

### Technical data

	ETIM 5.0 Class-ID: EC000046
	ETIM 5.0 Class-Description: Cable tie

Article number	Article description	Pieces / PU
<b>Cable Eater tool</b>		
61830340	STKP 8	1
61830350	STKP 15	1
61830360	STKP 20	1
61830370	STKP 25	1
61830380	STKP 32	1

Photographs are not to scale and do not represent detailed images of the respective products.



### Benefits

- High resistance to bases, oils, greases, oil derivatives, solvents containing chlorine
- Good UV-resistance of the black cable tie
- High tensile strengths

### Application range

- Multipurpose cable tie for many applications

### Product features

- Flame retardancy: UL 94 class V2
- Water absorption: 2.5 % (50 % relative humidity)
- Dielectric strength: 50,000 volts/mm

### Norm references / Approvals




- E-File no. upon request

### Info

- The standard cable ties for many applications



### Technical data

	ETIM 5.0 Class-ID: EC000046
	ETIM 5.0 Class-Description: Cable tie
	<b>Material</b> Polyamide 6.6 Halogen-free
	<b>Temperature range</b> -40°C to +85°C Max. temperature: +110°C (short-term)

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	PU
<b>natural</b>						
61831001	Basic Tie 100x2.5 TR	yes	100.0 x 2,5	2.0 - 24.0	110	1000
61831003	Basic Tie 160x2.5 TR	yes	160.0 x 2,5	2.0 - 42.0	110	1000
61831004	Basic Tie 200x2.5 TR	yes	200.0 x 2,5	2.0 - 55.0	110	1000
61831005	Basic Tie 140x3.5 TR	yes	140.0 x 3,5	3.0 - 36.0	200	1000
61831006	Basic Tie 200x3.5 TR	yes	200.0 x 3,5	3.0 - 55.0	200	1000
61831007	Basic Tie 280x3.5 TR	yes	280.0 x 3,5	3.0 - 80.0	200	100
61831013	Basic Tie 360x3.5 TR	yes	360.0 x 3,5	5.0 - 103.0	200	100
61831009	Basic Tie 160x4.5 nat.	yes	160.0 x 4,5	3.0 - 38.0	280	1000
61831011	Basic Tie 200x4.5 TR	yes	200.0 x 4,5	3.0 - 51.0	280	1000
61831014	Basic Tie 250x4.5 TR	yes	250.0 x 4,5	5.0 - 68.0	280	100
61831016	Basic Tie 360x4.5 TR	yes	360.0 x 4,5	5.0 - 101.0	280	100
61831020	Basic Tie 240x7.5 TR	yes	240.0 x 7,5	5.0 - 62.0	650	100
61831021	Basic Tie 320x7.5 TR	yes	320.0 x 7,5	5.0 - 88.0	650	100
61831022	Basic Tie 360x7.5 TR	yes	360.0 x 7,5	5.0 - 101.0	650	100
61831023	Basic Tie 450x7.5 TR	yes	450.0 x 7,5	20.0 - 130.0	650	100
61831024	Basic Tie 540x7.5 TR	yes	540.0 x 7,5	20.0 - 160.0	650	100
61831025	Basic Tie 750x7.5 TR	yes	750.0 x 7,5	32.0 - 222.0	650	100
61831026	Basic Tie 780x9.0 TR	yes	780.0 x 9,0	20.0 - 235.0	800	100

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	PU
<b>Black- UV-resistant</b>						
61831041	Basic Tie 100x2.5 BK	yes	100.0 x 2,5	2.0 - 24.0	110	1000
61831043	Basic Tie 160x2.5 BK	yes	160.0 x 2,5	2.0 - 42.0	110	1000
61831044	Basic Tie 200x2.5 BK	yes	200.0 x 2,5	2.0 - 55.0	110	1000
61831045	Basic Tie 140x3.5 BK	yes	140.0 x 3,5	3.0 - 36.0	200	1000
61831046	Basic Tie 200x3.5 BK	yes	200.0 x 3,5	3.0 - 55.0	200	1000
61831047	Basic Tie 280x3.5 BK	yes	280.0 x 3,5	3.0 - 80.0	200	100
61831053	Basic Tie 360x3.5 BK	yes	360.0 x 3,5	5.0 - 103.0	200	100
61831049	Basic Tie 160x4.5 BK	yes	160.0 x 4,5	3.0 - 38.0	280	1000
61831051	Basic Tie 200x4.5 BK	yes	200.0 x 4,5	3.0 - 51.0	280	1000
61831054	Basic Tie 280x4.5 BK	yes	280.0 x 4,5	5.0 - 68.0	280	100
61831056	Basic Tie 360x4.5 BK	yes	360.0 x 4,5	5.0 - 101.0	280	100
61831060	Basic Tie 240x7.5 BK	yes	240.0 x 7,5	5.0 - 62.0	650	100
61831061	Basic Tie 320x7.5 BK	yes	320.0 x 7,5	4.0 - 80.0	650	100
61831062	Basic Tie 360x7.5 BK	yes	360.0 x 7,5	5.0 - 101.0	650	100
61831063	Basic Tie 450x7.5 BK	yes	450.0 x 7,5	20.0 - 130.0	650	100
61831064	Basic Tie 540x7.5 BK	yes	540.0 x 7,5	20.0 - 160.0	650	100
61831065	Basic Tie 750x7.5 BK	yes	750.0 x 7,5	32.0 - 222.0	650	100
61831066	Basic Tie 780x9.0 BK	yes	780.0 x 9,0	20.0 - 235.0	800	100

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- BASIC cable tie pliers refer to page 1068



**TY - FAST® cable ties**



**Benefits**

- The integrally formed Polyamide pawl combines low insertion and high locking strength
- Sure Grip tab keeps the tail from popping out while being threaded, then holds it securely for final tightening by hand or tool

**Application range**

- Multipurpose cable tie for many applications

**Norm references / Approvals**

- File number: E49405, see table
- Fire behaviour according to UL 94V-2

**Suitable tools**

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

**Technical data**

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40°C to +85°C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>natural</b>						
61810350	TY100-18	yes	114.0 x 2.4	25.0	80	1000
61810360	TY125-18	yes	136.0 x 2.4	32.0	80	1000
61810380	TY125-40	yes	142.0 x 3.6	32.0	180	1000
61810390	TY200-40	yes	205.0 x 3.6	50.0	180	1000
61810400	TY300-40	yes	290.0 x 3.6	76.0	180	1000
61810410	TY175-50	yes	186.0 x 4.6	44.0	220	1000
61810420	TY300-50	yes	305.0 x 4.6	76.0	220	1000
61810430	TY400-50	yes	376.0 x 4.6	102.0	220	1000
61810440	TY200-120	no	219.0 x 7.6	50.0	540	500
61810450	TY400-120	yes	376.0 x 7.6	102.0	540	500
<b>Black- UV-resistant</b>						
61810460	TY100-18x	yes	114.0 x 2.4	25.0	80	1000
61810470	TY125-18x	yes	136.0 x 2.4	32.0	80	1000
61810490	TY125-40x	yes	143.0 x 3.6	32.0	180	1000
61810500	TY200-40x	yes	205.0 x 3.6	50.0	180	1000
61810510	TY300-40x	yes	290.0 x 3.6	76.0	180	1000
61810520	TY175-50x	yes	186.0 x 4.6	44.0	220	1000
61810530	TY300-50x	yes	305.0 x 4.6	76.0	220	1000
61810540	TY400-50x	yes	376.0 x 4.6	102.0	220	1000
61810550	TY200-120x	no	219.0 x 7.6	50.0	540	500
61810560	TY400-120x	no	376.0 x 7.6	102.0	540	500

TY-FAST® is a registered trademark of ABB.

Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



## Detectable Cable ties



PEW 8.185 crimping pliers



PEW 8.185 crimping pliers

### Benefits

- Detectable cable ties with a unique compound that can be detected by X-Ray equipment, metal detectors and visual inspection equipment
- Minimize the risk of product contamination
- The colour blue facilitates visual detection
- Help achieve the HACCP EU-Directive
- Available as standard polyamide 6.6 or in buoyant Polypropylene version for liquid-processing applications

### Application range

- Are particularly recommended for applications using detection systems, where cable tie installation residuals (cut tails) are not allowed in the finished product
- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Pharmaceutical production
- Applications with strong chemical influences

### Norm references / Approvals

- Flammability class: UL 94 V-2/TY-RAP® polyamide 6.6
- Flammability class: UL 94 HB/ polypropylene and cable ties without steel nose
- Only the cable ties with steel nose are ECOLAB certified

### Note

- Storage requirements: nylon (polyamide) is, by its nature, susceptible to external influences. Cable ties are mechanically moistened in order to ensure optimal use. As such, they must be stored in a cool, dry location and must not be exposed to direct sunlight. Cable ties are packed in plastic bags to retain moisture; these should remain closed until the cable ties are used.

### Design

- Without steel nose/ PA 6.6
- With steel nose (brand TY-RAP®) / PA 6.6
- With steel nose (brand TY-RAP®) / polypropylene

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> Blue
	<b>Material</b> Polyamide 6.6 or polypropylene Halogen-free and silicone-free
	<b>Temperature range</b> Cable ties without steel nose: -40°C up to +65°C Cable ties with steel nose: -40°C up to +85°C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>Without steel nose / PA 6.6</b>						
61723360	Cable tie Detect 100 x 2,5 BU	no	100.0 x 2.5	2.0 - 24.0	100	100
61723361	Cable tie Detect 200 x 4,5 BU	no	200.0 x 4.5	3.0 - 51.0	250	100
61723362	Cable tie Detect 380 x 4,5 BU	no	380.0 x 4.5	5.0 - 110.0	250	100
61723363	Cable tie Detect 360 x 7,5 BU	no	360.0 x 7.5	5.0 - 101.0	600	100
<b>With steel nose (brand TY-RAP®) / PA 6.6</b>						
61723351	Cable tie TY-RAP TY523M-NDT	no	92.0 x 2.4	2.0 - 6.0	80	100
61723352	Cable tie TY-RAP TY525M-NDT	no	186.0 x 4.8	3.5 - 45.0	220	100
61723353	Cable tie TY-RAP TY528M-NDT	no	360.0 x 4.8	3.5 - 102.0	220	100
61723354	Cable tie TY-RAP TY527M-NDT	no	340.0 x 7.0	6.0 - 90.0	540	50
<b>With steel nose (brand TY-RAP®) / polypropylene</b>						
61723355	Cable tie TY-RAP TY523M-PDT	no	92.0 x 2.4	2.0 - 16.0	50	100
61723356	Cable tie TY-RAP TY525M-PDT	no	186.0 x 4.8	3.5 - 45.0	130	100
61723357	Cable tie TY-RAP TY528M-PDT	no	360.0 x 4.8	3.5 - 102.0	130	100
61723358	Cable tie TY-RAP TY527M-PDT	no	340.0 x 7.0	6.0 - 90.0	270	50

TY-RAP® is a registered trademark of ABB.  
Photographs are not to scale and do not represent detailed images of the respective products.





Binding, bundling, fastening • Premium cable ties with steel nose



## Standard cable ties with steel nose



PEW 8.185 crimping pliers



### Info

- Convince yourself of the good price/performance ratio of the new Strong Tie series.

### Benefits

- The special design of the cable ties guarantees maximum resistance and safety even in the most extreme applications.
- Steel nose ensures secure and durable binding
- High strength is constant even under harsh conditions: extreme temperature ranges, humidity and extreme cold
- Lock is also resistant to shocks and vibrations

### Application range

- Good quality cable ties with steel nose for demanding environments

### Product features

- The steel blade is fixed to the tie head and is made from corrosion-resistant, anti-magnetic steel (type 316)
- Strong Tie with higher pull-out forces

### Norm references / Approvals

- File number TY-RAP®: E49405, see table
- Fire behaviour according to UL 94V-2

### Included

- Strong Tie and TY-X: Packed in a recyclable plastic bag
- Items provided with the add-in "B" (e.g. TYB 24 M) are supplied in a handy workbox, where the cable ties are arranged properly

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free
	<b>Temperature range</b> -40°C to +85°C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>Cable ties with steel nose- type Strong Tie</b>						
61715011	Strong Tie 100 x 2,5 NA	no	100.0 x 2.5	2.0 - 24.0	180	1000
61715017	Strong Tie 200 x 2,5 NA	no	200.0 x 2.5	2.0 - 55.0	180	1000
61715012	Strong Tie 140 x 3,5 NA	no	140.0 x 3.5	3.0 - 36.0	280	1000
61715018	Strong Tie 200 x 3,5 NA	no	200.0 x 3.5	3.0 - 55.0	280	1000
61715014	Strong Tie 280 x 3,5 NA	no	280.0 x 3.5	3.0 - 80.0	280	1000
61715019	Strong Tie 360 x 3,5 NA	no	360.0 x 3.5	3.0 - 101.0	280	1000
61715013	Strong Tie 186 x 4,5 NA	no	186.0 x 4.5	3.0 - 51.0	400	1000
61715020	Strong Tie 290 x 4,5 NA	no	290.0 x 4.5	3.0 - 80.0	400	1000
61715016	Strong Tie 360 x 4,5 NA	no	360.0 x 4.5	3.0 - 103.0	400	1000
61715015	Strong Tie 340 x 7,0 NA	no	340.0 x 7.0	6.0 - 90.0	700	500
61715021	Strong Tie 220 x 7,5 NA	no	220.0 x 7.5	6.0 - 56.0	800	500
<b>Cable ties with steel nose- type TY-RAP®</b>						
61715000	TYB* 23 M	no	92.0 x 2.4	2.0 - 16.0	80	1000
61716250	TY 232 M	yes	203.0 x 2.4	2.0 - 50.0	80	1000
61716310	TY 234 M	yes	356.0 x 2.4	2.0 - 102.0	80	1000
61715060	TYB* 24 M	no	140.0 x 3.6	2.0 - 29.0	180	1000
61716370	TY 242 M	yes	204.0 x 3.6	2.0 - 50.0	180	1000
61715180	TY 26 M	yes	284.0 x 3.6	2.0 - 76.0	180	1000
61716430	TY 244 M	yes	368.0 x 3.6	2.0 - 103.0	180	1000
61715120	TYB* 25 M	no	186.0 x 4.8	3.5 - 45.0	220	1000
61716490	TY 253 M	yes	295.0 x 4.8	3.5 - 78.0	220	1000
61715300	TY 28 M	yes	361.0 x 4.8	3.5 - 102.0	220	1000
61716550	TY 272 M	yes	223.0 x 7.6	6.0 - 50.0	540	500
61715240	TY 27 M	yes	340.0 x 7.0	6.0 - 90.0	540	500
61715360	TY 29 M	yes	771.0 x 6.9	6.0 - 229.0	540	500

B = box, otherwise plastic bag  
 TY-RAP® is a registered trademark of ABB.  
 TY-RAP® Standard in other colours are available upon request (see description).  
 Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067



## UV-stabilised cable ties with steel nose



PEW 8.185 crimping pliers



PEW 8.185 crimping pliers

### Benefits

- Weather-resistant for harsh environmental conditions
- Contain 2 % Carbon to meet military specifications
- Steel nose ensures secure and durable binding
- High strength is constant even under harsh conditions: extreme temperature ranges, humidity and extreme cold
- Lock is also resistant to shocks and vibrations

### Application range

- Used for outdoor installation and maintenance of power plants

### Product features

- Strong Tie with higher pull-out forces

### Norm references / Approvals

- File number TY-RAP®: E49405, see table
- Fire behaviour according to UL 94V-2

### Included

- Strong Tie and TY-X: Packed in a recyclable plastic bag



### Info

- Convince yourself of the good price/performance ratio of the new Strong Tie series.

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> RAL 9005 black/UV-resistant
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40 °C to +85 °C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>Cable ties with steel nose- type Strong Tie</b>						
61723001	Strong Tie UV 100x2,5 BK	no	100.0 x 2.5	2.0 - 24.0	180	1000
61723007	Strong Tie UV 200 x 2,5 BK	no	200.0 x 2.5	3.0 - 55.0	180	1000
61723002	Strong Tie UV 140 x 3,5 BK	no	140.0 x 3.5	3.0 - 36.0	280	1000
61723008	Strong Tie UV 200 x 3,5 BK	no	200.0 x 3.5	3.0 - 55.0	280	1000
61723004	Strong Tie UV 280 x 3,5 BK	no	280.0 x 3.5	3.0 - 80.0	280	1000
61723009	Strong Tie UV 360 x 3,5 BK	no	360.0 x 3.5	3.0 - 101.0	280	1000
61723003	Strong Tie UV 186 x 4,5 BK	no	186.0 x 4.5	3.0 - 51.0	400	1000
61723011	Strong Tie UV 290 x 4,5 BK	no	290.0 x 4.5	3.0 - 80.0	400	1000
61723006	Strong Tie UV 360 x 4,5 BK	no	360.0 x 4.5	3.0 - 103.0	400	1000
61723005	Strong Tie UV 340 x 7,0 BK	no	340.0 x 7.0	6.0 - 90.0	700	500
61723012	Strong Tie UV 220 x 7,5 BK	no	220.0 x 7.5	6.0 - 57.0	800	500
<b>Cable ties with steel nose- type TY-RAP®</b>						
61723010	TYB* 23 MX	no	92.0 x 2.4	2.0 - 16.0	80	1000
61723110	TY 232 MX	no	200.0 x 2.4	2.0 - 50.0	80	1000
61723120	TY 234 MX	no	356.0 x 2.4	2.0 - 102.0	80	1000
61723020	TYB* 24 MX	no	140.0 x 3.6	2.0 - 29.0	180	1000
61723130	TY 242 MX	yes	208.0 x 3.6	2.0 - 50.0	180	1000
61723040	TY 26 MX	yes	281.0 x 3.6	2.0 - 76.0	180	1000
61723140	TY 244 MX	no	368.0 x 3.6	2.0 - 103.0	180	1000
61723030	TYB* 25 MX	no	186.0 x 4.8	3.5 - 45.0	220	1000
61723150	TY 253 MX	no	293.0 x 4.8	3.5 - 78.0	220	1000
61723060	TY 28 MX	yes	360.0 x 4.8	3.5 - 102.0	220	1000
61723160	TY 272 MX	no	223.0 x 7.6	6.0 - 50.0	540	500
61723050	TY 27 MX	yes	340.0 x 7.0	6.0 - 90.0	540	500
61723070	TY 29 MX	no	762.0 x 7.6	6.0 - 229.0	540	500

TY-RAP® is a registered trademark of ABB.  
Photographs are not to scale and do not represent detailed images of the respective products.

Binding, bundling, fastening • Premium cable ties with steel nose



## Heat-resistant cable ties with steel nose



### Benefits

- Contains all the advantages of TY-RAP®, with higher heat-resistance

### Application range

- Can be used in areas exposed to high temperatures such as electrical heating devices or heating installations

### Norm references / Approvals

- File number: E49405, see table
- Fire behaviour according to UL 94V-2

### Design

- Heat-resistant cable ties have the extension "M"

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> Light green- transparent
	<b>Material</b> Heat-resistant polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40 °C to +105 °C

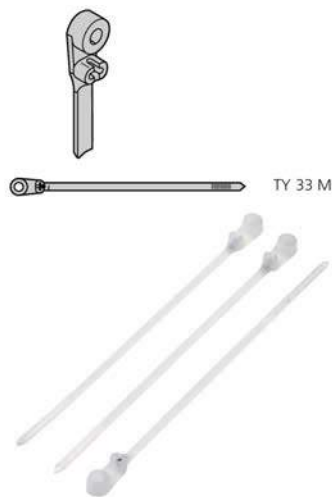
Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>TY-RAP® heat-resistant</b>						
61723470	TYH 23 M	yes	92.0 x 2.4	2.0 - 16.0	80	1000
61723460	TYH 232 M	yes	203.0 x 2.4	2.0 - 50.0	80	1000
61723440	TYH 24 M	yes	140.0 x 3.6	2.0 - 29.0	130	1000
61723430	TYH 242 M	no	208.0 x 3.6	2.0 - 50.0	130	1000
61723410	TYH 26 M	yes	284.0 x 3.6	2.0 - 76.0	130	1000
61723420	TYH 25 M	yes	186.0 x 4.8	3.5 - 45.0	220	1000
61723380	TYH 28 M	yes	360.0 x 4.8	3.5 - 102.0	220	1000
61723390	TYH 272 M	no	222.0 x 7.6	6.0 - 50.0	540	500
61723400	TYH 27 M	yes	340.0 x 7.0	6.0 - 90.0	540	500
61723350	TYH 29 M	no	761.0 x 6.9	6.0 - 229.0	530	500

TY-RAP® is a registered trademark of ABB.

Photographs are not to scale and do not represent detailed images of the respective products.



## Cable tie with steel nose for screwing on



### Benefits

- Cable ties with fasteners
- Allow installation and bundling in one step
- Steel nose ensures secure and durable binding

### Application range

- For assembly with screws, bolts and rivets
- Simultaneous installation and bundling
- Possible application areas: Cable assemblies, pre- and final installation of parts and bundles, and for maintenance-free installation of cables and ducts

### Norm references / Approvals

- File number: E49405, see table
- Fire behaviour according to UL 94V-2

### Design

- Also deliverable in black and UV-resistant

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40 °C to +85 °C

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

Article number	Article description	UL certification	Hole Ø (mm)	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
<b>TY-RAP® for screwing on</b>							
61715420	TY 33 M	yes	2.8	102.0 x 2.3	2.0 - 16.0	80	1000
61715480	TY 34 M	yes	4.2	151.0 x 3.5	2.0 - 29.0	180	1000
61720000	TY 635 M	yes	3.5	198.0 x 4.8	3.5 - 45.0	220	1000
61715540	TY 35 M	yes	4.8	198.0 x 4.7	3.5 - 45.0	220	1000
61720070	TY 1435 M	yes	6.3	198.0 x 4.8	3.5 - 45.0	220	1000
61715600	TY 37 M	yes	6.3	356.0 x 7.7	6.0 - 90.0	540	500

TY-RAP® is a registered trademark of ABB.

Photographs are not to scale and do not represent detailed images of the respective products.



## Cable ties with steel nose with labelling area

TY 53 M / TY 532 M



TY 51 M



### Benefits

- Cable ties with marking area
- Allow binding and marking in one step
- Easy assembly as all edges are rounded
- The patented stainless steel locking hook guarantees a secure hold under harsh conditions

### Application range

- For bundling and marking of cables, cable bundles, hydraulic and pneumatic supply lines

### Norm references / Approvals

- File number: E49405, see table
- Fire behaviour according to UL 94V-2

### Design

- TY 51 M: Area positioned at right angle to the cable tie
- TY 53 M/TY 532 M: Area positioned above the lock at right angle to the cable tie

### Included

- TY-X: Packed in a recyclable plastic bag

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to page 1067

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40°C to +85°C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Labelling surface (mm)	Tensile strength (N)	Pieces / PU
<b>Right-angled surface</b>							
61716020	TY 51 M	yes	92.0 x 2.4	10.0 - 16.0	25 x 8	80	500
<b>Parallel surface</b>							
61715840	TY 46 MD	yes	184.0 x 4.8	9.5 - 45.0	30 x 24	220 Double	500
61715880	TY 46 MT	yes	184.0 x 4.8	9.5 - 45.0	46 x 24	220 Triple	500
61715920	TY 46 MF	yes	184.0 x 4.8	9.5 - 45.0	63 x 24	220 Quadruple	250
61715780	TY 546 M	yes	184.0 x 4.8	9.5 - 45.0	13 x 24	220	100
61715950	TY 548 M	yes	360.0 x 4.8	19.0 - 102.0	13 x 54	220	100
<b>Right-angled area above</b>							
61716080	TY 53 M	yes	102.0 x 2.4	2.0 - 16.0	21 x 9	80	500
61716560	TY 532 M	yes	212.0 x 2.4	2.0 - 51.0	21 x 9	80	1000

TY-RAP® is a registered trademark of ABB.  
Smaller packing units are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

- KMK Label holders refer to page 989

### Accessories

- MS Marker pens refer to page 961



## Quick tie cable ties



### Benefits

- Low-cost, reopenable and reusable cable ties suitable for lightweight loads
- Round profile guarantees high mechanical strength and a firm seal
- Dual-closure design makes it possible to create a hanging loop

### Application range

- When something has to be bundled or fixed quickly at short notice
- For sealing of bags and sacks

### Norm references / Approvals

- Fire behaviour according to UL 94 HB

### Technical data

<b>RAL</b>	<b>Colour delivered</b> Black- UV-resistant Red- RAL 3000
	<b>Material</b> Polyethylene
	<b>Temperature range</b> -40 °C to +85 °C

Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Pieces / PU
<b>Red</b>					
61710040	Quick Tie 120 x 3,5 RD	no	118.0 x 3.4	3.0 - 26.0	100
61710041	Quick Tie 240 x 3,8 RD	no	238.0 x 4.0	4.0 - 61.0	100
61710042	Quick Tie 320 x 4,4 RD	no	318.0 x 4.4	5.0 - 83.0	100
61710043	Quick Tie 650 x 5,6 RD	no	643.0 x 5.5	80.0 - 180.0	100
<b>Black</b>					
61721101	Quick Tie 120 x 3,5 BK	no	118.0 x 3.4	3.0 - 26.0	100
61721102	Quick Tie 240 x 3,8 BK	no	238.0 x 4.0	4.0 - 61.0	100
61721103	Quick Tie 320 x 4,4 BK	no	318.0 x 4.4	5.0 - 83.0	100
61721104	Quick Tie 650 x 5,6 BK	no	643.0 x 5.5	80.0 - 180.0	100

Photographs are not to scale and do not represent detailed images of the respective products.



## TY-GRIP® FOL/ FO cable tie



### Benefits

- For easy and quick bundling
- Cable friendly: Prevent injuries of cable outer sheathing
- Could be reused again

### Application range

- Ideal for applications where they frequently need to be changed or constant access is required
- For bundling of sensitive cables as fiber optic cables and network cables
- Light and sound applications

### Norm references / Approvals

- Flame-retardant according to UL 94 HB

### Design

- FOL with strap: Strap made of high-quality polymer provides additional stability and safety
- FO with loop: Slitted head makes quick and easy fastening possible

### Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
<b>RAL</b>	<b>Colour delivered</b> Black
	<b>Material</b> Polyamide Halogen-free and silicone-free
	<b>Temperature range</b> -20°C to +93°C (FO)/ 104°C (FOL)

Article number	Article description	UL certification	Length x width (mm)	Pieces / PU
<b>FO with loop: Slitted head makes quick and easy fastening possible</b>				
61823720	FO 200-40-0	no	228.0 x 12.7	10
61823730	FO 350-40-0	no	330.0 x 12.7	10
<b>FOL with strap: Strap made of high-quality polymer provides additional stability and safety</b>				
61823740	FOL 300-50-0	no	304.0 x 19.0	10
61823750	FOL 500-50-0	no	457.0 x 19.0	10

TY-GRIP® is a registered trademark of ABB

Photographs are not to scale and do not represent detailed images of the respective products.

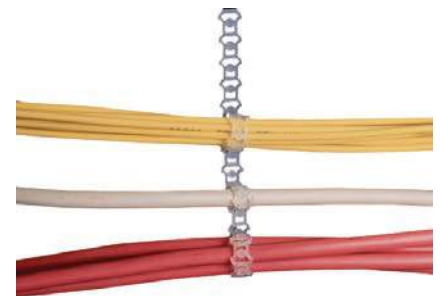


Mille-Tie™ cable ties



Info

- Environmentally friendly



Benefits

- Could be reused again
- Adjusts and controls the tension automatically by means of a self-regulating mechanism
- Fast assembly as binder can be mounted in any direction
- No sharp edges, avoids injuries
- No cable damage and crushing due to the elasticity of the tie

Application range

- For high-quality and complex cable management systems
- For bundling of sensitive cables as fiber optic cables and network cables

Design

- One size for all applications

Technical data

	ETIM 5.0 Class-ID: EC000046 ETIM 5.0 Class-Description: Cable tie
	<b>Material</b> TPE
	<b>Temperature range</b> -20°C to +80°C

Article number	Article description	Colour	UL certification	Length (mm)	Pieces / PU
<b>Mille-Tie™ cable ties</b>					
61710200	MT-00	black	no	305	100
61710201	MT-01	red	no	305	100
61710202	MT-02	blue	no	305	100
61710203	MT-03	yellow	no	305	100
61710204	MT-04	green	no	305	100
61710205	MT-05	natural	no	305	100
61710206	MT-06	grey	no	305	100

Photographs are not to scale and do not represent detailed images of the respective products.



## LS steel cable ties



**Info**

- LS 4,6-100 contained in FLEXIMARK® sample bag (article number M3251010)

### Benefits

- Acid-resistant
- Minimum space required due to the flat binder heads
- Cable ties are self-locking, time-consuming folding and crimping is not longer required
- Steel ball at the end of the tie makes it easy to thread it in
- If pulled in the opposite direction to re-open or loosen the tie, the ball is locked at the end of the tie and re-opening is impossible

### Application range

- Outdoor applications and usage under extreme conditions, e.g. high corrosion risk
- For fixing NM FLEXIMARK® stainless steel labelling character holders (width: 7,9 mm)
- Could be used in any industry with a demanding environment (e.g. oil & gas, railways)

### Norm references / Approvals

- DNV 2397
- UL File number: E193947
- Tested according to IEC 62275: 2006
- Achilles JQS certified

### Suitable tools

- STEEL GUN HT-338 cable tie pliers refer to page 1068

### Technical data

**ETIM** ETIM 5.0 Class-ID: EC000046  
ETIM 5.0 Class-Description: Cable tie

**General**  
Maximum tensile strength:  
4,6 mm= 445 N  
7,9 mm= 1112 N

**On request**  
Other sizes are available upon request

**Material**  
Acid resistant stainless steel  
EN 1.4404 (SS2348, AISI 316L)  
Material thickness: 0,26 mm

**Temperature range**  
-80 °C to +500 °C

Article number	Article description	Length x width (mm)	Bundling Ø (mm)	Minimum tensile strength (N/mm <sup>2</sup> )	Pieces / PU
<b>Without polyester coating</b>					
61812947	LS 4,6 - 100	100.0 x 4,6	21.0	45.3	100
61812948	LS 4,6 - 125	125.0 x 4,6	32.0	45.3	100
61812949	LS 4,6 - 150	150.0 x 4,6	40.0	45.3	100
61812950	LS 4,6 - 200	200.0 x 4,6	51.0	45.3	100
61812960	LS 4,6 - 360	360.0 x 4,6	102.0	45.3	100
61812970	LS 4,6 - 520	520.0 x 4,6	152.0	45.3	100
61812980	LS 4,6 - 680	680.0 x 4,6	203.0	45.3	100
61812990	LS 4,6 - 840	840.0 x 4,6	254.0	45.3	100
61813000	LS 7,9 - 200	200.0 x 7,9	51.0	113.3	100
61813010	LS 7,9 - 360	360.0 x 7,9	102.0	113.3	100
61813020	LS 7,9 - 520	520.0 x 7,9	152.0	113.3	100
61813030	LS 7,9 - 680	680.0 x 7,9	203.0	113.3	100
61813040	LS 7,9 - 840	840.0 x 7,9	254.0	113.3	100
61813050	LS 7,9 - 1010	1,016.0 x 7,9	305.0	113.3	100
<b>With polyester coating</b>					
61813085	LSC 4,6-100	100.0 x 4,6	21.0	45.3	100
61813086	LSC 4,6-125	125.0 x 4,6	32.0	45.3	100
61813088	LSC 4,6-200	200.0 x 4,6	51.0	45.3	100
61813089	LSC 4,6-360	360.0 x 4,6	102.0	45.3	100
61813093	LSC 7,9-200	200.0 x 7,9	51.0	113.3	100
61813094	LSC 7,9-360	360.0 x 7,9	102.0	113.3	100
61813096	LSC 7,9-520	520.0 x 4,6	152.0	113.3	100

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- FLEXIMARK® Stainless steel marking FCC refer to page 944
- FLEXIMARK® Stainless steel kit refer to page 956
- STEEL GUN HT-338 cable tie pliers refer to page 1068



## TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers



### Benefits

- Tip can be rotated 360° for easy assembly
- Adjustable tension-setting and automatic cutting mechanism
- Large feed-opening (25,4 mm width) facilitates inserting of the cable ties
- Ergonomic design (rounded design) and user-friendliness
- Reduced user stress and strain

### Application range

- Cable tie gun for plastic cable ties
- Allows quick and economical binding, fixing and mounting of plastic cable ties
- Increased service life due to the optimal tension setting for each cable tie
- Waste prevention on the floor- cable tie rests were prevented from falling down

### Product features

- Adjustable grip diameter enables adaption to the hand size of the user
- Anti-recoil mechanism prevents shaking
- Easy and practical storage of the replacement blades inside the tool (one replacement blade is included inside the tool- reordering with article no. 62120121 or 62120126)
- Lightweight
- Nose made of stainless steel guarantees a longer lifetime of the tool

### Note

- ERG 50 available as pneumatic version on request

### Design

- Interchangeable head for the other cable tie width is available as a component

### Technical data

- ETIM** ETIM 5.0 Class-ID: EC000453  
ETIM 5.0 Class-Description: Cable tie tool
- Caution**  
Tension is manually adjustable
- Note**  
Length x width x height:  
178x127x38 mm  
**ERG 50:** 65-83 N for setting 1, 175-220 N for setting 8  
**ERG 120:** 175-250 N for setting 1, 450-580 N for setting 8
- RAL** **Colour delivered**  
ERG 50: Black head  
ERG 120: Orange head
- Material**  
Shock-resistant polymer  
Soft rubber grip

Article number	Article description	For cable ties	Cable tie width (mm)	Weight (kg)	Pieces / PU
<b>Mounting pistol TY-GUN ERG 50</b>					
62120120	Mounting pistol TY-GUN ERG 50	Plastic	2.4 - 4.8	0.26	1
<b>TY-GUN ERG 120</b>					
62120125	Mounting pistol TY-GUN ERG 120	Plastic	4.8 - 7.6	0.278	1
62120126	TY-GUN ERG 120B spare blades	Plastic	4.8 - 7.6		1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Detectable Cable ties refer to page 1059



Binding, bundling, fastening • Assembly tool for cable ties

## BASIC cable tie pliers



### Benefits

- The tightening force can be adapted gradually
- Low-cost starter product

### Application range

- Cable tie gun for plastic cable ties
- For tightening and cutting cable ties

### Technical data



ETIM 5.0 Class-ID: EC000453  
ETIM 5.0 Class-Description:  
Cable tie tool

Article number	Article description	For cable ties	Cable tie width (mm)	D x V mm	Weight (kg)	PU
<b>BASIC cable tie pliers</b>						
62120321	BASIC - cable tie pliers	Plastic	2.2 - 4.8	160 x 130	0.31	1

Photographs are not to scale and do not represent detailed images of the respective products.

### Accessories

- Detectable Cable ties refer to page 1059
- TY - FAST® cable ties refer to page 1058

## STEEL GUN HT-338 cable tie pliers



### Benefits

- Handy processing tool for stainless steel ties (up to 0,3 mm thick)
- Cable tie is automatically cut at its end once the required tension is achieved
- Sharp edges are avoided
- Stripping force can be adjusted in increments

### Application range

- For stainless steel cable ties

### Note

- Guaranteed up to 2.000 pulls
- Further spare parts are available
- Use the adjusting screw to receive a clean cut - the right tension is depending on the type of cable used

### Technical data



ETIM 5.0 Class-ID: EC001288  
ETIM 5.0 Class-Description:  
Labelling material

Article number	Article description	For cable ties	Max. cable tie width (mm)	D x V mm	Weight (kg)	Pieces / PU
<b>FLEXIMARK® STEEL-GUN HT 338 Kabelbinderzange</b>						
83250022	FLEXIMARK® HT-338	Stainless steel	7.9	178 x 140	0.56	1
83250023	FLEXIMARK® Spare Part HT-338				0.018	1

Photographs are not to scale and do not represent detailed images of the respective products.

## Plug socket



### Benefits

- The plug-in socket has an opening for cable-tie width ups to 4,5 mm, and is due to the flat plug nose flexible for diverse applications

### Application range

- Push button mounts for cable ties
- The button is positioned for pressfitting in the panel for suitable thickness following drilling. The tie is inserted in the slot of the button body.
- The quick and safe mounting method makes these plug-in sockets ideal for applications in control cabinet manufacture, household appliances, motor vehicles and office equipment

### Technical data

	<b>Material</b> Polyamide 6.6
	<b>Temperature range</b> -40°C to +80°C

### Note

- Recommended minimum working temperature due to the adhesive layer: +10°C

### Design

- For cable ties: 2.8 / 4.8 mm



Article number	Article description	Colour	For wall thickness up to (mm)	Diameter (mm)	Tie width (mm)	Weight (g/ 100 pieces)	Pieces / PU
<b>Plug socket</b>							
61724001	Plug socket 10 x 66 NA	natural	3.2	6.4 (M6)	4.5	25.2	100
61724002	Plug socket 10 x 66 BK	black	3.2	6.4 (M6)	4.5	25.2	100

Photographs are not to scale and do not represent detailed images of the respective products.



## Tie socket self-adhesive

### Benefits

- Bi-directional nylon square bases with dual-adhesive
- Option for cross-mounting / double-mounting on the crossover points of the cable harness
- Self-adhesive
- Easy to handle
- Lower space requirement

### Application range

- Fastening elements for cable ties
- The cable ties are slotted through the eyelets for fixing cables or other items to the wall.
- Areas of application: Wiring of switch cabinets, motor vehicles and office machines, etc.

### Product features

- Minimum adhesive application time: 10 sec, recommended adhesive curing time: 24 h


### Norm references / Approvals

- Self-extinguishing in accordance with UL 94 V-2 (without adhesive tape)

### Note

- Walls must be smooth and grease-free.

### Technical data

	<b>On request</b> Further types and sizes of sockets of ABB available upon request.
	<b>Colour delivered</b> Black Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -15 °C to +50 °C Minimum working temperature: +10°C



Article number	Article description	Colour	For wall thickness up to (mm)	Diameter (mm)	Tie width (mm)	Length x width (mm)	Weight (g/ 100 pieces)	Pieces / PU
<b>Tie socket self-adhesive</b>								
61718612	Adhesive socket 19 x 19 NA	natural	4.7	4.8	4	19.0 x 19.0	52	100
61718611	Adhesive socket 19 x 19 BK	black	4.7	4.8	4	19.0 x 19.0	52	100
61718614	Adhesive socket 27 x 27 NA	natural	4.7	4.8	4.5	27.0 x 27.0	136	100
61718613	Adhesive socket 27 x 27 BK	black	4.7	4.8	4.5	27.0 x 27.0	136	100

Photographs are not to scale and do not represent detailed images of the respective products.



## Mounting socket with saddle



mm	A	B	C	D
TC 140	7,0	8,7	14,2	2,8
TC 141	8,2	11,1	17,0	4,0
TC 142	11,0	14,2	23,4	5,2

### Benefits

- Compact construction ensures high stability
- Prism-shaped saddle of this mounting socket enables torsion-safe fastening and bundling of cables

### Application range

- Fastening elements for cable ties
- For fastening with screws or rivets
- Typical areas of application: Process control systems, control cabinet manufacturing and mechanical engineering

### Norm references / Approvals

- UL 94 V-2

### Included

- Without screws, rivets, etc.

### Technical data

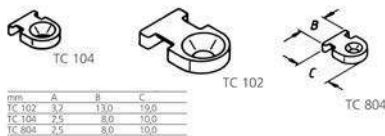
	ETIM 5.0 Class-ID: EC000449 ETIM 5.0 Class-Description: Mounting base and -element for cable ties
	<b>Colour delivered</b> White
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40°C to +85°C

Article number	Article description	Fastening type	Material	Diameter (mm)	Tie width (mm)	Weight (g/100 pieces)	Pieces / PU
<b>Mounting socket with saddle</b>							
61724920	TC 140	screwing	PA 6.6	2.8	2.4	47	500
61724510	TC 141	screwing	PA 6.6	3.5	4.8	77	500
61724910	TC 142	screwing	PA 6.6	5.2	7.6	120	500

This is a product of the company ABB/Thomas & Betts.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Tie small socket



mm	A	B	C
TC 102	3,2	13,0	19,8
TC 104	2,5	8,0	10,0
TC 804	2,5	8,0	10,0

### Benefits

- Particular small and low design
- Easy to handle

### Application range

- Fastening elements for cable ties
- Fastening with counter-sunk screws or rivets
- Typical areas of application: Control cabinet manufacture, motor vehicles, office machines

### Norm references / Approvals

- File number: E49405
- UL 94 V-2

### Included

- Without screws, rivets, etc.

### Technical data

	ETIM 5.0 Class-ID: EC000449 ETIM 5.0 Class-Description: Mounting base and -element for cable ties
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40°C to +85°C

Article number	Article description	Fastening type	Material	Diameter (mm)	Tie width (mm)	Weight (g/100 pieces)	Pieces / PU
<b>Tie small socket</b>							
61724400	TC 102	screwing	PA 6.6	4,4	4,8	50	1000
61724420	TC 104	screwing	PA 6.6	3,4	2,4	11	1000
61724720	TC 804	screwing	PA 6.6	2,4	2,4	11	250

This is a product of the company ABB/Thomas & Betts.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Tie screw socket

### Benefits

- Low overall height
- Possibility for cross mounting

### Application range

- Fastening elements for cable ties
- For fastening with screws or rivets
- Typical areas of application: Control cabinet manufacture, motor vehicles, office machines

### Norm references / Approvals

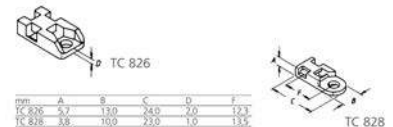
- File number: E49405
- UL 94 V-2

### Included

- Delivered without screws

### Technical data

	ETIM 5.0 Class-ID: EC000449 ETIM 5.0 Class-Description: Mounting base and -element for cable ties
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free and silicone-free
	<b>Temperature range</b> -40°C to +85°C



Article number	Article description	Fastening type	Material	Diameter (mm)	Tie width (mm)	Weight (g/100 pieces)	Pieces / PU
<b>Tie screw socket</b>							
61724810	TC 826	screwing	PA 6.6	4.2	4.8	197	1000
61724820	TC 828	screwing	PA 6.6	4.2	4.8	40	1000

This is a product of the company ABB/Thomas & Betts.  
Photographs are not to scale and do not represent detailed images of the respective products.



## Aluminium screw socket

### Benefits

- Excellent in matching contours
- Low height and low weight
- Heat-resistant
- Non-aging

### Application range

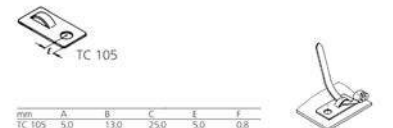
- Fastening elements for cable ties

### Included

- Delivered without screws

### Technical data

	ETIM 5.0 Class-ID: EC000449 ETIM 5.0 Class-Description: Mounting base and -element for cable ties
	<b>Material</b> Aluminium (3003, ASTM-B-209)
	<b>Temperature range</b> -100°C to +450°C



Article number	Article description	Fastening type	Material	Tie width (mm)	Weight (g/100 pieces)	Pieces / PU
<b>Aluminium screw socket</b>						
61724430	TC 105	screwing	aluminium	4.8	67	1000

This is a product of the company ABB/Thomas & Betts.  
Photographs are not to scale and do not represent detailed images of the respective products.



## AS-I clip clamp / AS-I end sealing



### Benefits

- AS-i clip clamp: Conical shape of the receptacle in the socket ensures that the cable is firmly secured, releasable closure
- AS-I end seal:
  - Easy to assemble
  - Can be used on both sides
  - Compact dimensions save space
  - Cost-effective method of sealing AS-Interface cables
- The high-grade acrylate adhesive allows quick mounting and the socket can be immediately stressed, can also be secured using a screw

### Application range

- Fastening elements for cables and conductors
- For use with UNITRONIC® AS-Interface bus cables

### Product features

- LABS-free

### Suitable cables

- UNITRONIC® BUS ASI Page 325

### Technical data

	ETIM 5.0 Class-ID: EC001604 ETIM 5.0 Class-Description: Fieldbus, decontr. periphery - communication module
	<b>Note</b> Adhesive: acrylic with lining made of PUR foam
	<b>Material</b> AS-i clip clamp: Polyamid 6.6 - halogen-free AS-I end seal: TPE (colour: black)
	<b>Temperature range</b> AS-i clip clamp: -40 °C to +80 °C AS-I end seal: -40 °C to +110 °C

Article number	Article description	Colour	Diameter (mm)	Length x width (mm)	Adhesive tape thickness (mm)	Height (mm)	Pieces / PU
<b>AS-I clip clamp</b>							
61825000	AS-I clip clamp	white	3.3	25.0 x 20.0	0.8	11.70	500
<b>AS-I end sealing</b>							
22260047	AB-ASI-PC-BK	black		20.0 x 4.7		11.00	100

Photographs are not to scale and do not represent detailed images of the respective products.



## CC cord clips



### Benefits

- The special support is designed for the quick insertion and removal of one or more cables without compromising the cable insulation
- Special mounting preparations are no longer necessary
- Easy to handle
- Self-adhesive

### Application range

- Fastening elements for cables and conductors
- Nylon dual-adhesive clips
- Excellent for laying several cables in parallel
- Suitable for cables up to an outer diameter of 15 mm

### Norm references / Approvals

- Self-extinguishing in accordance with UL 94 V-2 (without adhesive tape)

### Technical data

	ETIM 5.0 Class-ID: EC000127 ETIM 5.0 Class-Description: Fixing clip
	<b>General</b> Self-adhesive on many surfaces
	<b>On request</b> Upon request: Black colour
	<b>Colour delivered</b> Natural colour
	<b>Material</b> Polyamide 6.6 Halogen-free
	<b>Temperature range</b> -40 °C to +80 °C

Article number	Article description	Max. bundle Ø (mm)	Socket area x height (mm)	Pieces / PU
<b>CC cord clips</b>				
61723810	CC 5	5	19 / 19 x 10	100
61723820	CC 11	10	26 / 26 x 13	100
61723840	CC 21	15	26 / 26 x 17	100

Photographs are not to scale and do not represent detailed images of the respective products.

## Cable trolley system for round and flat cables



### Info

- Our configuration tool on our homepage (Knowledge center-cable accessories) supports you in choosing the correct cable trolley system
- 3D drawings available

### Benefits

- The guiding rollers have ball bearings and guarantee easy, smooth running in the C-profile rails.
- The cables in the clamping devices are clamped gently, and an appropriately shaped pressing piece prevents sharp bends at the clamping point.

### Application range

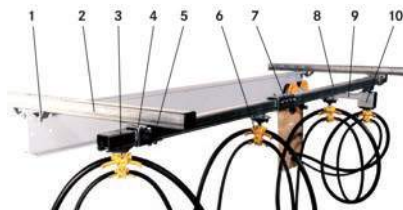
- Crane and conveying machinery
- For hoisting equipment and conveyor systems
- Mechanical engineering
- Nut suitable for applications for Ex-Areas

### Product features

- Certain components (such as the cable trailer) made of galvanised steel
- Dustproof ball bearing (wheels)
- Cable clamp and protection plate made of polyamide

### Product Make-up

- Complete system consisting of the following components:
- 1. Clamps (steel girder)
- 2. Extension arm
- 3. End clamp
- 4. Rail bracket
- 5. Stopper



6. Cable trailer
7. Track coupler
8. C-profile rail
9. Towing arm
10. Towing trolley

### Note

- Round- and flat cables are not allowed to combine a sight below and above
- Don't assemble more than three clamps for round cables below each other
- Bending radius on the bracket corresponds to a fixed installation

### Product Make-up

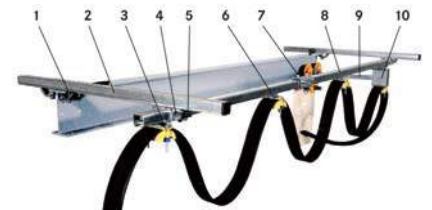
- The delivery length of the C-profile rail is 6 m.
- The rail opening is 11 mm
- The installation of a system depends on various criteria, e.g. maximum cable slack (cable weight) and working length.

### Suitable conduits

- Even air-pressure lines can be installed

### Suitable cables

- See selection tabel A 3-2, flat cables up to a width of 54 mm, round cables up to an outer diameter of 36 mm



### Technical data

- ETIM 5.0 Class-ID: EC000896  
ETIM 5.0 Class-Description: Ceiling bracket for cable support system
- General**  
Max. cable load: 20 kg
- On request**  
Further systems (e.g. stainless steel version, C40 system or steel wire system) are available upon request
- Temperature range**  
-40°C to +160°C

Article number	Article designation	Pieces / PU
<b>Cable trailer system for flat cables</b>		
62200420	Towing trolley, flat	1
62200421	Cable trailer, flat	1
62200422	End clamp, flat	1
<b>Cable trailer system for round cables</b>		
62200434	Cable trailer, round	1
62200435	Towing trolley, round	1
62200436	End clamp, round	1
62200437	Cable clamp, round, 1-16 mm	1
62200438	Cable clamp for cable 17-25 mm	1
62200439	Cable clamp, round, 26-36 mm	1
<b>Components for both systems</b>		
62200423	Rail bracket, vertical	1
62200425	Stopper	1
62200424	Track coupler	1
62200427	Rail bracket with flexible fastening	1
62200428	Rail bracket for ceiling mounting	1
62200429	Rail bracket for wall mounting	1
62200460	Wall bracket 11-725	1
62200430	Towing arm, 400 mm	1
62200431	Towing arm, 630 mm	1
62200432	Extension arm, 800 mm	1
62200433	Steel girder clamp	1
<b>Fastening options:</b>		
62200426	Rail curve: 90°	1
62200440	C-profile rail, 6 m	1

CIBES® is a registered trade mark of INOMECA AB  
The complete system is also available in stainless steel.  
Photographs are not to scale and do not represent detailed images of the respective products.

### Similar products

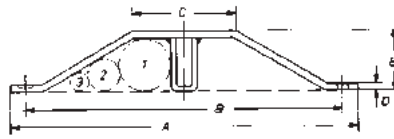
- SILVYN® CHAIN cable protection and guiding systems

### Accessories

- SKINDICHT® SVFK



## ST steel cable tunnel



### Benefits

- A central strength element strengthens and stiffens the design
- Point loads are thus distributed onto the floor
- The ST cable tunnel offers additional advantages in the area of building safety as it is flame-retardant and halogen-free.

### Application range

- Protects cables laid on the ground against mechanical influences
- Can be fixed onto the floor by using countersunk screws

### Product Make-up

- ST 1: A = 250, B = 230, C = 70, D = 5, E = 45
- Material thickness: 5 mm
- ST 2: A = 200, B = 182, C = 60, D = 4, E = 34,
- ST 3: A = 150, B = 134, C = 60, D = 4, E = 24, hole diameter = 6.6 mm

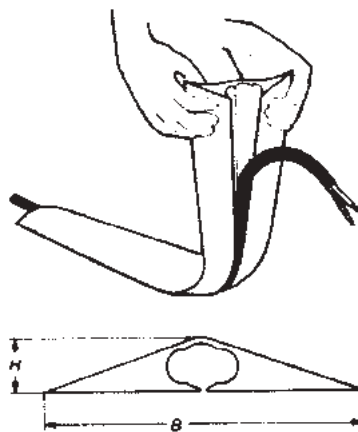
### Technical data

	ETIM 5.0 Class-ID: EC000047 ETIM 5.0 Class-Description: Cable tray/wide span cable tray
	<b>Note</b> Max. loading capacity: 7 t
	<b>Material</b> Steel, galvanized Fireproof

Article number	Article description	Length (mm)	Ø combinations (mm)	Weight (kg/piece)	Pieces / PU
<b>ST steel cable tunnel</b>					
61717000	ST 1	1000	36/25/15 or 40/24	14	1
61717040	ST 2	1000	25/20 or 30/18	9	1
61717070	ST 3	1000	17/14 or 20/13	7	1

Photographs are not to scale and do not represent detailed images of the respective products.

## STY plastic cable tunnel



### Technical data

	ETIM 5.0 Class-ID: EC000047 ETIM 5.0 Class-Description: Cable tray/wide span cable tray
	<b>Colour delivered</b> Grey
	<b>Material</b> PVC

### Benefits

- High flexibility of the material enables easy installation of cables
- Cutting to size is possible up to 10 m
- ROHS compliant

### Application range

- Reliable anti-tripping guard used to cover cables that are laid on the ground

### Product Make-up

- STY5: (W)idth = 48 mm, (H)eight = 8 mm
- STY9: (W)idth = 69 mm, (H)eight = 12 mm
- STY12: (W)idth = 87 mm, (H)eight = 15 mm

Article number	Article description	Width x height (mm)	Number of cables x outer Ø	PU (m)
<b>STY plastic cable tunnel</b>				
61746870	STY 5	48 x 8	1 x 5 - 2 x 4	10
61746880	STY 9	69 x 12	1 x 9 - 2 x 7	10
61746890	STY 12	87 x 15	1 x 12 - 2 x 9	10

Photographs are not to scale and do not represent detailed images of the respective products.

### RKK 01-06 round cable wedge clamps

**Benefits**

- The wedged clamps hold the cable without damaging it and without restricting the necessary movement of the cable.
- Other cable combinations are possible

**Application range**

- The wedged clamps can be used to secure round control cables.

**Product Make-up**

- Round cable wedged clamps

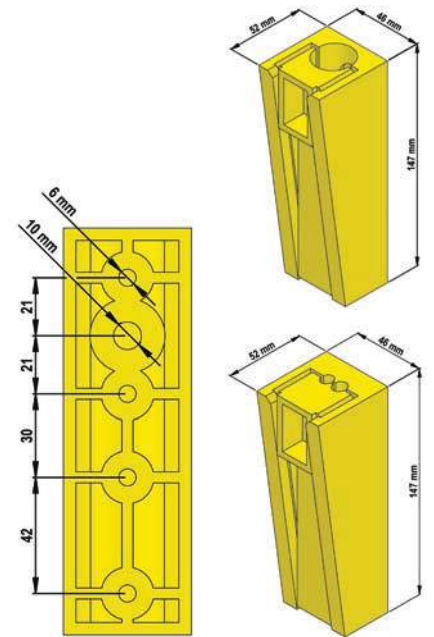
**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC000536  
ETIM 5.0 Class-Description: Cable bracket

**Note**  
Clamping force: 343N

**Material**  
Polyamide 6.6

**Temperature range**  
-20°C to +50°C



**Accessories**

- Installation sheets MP 11/13/12/14/18/28/21/22

Article number	Article designation	Number of cables	For cable outer Ø (mm)	Weight (g)	Pieces / PU
<b>RKK 01-06 round cable wedge clamps</b>					
52026020	RKK 01	2	8.0-11.0 and 7.0-10.0	200	1
52026024	RKK 02	1	18.0-21.5	180	1
52026028	RKK 04	1	24.5-26.0	150	1
52026030	RKK 05	1	19.0-24.0	150	1
52026022	RKK 06	1	11.5-14.0	190	1

Photographs are not to scale and do not represent detailed images of the respective products.

### FKK 08 Flat cable wedge clamp, small

**Benefits**

- On the shaft side, the mounting plate can be screwed onto the wall or bolted or welded to the rail bracket.
- The mounting plate can be bolted or welded to the lift cage.

**Application range**

- Flat cable wedge clamps are suitable for securing flat control cables.

**Product Make-up**

- Maximum cable thickness: 10 mm
- The small wedge-shaped cable clamp can hold up to two flat cables.

**Suitable cables**

- ÖLFLEX® LIFT F Page 172

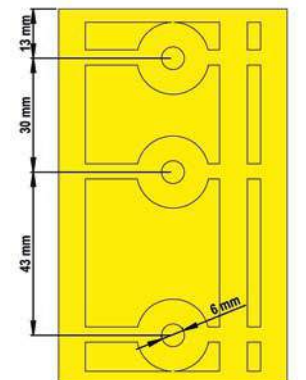
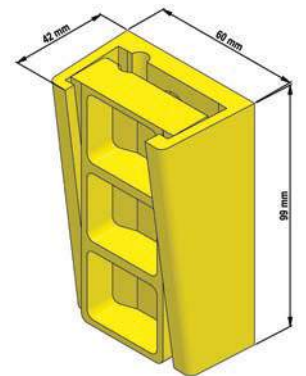
**Technical data**

**ETIM** ETIM 5.0 Class-ID: EC002407  
ETIM 5.0 Class-Description: Accessories for installation rail current/data cable

**Info**  
Clamping force: at overall cable thickness 2-10 mm = 600-800 N  
Minimum insert depth for wedge: 60 % = 60 mm

**Material**  
Polyamide 6.6 - halogen-free

**Temperature range**  
Operating temperature: -20°C to +50°C



**Accessories**

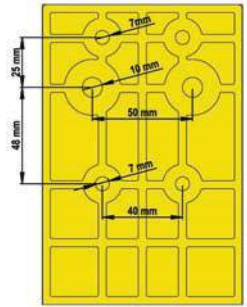
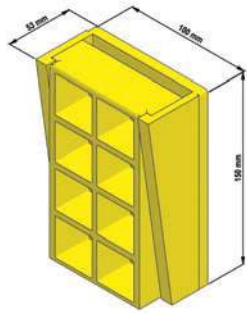
- Installation sheets MP 11/13/12/14/18/28/21/22

Article number	Article designation	Number of cables	Max. total cable length (mm)	Weight (g)	Pieces / PU
<b>FKK 08 Flat cable wedge clamp, small</b>					
52026051	FKK 08	1-2	50 x 10	105	1

Photographs are not to scale and do not represent detailed images of the respective products.



## FKK 07 cable wedge clamp, large



### Application range

- Flat cable wedge clamps are suitable for securing flat control cables.

### Product Make-up

- Maximum cable thickness: 17 mm
- The large wedge-shaped cable clamp can hold up to three flat cables.

### Suitable cables

- ÖLFLEX® LIFT F Page 172

### Technical data



ETIM 5.0 Class-ID: EC002407  
ETIM 5.0 Class-Description:  
Accessories for installation rail  
current/data cable



**Info**  
Clamping force: at overall cable thickness 2-9 mm and 16-17 mm = 800 N  
Minimum insert depth for wedge:  
60 % = 90 mm



**Material**  
Polyamide 6.6 - halogen-free



**Temperature range**  
Operating temperature: -20°C to +50°C

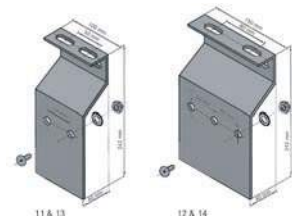
### Accessories

- Installation sheets MP 11/13/12/14/18/28/21/22

Article number	Article designation	Number of cables	Max. total cable length (mm)	Weight (g)	Pieces / PU
<b>FKK 07 cable wedge clamp, large</b>					
52026050	FKK 07	1-3	90x17	345	1

Photographs are not to scale and do not represent detailed images of the respective products.

## MP 11/13/12/14 installation sheets



### Application range

- Installation sheets
- Installation sheet for all-round and large flat cable wedges (primed)

### Included

- 2 or 3 hexagonal nuts
- 2 or 3 countersunk screws
- 2 or 3 serrated lock washers
- 1 mounting plate

### Technical data



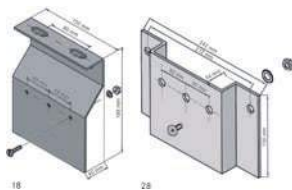
ETIM 5.0 Class-ID: EC002407  
ETIM 5.0 Class-Description:  
Accessories for installation rail  
current/data cable

Article number	Article designation	Number of terminals and types	Pieces / PU
<b>MP 11/13/12/14 installation sheets</b>			
52026031	MP 11	1-2 RKK (01-06)	1
52026032	MP 13	1-2 RKK (01-06) or 1 FKK (07)	1
52026033	MP 12	1-3 RKK (01-06)	1
52026034	MP 14	1-3 RKK (01-06) or 1 FKK (07) and 1 RKK (01-06)	1

RKK = round cable wedge clamp; FKK = flat cable wedge clamp

Photographs are not to scale and do not represent detailed images of the respective products.

## MP 18/28 installation sheets



### Application range

- Installation sheets
- Installation sheet for small flat cable wedges (zinc-plated)

### Included

- 2 or 3 hexagonal nuts
- 2 or 3 countersunk screws
- 2 or 3 serrated lock washers
- 1 mounting plate

### Technical data



ETIM 5.0 Class-ID: EC002407  
ETIM 5.0 Class-Description:  
Accessories for installation rail  
current/data cable

Article number	Article designation	Number of terminals and types	Pieces / PU
<b>MP 18/28 installation sheets</b>			
52026060	MP 18	1-2 FKK (08)	1
52026061	MP 28	1-2 FKK (08)	1

FKK = flat cable wedge clamp

Photographs are not to scale and do not represent detailed images of the respective products.

## MP 21/22 installation sheets

### Application range

- Installation sheets
- Installation sheet for all-round and large flat cable wedges (zinc-plated)

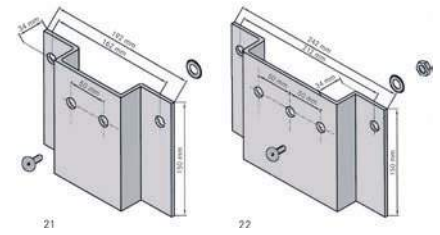
### Included

- 2 or 3 hexagonal nuts
- 2 or 3 serrated lock washers
- 2 or 3 countersunk screws
- 1 mounting plate

### Technical data



ETIM 5.0 Class-ID: EC002407  
 ETIM 5.0 Class-Description:  
 Accessories for installation rail  
 current/data cable



Article number	Article designation	Number of terminals and types	Pieces / PU
<b>MP 21/22 installation sheets</b>			
52026062	MKK 21	1 FKK (07) or 2 RKK (01-06)	1
52026063	MKK 22	1 FKK (07) + 1 RKK (01-06) or 3 RKK (01-06)	1

RKK = round cable wedge clamp; FKK = flat cable wedge clamp

Photographs are not to scale and do not represent detailed images of the respective products.

## EKK single clamp / DKK double clamp



EKK single clamp



DKK double clamp

### Benefits

- Secure protection without restricting the mobility of the cable cores
- Wide clamping range

### Application range

- Simple and reliable mounting clamps for lift control cables

### Note

- Installation guidelines for ÖLFLEX® -LIFT RH and RS lift control cables can be found in the appendix T5
- Maximum load for each clamp: 800 N (80 kg)
- Only for vertical assembly

### Included

- Impact anchor, screws and safety discs are supplied as installation accessories

### Technical data



ETIM 5.0 Class-ID: EC000127  
 ETIM 5.0 Class-Description: Fixing clip



**Temperature range**  
 high mechanical load: +65 °C  
 low mechanical load: +100 °C

Article number	Article designation	For cable Ø (mm)	Length x width x height (mm)	Weight (kg/piece)	Pieces / PU
<b>Single clamp</b>					
52026000	EKK 18	15-18	125 x 45 x 120	1.4	1
52026011	EKK 26	19-26	125 x 45 x 120	1.4	1
<b>DKK</b>					
52026010	DKK 18	15-18	125 x 85 x 120	1.9	1
52026012	DKK 26	19-26	125 x 85 x 120	1.9	1

Photographs are not to scale and do not represent detailed images of the respective products.



## Kraftform® adjustable torque screwdriver/Kraftform Kompakt® Set



### Benefits

- Mounting tool for EPIC® connector systems, SKINTOP® CUBE and sensor-actuator cables
- Fatigue-free due to ergonomic grip design
- Simple, free assembly in any position
- Safety close at hand
- Quick and easy change of tools due to quick-change chuck







### Application range

- Prevents misjudgements of the user which often lead to significantly higher extracting values. The consequences are ripped-off screw heads and over-twisted screw threads.

### Included

- Article number 61813958: Kraftform® torque screwdriver for 0.3 - 1.2 Nm
- Article number 61813990: Kraftform Kompakt®
  - 10-piece screwdriver set
  - Bits: 1xR, 1xTZ, 1xTZ PH, 1xTZ PZ, 1xTZ TORX®
  - 1x hand screwdriver without torque system
- Traceable calibration certificate contained in the scope of delivery

### Technical data

	ETIM 5.0 Class-ID: EC002132 ETIM 5.0 Class-Description: Momentum wrench
	<b>Caution</b> Can be used in areas requiring ESD protection ESD version in acc. with EN 100-015 Part 1
	<b>General</b> Phillips screwdriver PH (Phillips recess)
	<b>Certifications</b> Robust industrial design with excellent accuracy in accordance with ISO 6789/EN 26789
	<b>Info</b> Controlled torque of 0.3-1.2 Nm is possible
	<b>Colour delivered</b> Black

Article number	Article designation	Measuring range	Length (mm)	Pieces / PU
<b>Kraftform® adjustable torque screwdriver/Kraftform Kompakt® Set</b>				
61813958	Kraftform® torque screwdriver	0.3 - 1.2	180	1
61813990	Kraftform Kompakt® 10			1

Kraftform® is a registered trademark of Wera (Hermann Werner GmbH & Co.KG)  
Photographs are not to scale and do not represent detailed images of the respective products.

# Appendix



**Selection tables**

<b>A1</b>	Flexible connecting and control cables	1081
<b>A2</b>	Cables for use in power chains or robot applications	1084
<b>A3</b>	Cables for conveyor technology	1086
<b>A4</b>	Halogen-free cables	1088
<b>A5</b>	Data network cables for low-frequency analogue/digital signal transmission	1091
<b>A6</b>	UNITRONIC® COAXIAL/BUS/LAN cables ETHERLINE® cables – Industrial Ethernet cable interfaces	1092
<b>A7</b>	UNITRONIC® BUS and ETHERLINE®	1094
<b>A8</b>	Cable entries at a glance	1098
<b>A9</b>	DESINA <sub>®</sub> -compliant cables	1099
<b>A10</b>	Technical data for EPIC® rectangular connectors	1100
<b>A11</b>	Applications of HITRONIC® fibre-optic cable components	1102
<b>A12</b>	Applications of servo cables in electrical power drive systems (PDS)	1103
<b>A13</b>	Cables for expanded ambient temperature ranges	1104
<b>A15</b>	FLEXIMARK® Marking systems	1105

**Technical tables**

<b>T0</b>	Safe use of our products	1106
<b>T1</b>	Chemical resistance of cables	1110
<b>T2</b>	Assembly guidelines – PROFIBUS (UNITRONIC® BUS PB) and Industrial Ethernet cables (ETHERLINE®)	1112
<b>T3</b>	Assembly guidelines – ÖLFLEX® FD/CHAIN, UNITRONIC® FD, ETHERLINE® FD and HITRONIC® FD cables in power chains	1113
<b>T4</b>	Assembly guidelines – ÖLFLEX® CRANE NSHTÖU, ÖLFLEX® CRANE VS (N)SHTÖU and ÖLFLEX® CRANE PUR	1114
<b>T5</b>	Assembly guidelines – Lift/elevator control cables – ÖLFLEX® LIFT, ÖLFLEX® LIFT T, ÖLFLEX® LIFT S	1115
<b>T6</b>	Type designations	1116
<b>T7</b>	Core ID code for ÖLFLEX® cables	1118
<b>T7</b>	Core ID code for UNITRONIC® cables	1119
<b>T8</b>	Extension and compensating cables – colour codes and background information	1120
<b>T9</b>	Core ID code as per VDE colour code	1122
<b>T9</b>	Core ID code as per DIN colour code	1123
<b>T10</b>	Core ID code as per VDE colour code for telephone cables	1124
<b>T11</b>	Conductor resistances and strand structure (metric)	1125
<b>T12</b>	Current ratings – basic table	1126
<b>T12</b>	Current ratings – reduction tables	1127
<b>T13</b>	Current rating as per National Electrical Code of the USA	1134
<b>T14</b>	European Construction Product Regulation – Fire behaviour of cables	1135
<b>T15</b>	Properties of cable insulation and sheathing	1136
<b>T16</b>	Anglo-American dimensions	1138
<b>T17</b>	Calculating metal surcharges	1140
<b>T19</b>	Laying guidelines for cables and wires	1142
<b>T19</b>	Drum holding capacity for plastic-insulated cables in m DIN 46391	1143
<b>T20</b>	Cable drums – transport damage, losses, rental and handling	1144
<b>T21</b>	Thread dimensions for cable glands	1145
<b>T21</b>	Tightening torques and installation dimensions for cable glands	1146
<b>T22</b>	Protection ratings to EN 60529	1147
<b>T23</b>	Cable glands	1148
<b>T24</b>	Chemical resistance of plastics	1152
<b>T25</b>	Registered trademarks	1154
<b>T26</b>	Products with certification for Russia	1155
<b>T27</b>	Fire load calculations for cables	1157
<b>T28</b>	Radiation resistance	1158
<b>T29</b>	Using UL-approved cables	1160
<b>T30</b>	Environmental information	1165
<b>T31</b>	EPIC® housings and inserts	1166
<b>T31</b>	EPIC® industrial connectors – definitions and instructions for use	1167

<b>Index of products</b>	1169
--------------------------	------

<b>Glossary</b>	1193
-----------------	------

<b>The Lapp Group worldwide</b>	1214
---------------------------------	------

<b>Lapp products in motion</b>	1216
--------------------------------	------

Usage criteria	Cable designation (fixed installation and/or occasional flexing)																																																													
	26	28	29	30	31	32	33	34	37	38	39	40	41	42	43	44	46	47	48	49	50	51	52	53	54	56	58	60	62																																	
<b>Use</b>	<p>For non-deactivatable circuits: EN 60204</p> <p>For intrinsically safe circuits in hazardous areas/VDE 0165</p> <p>Handheld devices and lights on building sites</p> <p>Oil-resistant to UL + CSA specification</p> <p>Enhanced oil resistance to VDE</p> <p>Bio-oil-resistant</p> <p>Chemical-resistant cables</p> <p>UV-resistant cables</p> <p>Servomotors/drive systems</p> <p>For torsion in wind turbine generators (see catalogue page)</p>																																																													
<b>Standards</b>	<p>Based on standards, such as VDE, HAR or DIN, ...</p> <p>According to standard with VDE certification</p> <p>With VDE registration</p> <p>With HAR certification</p> <p>With UL certification</p> <p>With CSA certification</p>																																																													
<b>Temperature range*</b>	<p>+105 °C</p> <p>+90 °C</p> <p>+80 °C</p> <p>+70 °C</p> <p>+60 °C</p> <p>-5 °C</p> <p>-10 °C</p> <p>-15 °C</p> <p>-25 °C</p> <p>-30 °C</p> <p>-40 °C</p> <p>-50 °C</p> <p>-55 °C</p>																																																													
<b>Installation</b>	<p>Outdoor use, unprotected, fixed installation</p> <p>Outdoor use, UV light protection, fixed installation</p> <p>Outdoor use, unprotected, occasional flexing</p> <p>Inside, on plaster, in pipe/conduit, in partitions, fixed installation</p> <p>Inside, occasional flexing</p>																																																													
<b>Bending radius (occasional flexing)</b>	<p>5 x D</p> <p>10 x D</p> <p>12.5 x D</p> <p>15 x D</p> <p>20 x D</p>																																																													
<b>Nominal voltage</b>	<p>300/500 V</p> <p>600 V acc. to UL or CSA</p> <p>450/750 V</p> <p>600/1000 V</p>																																																													
<b>Design</b>	<p>Fine wire, VDE class 5, stranded copper conductor</p> <p>Extra-fine wire, VDE class 6, stranded copper conductor</p> <p>Ultra-fine wire, VDE class 6, stranded copper conductor</p> <p>PUR core insulation</p> <p>Rubber core insulation</p> <p>PVC/special PVC core insulation</p> <p>PE/PP core insulation</p> <p>Halogen-free core insulation</p> <p>Number printing</p> <p>Colour code acc. to VDE 0293</p> <p>ÖLFLEX® colour code</p> <p>Screening Cu braid/cover</p> <p>Shared inner sheath under overall screening/braid</p> <p>Steel wire braiding</p> <p>PVC sheath</p> <p>PUR sheath, abrasion-resistant, cut-resistant</p> <p>Halogen-free outer sheath</p> <p>Bio-oil-resistant outer sheath P4 / 11</p> <p>Rubber compound sheath acc. to standard</p>																																																													
<b>Legend</b>	<p>✓ Main application/design</p> <p>✓ Possible application</p> <p>● Flexible use</p> <p>□ Fixed and flexible use</p> <p>▲ Fixed installation</p> <p>*fixed or occ. bended</p>																																																													



Usage criteria	Cable designation (fixed installation and/or occasional flexing)																				
	94	96	99	100	101	102	103	105	106	104	107	117	154	154	162	163	164	165	167	168	169
<b>Page</b>	94	96	99	100	101	102	103	105	106	104	107	117	154	154	162	163	164	165	167	168	169
<b>Usage criteria</b>	<p><b>Use</b></p> <p>For non-deactivatable circuits: EN 60204</p> <p>For intrinsically safe circuits in hazardous areas/VDE 0165</p> <p>Handheld devices and lights on building sites</p> <p>Oil-resistant to UL + CSA specification</p> <p>Enhanced oil resistance to VDE</p> <p>Bio-oil-resistant</p> <p>Chemical-resistant cables</p> <p>UV-resistant cable</p> <p>Servomotors/drive systems</p> <p>For torsion in wind turbine generators (see catalogue page)</p> <p>Long-time water submersion (AD 8)</p> <p><b>Standards</b></p> <p>Based on standards, such as VDE, HAR or DIN, ...</p> <p>According to standard with VDE certification</p> <p>With VDE registration</p> <p>With HAR certification</p> <p>With UL certification</p> <p>With CSA certification</p> <p><b>Temperature range</b></p> <p>+105 °C</p> <p>+90 °C</p> <p>+80 °C</p> <p>+70 °C</p> <p>+60 °C</p> <p>-5 °C</p> <p>-10 °C</p> <p>-15 °C</p> <p>-25 °C</p> <p>-30 °C</p> <p>-40 °C</p> <p>-45 °C</p> <p>-50 °C</p> <p>-55 °C</p> <p><b>Installation</b></p> <p>Outdoor use, unprotected, fixed installation</p> <p>Outdoor use, UV light protection, fixed installation</p> <p>Outdoor use, unprotected, occasional flexing</p> <p>Inside, on plaster, in pipe/conduit, in partitions, fixed installation</p> <p>Inside, occasional flexing</p> <p><b>Bending radius (occasional flexing)</b></p> <p>5 x D</p> <p>6 x D</p> <p>7.5 x D</p> <p>10 x D</p> <p>12.5 x D</p> <p>15 x D</p> <p>20 x D</p> <p><b>Nominal voltage</b></p> <p>300/500 V</p> <p>600 V acc. to UL or CSA</p> <p>450/750 V</p> <p>600/1000 V</p> <p>1000 V acc. to UL or CSA</p> <p><b>Design</b></p> <p>Fine wire, VDE class 5, stranded copper conductor</p> <p>Extra-fine wire, VDE class 6, stranded copper conductor</p> <p>Ultra-fine wire, VDE class 6, stranded copper conductor</p> <p>PUR core insulation</p> <p>Rubber core insulation</p> <p>PVC/special PVC core insulation</p> <p>PE/PP core insulation</p> <p>Halogen-free core insulation</p> <p>Number printing</p> <p>Colour code acc. to VDE 0293</p> <p>ÖLFLEX® colour code</p> <p>Tensile strain relief element (ZEE)</p> <p>Screening Cu braid/cover</p> <p>Shared inner sheath under overall screening/braid</p> <p>Steel wire braiding</p> <p>Jacket-integrated support braid against torsion + ovalisation</p> <p>PVC sheath</p> <p>PUR sheath, abrasion-resistant, cut-resistant</p> <p>Halogen-free outer sheath</p> <p>Bio-oil-resistant outer sheath P4/11</p> <p>Rubber compound sheath acc. to standard</p>																				
<b>Cable designation</b>	H07ZZ-F***	NSSHÖU	H07RM8-F***	ÖLFLEX® SERVO 700	ÖLFLEX® SERVO 720 CY	ÖLFLEX® SERVO 2YSLCY-JB	ÖLFLEX® SERVO 719 CY	ÖLFLEX® SERVO 7DSL	SERVO cable acc. to SIEMENS® standard GFX 5008	ÖLFLEX® SERVO 9YSLCY-JB	SERVO cable acc. to SEW® standard	SERVO cable acc. to LENZE® standard	ÖLFLEX® TORSION FRNC	ÖLFLEX® TORSION D FRNC	ÖLFLEX® CRANE NSHTÖU	ÖLFLEX® CRANE VS (N)SHÖU	ÖLFLEX® CRANE PUR	ÖLFLEX® CRANE	ÖLFLEX® LIFT	ÖLFLEX® LIFT T	ÖLFLEX® LIFT S

Main application/design  
 Possible application  
 Flexible use  
 Fixed and flexible use  
 Fixed installation

\*\*\*Acc. to DIN EN 50565-1 (VDE 0298-565-1); with other applications, partially different bending radii acc. to DIN EN 50565-1 (VDE 0298-565-1), in some cases up to 8 x D



Cables for use in power chains or robot applications

Usage criteria	Cable designation																												
	108	109	110	112	113	114	116	117	118	129	130	131	132	133	134	137	135	136	121	122	123	124	125	126	127	128	138	139	
<b>Use</b>	<p>For industrial mach. acc. to EN 60204 Part 1/VDE 0113</p> <p>For servo drives powered by frequency converters</p> <p>For servo drives, low capacitance</p> <p>For encoders, feedback systems, sensors</p> <p>For free-arm robots/torsional load</p> <p>For indoor application, flexing</p> <p>For outdoor application, flexing</p> <p>For fieldbus systems</p> <p>For video transmission: RGB signal transmission</p> <p>For North America with UL + CSA approval</p> <p>For use in oily environments, enhanced oil resistance</p> <p>For use in areas with drilling fluids acc. to NEK 606</p> <p>For use in areas with bio-oils</p> <p>For torsion in wind turbine generators (see catalogue page)</p>																												
<b>Temperature range</b>	<p>+105 °C</p> <p>+90 °C</p> <p>+80 °C</p> <p>+70 °C</p> <p>+60 °C</p> <p>+5 °C</p> <p>-5 °C</p> <p>-10 °C</p> <p>-20 °C</p> <p>-30 °C</p> <p>-40 °C</p> <p>-50 °C</p>																												
<b>Minimum bending radius</b> (for continuous flexing)	<p>5 x D</p> <p>6.5 x D</p> <p>7.5 x D</p> <p>10 x D</p> <p>12.5 x D</p> <p>15 x D</p>																												
<b>Installation</b>	<p>For chains with low radii</p> <p>For chains with minimal space</p> <p>For lower power/weight ratio in chain</p> <p>For 24-hour operation with high cycle numbers</p> <p>For high acceleration &gt; 10 m/s<sup>2</sup></p> <p>For very high acceleration up to 50 m/s<sup>2</sup></p> <p>For travel speeds up to 5 m/s, travel lengths up to 10 m</p> <p>For travel speeds up to 10 m/s, travel lengths up to 10 m</p> <p>For travel speeds up to 5 m/s, travel lengths up to 100 m</p>																												
<b>Nominal voltage</b>	<p>350 Vss</p> <p>30/300 V AC</p> <p>300/500 V AC</p> <p>600/1000 V AC</p> <p>600 V acc. to UL/CSA</p>																												
<b>Design</b>	<p>Fine wire, VDE class 5, stranded copper conductor</p> <p>Extra-fine wire, VDE class 6, stranded copper conductor</p> <p>Ultra-fine wire, VDE class 6, stranded copper conductor</p> <p>PVC/special PVC core insulation</p> <p>Elastomer core insulation</p> <p>PE/cellular PE/cellular PE foam skin core insulation</p> <p>Polyethylene/polypropylene core insulation</p> <p>TPE core insulation</p> <p>Special TPE (P4/11) core insulation</p> <p>Halogen-free core insulation</p> <p>Number printing</p> <p>VDE colour code</p> <p>DIN 47100 colour code/special colour code</p> <p>Pair screening PiCY/PiMF/STP</p> <p>Overall screening</p> <p>Special PVC sheath</p> <p>PUR sheath, abrasion-resistant, cut-resistant</p> <p>Rubber sheath</p> <p>Special TPE (P4/11) sheath, bio-oil-resistant</p> <p>Halogen-free sheath</p>																												

✓ Main application/design  
 ✓ Possible application  
 ● Flexible use  
 □ Fixed and flexible use  
 ▲ Fixed installation

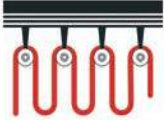
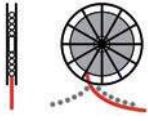
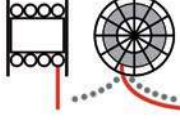
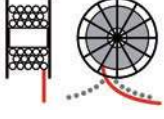



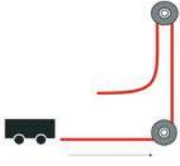

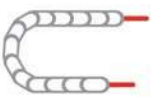
ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX



ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

Usage criteria	Cable designation														
	Page	165	172	170	171	167	168	169	166	162	163	164	131	308 309	346
LAPP GROUP															
<b>Use</b>															
For cable trailer guide systems															
Fixing via rollers, drum motors															
Reeling/re-routing under tensile load															
For free-hanging use in lifting/conveying systems	✓	✓	✓	✓	✓	✓	✓								
For free-hanging use with additional load	✓							✓		✓	✓				
For outdoor use	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	
For short travel distances, inside	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	
For short travel distances, outside	✓								✓	✓	✓				
For use in power chains															
<b>Standards</b>															
In accordance with VDE/HAR/DIN	✓	✓	✓	✓			✓	✓		✓	✓		✓		
With VDE approval									✓						
With VDE registration							✓	✓							
Flame-retardant acc. to IEC 60332-1-2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Temperature range</b>															
+90 °C			□	□											
+80 °C	□								□	□	□	▲	□	□	
+70 °C		□			□	□	□	□				●		●	
+60 °C															
+5 °C															
0 °C		●													
-5 °C												●		●	
-10 °C															
-15 °C		●			●	●	●	●							
-20 °C															
-25 °C	●		●	●					●	●					
-30 °C															
-40 °C	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	□	▲	□	□	
<b>Bending radius</b>															
7.5 x D									✓	✓	✓	✓	✓		
10 x D		✓	✓	✓										✓	
12.5 x D	✓														
20 x D					✓	✓	✓	✓							
<b>Nominal voltage</b>															
300/500 V	✓	✓	✓	✓	✓	✓	✓	✓				✓			
450/750 V		✓													
600/1000 V									✓	✓	✓				
<b>Design</b>															
PVC core insulation		✓			✓	✓	✓	✓				✓			
TPE core insulation												✓			
Poly-olefine based core insulation													✓		
Rubber core insulation	✓		✓	✓						✓					
Supporting element: hemp/textile rope	✓				✓	✓					✓				
Supporting element: steel rope, internal							✓								
Supporting element: steel rope, external								✓							
Supporting element: Kevlar rope					✓	✓				✓	✓				
Outer sheath with supporting braid									✓	✓	✓				
PVC sheath		✓			✓	✓	✓	✓						✓	
PUR sheath												✓	✓		
Rubber sheath	✓		✓	✓					✓	✓					

✓ Main application/design  
 ✓ Possible application  
 ● Flexible use  
 □ Fixed and flexible use  
 ▲ Fixed installation  
 \*Min. conductor temperature -15 °C with flexible application and nominal voltage U°/U = 450/750 V<sub>ac</sub>, only from nominal conductor cross-section of 1.5 mm<sup>2</sup>  
 \*\*Min. bending radius 5 x D only if outer diameter < 21.5 mm

Usage criteria	Cable designation															
	Page	162	163	164	165	171	166	167	168	169	170	172	131	308 309	346	
		ÖLFLEX® CRANE NSHTÖU	ÖLFLEX® CRANE VS (NSHTÖU)	ÖLFLEX® CRANE PUR	ÖLFLEX® CRANE	ÖLFLEX® CRANE CF	ÖLFLEX® CRANE 2S	ÖLFLEX® LIFT	ÖLFLEX® LIFT T	ÖLFLEX® LIFT S	ÖLFLEX® CRANE F	ÖLFLEX® LIFT F	ÖLFLEX® CLASSIC FD 810 P	UNITRONIC® FD CP plus/(TP) plus	UNITRONIC® BUS PB FESTOON	
<b>Application</b>																
Cable trailer systems					✓	✓						✓	✓	✓	✓	
Reeling, light stress (monospiral configuration – stacked)		✓	✓	✓												
Reeling, moderate stress (multispiral configuration – single layer)		✓	✓	✓												
Reeling, moderate stress (multispiral configuration – multilayer)		✓	✓	✓												
Vertical reeling			✓	✓												
Reel storage (horizontal)			✓	✓												
Reel storage (vertical)				✓												
Re-routing under tensile load			✓	✓												
Push-button control unit			✓	✓		✓										
Drag chain		✓	✓	✓	✓						✓	✓	✓	✓		
Lift								✓	✓	✓	✓	✓				

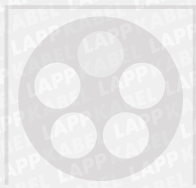





✓ Main application  
 ✓ Possible application

## Halogen-free cables

Usage criteria	Cable designation																											
	Page	63	64	65	66	67	69	70	71	81	82	86	87	92	94	98	114	135	136	110	137	109	112	139	113	151	152	153
<b>Use</b>																												
<b>Machines and systems:</b>																												
External wiring of machinery		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Internal wiring of control cabinets		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Other circuits in buildings:</b>																												
Lighting circuits		✓																										
Power circuits		✓																										
Network cables																												
<b>Standards</b>																												
Low smoke density		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Low toxicity of flue gas		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Flame-retardant to IEC 60332-1-2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Highly flame-retardant to IEC 60332-3		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Based on e. g. VDE, HAR, DIN or UL,...		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Certification, e. g. VDE, HAR, UL, TÜV or DNV,...		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Temperature range</b>																												
+180 °C																												
+145 °C																												
+120 °C																												
+110 °C																												
+90 °C																												
+80 °C		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
+70 °C		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
+50 °C		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
0 °C																												
-5 °C																												
-15 °C																												
-25 °C		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
-30 °C		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
-40 °C		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
-50 °C		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
-60 °C		▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
<b>Nominal voltage</b>																												
250 Vss																	✓											
300/500 V			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
450/750 V		✓																										
600/1000 V		✓																										
1.8/3 KV																												
<b>Design</b>																												
Solid wire VDE 0295 class 1																												
Multi-wire VDE 0295 class 2																												
Fine wire VDE 0295 class 5		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extra-fine wire VDE 0295 class 6																												
Number printing VDE 0293			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Colour code to VDE 0293-308; HD 308-S2		✓																										
Colour code to DIN 47100																												
Special core ident. code																												
Single colours																												

Halogen-free accessories:	Cable protection hoses	Cable entries	Marking	Accessories	
	SILVYN® RILL PA6 SILVYN® RILL PA12 SILVYN® FPAS SILVYN® HCC SILVYN® LCCH-2 SILVYN® AS SILVYN® EDU-AS SILVYN® TC	SILVYN® EMC AS-CU SILVYN® SSUE SILVYN® UI 511 SILVYN® HFX SILVYN® CHAIN SILVYN® CHAIN STEEL SILVYN® HIPROJACKET	SKINTOP® ST-HF-M SKINTOP® GMP-HF-M SKINTOP® BLK-GL-M SKINTOP® GMP-GL-M SKINDICHT® KW-M SKINDICHT® KU-M SKINDICHT® EKU-M	FLEXIMARK® single core marking Flexipart, marking sleeves, Flexiprint FLEXIMARK® cable labelling MINI system, shrink tube labelling FLEXIMARK® component labelling LB LA labels DYMO® label strips	Embossed metal plates, insulated conductor end sleeves Insulated cable lugs, TBTA insulating tape Shrink hoses CMP/PKG/HSB/PLG TEC end caps TEB branch joints KW plastic coil Cable ties Basic Tie/TY-RAP®/TY-FAST®

✓ Main application/design  
 ✓ Possible application  
 ● Flexible use  
 □ Fixed and flexible use  
 ▲ Fixed installation  
 Other halogen-free cables on request.  
 \*Use of NSHXAFö - all standard nominal voltage classes: no lagged cables, just "outer sheath" acc. to design standard VDE 0250-606.

Usage criteria	Cable designation																																	
	Page	164	174	175	176	177	178	179	180	181	182	189	191	192	154	154	156	216 217	222	225	227	244	329	297	298	299	307	308	309	375	372	374	324	
		ÖLFLEX® CRANE PUR	ÖLFLEX® HEAT 125 MC	ÖLFLEX® HEAT 125 C MC	ÖLFLEX® HEAT 180 SHF	ÖLFLEX® HEAT 180 HOSSS-F EWKF	ÖLFLEX® HEAT 180 MS	ÖLFLEX® HEAT 180 C MS	ÖLFLEX® HEAT 180 EWKF	ÖLFLEX® HEAT 180 EWKF C	ÖLFLEX® HEAT 180 GLS	ÖLFLEX® HEAT 125 SC	ÖLFLEX® HEAT 180 SIF	ÖLFLEX® HEAT 180 SIF A	ÖLFLEX® TORSION FRNC	ÖLFLEX® TORSION D FRNC	ÖLFLEX® CHARGE	H05Z-K, H07Z-K 90 °C*	(N)HXMH	N2XH	N2XCH	ÖLFLEX® SPIRAL 540 P	UNITRONIC® BUS PB H FC	UNITRONIC® LIHH	UNITRONIC® LIHCH	UNITRONIC® LIHCH (TP)	UNITRONIC® FD P plus	UNITRONIC® FD CP plus	UNITRONIC® FD CP (TP) plus	UNITRONIC® BUS EIB	UNITRONIC® BUS IBS P COMBI	UNITRONIC® BUS IBS FD P	UNITRONIC® BUS LD FD P	
 Use																																		
<b>Machines and systems:</b>																																		
External wiring of machinery		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Internal wiring of control cabinets		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Other circuits in buildings:</b>																																		
Lighting circuits		✓																																
Power circuits		✓						✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Network cables																																		
 Standards																																		
Low smoke density			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Low toxicity of flue gas			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Flame-retardant to IEC 60332-1-2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Highly flame-retardant to IEC 60332-3			✓																															
Based on e. g. VDE, HAR, DIN or UL,...		✓			✓				✓																									
Certification, e. g. VDE, HAR, UL, TÜV or DNV,...		✓	✓		✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓	✓	✓	✓	✓	✓	✓
 Temperature range																																		
+180 °C																																		
+145 °C			◆	◆																														
+120 °C			●	●																														
+110 °C																																		
+90 °C																																		
+80 °C			□																															
+70 °C																																		
+50 °C																																		
0 °C																																		
-5 °C																																		
-15 °C																																		
-25 °C																																		
-30 °C																																		
-40 °C		●	●	●																														
-50 °C		▲	▲	▲	□	□	□	□	□	□	□	▲	▲	▲	□	□	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
-60 °C																																		
 Nominal voltage																																		
250 Vss																																		
300/500 V			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
450/750 V			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
600/1000 V		✓	✓	✓																														
1.8/3 KV			✓																															
 Design																																		
Solid wire VDE 0295 class 1																																		
Multi-wire VDE 0295 class 2																																		
Fine wire VDE 0295 class 5			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
Extra-fine wire VDE 0295 class 6		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
Number printing VDE 0293		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
Colour code to VDE 0293-308; HD 308-S2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																				
Colour code to DIN 47100																																		
Special core ident. code																																		
Single colours																																		

Halogen-free accessories:	Cable protection hoses	Cable entries	Marking	Accessories
	SILVYN® RILL PA6	SKINTOP® ST-HF-M	FLEXIMARK® single core marking	Embossed metal plates, insulated conductor end sleeves
	SILVYN® RILL PA12	SKINTOP® GMP-HF-M	Flexipart, marking sleeves, Flexiprint	Insulated cable lugs, TBTA insulating tape
	SILVYN® FPAS	SKINTOP® BLK-GL-M	FLEXIMARK® cable labelling	Shrink hoses CMP/PKG/HSB/PLG
	SILVYN® HCC	SKINTOP® GMP-GL-M	MINI system, shrink tube labelling	TEC end caps
	SILVYN® LCCH-2	SKINDICHT® KW-M	FLEXIMARK® component labelling	TEB branch joints
	SILVYN® AS	SKINDICHT® KU-M	LB LA labels	KW plastic coil
	SILVYN® EDU-AS	SKINDICHT® EKU-M	DYMO® label strips	Cable ties Basic Tie/TY-RAP®/TY-FAST®
	SILVYN® TC			

 Main application/design  
 Possible application  
 Flexible use  
 Fixed and flexible use  
 Fixed installation  
 Fixed installation (briefly)  
 Other halogen-free cables on request.  
 \*Nominal voltage U<sub>0</sub>/U: for 05Z-K = 300/500 V<sub>ac</sub> for 07Z-K = 450/750 V<sub>ac</sub>

## Halogen-free cables

Usage criteria	Cable designation																																					
	326	412	412	426	427	466	467	468	469	470	471	412	413	414	419	420	421	434	428 432	428 432	429	430	431	435	433	333	341	345	357									
<b>Use</b>																																						
<b>Machines and systems:</b>																																						
External wiring of machinery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Internal wiring of control cabinets																																						
<b>Other circuits in buildings:</b>																																						
Lighting circuits																																						
Power circuits																																						
Network cables				✓	✓	✓	✓																															
<b>Standards</b>																																						
Low smoke density		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																											
Low toxicity of flue gas		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																											
Flame-retardant to IEC 60332-1-2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																											
Highly flame-retardant to IEC 60332-3																																						
Based on e. g. VDE, HAR, DIN or UL,...	✓	✓	✓																																			
Certification, e. g. VDE, HAR, UL, TÜV or DNV,...				✓																																		
<b>Temperature range</b>																																						
+180 °C																																						
+145 °C																																						
+120 °C																																						
+110 °C																																						
+105 °C																																						
+90 °C																																						
+80 °C		▲	▲	□								□	□	▲	▲	▲	▲	●	▲	▲	▲	▲	▲	▲	▲	□	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
+70 °C	●		□											●	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
+60 °C		●			▲	▲	▲	▲	▲	▲	▲	▲	▲	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
+50 °C																																						
0 °C																																						
-5 °C			●										●	●																								
-15 °C																																						
-20 °C																																						
-25 °C																																						
-30 °C	●	▲		●								▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
-40 °C	▲			▲								▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	
-50 °C																																						
-60 °C																																						
<b>Nominal voltage</b>																																						
250 Vss	✓																																					
300/500 V																																						
450/750 V																																						
600/1000 V																																						
1.8/3 KV																																						
<b>Design</b>																																						
Solid wire VDE 0295 class 1		✓			✓	✓	✓	✓	✓	✓																												
Multi-wire VDE 0295 class 2																																						
Fine wire VDE 0295 class 5			✓																																			
Extra-fine wire VDE 0295 class 6	✓																																					
Number printing VDE 0293																																						
Colour code to VDE 0293-308; HD 308-S2																																						
Colour code to DIN 47100																																						
Special core ident. code	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Single colours																																						

	Cable protection hoses	Cable entries	Marking	Accessories
<b>Halogen-free accessories:</b>	SILVYN® RILL PA6	SILVYN® EMC AS-CU	SKINTOP® ST-HF-M	FLEXIMARK® single core marking
	SILVYN® RILL PA12	SILVYN® SSUE	SKINTOP® GMP-HF-M	Flexipart, marking sleeves, Flexiprint
	SILVYN® FPAS	SILVYN® UI 511	SKINTOP® BLK-GL-M	FLEXIMARK® cable labelling
	SILVYN® HCC	SILVYN® HFX	SKINTOP® GMP-GL-M	MINI system, shrink tube labelling
	SILVYN® LCCH-2	SILVYN® CHAIN	SKINDICHT® KW-M	FLEXIMARK® component labelling
	SILVYN® AS	SILVYN® CHAIN STEEL	SKINDICHT® KU-M	LB LA labels
	SILVYN® EDU-AS	SILVYN® HIPROJACKET	SKINDICHT® EKU-M	DYMO® label strips
	SILVYN® TC			

✓ Main application/design  
 ✓ Possible application  
 ● Flexible use  
 □ Fixed and flexible use  
 ▲ Fixed installation

Other halogen-free cables on request.  
**PLEASE NOTE:** halogen-free fibre optics you can find at appendix A11.

Usage criteria	Cable designation																															
	Page	276	278 279	281	282	303	304	284	285	286	287	288	289	290	291	293	294 295	296	297 298	299	305 306	307	308	309	314	315	281	317	318	320		
		UNITRONIC® 100, 100 CY	UNITRONIC® LiY, LiYCY	UNITRONIC® LiY (TP)	UNITRONIC® LiYCY (TP)	UNITRONIC® 300, 300 S	UNITRONIC® 300 STP	UNITRONIC® LiYCY-CY	UNITRONIC® LiFYCY (TP)	UNITRONIC® CY PIDY (TP)	UNITRONIC® ST	UNITRONIC® LiYD1Y	UNITRONIC® PUR CP	UNITRONIC® PUR CP (TP)	UNITRONIC® Li2YCY(TP)-Li2CYv (TP)	UNITRONIC® Li2YCY PIMF	UNITRONIC® ROBUST, ROBUST C	UNITRONIC® ROBUST C (TP)	UNITRONIC® LiHH, LiHCH	UNITRONIC® LiHCH (TP)	UNITRONIC® FD, FD CY	UNITRONIC® FD P plus	UNITRONIC® FD CP plus*	UNITRONIC® FD CP (TP) plus*	JE-Y(ST)Y...BD	JE-LiYCY...BD	Indoor telephone cable J-Y(ST)Y	Fire alarm cable J-Y(ST)Y red	J-2Y(ST)Y...ST III BD	Outdoor telephone cable		
<b>Use</b>																																
Food and beverage industry**																																
Access control/time recording system																																
Medical technology, laundries, car washing equipment, chemical industry, composting plants, sewage works																																
Production data acquisition systems																																
Clock systems																																
Versions with UL and <16AWG/<1.5 mm²***																																
Intrusion detection systems																																
Fire alarm systems																																
Class I, Div. 2 (PLTC, 18 & 16 AWG)																																
Telephone private branch exchanges																																
Intercom systems																																
Electro-acoustic systems																																
Recording studio cables/microphone cables																																
Printers/plotters																																
DC stepper motors																																
Encoders (position or angle)																																
Industrial sensors, U < 50 V <sub>eff</sub>																																
Industrial actuators, U < 50 V <sub>eff</sub>																																
Measurement and control purposes, analogue																																
MSR, digital																																
In electronic devices																																
For cutting/clamping technology (0.34 mm²/AWG 22)																																
<b>Temperature range</b>																																
+105 °C																																
+90 °C																																
+80 °C (UL) for UL AWM versions																																
+80 °C																																
+75 °C (UL/CSA CMX - stationary)																																
+70 °C																																
+50 °C																																
-5 °C																																
-25 °C																																
-30 °C																																
-40 °C																																
-50 °C																																
<b>Installation</b>																																
Fixed installation indoors																																
Flexing applications (indoors), occasional																																
Outdoors																																
Permanent flexing (indoors/outdoors)																																
As tray cable in North-America																																
<b>Design</b>																																
Halogen-free																																
Flame-retardant, self-extinguishing																																
Symmetrical transmission, twisted pair (TP)																																
High pair decoupling, pair screening																																
El. screening effect, overall screening																																
Low-attenuation transmission, low-capacitance																																
Individually screened cores																																
Colour code DIN 47100																																
UNITRONIC® colour code																																
Industrial electronics colour code per VDE 0815																																
Star quad colour code "BD" per VDE 0815/0816																																
Pair colour code "LG" per VDE 0815																																
Special colour code																																
PVC/special PVC outer sheath																																
PUR sheath, abrasion-resistant, cut-resistant																																
PE outer sheath (not flame-retardant)																																
Special TPE sheath, chem. resistant																																
<b>Halogen-free accessories</b>																																
SILVYN® RILL PA6	SILVYN® EMC AS-CU	SKINTOP® ST-HF-M	FLEXIMARK® single core marking	Embossed metal plates, insulated conductor end sleeves																												
SILVYN® RILL PA12	SILVYN® SSUE	SKINTOP® GMP-HF-M	Flexipart, marking sleeves, Flexiprint	Insulated cable lugs, TBTA insulating tape																												
SILVYN® FPAS	SILVYN® UI 511	SKINTOP® BLK-GL-M	FLEXIMARK® cable labelling	Shrink hoses CMP/PKG/HSB/PLG																												
SILVYN® HCC	SILVYN® HFX	SKINTOP® GMP-GL-M	MINI system, shrink tube labelling	TEC end caps																												
SILVYN® LCCH-2	SILVYN® CHAIN	SKINDICHT® KW-M	FLEXIMARK® component labelling	TEB branch joints																												
SILVYN® AS	SILVYN® CHAIN STEEL	SKINDICHT® KU-M	LB LA labels	KW plastic coil																												
SILVYN® EDU-AS	SILVYN® HIPROJACKET	SKINDICHT® EKU-M	DYMO® label strips	Cable ties Basic Tie/TY-RAP®/TY-FAST®																												
SILVYN® TC																																

- ✓ Main application/design
- ✓ Possible application
- Flexible use
- Fixed and flexible use
- ▲ Fixed installation

\*NFA 79, 2015 Edition, 12.9.2, Exemption 3 not applicable before May 2016  
 \*\*especially for production and processing equipment of milk and meat products  
 \*\*\*for internal wiring in industrial machinery in the USA

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX







UNITRONIC® BUS and ETHERLINE® – which cable suits which fieldbus system?

Usage criteria	Cable designation																											
	372	372	374	374	373	323	329	329	329	356	338	345	346	343	334	329	329	329	356	340	336	359	361	332	368	328	360	
<b>Standards</b>	<ul style="list-style-type: none"> <li>UL/CSA-approved</li> </ul>																											
<b>Installation</b>	<ul style="list-style-type: none"> <li>Fixed installation</li> <li>Flexible</li> <li>Highly flexible (drag chains etc.)</li> <li>Suitable for outdoor use/direct burial, UV-resistant</li> </ul>																											
<b>Characteristic impedance</b>	<ul style="list-style-type: none"> <li>100–120 ohms</li> <li>150 ohms</li> </ul>																											
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>In mm<sup>2</sup>, or diameter in mm, or AWG size</li> <li>3 x 2 x 0.22</li> <li>3 x 2 x 0.25</li> <li>3 x 2 x 0.25 + 3 x 1.0</li> <li>3 x 2 x 0.22 + 3 x 1.0</li> <li>1 x 2 x 0.22/2 x 2 x 0.22/3 x 2 x 0.22</li> <li>1 x 2 x 0.64</li> <li>1 x 2 x 1.0</li> <li>1 x 2 x 0.8</li> <li>1 x 2 x 0.64 + 4 x 1.5</li> <li>1 x 2 x 0.25/2 x 2 x 0.25</li> <li>1 x 2 x 0.34/2 x 2 x 0.34</li> <li>1 x 2 x 0.5/2 x 2 x 0.5</li> <li>1 x 2 x 0.75/2 x 2 x 0.75</li> <li>2 x 6 + 2 x 2.5 + 1 x 4 x 0.5</li> </ul>																											
<b>Bus systems</b>	<ul style="list-style-type: none"> <li>INTERBUS® DIN 19258 EN 50251 sensor/actuator bus</li> <li>INTERBUS® (Phoenix Contact)</li> <li>SUCOnet p® (Klöckner-Möller), Modulink® P (Weidmüller) MODBUS VariNet®-P (Pepperl + Fuchs)</li> <li>PROFIBUS-DP, -FMS, FIP</li> <li>PROFIBUS-PA, Foundation™ Fieldbus</li> <li>CAN ISO 11898, CAN open</li> <li>AS-INTERFACE</li> <li>EIB</li> <li>CC-Link®</li> <li>Device Net™ (Allen-Bradley/Rockwell Automation)</li> <li>Industrial Ethernet/Fast Ethernet</li> <li>ISOBUS (ISO 11783-2)</li> </ul>																											
<b>Legend</b>	<ul style="list-style-type: none"> <li>7-W = 7-wire braided conductor</li> <li>AS-I = AS-INTERFACE</li> <li>COMBI IBS = Installation bus cable for INTERBUS</li> <li>DN = Device Net</li> <li>EIB = European Installation Bus</li> <li>FD = Cable suitable for drag chains</li> <li>FRNC = Flame Retardant Non Corrosive</li> <li>G = Rubber outer sheath (EPDM)</li> <li>H = Halogen-free material</li> <li>IBS = Remote bus cable for INTERBUS</li> <li>L2 = Abbr. for SINEC L2-DP</li> <li>LD = Long distance</li> <li>P = Polyurethane outer sheath</li> <li>PB = PROFIBUS</li> <li>PE = Polyethylene outer sheath</li> <li>PROFIBUS-DP = Decentralised Periphery</li> <li>PROFIBUS-FMS = Fieldbus Message Specification</li> <li>PROFIBUS-PA = Process Automation</li> <li>TPE = Thermoplastic elastomer</li> <li>Yv = Cable for routing outdoors/underground with reinforced PVC outer sheath</li> <li>YY = Twin PVC outer sheath</li> </ul>														<ul style="list-style-type: none"> <li>CC-Link® = is a registered trademark of CLPA, Japan</li> <li>DeviceNet™ = is a registered trademark of Open Device Vendors Association (ODVA)</li> <li>Foundation™ = is a registered trademark of Foundation Fieldbus</li> <li>INTERBUS® = is a registered trademark of Phoenix Contact GmbH &amp; Co.</li> <li>Modulink® P = is a registered trademark of Weidmüller GmbH &amp; Co.</li> <li>SIMATIC® = is a registered trademark of SIEMENS AG</li> <li>SINEC® = is a registered trademark of SIEMENS AG</li> <li>SUCOnet P® = is a registered trademark of Klöckner + Moeller GmbH</li> <li>VariNet®-P = is a registered trademark of Pepperl + Fuchs GmbH</li> </ul>													

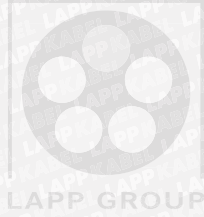


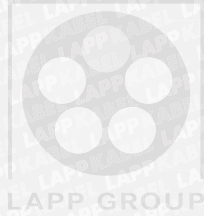
## UNITRONIC® BUS and ETHERLINE® – technical data

Usage criteria	Page	Cable designation														
		372	374	373	323	324	329	338 340	334	356	359	359	369	369	360	328
		UNITRONIC® BUS IBS fixed installation	UNITRONIC® BUS IBS FD P highly flexible application	UNITRONIC® BUS IBS Yv suitable for outdoor use / direct burial	UNITRONIC® BUS LD fixed installation	UNITRONIC® BUS LD FD P highly flexible application	UNITRONIC® BUS PB fixed installation	UNITRONIC® BUS PB FD P + PB FD P FC highly flexible application	UNITRONIC® BUS PB Yv suitable for outdoor use / direct burial	UNITRONIC® BUS PA (blue + black) fixed installation	UNITRONIC® BUS CAN fixed installation (0,22 mm <sup>2</sup> )	UNITRONIC® BUS FD P CAN FD P highly flexible application (0,25 mm <sup>2</sup> )	UNITRONIC® BUS FF 3 ARM fixed installation	UNITRONIC® BUS FF 2 fixed installation	UNITRONIC® BUS CAN TRAY	UNITRONIC® BUS PB TRAY
<b>Parameter</b>																
Characteristic impedance Ω		100	100	100	100-120	100-120	150 +/-15	150 +/-15	150 +/-15	100 +/-20	120	120	100	100	120	150 +/-15
Mutual capacitance (800 Hz) max. nF/km		60	60	60	60	60	30	30	30	52	40	40	56	65	40	30
Peak operating voltage V (not for power applications)		250	250	250	250	250	250	250	250	250	250	250	300	300	250	250
Test voltage, core/core, U <sub>eff</sub> V		1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	2000	2000
Conductor resistance (loop) Data network cable pair max. Ω/km		186	159.8	186	186	159.8	110	145, 133	115	44	186	159.8	≤ 24	≤ 24	110.8	110
Minimum bending radius, fixed installation		8 x D	-	8 x D	8 x D	-	75 mm	-	75 mm	65 mm	8 x D	-	15 x D	15 x D	8 x D	8 x D
Minimum bending radius, flexing		-	15 x D	-	-	15 x D	-	**	-	-	-	15 x D	-	-	-	-
Temperature range fixed installation	from °C to °C	-30 to +80	-40 to +80	-40 to +70	-40 to +80	-40 to +80	-40 to +80	-40 to +80	-40 to +80	-30 to +80	-30 to +80	-40 to +80	-25 to +80	-25 to +105	-40 to +80	-40 to +80
Temperature range flexing	from °C to °C	-	-30 to +70	-	-5 to +70	-30 to +70	-	-30 to +70	-	-	-5 to +70	-30 to +70	-	-	-10 to +70	-10 to +70

Usage criteria	Page	Cable designation													
		370	370	412	412	412	412	413	413	416	416	417	419	419	421
		UNITRONIC® BUS CC fixed installation	UNITRONIC® BUS CC FD P FRNC highly flexible application	ETHERLINE® H Cat.5e fixed installation	ETHERLINE® P Cat.5e fixed installation	ETHERLINE® H-H Cat.5e fixed installation	ETHERLINE® H FLEX Cat.5e flexible application	ETHERLINE® P FLEX Cat.5e flexible application	ETHERLINE® Y FLEX Cat.5e	ETHERLINE® Y EC FLEX Cat.5e	ETHERLINE® P EC FLEX Cat.5e	ETHERLINE® P EC FD Cat.5e	ETHERLINE® PN Cat.5 Y FLEX FC	ETHERLINE® PN Cat.5 FRNC FLEX FC	ETHERLINE® TORSION Cat.5
<b>Parameter</b>															
Characteristic impedance Ω		110	110	100	100	100	100	100	100	100	100	100	100	100	100
Mutual capacitance (800 Hz) max. nF/km		60	60	48	46	46	48	48	-	-	-	-	-	-	-
Peak operating voltage V (not for power applications)		300	300	125	125	125	125	125	125	100	100	100	125	125	100
Test voltage, core/core, U <sub>eff</sub> V		2000	2000	1000	1000	1000	1000	1000	1000	1000	1000	1000	2000	2000	700
Conductor resistance (loop) Data network cable pair max. Ω/km		37.8	37.8	192	186.6	186.6	284	284	-	-	-	-	-	-	-
Minimum bending radius, fixed installation		15 x D	4 x D	7.5-8 x D	7.5-8 x D	8 x D	8 x D	8 x D	8 x D	4 x D	4 x D	4 x D	10 x D	4 x D	5 x D
Minimum bending radius, flexing		-	8 x D	-	-	-	15 x D	15 x D	15 x D	8 x D	8 x D	8 x D	15 x D	8 x D	5 x D
Temperature range fixed installation	from °C to °C	-40 to +70	-40 to +80	-30 to +80	-30 to +80	-30 to +80	-30 to +80	-30 to +80	-40 to +80	-30 to +80	-40 to +80	-40 to +80	-40 to +80	-25 to +80	-40 to +80
Temperature range flexing	from °C to °C	-	-40 to +80	-5 to +60	-5 to +60	-5 to +60	-5 to +60	-5 to +60	-10 to +70	-5 to +50	-30 to +50	-30 to +50	-20 to +60	-25 to +80	-40 to +80

\*\*without FC = 65 mm/FC = 120 mm

Usage criteria		Cable designation													
Page		418	418	418	418	414	420	428 432	428 432	428 432	429	429	430 431	430 431	434
		ETHERLINE® Y CAT.5e AWG 22/1 fixed installation	ETHERLINE® TRAY ER PN Y FC	ETHERLINE® Y FC CAT.5 AWG 22/1 fixed installation	ETHERLINE® YY CAT.5e AWG 22/1 suitable for outdoor use/direct burial	ETHERLINE® FD P CAT.5e AWG 26 / 19 highly flexible application	ETHERLINE® PN Cat.5 FD highly flexible application	ETHERLINE® Cat.6 <sub>A</sub> H + Cat.7 H	ETHERLINE® Cat.6 <sub>A</sub> P + Cat.7 P	ETHERLINE® Cat.6 <sub>A</sub> Y + Cat.7 Y	ETHERLINE® PN Cat.6 <sub>A</sub> Y FLEX	ETHERLINE® PN Cat.6 <sub>A</sub> FRNC FLEX	ETHERLINE® FD Cat.6 <sub>A</sub> + TORSION Cat.6 <sub>A</sub> Y	ETHERLINE® FD P Cat.6 <sub>A</sub> + TORSION Cat.6 <sub>A</sub> P	ETHERLINE® TRAY Cat.5e Y
Parameter															
Characteristic impedance Ω		100	100	100	100	100	100	100	100	100	100	100	100	100	100
Mutual capacitance (800 Hz) max. nF/km		48	48	48	48	48	48	-	-	-	-	-	-	-	-
Peak operating voltage V (not for power applications)		125	125	125	125	125	125	125	125	125	125	125	125	125	125
Test voltage, core/core, U <sub>eff</sub> V		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Conductor resistance (loop) Data network cable pair max. Ω/km		192	192	192	192	192	192	118	118	118	143	143	175	175	192
Minimum bending radius, fixed installation		-	-	-	-	8 x D	-	10 x D	10 x D	10 x D	8 x D	8 x D	8 x D	8 x D	10 x D
Minimum bending radius, flexing		78 mm	90 mm	90 mm	90 mm	15 x D	100 mm	-	-	-	15 x D	15 x D	15 x D	15 x D	15 x D
Temperature range fixed installation	from °C to °C	-30 +80	-30 +70	-30 +80	-30 +80	-30 +80	-20 +70	-25 +80	-40 +80	-30 +80	-10 +70	-25 +80	-40 +80	-40 +80	-40 +80
Temperature range flexing	from °C to °C	-5 +60	-5 +60	-5 +60	-5 +60	-5 +60	-5 +60	-	-	-	-10 +70	-25 +80	-10 +70	-30 +70	-25 +80

Usage criteria		Cable designation													
Page		325	325	326	326	326	325	357	357	357	357	322	375	375	
		UNITRONIC® BUS ASI (G) yellow + black fixed installation/flexible	UNITRONIC® BUS ASI (TPE) yellow + black fixed installation/flexible	UNITRONIC® BUS ASI LD FD P yellow + black highly flexible application	UNITRONIC® BUS ASI FD (TPE) A yellow + black highly flexible application	UNITRONIC® BUS ASI FD P FRNC yellow + black fixed installation	UNITRONIC® BUS ASI (PVC) A yellow + black fixed installation	UNITRONIC® DeviceNet THICK + THIN (halogen-free) fixed installation	UNITRONIC® DeviceNet THICK + THIN (PVC) fixed installation	UNITRONIC® DeviceNet THICK + THIN (PUR) highly flexible	UNITRONIC® DeviceNet THICK + THIN (PVC) highly flexible	UNITRONIC® BUS SAFTEY fixed installation/highly flexible	UNITRONIC® BUS EIB fixed installation	UNITRONIC® BUS EIB COMBI fixed installation	
Parameter															
Characteristic impedance Ω		-	-	-	-	-	-	120	120	120	120	100- 200	-	-	
Mutual capacitance (800 Hz) max. nF/km		-	-	-	-	-	-	39.8	39.8	39.8	39.8	45	max. 100	max. 100	
Peak operating voltage V (not for power applications)		300	300	300	300	300	300	300	300	300	300	250	250	250	
Test voltage, core/core, U <sub>eff</sub> V		2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	3000	4000	4000	
Conductor resistance (loop) Data network cable pair max. Ω/km		27.4	27.4	16.5	27.4	27.4	27.4	THICK 45 THIN 180	THICK 45 THIN 180	THICK 45 THIN 180	THICK 45 THIN 180	52	max. 130	max. 130	
Minimum bending radius, fixed installation		3 x D	3 x D	3 x D	3 x D	3 x D	3 x D	10 x D	10 x D	-	-	8 x D	10 x D	10 x D	
Minimum bending radius, flexing		-	-	6 x D	6 x D	-	-	-	-	10 x D	10 x D	-	-	-	
Temperature range fixed installation	from °C to °C	-40 +85	-40 +85	-40 +80	-40 +105	-40 +80	-30 +90	-25 +80	-20 +80	-	-	-40 +80	-30 +70	-30 +70	
Temperature range flexing	from °C to °C	-	-	-30 +70	-30 +105	-30 +70	-	-	-	-40 +80	-10 +80	-30 +80	-	-	



## Increase efficiency through standardisation and decentralisation

The Verein Deutscher Werkzeugmaschinenfabriken e. V. (VDW) [German Machine Tool Manufacturing Federation] developed **DESINA** (DEcentralised and Standardised INstallation technology), a comprehensive overall concept for the standardisation of electrical installation of equipment and machinery. State-of-the-art technologies are employed with the aim of simplifying installation work, speeding up assembly and repair work and improving quality. Decentralisation means that control components and their related functions are moved from the central control cabinet to field level.



## Lapp Kabel and DESINA<sup>®</sup>-compliant products

The VDW used existing fieldbus systems as a basis for defining new standards for connectors and for increasing efficiency when cabling, working in partnership with the mechanical engineering, automotive and supplier sectors. As the leading supplier to machine tool manufacturers, Lapp Kabel is fully committed to the **DESINA** concept. We can quickly and easily develop solutions for you that comply with **DESINA** requirements, from the individual components right through to assembled cables that are ready for connection/ installation.

Usage criteria	Cable designation																																									
	Page	42	103	109	110	112	75	48	79	80	83	81	50	52	63	64	108	131	135	121	123	124	127	128	138	139	307	308	309	377	58	154	116	117	118	106	114	107	344			
		ÖLFLEX <sup>®</sup> CLASSIC 0,6/1 kV unscreened																																								
		ÖLFLEX <sup>®</sup> SERVO 719 CY																																								
		ÖLFLEX <sup>®</sup> SERVO FD 796 P																																								
		ÖLFLEX <sup>®</sup> SERVO FD 796 CP																																								
		ÖLFLEX <sup>®</sup> SERVO FD 798 CP																																								
		ÖLFLEX <sup>®</sup> CLASSIC 400 P																																								
		ÖLFLEX <sup>®</sup> 140																																								
		ÖLFLEX <sup>®</sup> 408 P																																								
		ÖLFLEX <sup>®</sup> 409 P																																								
		ÖLFLEX <sup>®</sup> 491 P																																								
		ÖLFLEX <sup>®</sup> 440 P																																								
		ÖLFLEX <sup>®</sup> 150																																								
		ÖLFLEX <sup>®</sup> 191																																								
		ÖLFLEX <sup>®</sup> 100 H																																								
		ÖLFLEX <sup>®</sup> 110 H																																								
		ÖLFLEX <sup>®</sup> SERVO FD 781 CY																																								
		ÖLFLEX <sup>®</sup> CLASSIC FD 810 P																																								
		ÖLFLEX <sup>®</sup> FD 855 P																																								
		ÖLFLEX <sup>®</sup> CHAIN 809 SC																																								
		ÖLFLEX <sup>®</sup> FD 90																																								
		ÖLFLEX <sup>®</sup> FD 90 CY																																								
		ÖLFLEX <sup>®</sup> FD 891/891 CY																																								
		ÖLFLEX <sup>®</sup> FD 891 P																																								
		ÖLFLEX <sup>®</sup> CHAIN 896 P																																								
		UNITRONIC <sup>®</sup> FD P plus, FD CP plus, FD CP (IP) plus																																								
		UNITRONIC <sup>®</sup> SENSOR <b>DESINA</b>																																								
		ÖLFLEX <sup>®</sup> TRAY II, TRAY II CY																																								
		ÖLFLEX <sup>®</sup> TORSION (D) FRNC																																								
		SERVO cable as per INDRAMAT <sup>®</sup> standard																																								
		SERVO cable as per LENZE <sup>®</sup> standard																																								
		SERVO cable as per FANUC <sup>®</sup> standard																																								
		SERVO cable as per SIEMENS <sup>®</sup> standard 6FX 5008																																								
		SERVO cable as per SIEMENS <sup>®</sup> standard 6FX 8 PLUS																																								
		SERVO cable as per SEW <sup>®</sup> standard																																								
		UNITRONIC <sup>®</sup> BUS PB FD Y HYBRID																																								

**Properties**

**Servo cable**

Screened  
Orange sheath  
RAL 2003

**Cable for measurement systems**

Screened  
Green sheath  
RAL 6018

**Power cable**

Unscreened  
Black sheath  
RAL 9005

**24-volt control cable**

Unscreened  
Grey sheath  
RAL 7040 (similar to 7001)

**Fieldbus hybrid cable**

Cu and fibre-optic cable  
Violet sheath  
RAL 4001

**PROFIBUS DP Hybrid cable**

**Sensor/actuator cable**

Unscreened  
Yellow sheath  
RAL 1021

**DESINA**<sup>®</sup> marking on the sheath

Suitable for power chains

Sheath compound with enhanced oil resistance

UL and/or CSA approval

- ✓ Main application/design
- ✓ Possible application



## Technical data for EPIC® rectangular connectors

Usage criteria		EPIC® rectangular connectors/inserts																				
Page		534	534	535	535	535	535	536	536	537	537	538	538	539	540	540	541	542	542	543	543	544
		EPIC® H-A 3	EPIC® H-A 4	EPIC® H-A 10	EPIC® H-A 16	EPIC® H-A 32	EPIC® H-A 48	EPIC® STA 6	EPIC® STA 6	EPIC® STA 14	EPIC® STA 14	EPIC® STA 20	EPIC® STA 20	EPIC® H-Q 5	EPIC® H-D 7	EPIC® H-D 7	EPIC® H-D 8	EPIC® H-D 15	EPIC® H-D 15	EPIC® H-D 25	EPIC® H-D 25	EPIC® H-D 40
Parameter																						
Number of contacts		3 + PE	4 + PE	10 + PE	16 + PE	32 + PE	48 + PE	6	6	14	14	20	20	5 + PE	7 + PE	7 + PE	8	15 + PE	15 + PE	25 + PE	25 + PE	40 + PE
Connection system:	screw	✓	✓	✓	✓	✓	✓			✓		✓										
	solder								✓		✓		✓									
	crimp										✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	cage clamp														✓	✓	✓	✓	✓	✓	✓	✓
Suitable contacts:	H-BE 2.5, machined													✓								
	H-D 1.6, machined														✓		✓	✓		✓		✓
	H-D 1.6, stamped															✓				✓		✓
Cross-section [mm²]		0.5 -2.5	0.5 -2.5	0.5 -2.5	0.5 -2.5	0.5 -2.5	0.5 -2.5	0.5 max. -1.5	0.5 max. -1.5	0.5 max. -1.5	0.5 max. -1.5	0.5 max. -1.5	0.5 max. -1.5	0.5 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5
IEC: rated voltage [V]	400	✓	✓																			
	250			✓	✓	✓	✓												✓	✓	✓	✓
	24 AC/60 DC							✓	✓	✓	✓	✓	✓									
	230/400													✓								
	24 AC/60 DC/250														✓	✓	✓					
500																						
IEC: rated current [A]		23	23	16	16	16	16	10	10	10	10	10	10	16	10	10	10	10	10	10	10	10
UL: rated voltage [V]		600	600	600	600	600	600	48	48	48	48	48	48	600	250	250	250	250	250	250	250	250
UL: rated current [A]		10	10	14	14	14	14	10	10	10	10	10	10	16	10	10	10	10	10	10	10	10
CSA: rated voltage [V]		400	400	600	600	600	600	48	48	48	48	48	48	600	-	-	-	-	-	-	-	-
CSA: rated current [A]		10	10	16	16	16	16	10	10	10	10	10	10	16	-	-	-	-	-	-	-	-
Suitable housing		H-A 3	H-A 3	H-A 10	H-A 16	H-A 32	H-A 48	H-A 3	H-A 3	H-A 10	H-A 10	H-A 16	H-A 16	H-A 3	H-A 3	H-A 3	H-A 3	H-A 10	H-A 10	H-A 16	H-A 16	H-B 16

Usage criteria		EPIC® rectangular connectors/inserts																				
Page		544	545	545	546	546	547	547	547	548	548	548	548	550	550	550	552	552	552	554	554	554
		EPIC® H-D 40	EPIC® H-D 64	EPIC® H-D 64	EPIC® H-DD 24	EPIC® H-DD 42	EPIC® H-DD 72	EPIC® H-DD 108	EPIC® H-DD 144	EPIC® H-DD 216	EPIC® H-BE 6	EPIC® H-BE 6	EPIC® H-BE 6	EPIC® H-BE 10	EPIC® H-BE 10	EPIC® H-BE 10	EPIC® H-BE 16	EPIC® H-BE 16	EPIC® H-BE 16	EPIC® H-BE 24	EPIC® H-BE 24	EPIC® H-BE 24
Parameter																						
Number of contacts		40 + PE	64 + PE	64 + PE	24 + PE	42 + PE	72 + PE	108 + PE	144 + PE	216 + PE	6 + PE	6 + PE	6 + PE	10 + PE	10 + PE	10 + PE	16 + PE	16 + PE	16 + PE	24 + PE	24 + PE	24 + PE
Connection system:	screw										✓			✓								
	solder																					
	crimp	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓			✓			✓	
	cage clamp														✓		✓			✓		
Suitable contacts:	H-BE 2.5, machined														✓						✓	
	H-D 1.6, machined		✓		✓	✓	✓	✓	✓	✓								✓	✓			
	H-D 1.6, stamped	✓		✓																		
Cross-section [mm²]		0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.14 -2.5	0.5 -2.5	0.5 -4.0	0.5 -2.5	0.5 -2.5	0.5 -4.0	0.5 -2.5	0.5 -2.5	0.5 -4.0	0.5 -2.5	0.5 -2.5	0.5 -4.0	0.5 -2.5
IEC: rated voltage [V]	400																					
	250	✓	✓	✓	✓	✓	✓	✓	✓	✓												
	24 AC/60 DC																					
	230/400																					
	24 AC/60 DC/250																					
500																						
IEC: rated current [A]		10	10	10	10	10	10	10	10	10	16	16	16	16	16	16	16	16	16	16	16	16
UL: rated voltage [V]		250	250	250	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
UL: rated current [A]		10	10	10	8.5	8.5	8.5	8.5	8.5	8.5	16	16	16	16	16	16	16	16	16	16	16	16
CSA: rated voltage [V]		-	-	-	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600
CSA: rated current [A]		-	-	-	10	10	10	10	10	10	16	16	16	16	16	16	16	16	16	16	16	16
Suitable housing		H-B 16	H-B 24	H-B 24	H-B 6	H-B 10	H-B 16	H-B 24	H-B 32	H-B 48	H-B 6	H-B 6	H-B 6	H-B 10	H-B 10	H-B 10	H-B 16	H-B 16	H-B 16	H-B 24	H-B 24	H-B 24

Usage criteria		EPIC® rectangular connectors/inserts																					
Page		552	552	552	552	552	552	556	556	557	557	557	557	558	558	559	559	559				562	562
		EPIC® H-BE 32	EPIC® H-BE 32	EPIC® H-BE 32	EPIC® H-BE 48	EPIC® H-BE 48	EPIC® H-BE 48	EPIC® H-EE 10	EPIC® H-EE 18	EPIC® H-EE 32	EPIC® H-EE 46	EPIC® H-EE 64	EPIC® H-EE 92	EPIC® H-BS 6	EPIC® H-BS 12	EPIC® H-BVE 3	EPIC® H-BVE 6	EPIC® H-BVE 10	EPIC® Terminal adapter TB-H-BE 6	EPIC® Terminal adapter TB-H-BE 10	EPIC® Terminal adapter TB-H-BE 16	EPIC® Terminal adapter TB-H-BE 24	
Parameter																							
Number of contacts		32 + PE	32 + PE	32 + PE	48 + PE	48 + PE	48 + PE	10 + PE	18 + PE	32 + PE	46 + PE	64 + PE	92 + PE	6 + PE	12 + PE	3+2 + PE	6+2 + PE	10+2 + PE	6 + PE	10 + PE	16 + PE	24 + PE	
Connection system:	screw	✓			✓									✓	✓	✓	✓	✓	✓	✓	✓	✓	
	solder																						
	crimp		✓			✓		✓	✓	✓	✓	✓	✓										
	cage clamp			✓			✓																
Suitable contacts:	H-BE 2.5, machined	✓				✓		✓	✓	✓	✓	✓	✓										
Cross-section [mm²]		0.5 -2.5	0.5 -4.0	0.5 -2.5	0.5 -2.5	0.5 -4.0	0.5 -2.5	0.5 -4.0	0.5 -4.0	0.5 -4.0	0.5 -4.0	0.5 -4.0	0.5 -4.0	0.5 -6.0	0.5 -6.0	0.5 -2.5	0.5 -2.5	0.5 -2.5	0.5 -4.0	0.5 -4.0	0.5 -4.0	0.5 -4.0	
IEC: rated voltage [V]		500	500	500	500	500	500	500	500	500	500	500	500	500	500	630	630	630	500	500	500	500	
IEC: rated current [A]		16	16	16	16	16	16	16	16	16	16	16	16	35	35	16	16	16	16	16	16	16	
UL: rated voltage [V]		600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	
UL: rated current [A]		16	16	16	16	16	16	16	16	16	16	16	16	35	35	16	16	16	16	16	16	16	
CSA: rated voltage [V]		600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	600	
CSA: rated current [A]		16	16	16	16	16	16	16	16	16	16	16	16	35	35	16	16	16	16	16	16	16	
Suitable housing:		H-B 32	H-B 32	H-B 32	H-B 48	H-B 48	H-B 48	H-B 6	H-B 10	H-B 16	H-B 24	H-B 32	H-B 48	H-B 16	H-B 32	H-B 10	H-B 16	H-B 24	H-B 6	H-B 10	H-B 16	H-B 24	

Usage criteria		EPIC® rectangular connectors/inserts																			
Page		563	563	567	568	568	568	569	569	569	570	570	571	571	571	573	576	576	576	576	576
		EPIC® High-current module, 1+PE	EPIC® High-current module, 2-pin	EPIC® High-voltage module, 3-pin	EPIC® High-voltage module, 4+PE	EPIC® 3-pin module	EPIC® 4-pin module, HE	EPIC® 4-pin module, cage clamp	EPIC® 5-pin module	EPIC® 10-pin module, machined	EPIC® 10-pin module, stamped	EPIC® 20-pin module	EPIC® 3-pin module coaxial	EPIC® Profibus DP module	EPIC® Universal Bus module	EPIC® RJ45 module	EPIC® MCR 6 module frame	EPIC® MCR 10 module frame	EPIC® MCR 16 module frame	EPIC® MCR 24 module frame	
Parameter																					
Number of contacts		1 + PE	2	3	4 + PE	3	4	4	5	10	10	20	3	2 + screen	4 + screen	8 + 4	-	-	-	-	
Connection system:	screw	✓	✓											✓	✓						
	solder												✓								
	crimp			✓	✓	✓	✓		✓	✓	✓	✓				✓					
	cage clamp							✓													
Suitable contacts:	MC 3.6, machined			✓		✓															
	MC 2.5, stamped				✓																
	H-BE 2.5, machined						✓														
	MC 2.5, machined								✓												
	H-D 1.6, machined									✓											
	H-D 1.6, stamped										✓										
	MD 1.0, stamped											✓									
	MC coaxial												✓								
for 2 modules																	✓				
for 3 modules																		✓			
for 5 modules																			✓		
for 7 modules																				✓	
Cross-section [mm²]		10.0 -25.0	10.0 -25.0	1.5 -10.0	0.5 -2.5	1.5 -10.0	0.5 -4.0	0.5 -2.5	0.5 -4.0	0.14 -2.5	0.14 -2.5	0.08 -0.52	-	max. 1.5	max. 1.5	Cat.5 0.14 -2.5	-	-	-	-	
IEC: rated voltage [V]		1000	1000	1000	1000	630	630	400	400	250	250	100	250	30	30	125/600	-	-	-	-	
IEC: rated current [A]		82	82	50	16	40	25	14	20	10	10	4	-	1	1	1.5/10	-	-	-	-	
UL: rated voltage [V]		600	600	-	-	600	-	600	400	250	-	100	-	-	-	-	-	-	-	-	
UL: rated current [A]		82	82	-	-	40	-	14	20	10	-	4	-	-	-	-	-	-	-	-	
CSA: rated voltage [V]		-	-	-	-	600	-	600	400	240	-	100	-	-	-	-	-	-	-	-	
CSA: rated current [A]		-	-	-	-	35	-	14	16	10	-	4	-	-	-	-	-	-	-	-	
Suitable housing:		**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	H-B 6	H-B 10	H-B 16	H-B 24	

\*\*Module frame

Applications of HITRONIC® fibre-optic cable components at a glance

Usage criteria	Lapp Kabel plastic fibre-optic cables (POF) – range										PCF fibre optic cable range										
	Page	488	489	490	491	491	489 491	492	492	492				499	500	500	501	502	502	502	502
		HITRONIC® POF SIMPLEX PE	HITRONIC® POF SIMPLEX PE-PUR	HITRONIC® POF DUPLEX PE	HITRONIC® POF DUPLEX PE-PUR	HITRONIC® POF DUPLEX HEAVY PE-PUR	HITRONIC® POF SIMPLEX/DUPLEX FD PE-PUR	HITRONIC® POF DUPLEX PNB PA-PUR	HITRONIC® POF DUPLEX PNB PA-PVC	HITRONIC® POF DUPLEX FD PNC PA-PUR				HITRONIC® PCF SIMPLEX Outdoor	HITRONIC® PCF DUPLEX FRNC-PUR Indoor	HITRONIC® PCF DUPLEX FRNC-PE Outdoor	HITRONIC® PCF DUPLEX FD	HITRONIC® PCF DUPLEX PNB PVC-PVC A	HITRONIC® PCF DUPLEX PNB PVC-PVC	HITRONIC® PCF DUPLEX FD PNC PVC-PUR	HITRONIC® PCF DUPLEX FD PNC PVC-PVC
<b>Properties</b>																					
For indoor use		✓	✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓
For outdoor use													✓		✓						
For aerial use																					
Installation by blowing/compressed air																					
Direct burial																					
Armoured															✓						
Rodent protection																					
Heavy duty						✓															
Flame-retardant (IEC 60332)			✓		✓	✓	✓	✓	✓	✓				✓		✓	✓	✓	✓	✓	✓
Fire-resistant (IEC 60331-25)																					
Water-tight															✓	✓					
UV-resistant		✓		✓									✓		✓	✓					
Power/drag chain							✓														
Flexible							✓										✓				
Torsion -resistant																					
Reelable																					
Halogen-free		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓					
Low-smoke emission		✓		✓									✓		✓						
PROFINET compliant								✓	✓	✓											

Usage criteria	GOF fibre optic cable range																	
	Page	506	507	509	508	512	513	511	514	510	515	516	517	518	519	520	521	522
		HITRONIC® FIRE	HITRONIC® TORSION, A/J-V(ZN)H 11Y	HITRONIC® HRM-FD, A/J-V(ZN)H(ZN) 11Y	HITRONIC® HDM, A/J-V(ZN) 11Y	HITRONIC® HQN Outdoor Cable, A-DO(ZN)B2Y	HITRONIC® HVN Outdoor Cable, A-DO(ZN)B2Y	HITRONIC® HVN-Mini Outdoor Cable, A-DO(ZN)2Y	HITRONIC® HQW Armoured Outdoor Cable, A-DO(ZN)(SR)2Y	HITRONIC® HMDC Micro Cable A-D(ZN)2Y	HITRONIC® HWW Armoured Outdoor Cable, A-DO(ZN)(SR)2Y	HITRONIC® HQW-Plus Armoured Outdoor Cable, A-DO(ZN)2Y(SR)2Y	HITRONIC® HOA Aerial Cable, A-DO(ZN)B2Y	HITRONIC® HOA-Plus Aerial Cable, A-DO2Y(ZN)B2Y	HITRONIC® HUN Universal Cable, A/J-DO(ZN)BH	HITRONIC® HUW Armoured Outdoor Cable, A/J-DO(ZN)(SR)H	HITRONIC® HRH Breakout Cable, J-V(ZN)JH	HITRONIC® HDH Mini Breakout Cable, J-V(ZN)H
<b>Properties</b>																		
For indoor use		✓	✓	✓	✓										✓	✓	✓	✓
For outdoor use		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
For aerial use																		
Installation by blowing/compressed air										✓				✓				
Direct burial																		
Armoured		✓																
Rodent protection		✓																
Heavy duty		✓																
Flame-retardant (IEC 60332)		✓	✓		✓													
Fire-resistant (IEC 60331-25)		✓																
Water-tight		✓																
UV-resistant		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Power/drag chain																		
Flexible										✓								
Torsion -resistant			✓															
Reelable																		
Halogen-free		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Low-smoke emission		✓																

PLEASE NOTE: the standard lengths for fibre-optic cables are 100 m and 500 m; any other lengths will incur a surcharge.  
O. r. = on request

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX

Usage criteria		Cable designation (fixed installation or occasional flexing)															
Page		100	103	101	42	43	102	104	105	107	106						
		ÖLFLEX® SERVO 700	ÖLFLEX® SERVO 719 CY	ÖLFLEX® SERVO 720 CY	ÖLFLEX® CLASSIC 110 BLACK 0,6/1 KV	ÖLFLEX® CLASSIC 110 CY BLACK 0,6/1 KV	ÖLFLEX® SERVO 2YSLCY low capacitance	ÖLFLEX® SERVO 9YSLCY low capacitance	ÖLFLEX® SERVO 7DSL	Servo cable as per SEW® standard, static	Servo cable as per SIEMENS® FX5 series						
	<b>Use</b>																
Power drive systems	Mains	✓			✓												
	Motor	✓	✓			✓	✓	✓		✓							
SEW®	Power																
	Signal																
SIEMENS®	Power		✓								✓						
	Signal										✓						
INDRAMAT®	Power		✓														
	Signal																
LENZE®	Power						✓	✓									
	Signal																
Heidenhain®	Power			✓													
	Signal																
One cable technology	Power								✓								
Hiperface DSL®	Signal								✓								

Usage criteria		Cable designation (permanent flexing, e.g. in power chains)																	
Page		108	109	110	112	113	114	116	117	118	118	118	118	118	118	118	309		
		ÖLFLEX® SERVO FD 781 CY	ÖLFLEX® SERVO FD 796 P	ÖLFLEX® SERVO FD 796 CP	ÖLFLEX® SERVO FD 798 CP	ÖLFLEX® SERVO FD 7DSL	Servo cable as per SIEMENS® FX8PLUS series	Servo cable as per INDRAMAT® standard INK	Servo cable as per LENZE® standard	Servo cable as per Heidenhain® standard	Servo cable as per ELAU® standard	Servo cable as per KEB® standard	Servo cable as per Controles Techniques® standard	Servo cable as per Berger Lahr® standard	Servo cable as per B & R® standard	Servo cable as per FANUC® standard	UNITRONIC® FD CP (TP) plus		
	<b>Use</b>																		
Power drive systems	Mains																		
	Motor	✓	✓	✓	✓														
SEW®	Power																		
	Signal																		
SIEMENS®	Power		✓	✓				✓											
	Signal				✓			✓											
INDRAMAT®	Power		✓	✓					✓										
	Signal				✓				✓										
LENZE®	Power				✓				✓										
	Signal								✓										
Heidenhain®	Power		✓							✓									
	Signal									✓									
ELAU®	Power				✓						✓								
	Signal										✓								
KEB®	Power											✓							
	Signal											✓							
Controles Techniques®	Power												✓						
	Signal												✓						
Berger Lahr®	Power													✓					
	Signal													✓					
B & R®	Power														✓				
	Signal														✓				
FANUC®	Power															✓			
	Signal															✓			
One cable technology	Power							✓											
Hiperface DSL®	Signal							✓											

✓ Main application/design  
 ✓ Possible application

SIEMENS® article designations (6FX5002/5008, 6FX7002/7008, 6FX8002/8008) are registered trademarks of SIEMENS AG, and are listed for comparison purposes only. INDRAMAT® article designations (IKG, IKS, INK, INS, RKL and RKG) are registered trademarks of Bosch Rexroth AG, and are listed for comparison purposes only. LENZE® article designations (EWLM\_, EWLR\_, EWLE\_, EWLL\_, EYL and EYP) are registered trademarks of LENZE AG, and are listed for comparison purposes only. SEW® and SEW® Eurodrive are registered trademarks of SEW Eurodrive GmbH & Co KG. Heidenhain®, ELAU®, KEB®, Controles Techniques®, Berger Lahr®, B & R® and FANUC® are registered trademarks of the respective companies, and are listed here for comparison purposes only. HIPERFACE DSL® is a registered trademark of SICK AG.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

Cables for expanded ambient temperature ranges

Usage criteria		Cable designation																												
Page		173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	191	192	193	194	194	194	195	196	197	198	199	
		ÖLFLEX® HEAT 105 MC	ÖLFLEX® HEAT 125 MC*	ÖLFLEX® HEAT 125 C MC*	ÖLFLEX® HEAT 180 SHF	ÖLFLEX® HEAT 180 H05SS-F EWKF	ÖLFLEX® HEAT 180 MS	ÖLFLEX® HEAT 180 C MS	ÖLFLEX® HEAT 180 EWKF	ÖLFLEX® HEAT 180 EWKF C	ÖLFLEX® HEAT 180 GLS	ÖLFLEX® HEAT 205 MC	ÖLFLEX® HEAT 260 MC	ÖLFLEX® HEAT 260 C MC	ÖLFLEX® HEAT 260 GLS	ÖLFLEX® HEAT 350 MC	ÖLFLEX® HEAT 1565 MC	ÖLFLEX® HEAT 125 SC	ÖLFLEX® HEAT 180 SIF	ÖLFLEX® HEAT 180 SIF A	ÖLFLEX® HEAT 180 SID	ÖLFLEX® HEAT 180 SIF /GL	ÖLFLEX® HEAT 180 SIZ	ÖLFLEX® HEAT 180 FZLSi	ÖLFLEX® HEAT 205 SC	ÖLFLEX® HEAT 260 SC	ÖLFLEX® HEAT 350 SC	ÖLFLEX® HEAT 1565 SC	ÖLFLEX® HEAT 650 SC	
	<b>Use</b>																													
	Internal and external machine cabling	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Internal wiring of control units/machinery	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	In dry rooms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	In dry and damp rooms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Outdoors, fixed installation (mech. protection)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Chemical resistance	Please see technical table T1																												
	In EMC-sensitive environments		✓				✓		✓				✓																	
	Suitable for extreme applications in paint shops											✓		✓	✓											✓	✓			
	<b>Standards</b>																													
	Halogen-free according to IEC 60754-1		✓	✓	✓	✓	✓	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓						
	Low smoke density according to IEC 61034		✓	✓	✓	✓	✓	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓						
	Low smoke toxicity according to NES 02-713		✓	✓	✓	✓	✓	✓	✓	✓	✓								✓	✓	✓	✓	✓	✓						
	Flame-retardant according to IEC 60332-1-2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Flame-retardant according to IEC 60332-3		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Based on VDE/HAR/DIN	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	With VDE/HAR certification						✓											✓												
	With UL/CSA certification							✓		✓									✓											
	With GL/DNV certification		✓	✓																										
	<b>Temperature range</b>																													
	+1565 °C																	◆											◆	
	+650 °C																													▲
	+400 °C																													
	+350 °C																													
	+300 °C																													
	+260 °C																													
	+200 °C																													
	+180 °C																													
	+145 °C		◆	◆																										
	+125 °C		●	●																										
	+105 °C		▲																											
	+90 °C																													
	-20 °C																													
	-35 °C		●	●																										
	-50 °C		▲	▲																										
	-80 °C																													
	-100 °C																													
	-140 °C																													
	-190 °C																													
	<b>Nominal voltage</b>																													
	300/500 V	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	450/750 V		✓	✓																										
	600/1000 V		✓	✓																										
	10 kV																													
	600 V as per UL/CSA							✓	✓																					
	1000 V as per UL/CSA																													
	<b>Design</b>																													
	Solid wire as per VDE 0295, class 1																													
	Fine-wire according to VDE 0295, class 5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	PVC core insulation/sheath, heat-resistant	✓																												
	Halogen-free special core insulation/sheath		✓	✓																										
	Silicone core insulation/sheath				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Silicone, notch-resistant (EWKF) sheath					✓			✓	✓																				
	Fluoropolymer core insulation/sheath (FEP/PTFE)												✓	✓	✓	✓										✓	✓			
	Glass fibre core insulation/sheath																													
	Printed numbers according to VDE 0293		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Colour code according to VDE 0293-308	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Individual colours																													
	Overall screening			✓				✓		✓				✓																
	Steel wire armouring										✓				✓															

	944	* 982	983	985 986 987	964	955	949	* 977	978	946																																										
	Stainless steel FCC marking	Character strips plastic MINI	Character holders PTE	Character holders PTEF Cab	Collars	Flexiprint LF	Wrapping labels LOK	Cable label LFL	Cable label TFL	LA Labels	TA Labels	Cable marker FCC																																								
<b>Temperature Range</b>																																																				
max +500 °C	✓																																																			
-20 °C - +65 °C	✓	✓																																																		
-20 °C - +45 °C			✓																																																	
-75 °C - +80 °C				✓																																																
-40 °C - +80 °C					✓																																															
-40 °C - +125 °C						✓	✓	✓	✓	✓																																										
-40 °C - +150 °C											✓																																									
-30 °C - +70 °C												✓																																								
<b>Resistance test</b>																																																				
UV-light	●	●	●	●	●	●	●	●	●	●	●	●																																								
Ageing	●	●	●	●	●	●	●	●	●	●	●	●																																								
Abrasion of the marketing text	▲	●	●	▲	▲	●	●	●	●	●	●	▲																																								
<b>Chemical resistance test</b>																																																				
Diesel	●	□	□	●	●	◆	□	□	◆	□	□	●																																								
Acid (H <sub>2</sub> SO <sub>4</sub> ), 25%	●	□	□	●	●	◆	□	□	□	□	□	●																																								
Alkali (Detergent solution, 10%)	●	□	□	●	●	□	□	□	◆	□	◆	●																																								
Distilled water	●	□	□	●	●	□	□	□	□	□	□	●																																								
Salt water (5% NaCl)	●	□	□	●	●	□	□	□	□	□	□	●																																								
Transformer oil (Nytro 10X)	●	□	□	●	●	□	□	□	□	□	□	●																																								
Ethanol	●	□	□	●	●	◆	□	□	□	□	□	●																																								
<b>Chemical resistance test with abrasion</b>																																																				
Diesel	▲	●	●	▲	▲	◆	●	●	◆	●	●	▲																																								
Acid (H <sub>2</sub> SO <sub>4</sub> ), 25%	▲	●	●	▲	▲	◆	●	●	◆	●	●	▲																																								
Alkali (Detergent solution, 10%)	▲	●	●	▲	▲	●	●	●	◆	●	◆	▲																																								
Distilled water	▲	●	●	▲	▲	●	●	●	●	●	●	▲																																								
Salt water (5% NaCl)	▲	●	●	▲	▲	●	●	●	●	●	●	▲																																								
Transformer oil (Nytro 10X)	▲	●	●	▲	▲	●	●	●	●	●	●	▲																																								
Ethanol	▲	●	●	▲	▲	◆	●	●	●	●	●	▲																																								

● Tested and recommended.      ▲ Not tested. Marking text has an automatic protection in form of a holder or similar.      \* see online-catalogue  
 □ Not tested. A Chemical resistance test with abrasion has been performed instead.      ◆ Not recommended.

To meet the high requirements of our products and to ensure our quality standard all FLEXIMARK® products are subjected to a series of strict tests. These are made by the independent SP Technical Research Institute of Sweden using the SP 2171 Test Method which is used especially for collars and plastic information carrier which mark electric wires, cables, components and clamps. For receiving an impression, some of the tests are listed below:

Test	Method and criteria
Ageing resistance	Accelerated ageing in heat oven (2000 days at 90 °C (194 °F)) corresponding to use at 20 °C (+68 °F) for 30 years. Check for cracks, breaks or similar damage. (Max 50% reduction in elongation before breakage.) Also check for mountability and dismountability.
UV-resistance	Accelerating test corresponding to ISO 4892-2 exposure 1 year outdoors in southern Sweden. Check for brittleness and change in colour and readability.
Abrasion resistance of marking text	According to SP Method 2172 (rubbing machine). Load 75 g per mm mandrel diameter. 200 + 200 cycles.
Chemical resistance	Mounted sleeves kept for 24 hours at +23 °C & -2 °C (+73.4 °F & 28.4 °F) immersed in the chemical. Drying for 2 hours then check for functionality, colour fastness and print legibility.  <b>Chemicals used:</b> Synthetic diesel oil, Sulphuric acid 25%, basic cleaning agent (Berol 226, 10%), Distilled water, Sea water (5% NaCl), Transformer oil (Nytro 10x), Ethanol, other chemicals on request.
Chemical resistance with abrasion test	Combination of abrasion-test and chemical resistance-test.

NOTE: actual version and further information are available on our homepage.

## 1. General

The **resistance** of the product materials in the application environment, correct product assembly and subjected load in the context of permitted limit values (technical data) have a significant impact on the safety and durability of our products. Notes on product usage and technical data can primarily be found on the catalogue product pages, both in the text sections and the tables provided.

**Selection tables A1–A13** provide an overview of similar products and enable comparisons on the basis of important product properties (e.g. “permitted temperature range”, “permitted bending radius”) and main application parameters (e.g. “outdoor use, unprotected”), thus facilitating the selection process.

The **“technical tables”** (T1–T31) focus on the following:

- Chemical resistance (T1, T24), radiation resistance (T28), weather and oil resistance (T15)
- Assembly of Profibus and Industrial Ethernet cables (T2), assembly of cables for power chains (T3), assembly of cables for conveyor technology (T4, T5)

- Assembly/installation/fastening of cables in special cases (T19)
- Assembly, thread dimensions and tightening torques of cable glands (T21)
- Electrical load capacity, conversion factors, installation type according to VDE, Germany (T12)
- Electrical load capacity, installation type according to NEC, USA (T13)
- Load capacity with regard to thermal stress and tensile strain (T19)
- Conductor cross-sections with different measurement systems (T16)

This and the following information on special product groups/topics represent guidelines on the use and application of our products, but do not cover the competent project planning of electrical equipment in all its aspects.

### Questions?

Contact us; we are happy to help: [info@lappkabel.de](mailto:info@lappkabel.de)

## 2. Cables and wires

The applications of cables and wires are extremely diverse and thus governed by a whole range of application standards in the various standard groups (IEC, EN, NEC, ...).

One example is the international standard IEC 60204-1:2009, Electrical equipment of machines – Part 1: General requirements) with reference to the requirements of cables and wires as well as their application conditions.

In all cases, meeting these **general** specifications requires the user to perform a professional examination as to the existence of **specific** product standards with other/extended requirements that may take precedence.

In this case, support is provided by the catalogue product pages in the form of product and application standards – e.g. “Oil resistance according to VDE 0473-811” or “Railway applications: DIN EN 50306-2”. In the area of low voltage harmonised cables (e.g. H05VV5-F/ÖLFLEX® 140), DIN EN 50565-2 (VDE 0298-565-2) in table 1A provides a list of requirements and criteria that are largely applicable to other low voltage cables as well as notes on recommended applications.

In addition, the application information provided in IEC publication 62440:2008-02 Ed. 1.0 must be observed for electrical cables with nominal voltages up to 450/750 V.

A summary of the most important information on cable and wire applications contained in the aforementioned documents is provided below.

### General

Conductors, cables and wires must be selected such that they are suitable for the relevant operating conditions (e.g. voltage, current, protection against electric shock, bundling of cables and wires) and external influences (e.g. ambient temperature, presence of water or corrosive materials, mechanical stress, incl. stress experienced during installation, fire risks).

### Electrical voltage

The control and connecting cables listed in the catalogue are subject to the **“low voltage directive” 2014/35/EU for electrical equipment with a nominal voltage between 50 and 1000 V (alternating current) and between 75 and 1500 V (direct current)**.

The nominal voltage is the reference voltage for which cables and wires are constructed and tested. The nominal voltage of cables and wires used with AC supplies must be greater than or equal to the nominal supply voltage. In the case of a DC supply, the nominal supply voltage must not exceed the nominal voltage of the cable by a factor greater than 1.5. The continuous operating voltage of AC and DC supplies may exceed the nominal supply voltage e. g. 500 → 550 V (10%) as per DIN EN 50565-1, table 2 for a 300/500 VAC System.

The nominal voltage of cables and wires is expressed by the ratio  $U/U_0$ , in volts, whereby:

- $U_0$  is the effective voltage between a phase conductor and the earth (metal sheath/screening of the cable or surrounding medium)
- $U$  is the effective voltage between two phase conductors of a multi-core cable or a system of single core cables

The dielectric strength of the insulation of cables, conductors and wires must be sufficient for the required test voltage.

For cables and wires subjected to voltages over 50 V AC or 120 V DC, the test voltage is a minimum of 2000 V AC for a duration of 5 minutes. For alternating currents with a maximum of 50 V and direct currents with a maximum of 120 V (typical values for SELV or PELV systems), the test voltage must be a minimum of 500 V AC for a duration of 5 minutes. The AC test voltages are detailed on the individual product pages in the catalogue under “technical data” and can also be used to make selections in cases where no meaningful  $U/U_0$  ratio can be provided.

## 2. Cables and wires – continued

### Explosive atmospheres

The family of standards IEC 60079-14 →DIN EN 60079-14 →VDE 0165-1, Oct 2014 is also applicable in the development and selection of cables and wires for explosive atmospheres.

#### 1. Quotation from standard VDE 0165-1, 1. Scope

“This part of the IEC 60079 series contains the specific requirements for the design, selection, erection and the initial inspection of electrical installations in, or associated with, explosive atmospheres.”

#### 2. Quotation from standard VDE 0165-1, 4.5 Qualifications of personnel

“The design of the installation, the selection of equipment and the erection covered by this standard shall be carried out only by persons whose training has included instruction on the various types of protection and installation practices, relevant rules and regulations and on the general principles of area classification. The competency of the person shall be relevant to the type of work to be undertaken. (see Annex A).”

**3. The normative Annex A** describes the necessary knowledge/competencies for the persons responsible. (This includes, for example, considerations of the equipment design and its impact on the protection concept.) Lapp is pleased to provide details about its range of catalogue items and their properties. In terms of the required competencies for the development, selection and erection of explosion-protected equipment and installations, the responsibility for the correct use of the item shall lie with the ordering party.

#### 4. VDE 0165-1, 9.3.2 Cables and wires for fixed installation

These are generally cables and wires which are equipped with a solid conductor and with an extruded filler material that occupies the intermediate spaces of the core. Examples include the types NYY, NAPP, NYM, (N)HXMH.

If there is a possibility of longitudinal expansion of a liquid or a gas medium inside a cable or wire where this is not permitted, then the use of suitable Ex “d” cable entries on the equipment is an approved alternative. See also VDE 0165-1, Annex E.

#### 5. VDE 0165-1, 9.3.3 Flexible cables and wires for fixed installation

These cables and wires normally do not contain any extruded filler material. Examples include rubber cables such as H07RN-F and NSSHÖU or plastic-insulated cables with resistant (VDE 0165-1, 9.3.3 e) designs such as ÖLFLEX® 540P (or similar). Connecting cables with a comparably robust structure are also used with mobile and portable equipment. See also DIN VDE 0165-1, 9.3.4.

DIN VDE 0298-3:2006-06, tables 4 and 5 display further standard-compliant cables and cable designs which are suitable for use in explosive atmospheres.

### Conductor cross-sections with different measurement systems

IEC 60228 is an important international standard that describes cables with metric cross-sections. North America and other regions currently employ conductor cross-sections according to the AWG (American Wire Gauge) system with kcmil” used for larger cross-sections. A table is provided under T16 to support safe, alternative usage of cables from both these measurement systems.

### Tensile strain

The following applies to all conductors up to maximum tensile strain of 1000 N: Max. 15 N per mm<sup>2</sup> conductor cross-section (excl. screening, concentric conductors and divided protective conductors) for static tensile strain when using moving/flexible cables and cables for/in fixed installation. Max. 50 N per mm<sup>2</sup> conductor cross-section (excl. screening, concentric conductors and divided protective conductors) for static tensile strain when assembling cables for/in fixed installation.

### Flexible use – stationary use/Definitions

#### • Continuous Flexing

Cables are in constant linear motion in automated applications. They are subjected to continuous forces applied during bending motions.

Typical application:

Horizontal and vertical c-tracks power chains, automated assemblies, etc.

#### • Flexible/occasional flexing

Cables are moved randomly in a non-automated application. They are susceptible to occasional uncontrolled conditions of movement.

Typical application:

Flexible cable tray routings, machine tools, residential electronics, portable power equipment, etc.

#### • Stationary use/fixed installation

Cables are installed and left in their original position. They are only moved for purposes of maintenance, repair or retrofitting.

Typical application:

Cable trays, conduits, wire ways installed in buildings, machines, manufacturing facilities, etc.

### Cables for use in power/drag chains

These cables are indicated by the code “FD” or “CHAIN” in their product names. In addition to the generally applicable information on assembly and project planning contained in technical table T3, particular attention must be paid to the specifications relating to individual cables that are provided on the relevant product pages in the catalogue.

These are specifically:

- Restrictions of the traversing path length (e.g.: “... up to 10 m”).
- Restrictions of the minimum bending radius for flexible applications. The radius implemented with the power/drag chain must not be lower than the minimum bending radius! The minimum bending radius is defined as the inner radius relative to the surface of the curved cable.

### Torsion movement in wind turbine generators

The torsional motion of wind turbines is very different from those in robotic applications. In comparison to the quick, highly dynamic movements of robots, the motion in the loop between the nacelle and tower of a wind turbine is slow. Moreover, the rotation of the cable on its axis about 150° per 1 m cable and the rotational speed with 1 revolution per minute is less than usual robotic applications. To confirm these requirements, our cables are tested in our in-house testing facility. To take the different materials into account, different tests are performed in order to achieve meaningful results even at the temperature resistance of the cables.

Based on the test results the cables are classified to the LAPP-internal rating for torsion in wind turbine generators which is adapted to the requirements of leading manufacturers of wind turbines:

	Number of cycles	Temperature range	Torsion angle
TW-0	5.000	≥ +5 °C	± 150 °/1 m
TW-1	2.000	≥ -20 °C	± 150 °/1 m
TW-2	2.000	≥ -40 °C	± 150 °/1 m



## 2. Cables and wires – continued

### Transport and storage

Cables and wires that are **not** designated for outdoor use must be stored indoors, in dry conditions and protected from direct sunlight. If stored outside, all cable and wire ends must be sealed to prevent the ingress of water.

The ambient temperature for transport and storage must be between -25 °C and +55 °C (max. +70 °C for no longer than 24 hours).

Particularly in the lower temperature ranges, mechanical stress through vibration, shock, bending and twisting must be avoided. This is especially important for PVC-insulated cables and wires. The following guidelines apply for the maximum storage of cables and wires before use and without prior testing:

- One year if stored outdoors
- Two years if stored indoors

## 3. Industrial connectors

For Industrial Connectors please see (NEW) Technical Table T31.

## 4. Cable glands and cable bushings

SKINTOP® and SKINDICHT® cable glands and cable entries represent highest quality levels and over 30-years of expertise in the relevant areas of application.

Along with quality, the correct usage of these products with regard to operational safety is the most important factor. For this reason, we would like to remind you to observe all relevant standards for your

intended application. In addition to the technical data on the product pages, please also refer to the technical tables in our main catalogue (T21 – thread dimensions for cable glands, tightening torques and installation dimensions for cable glands/T22 – protection ratings according to EN 60529), as well as the supplied package leaflets describing product usage (e.g. package leaflet for products acc. to DIN EN 60079-0, DIN EN 60079-7).

## 5. Cable protection and guiding systems

SILVYN® cable protection systems offer additional protection for cables and wires. If used in a specified system and professionally fitted by a certified electrician, SILVYN® products will meet the properties detailed on the catalogue pages.

When configuring and assembling the SILVYN® CHAIN energy supply systems, the assembly instructions detailed in table T3 “Assembly guidelines for ÖLFLEX® FD and UNITRONIC® FD cables in power chains” must be followed. With regards to the correct installation of a SILVYN® CHAIN energy supply system, please refer to the information in our current special SILVYN® CHAIN catalogue.

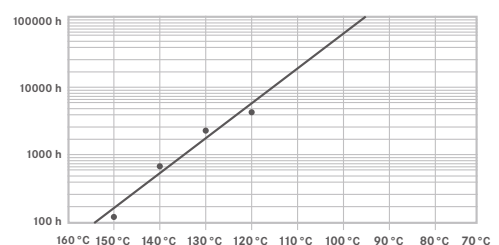
## 6. Ready-to-use parts, tools and printers

Products in the area of cable accessories are system-tested to ensure optimal assembly. The commissioning and processing of

these products must only be performed by authorised electricians and following the supplied information.

## 7. Service life

The average service life of cables is dictated not just by the mechanical and chemical stress, but also by the operating or ambient temperature. As is customary in mechanical engineering, the continuous temperature range of a cable, as specified in our technical data, refers almost exclusively to a period of at least 20,000 h. The adjacent example of an ageing curve according to Arrhenius illustrates the behaviour of an insulating material on the basis of time and temperature. The material tested here has a temperature index of approx. +110 °C at 20,000 h. The material can also be specified with an index of +135 °C, but in this case only for a duration of approx. 3000 h.



## 8. Connection technology

The quality of an electrical connection greatly depends on the choice of suitable components in the relevant nominal cross-sections and the use of recommended tools for processing.

Size differences between the cable and the tubular cable lug/conductor end sleeve are attributable to the fact that class 5 and 6 conductors can be pressed with just one crimp contact – even if the conductors have different structures (bunched, stranded or compressed conductors). Despite the sleeves appearing to be too large for the relevant

cross-sections, the correct combination of conductor, contact and tool will ensure gas-tight crimping. The dimensional accuracy at the aforementioned connection points is governed by standards, incl.:

- DIN EN 60228 (VDE 0295), September 2005 – “Conductors for cables and insulated leads”
- DIN 46228 – 4, September 1990 – “Tubular end-sleeves with plastic sleeve”
- Crimping quality according to DIN 46228-1 and DIN EN 50027

## 9. Testing and inspection

The operator must ensure that the correct functioning and condition of electrical systems and equipment is checked by or under the supervision of a certified electrician. This must occur prior to initial commissioning and before reactivation following any modifications or maintenance work.

Inspection intervals must be set such that any problems that can reasonably be expected are identified in good time. In many cases, the service life of Lapp products can only be established empirically in the relevant applications. Indicators for inspection intervals can be based, for example, on the temperature load (see “Service life”) or the number of permitted alternating bending cycles for drag chains (see information on relevant product pages in the catalogue).

As a rule, cables and wires in fixed installations will have a longer service life and will thus also be suitable for longer inspection intervals.

Shorter intervals are recommended for cables and wires used at the limit of their permitted parameters. This applies to the following in

particular (see also “Technical data” and “Application” on the relevant product pages in the catalogue):

- Minimum bending radius
- Temperature range
- Presence of radiation (e.g. sunlight)
- Existence of tensile strain
- Influence of surrounding chemical substances and unverified resistance
- In the case of water accumulation or condensation in the area of the connection points. Cables and wires should be subjected to a visual inspection to identify any changes to their appearance. This should be done no later than when the cables or wires are likely to have been exposed to excessive loads (be they electrical, thermal, mechanical or chemical).

## 10. Fire properties

The behaviour of products in the case of a fire (reaction to fire) is of great importance to building installation. The EU has converted the various national regulations throughout Europe into a uniform rating system. The Construction Products Regulation (directive (EU) no. 305/2011) of 09/03/2011 came into force on 01/07/2013 and is binding for all member states.

Please find more details in this catalogues appendix under Technical tables T14.

## 11. Copyright and updated standards

We aim to observe the copyright of the images/graphics and texts used in this catalogue, and to primarily utilise our own or licence-free images/graphics and texts.

By specifying standards and using extracts from standards, we aim to support our customers with important information on safe use of our products.

Please note that as the catalogue gets increasingly old, the specified standards/standard extracts may no longer be fully up to date.

To preserve copyright and ensure that standards are up to date, we recommend that our customers and users of this catalogue refer to the latest applicable standards from an authorised source.

**Example:** Technical table T12 – Load capacity

Extracts from DIN VDE 0298-4 (issued 2013-06) are used in the pending catalogue edition, with approval 162.013 from DIN (Deutsches Institut für Normung e.V.) and the VDE (Verband der Elektrotechnik Elektronik Informationstechnik e.V.). Application of the standards is based on the versions with the most recent issue date.

These are available from VDE VERLAG GmbH, Bismarckstraße 33, 10625 Berlin, [www.vde-verlag.de](http://www.vde-verlag.de) and Beuth Verlag GmbH, Burggrafenstraße 6, 10787 Berlin.

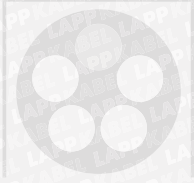
## Chemical resistance of cables

All data is for a temperature of +20 °C		Cable designations									
		ÖLFLEX® SMART 108, ÖLFLEX® CLASSIC 100, 110, 115 CY, 100 BK, 110 BK, 110 CY BK	ÖLFLEX® SERVO 700, ZYSLOCY, 9SLOCY, ÖLFLEX® EB, EB CY, SF, UNITRONIC® 100, 100 CY	ÖLFLEX® FD 90, FD 90 CY, ÖLFLEX® 140, 140 CY, TRAY II CY, ÖLFLEX® CHAIN 809, 809 CY, 809 SC, 809 SC CY, ÖLFLEX® 150, 150 CY, 191, 191 CY, ÖLFLEX® FD 891/891 CY, TRAY II, ÖLFLEX® SERVO 719 CY, ÖLFLEX® SERVO FD 781 CY, ÖLFLEX® CONTROL TM/TM CY, SERVO cables as per SEW®, SIEMENS® FX 5008 Standard	ÖLFLEX® CLASSIC 100 SY, ÖLFLEX® CLASSIC 100 CY, ÖLFLEX® CLASSIC 110 SY, 110 CY, ÖLFLEX® FD CLASSIC 810, 810 CY	ÖLFLEX® CLASSIC 400 P, 400 CP, 415 CP, 440 P, 440 CP, 408 P, 409 P, 450 P, 500 P, 540 CP, 540 P, 550 P, ÖLFLEX® PETRO C-HFR, ÖLFLEX® SERVO FD 796 P, 796 CP, 798 CP, FD 7DSL, 7DSL, CLASSIC 810 P, 810 CP, 855 P, 855 CP, 865 CP, ÖLFLEX® FD 891 P, ÖLFLEX® CHAIN 808 P, 808 CP, ÖLFLEX® CHAIN 896 P, ÖLFLEX® Robot 900, F1, ÖLFLEX® CRANE PUR, UNITRONIC® LYD 11Y, UNITRONIC® FD P, UNITRONIC® FD CP, UNITRONIC® FD CP (TP), HITRONIC® with PUR sheath, UNITRONIC® PUR, SERVO cable as per SIEMENS® FX8 PLUS Standard	ÖLFLEX® CRANE round and flat	ÖLFLEX® LIFT T, LIFT S, ÖLFLEX® CRANE 2S, ÖLFLEX® LIFT F, ÖLFLEX® SF, Single-core products LIFY, LIFY 1 kV	ÖLFLEX® HEAT 105	ÖLFLEX® HEAT 180	ÖLFLEX® HEAT 205/260
<b>Inorganic chemicals</b>											
Alums, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Aluminium salts, any concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Ammonia, aqueous, 10% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Ammonium acetate, aqueous, any concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Ammonium carbonate, aqueous, any concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Ammonium chloride, aqueous, any concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Barium salts, any concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Boric acid, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Calcium chloride, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Calcium nitrate, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Chromium salts, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium carbonate, aqueous (potash)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium chlorate, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium chloride, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium dichromate, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium iodide, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium nitrate, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Potassium permanganate, aqueous	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Potassium sulphate, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Copper salts, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Magnesium salts, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sodium bicarbonate, aqueous (natron)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sodium bisulphite, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sodium chloride, aqueous (table salt)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sodium thiosulphate, aqueous (fixing salt)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Nickel salts, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Phosphoric acid, 50% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Mercury, 100% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Mercury salts, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Nitric acid, 30% concentration	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Hydrochloric acid, concentrated	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Sulphur, 100% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sulphur dioxide, gaseous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Carbon disulphide	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Hydrogen sulphide	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Sea water	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Silver salts, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Hydrogen peroxide, 3% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Zinc salts, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Tin(II) chloride	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
<b>Organic chemicals</b>											
Ethanol, 100% concentration	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Formic acid, 30% concentration	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Petrol	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Succinic acid, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Acetic acid, 20% concentration	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Hydraulic oil	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Isopropanol, 100% concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Machinery oil	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Methanol, 100% concentration	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Oxalic acid, aqueous, cold-saturated concentration	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Cutting oil	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Plant-based oils + fats	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Tartaric acids, aqueous	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Citric acid	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗

⊗ no or slight reaction = good resistance  
 ✘ slight to moderate reaction = moderate resistance  
 ✘ moderate to strong reaction = low/no resistance

Whilst this information is accurate to the best of our knowledge and experience, it must be treated as a non-binding guideline only. In many cases, tests must be carried out under working conditions to reach a definitive conclusion.

All data is for a temperature of +20 °C

	Cable designations									
	Halogen-free cables, NHXMH, JH(ST)H, ÖLFLEX® 130 H, 135 CH, 130 H BK 0.6/1 KV, 135 CH BK 0.6/1 KV, UNITRONIC® LIHH, LIHCH, LIHCH(TP)	HITRONIC® fibre-optic cables	UNITRONIC® FD, FD CY, UNITRONIC® LIYY, LIYCY, LIYCY(TP), UNITRONIC® LI2YCY(TP), LI2YCY PIMF, UNITRONIC® LAN	J-Y(STY), JE-Y(STY), JE-LIYCY, J-2Y(STY), J-Y, JE-Y	Coaxial cables (PE), A-2Y(L)2Y, A-2YF(L)2Y, HITRONIC® with PE sheath	ESUY copper earthing cable, X00V3-D	ÖLFLEX® CRANE NSHTÖU, NSGAFÖU; H01N2-D, ÖLFLEX® CRANE VS (NSHTÖU, H05RN-F, H07RN-F, 07RN8-F	LIY single cores, H05V-K, H07V-K, LIYF, LIYF 1 kV, Multi-Standard SC 1, Multi-Standard SC 2.1, Multi-Standard SC 2.2	H05RR-F	ÖLFLEX® ROBUST 200, 210, 215 C, ÖLFLEX® ROBUST FD, ROBUST FD C, UNITRONIC® ROBUST, ROBUST C

	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic	Hitronic
<b>Inorganic chemicals</b>										
Alums, cold-saturated concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Aluminium salts, any concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Ammonia, aqueous, 10% concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Ammonium acetate, aqueous, any concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Ammonium carbonate, aqueous, any concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Ammonium chloride, aqueous, any concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Barium salts, any concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Boric acid, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Calcium chloride, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Calcium nitrate, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Chromium salts, aqueous, cold-saturated concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium carbonate, aqueous (potash)	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium chlorate, aqueous, cold-saturated concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium chloride, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium dichromate, aqueous	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium iodide, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium nitrate, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Potassium permanganate, aqueous	✘	✘	✘	✘	✘	✘	✘	✘	✘	✘
Potassium sulphate, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Copper salts, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Magnesium salts, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sodium bicarbonate, aqueous (natron)	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sodium bisulphite, aqueous	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sodium chloride, aqueous (table salt)	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sodium thiosulphate, aqueous (fixing salt)	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Nickel salts, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Phosphoric acid, 50% concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Mercury, 100% concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Mercury salts, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Nitric acid, 30% concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Hydrochloric acid, concentrated	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sulphur, 100% concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sulphur dioxide, gaseous	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Carbon disulphide	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Hydrogen sulphide	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Sea water	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Silver salts, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Hydrogen peroxide, 3% concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Zinc salts, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Tin(II) chloride	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
<b>Organic chemicals</b>										
Ethanol, 100% concentration	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Formic acid, 30% concentration	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Petrol	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Succinic acid, aqueous, cold-saturated concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Acetic acid, 20% concentration	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Hydraulic oil	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Isopropanol, 100% concentration	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
Machinery oil	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Methanol, 100% concentration	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Oxalic acid, aqueous, cold-saturated concentration	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Cutting oil	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Plant-based oils + fats	✘	✘	✘	✘	☒	✘	☒	✘	☒	☒
Tartaric acids, aqueous	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒
Citric acid	✘	☒	☒	☒	☒	☒	☒	☒	☒	☒

☒ no or slight reaction = good resistance  
 ✘ slight to moderate reaction = moderate resistance  
 ✘ moderate to strong reaction = low/no resistance

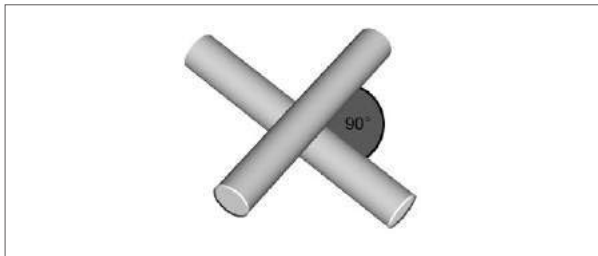
Whilst this information is accurate to the best of our knowledge and experience, it must be treated as a non-binding guideline only. In many cases, tests must be carried out under working conditions to reach a definitive conclusion.

### PROFIBUS (UNITRONIC® BUS PB) and Industrial Ethernet cables (ETHERLINE®)

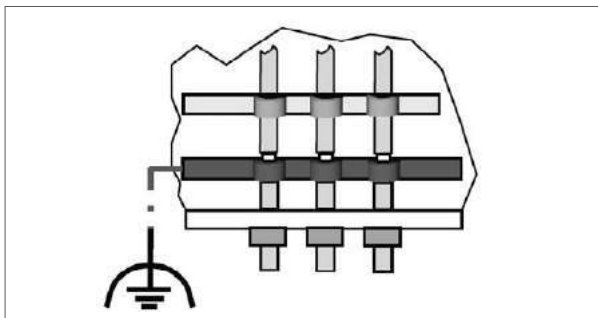
- Only use cables that have been designed for the relevant type of application (fixed installation, flexible or highly flexible application, torsional load, cable trailer systems, routing outdoors/underground). These cables have a specific design and have undergone the corresponding testing.
- Please note the electrical properties listed in the data sheet when selecting cables. Depending on the design, higher damping values can occur or a limitation of the transmission length.
- PROFINET has the following conductor types:  
**Type A:** fixed installation  
**Type B:** flexible application, occasional flexing  
**Type C:** highly flexible application, torsion, drag chain, etc.

Pairs/Type	Type A	Type B	Type C
2-pair (2x2)	AWG22/1	AWG22/7	AWG22/1-19
4-pair (4x2)	min. AWG23/1	min. AWG23/1	min. AWG24/1-19

- In a system with different PROFINET categories and power cables, all of the cables should be separate bundles and run along separate ducts.
- The minimum clearances between power cables and data network cables are listed in IEC 61918. For unshielded power cables next to data network cables without separating strips or for non-metallic separating strips, the minimum clearance is 200 mm. The clearance is reduced if metallic separating strips are used. Shielded power cables can be installed directly next to bus systems. As a general rule, the greater the clearance is, the less interference there will be.
- Cables of different categories must always cross one another at an angle of 90°.

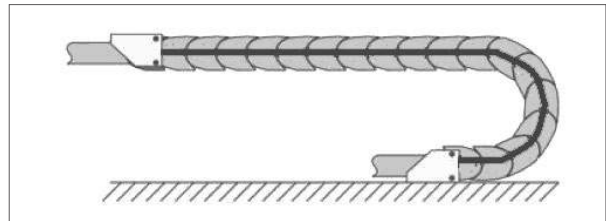


- Connect the screenings of all the cables which run into the control cabinet with the equipotential bonding at the cabinet entrance. Between the cabinet entrance and the screening contact, avoid installing cables coming from outside of the cabinet parallel to PROFINET cables that are inside the cabinet. This also applies to cables of the same category as each other.

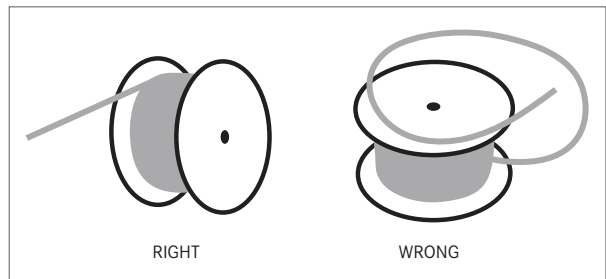


- Use the appropriate cable entries when introducing the cable into the control cabinet. We recommend using suitable fibre-optic cables when installing cables outdoors. Observe the relevant installation regulations.

- Always route backup cables along separate paths to ensure they remain undamaged, should damage occur to the main cable.
- Protect copper conductors and fibre-optic cables outside of cable carrier systems using plastic pipes or, in the case of a heavy mechanical load, using metal pipes.
- Data network cables can only be subjected to a defined tension load because otherwise the transmission characteristics could change. Replace any cables that have been mechanically overloaded or damaged.
- Observe the temperature range for the cables. Deviations from these temperatures will result in a lower mechanical and electrical cable rating and will damage the cables.
- Applications involving torsion require a special cable design, as do cables for drag chains and cable trolley systems. These cables cannot be swapped.
- For drag chain cables, it is imperative that the minimum bending radius is observed, otherwise there may be cable damage or a risk of system failure. Make sure that cables in the bending radius run along the neutral zone, i.e. there must be no forced guidance through the chain the inner or outer radius, so that the cables can still move relative to one another and to the chain.



- The cables must be unreel from the ring or drum free of any twists (at a tangent). Additionally, the cables should not be pulled over sharp corners and edges.



- “Electromagnetic compatibility” (EMC) is now a basic requirement to be fulfilled during installation. As such, include all metal system parts in the equipotential bonding concept and use only screened cables and connectors, or alternatively use fibre-optic cables and fibre-optic connectors that are resistant to electromagnetic interference.

**RECOMMENDATION:** a detailed “Planning and Installation Guide” for PROFIBUS and/or PROFINET is available from the PROFIBUS User Organisation (PNO) in Karlsruhe, Germany.

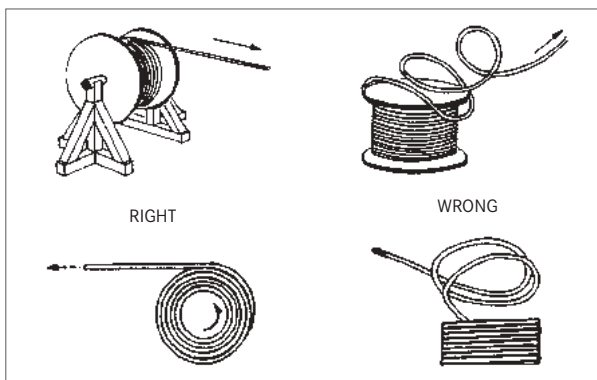
Internet: [www.profibus.com](http://www.profibus.com)  
[www.profinet.com](http://www.profinet.com)

## ÖLFLEX® FD/CHAIN, UNITRONIC® FD, ETHERLINE® FD and HITRONIC® FD cables in power chains

1. Power chains must be selected in accordance with the relevant project documentation of the chain manufacturers. The bending radius must comply with the minimum bending radius of the cables. If possible, we recommend avoiding a multi-layer cable configuration, i.e. >25 cores, and instead distributing the required quantity amongst several cables.

2. The cables must be unreeled from the ring or drum free of any twists (at a tangent) and must be laid out straight. This work should be carried out before starting the installation works so that the cables can relax in this time.

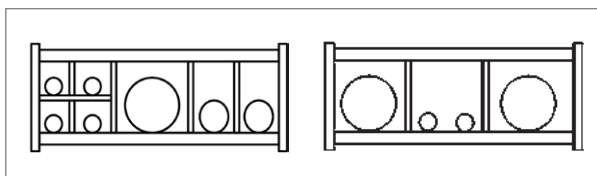
Due to the manufacturing process, the markings on the cables run round in a gentle spiral. Therefore this cannot be used to ensure that the cables have been straightened out without any twists.



3. The cable temperature should not drop below +5 °C at any point during installation.

4. The cables also need to be installed without any twisting when inserted into the chambers. If a cable is twisted during installation, it can lead to premature damage to the core stranding. This effect can be reinforced during operation and result in so-called cork-screwing. This leads to core breaks, which ultimately cause malfunctions.

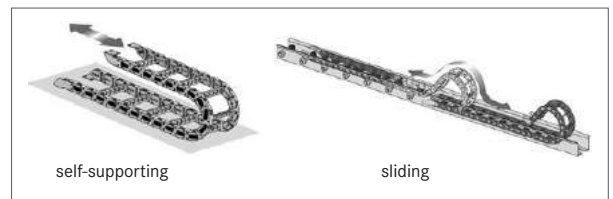
5. The cables must lie loosely next to each other in the chain chambers. They should be separated as much as possible using separators. The clearance between the cables and the cross bar, the separators or the neighbouring cables should be at least 10% of the cable diameter.



6. The cables should be installed symmetrically in terms of their weight and size; those with greater diameters and weights on the outside, those with smaller diameters and weights on the inside. They can also be placed in descending size order from inside to outside. Avoid arranging the cables above one another without the use of a shelf.

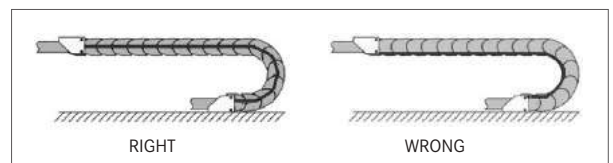
7. If the chain configurations are suspended vertically, additional free space must be provided in terms of the stay height, as the cables are lengthened during operation. After a short period of operation time, it is important to check whether the cables are still running along the neutral zone. It may be necessary to readjust them.

8. With self-supporting chain configurations, a cable is fastened both to the moving point and to the fixed point. Suitable cable supports of the chain manufacturer should be used here. With high accelerations, cable ties only have limited suitability. Avoid tying multiple cables together. The cables must not be secured or in any way bound together in the moving part of the chain. The clearance between the fixed point and the bending movements should be sufficiently wide.



9. With sliding chains, we recommend that the cable only be fastened to the moving point. A small cable reserve should be factored in at the fixed point. (Note the assembly instructions of the chain manufacturer).

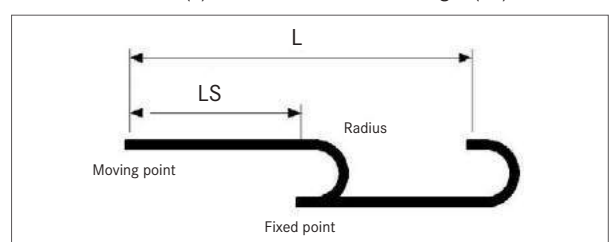
10. Make sure that the cables in the bending radius run in the neutral zone, i.e. there must be no forced guidance through the chain in the inner or outer radius, so that the cables can still move relative to one another and to the chain.



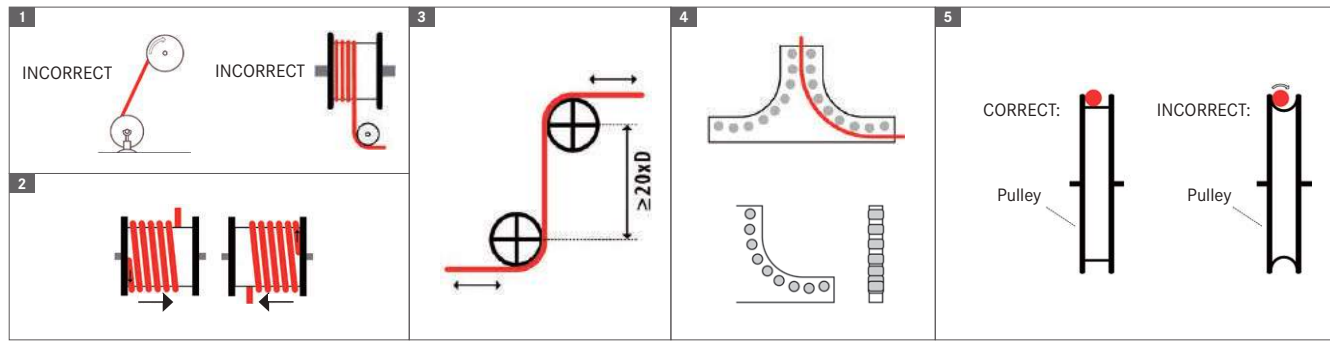
11. If a cable does not run smoothly, i.e. if it becomes twisted along the longitudinal axis during operation, the cable should be rotated gradually at one of the fastening points until it runs smoothly again.

12. The length-changing characteristics of a cable and a chain differ considerably from one another in terms of their absolute sizes. In the first few hours of operation, cables undergo natural lengthening. With chains, it takes many hours of operation for this effect to take place. This oppositional behaviour should be addressed by regularly checking the installation position of the cables. We recommend carrying out the inspections regularly, every three months, in the first year of operation – after they should be carried out whenever a maintenance interval is due. This involves checking that the cables in the bending radius can move completely freely. It may be necessary to make readjustments. We recommend incorporating the maintenance instructions into the inspection plan of the system.

13. The travel distance (L) results from 2 x chain length (LS)



### ÖLFLEX® CRANE NSHTÖU, ÖLFLEX® CRANE VS (N)SHTÖU and ÖLFLEX® CRANE PUR



- The delivery drum must be transported as close as possible to the installation location. Avoid rolling the cable drum unnecessarily. If it is not possible to transport the drum directly to the system, we recommend unreeling the cable from the drum using guide pulleys. A drag rope and a cable grip should also be used.
- The cable can only be unreeled using cable stands or unwinders and only from above. When doing so, the cable must also be stretched out straight, and must not be deflected or pulled over any sharp edges. The cable temperature should not fall below +5 °C during this process (Lapp's recommendation).
- The entire length of cable must be laid out prior to installation. Avoid rewinding the cable from the delivery drum directly onto the unit drum. When laying the cable, avoid "S"-shaped bends or other similar deflections. The cable must be free of twists when wound on the unit drum. Likewise, it must be possible to connect and fasten the cable to the feed-in point without any twisting. (fig. **1**).
- The core layer structure of windable ÖLFLEX® CRANE cables has an "S"-shaped core stranding design. We therefore strongly recommend that you ensure the first layer of the cable is wound onto the drum in the correct direction, depending on the feed-in position of the cable alongside the drum body, as shown in the figure **2**. Otherwise the cores could become damaged.
- If a feed-in point is passed over during operation, a pulling protection drum with the correct diameter should be used underneath the travel path. At least 1-2 cable windings should be placed on this drum in order to evenly distribute the tensile forces. A deflection funnel with a defined radius should be applied above the drum.
- To fasten the cable to the feed-in point, it is absolutely necessary to use sufficiently large clamps or cable support grips in order to ensure cable-friendly strain relief. The clearance between the fastening and the drum should be at least 40 x D.
- With a fully unreeled cable, at least 2 cable windings should remain on the unit drum to provide strain relief.
- The bending diameter for ÖLFLEX® CRANE NSHTÖU, on cables with an outer diameter of up to 21.5 mm, must not be less than 10 times the cable diameter, and 12.5 times for cables with larger outer diameters. With ÖLFLEX® CRANE VS (N)SHTÖU and ÖLFLEX® CRANE PUR, the bending diameter must be at least 15 times greater than the cable diameter. The relevant minimum bending radius is listed both on the corresponding catalogue page and the product data sheet.
- "S"-shaped bends in the cable should be avoided during operation. However, if this is not possible, the space between the deflection pulley axes must be at least 20 times the cable diameter for cables with an outer diameter of less than 21.5 mm, and at least 25 times for cables with larger outer diameters. Cables which are suitable for this application are listed in selection table A3-2. (fig. **3**).
- For the installation and operation of the cables ÖLFLEX® CRANE VS (N)SHTÖU and ÖLFLEX® CRANE PUR, the maximum tension load of the cable should be observed for each dimension based on the integrated supporting elements (see product page in catalogue). For cables with large outer diameters (approximately 21.5 mm and above), we recommend using guide pulleys to minimise friction on the outer sheath when changing direction. (fig. **4**).
- In order to prevent the cable from twisting, the inner contact surface of the pulley must not have a concave shape. To ensure that the cable runs smoothly, the inner width of the guiding groove must be at least 10% greater than the outer diameter of the cable. (fig. **5**).
- These cables fulfil the requirements stipulated by VDE 0250 and VDE 0298-3 (use/installation). Any loads exceeding those specified will reduce the service life of the cable:

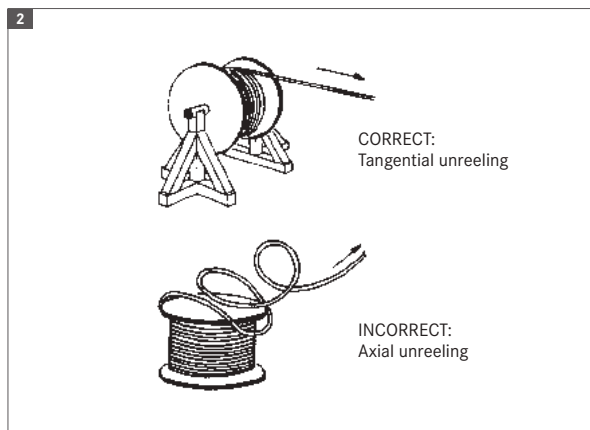
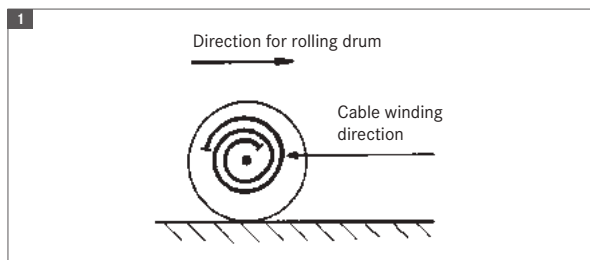
## Lift/elevator control cables – ÖLFLEX® LIFT, ÖLFLEX® LIFT T, ÖLFLEX® LIFT S

### A General information

1. The cables must be free of twists when being installed, and this should be done at temperatures of at least +5 °C. VDE 0298-4/Lapp table T12, column C applies for the current rating values.
2. The inner bending radius of the cable must not be less than 20 times the outer cable diameter.
3. The maximum suspension length depends on the supporting element in the cable in each case (see the products catalogue pages).
4. The delivery drum must be transported to (or as close as possible to) the installation location. If possible, avoid rolling the drum. If the drum must be rolled, only move the drum in the specified direction (see fig. 1).

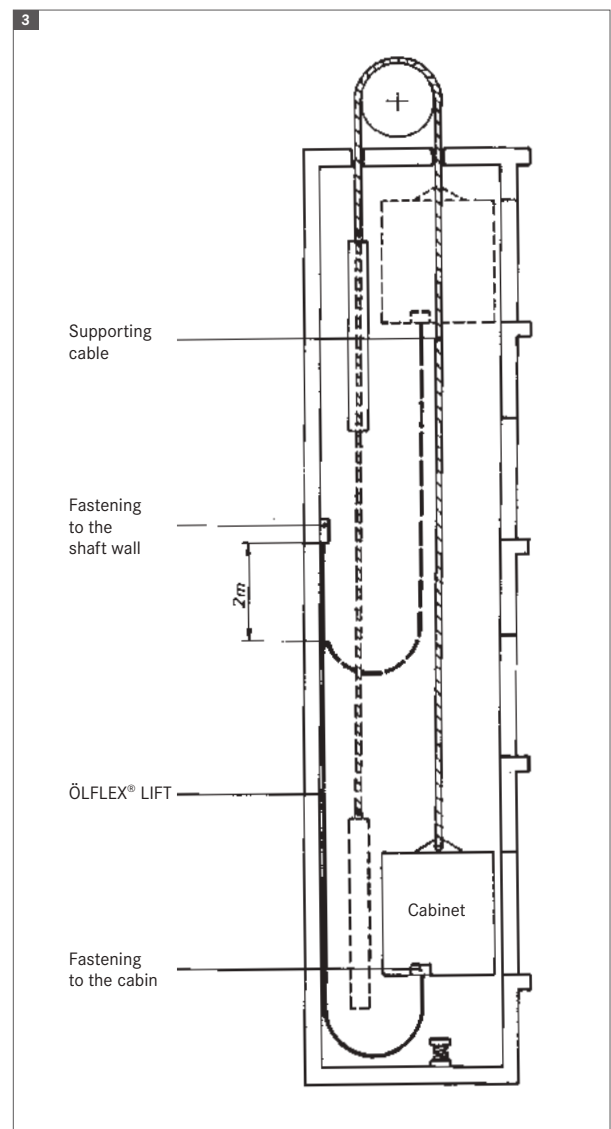
### B Suspending the cables

1. When pulling the cables into the shaft, unreel them tangentially from the drum. Unreeling the cable axially from the drum will result in the cable twisting and will affect the core stranding, which may in turn cause malfunctions (see fig. 2).
2. To ensure the cable is fitted without twists, allow the cable to briefly hang freely in the shaft. The best way to do this is to pull the control cable into the lift shaft from the bottom of the shaft.
3. The gap between the lift cabin and bottom of the shaft must be sufficiently large, and must be used in full for the cable loop height (see fig. 3).



### C General information

1. It is essential that sufficiently large clamps are used to secure the cables (e.g. Lapp cable wedge clamps type EKK or DKK). For suspension lengths greater than 50 m, the supporting element must also be damped separately.
2. The fastening point on the shaft wall must be at least 2 m above the centre of the travel distance (see fig. 3).
3. If the cable does not run smoothly, i.e. if the cable leaves the max. gradient line during operation, rotate the control cable slightly at one of the fastening points until the cable runs smoothly again.
4. If several control cables need to be installed for the lift unit, for technical reasons we recommend suspending the individual cables such that the height of the various loops differs by approx. 15 cm (stepped suspension).





## Type designations

### Type designations for control cables and harmonised cables (excerpts)

#### Control cables

□ □ □ □ □ □ □ x □  
1 2 3 4 5 6 7 8

##### 1. Basic type

N VDE standard  
(N) in line with VDE

##### 2. Insulating material

Y Thermoplastic resins  
X Cross-linked thermoplastic resins  
G Elastomers  
HX Halogen-free materials

##### 3. Cable designation

A Core cable  
D Solid wire  
AF Fine-wire core cable  
F Socket core  
L Fluorescent tube cable  
LH Connecting cable,  
light mechanical loads  
MH Connecting cable,  
moderate mechanical loads  
SH Connecting cable,  
heavy mechanical loads  
SSH Connecting cable for special loads  
SL Control cable/welding cable  
S Control cable  
LS Light control cable  
FL Flat cable  
Si Silicone cable  
Z Twin cable  
GL Glass fibre  
Li Braided conductor as per VDE 0812  
LiF Braided conductor as per VDE 0812,  
extra-fine wire

##### 4. Special features

T Supporting element  
Ö Enhanced oil resistance  
U Flame-retardant  
w Heat-resistant, weather-resistant  
FE Insulation retained for a limited time  
C Screening braid  
D Screening as Cu wire wrapping  
S Steel wire braiding as mech. protection

##### 5. Sheaths

As point 2.  
"Insulating material" P/PUR polyurethane

##### 6. Protective conductor

-O Without protective conductor  
-J With protective conductor

##### 7. Number of cores

... number of cores

##### 8. Conductor cross-section

Figures in mm<sup>2</sup>

**EXAMPLE: NSHTÖU 24G 1.5**  
ÖLFLEX® CRANE NSHTÖU cable, 24-core,  
with protective cond., cross-section: 1.5 mm<sup>2</sup>

#### Harmonised cables

□ □ □ □ □ - □ □ □ □  
1 2 3 4 5 6 7 8 9

##### 1. Basic type

H Harmonised type  
A National type  
X or S in the style of a harmonized type

##### 2. Nominal voltage

01 100/100 volts  
03 300/300 volts  
05 300/500 volts  
07 450/750 volts

##### 3. Insulating material

V PVC  
V2 PVC +90 °C  
V3 PVC flexible at cold temperatures  
B Ethylene propylene rubber  
E PE polyethylene  
X XPE, cross-linked PE  
R Rubber  
S Silicone rubber

##### 4. Outer/inner sheath material

V PVC  
V2 PVC +90 °C  
V3 PVC flexible at cold temperatures  
V5 PVC with enhanced oil resistance  
R Rubber  
N Chloroprene based rubber  
Q Polyurethane  
J Glass fibre braiding  
T Textile braiding  
S Silicone rubber

##### 5. Special features

C4 Copper wire screen braiding  
H Flat cable, divisible  
H2 Flat cable, not divisible  
H6 Flat cable, not divisible,  
for lifts  
H8 Helical/spiral cable

##### 6. Conductor type

U Single-wire  
R Multi-wire  
K Fine-wire (fixed installation)  
F Fine-wire (flexible installation)  
H Extra-fine wire  
Y Tinsel wire  
D Fine-wire conductor  
for welding cable  
E Extra-fine wire conductor  
for welding cable

##### 7. Number of cores

... number of cores

##### 8. Protective conductor

X Without protective conductor  
G With protective conductor

##### 9. Conductor cross-section

Figures in mm<sup>2</sup>

**EXAMPLE: H05 VV-F 3G 1.5**  
Medium PVC hose, 3-core,  
with protective cond., cross-section: 1.5 mm<sup>2</sup>

#### Telecommunications cables

□ □ - □ □ □ □ x □ x □ □ □  
1 2 3 4 5 6 7 8 9 10

##### 1. Basic type

A- Outdoor cable  
G- Mining cable  
J- Installation cable  
Li Stranded conductor, flexible cable  
S- Jumper cable

##### 2. Additional designation

J Induction protection  
E Electronics

##### 3. Insulating material

Y PVC  
11Y PUR  
2Y Polyethylene  
O2Y Cellular PE  
9Y PP  
5Y PTFE  
6Y FEP  
7Y ETFE  
H Halogen-free compound

##### 4. Special features

C Copper screen braiding  
D Copper wrapping  
(ST) Metal foil screening  
(L) Aluminium strip  
F Petroleum jelly filling  
LD Corrugated aluminium sheath  
(K) Copper strip screening  
(Z) Steel wire braiding  
W Corrugated steel sheath  
b Armouring

##### 5. Sheathing

(see point 3. "Insulating material")

##### 6. Number of elements

... number of stranding elements

##### 7. Stranding element

1 Single core  
2 Pair  
3 Triple

##### 8. Conductor diameter or cross section

... in mm or mm<sup>2</sup>

##### 9. Stranding element

St Star quad (phantom)  
StI Star quad (trunk cable)  
StIII Star quad (local cable)  
TF Star quad for TF  
S Signal cable (railway)  
PiMF Screened pair  
(TP) Twisted Pair  
PiD Pairs in copper wrapping

##### 10. Stranding type

Lg Twisted into layers  
Bd Twisted into bundles

**EXAMPLE: A2Y(L)2Y 6 x 2 x 0.8 Bd**  
Telephone cable for local network  
with PE insulation and layered sheath

# Type designations for telecommunications cables and fibre-optic cables

## Fibre-optic cables



### 1. Basic type

- A Outdoor cable
- AT Outdoor cable, divisible
- J Indoor cable
- J/A or U Indoor/outdoor cable, universal cable

### 2. Fibres

- B Loose tube, unfilled
- D Loose tube, filled
- V Tight-buffered fibres

### 3. Design elements

- F Petroleum jelly filling
- Q Swelling tape

### 4. Further design elements

- S Metal element in cable core

### 5. Sheath

- 2Y PE sheath
- 11Y PUR sheath
- H Halogen-free sheath
- (ZM) With metallic strain relief elements
- (ZN) With non-metallic strain relief elements
- (ZN)2Y PE sheath with non-metallic strain relief elements

### 6. Armouring

- B Armouring
- B2Y Armouring with PE casing
- (BN) Glass yarn armouring
- (SG) Steel sheath
- (SR) Corrugated steel sheath
- (SR)2Y Corrugated steel sheath with PE casing

### 7. Number of fibres

Number of fibres

### 8. Fibre type

- E Single-mode fibre glass/glass (SM GOF)
- G Gradient fibre glass/glass (MM GOF)
- K Step fibre glass/plastic (PCF)
- P Polymer optical fibre/plastic (POF)

### 9. Core diameter/fibre sheath diameter

- 50/125 Multimode glass fibre
- 62.5/125 Multimode glass fibre
- 9/125 Single-mode glass fibre
- 200/230 Plastic-coated glass fibre
- 980/1000 Polymer optical fibre

### 10. Category: fibre quality

- OM4 For 50/125 OM4 multimode fibres
- OM3 For 50/125 OM3 multimode fibres
- OM2 For 50/125 OM2 multimode fibres
- OM1 For 62.5/125 OM1 multimode fibres
- OS2 For 9/125 OS2 Single-mode fibres (G 652D)

#### EXAMPLE 1: A-DQ(ZN)(SR)2Y 12G 50/125 OM3

Outdoor cable with corrugated steel sheath, central loose tube, non-metallic strain relief made of glass yarn, 12 fibres, 50/125 µm OM3 multimode fibres

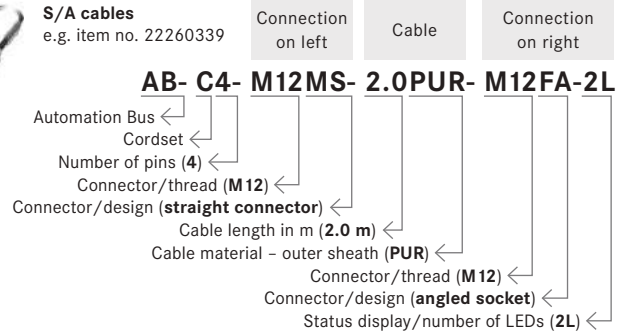
#### EXAMPLE 2: J-V2Y(ZN)11Y 2P 980/1000

Plastic fibre-optic cable, two-fibre (duplex), indoor cable with PE inner sheath, non-metallic strain relief, PUR outer sheath

## Type designations for UNITRONIC® field bus



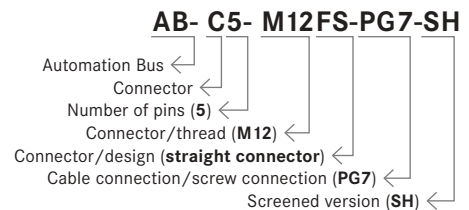
S/A cables  
e.g. item no. 22260339



- MS - straight connector
- MA - angled connector
- FS - straight socket
- FA - angled socket
- M8, M12, M16, M23 - thread
- L - status display/LEDs
- SH - screened version
- HD - Hygienic Design
- VA - stainless steel knurl
- M12Y - M12 Y connector
- B - bridged
- 3-, 4-, 5-, 8-, .. number of pins
- A, AD, B, BI, C, CI - valve connector type
- S - valve connector with Z diode
- SV - valve connector with varistor
- SVC - valve connector with varistor and commutator
- SUP - valve connector with suppressor diode



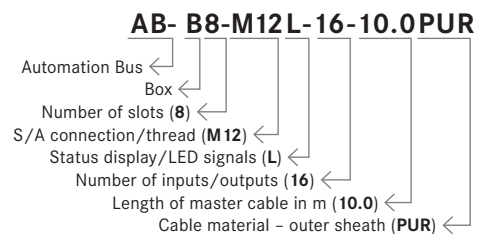
Ready-made connector e.g. item no. 22260127



- MS - straight connector
- MA - angled connector
- FS - straight socket
- FA - angled socket
- P - piercing connection
- SH - screened version
- M8, M12, M16, M23 - thread
- 3-, 4-, 5-, 8-, .. number of pins
- PG7, PG9, PG11, PG13 - cable connection
- F0.34 (fast connection, max. 0.34 mm² cond. cross-sec.)
- F0.75 (fast connection, max. 0.75 mm² cond. cross-sec.)
- M16-0.5 (M16 flush-type conn. with 0.5 m PUR strand)
- PG9-0.5 (PG9 flush-type conn. with 0.5 m PUR strand)
- DSI - flush-type connector (rear wall mounting)
- PO - flush-type connector (can be positioned)



S/A passive distributor box e.g. item no. 22260025



INFO: S/A box with double assignment →  $\frac{(\text{number of inputs/outputs})}{(\text{number of slots})} = 2$

- PUR - distributor box with perm. connected master cable (PUR)
- C - distributor box with master cable conn. (pluggable screw connection)
- M8L - distributor box with M8 slots and LED signals
- M16 - distributor box with M16 master cable conn.
- M12 - distributor box with M12 master cable conn.

Further abbreviations:

- AB-PC - Automation Bus Power Cable
- AB-PB - Automation Bus PROFIBUS
- AB-DN - Automation Bus DeviceNet
- AB-CAN - Automation Bus CAN
- AB-ASI - Automation Bus AS-Interface
- AB-ASI-J - AS-Interface distributor
- DI - Digital Inputs
- DO - Digital Outputs
- R - Relay outputs

Core ID code for ÖLFLEX® cables

## Colour code for ÖLFLEX® cables

The colour code applies to the following cables starting from 6 cores: ÖLFLEX® CLASSIC 100, ÖLFLEX® CLASSIC 100 CY, ÖLFLEX® CLASSIC 100 SY and ÖLFLEX® CLASSIC 100 BK 0,6/1 KV. It contains colours and colour combinations for up to 102 cores, and consists of 11 basic colours. The different variations of the basic colours are achieved by using one or two coloured stripes, meaning each core can be easily distinguished from the rest. The VDE colour code applies for cables with up to 5 cores (inclusive). Please also see T9. The cores are counted from the inside to the outside, and the green/yellow core is always the last core in the outer layer.

### Basic colours

0	green/yellow	
1	white	
2	black	
3	blue	
4	brown	
5	grey	
6	red	
7	violet	
8	pink	
9	orange	
10	transparent	
11	beige	

### Basic colours with white stripe

12	black/white	
13	blue/white	
14	brown/white	
15	grey/white	
16	red/white	
17	violet/white	
18	pink/white	
19	orange/white	
20	transparent/white	
21	beige/white	

### Basic colours with black stripe

22	blue/black	
23	brown/black	
24	grey/black	
25	red/black	
26	violet/black	
27	pink/black	
28	orange/black	
29	transparent/black	
30	beige/black	

### Basic colours with blue stripe

31	brown/blue	
32	grey/blue	
33	red/blue	
34	pink/blue	
35	orange/blue	
36	transparent/blue	
37	beige/blue	

### Basic colours with brown stripe

38	grey/brown	
39	red/brown	
40	violet/brown	
41	pink/brown	
42	orange/brown	
43	transparent/brown	
44	beige/brown	

### Basic colours with grey stripe

45	red/grey	
46	violet/grey	
47	pink/grey	
48	orange/grey	
49	transparent/grey	
50	beige/grey	

### Basic colours with red stripe

51	orange/red	
52	transparent/red	
53	beige/red	

### Basic colours with violet stripe

54	pink/violet	
55	orange/violet	
56	transparent/violet	
57	beige/violet	

### Basic colours with pink stripe

58	transparent/pink	
59	beige/pink	

### Basic colours with orange stripe

60	transparent/orange	
61	beige/orange	

### Basic colours with white/black stripes

62	blue/white/black	
63	brown/white/black	
64	grey/white/black	
65	red/white/black	
66	violet/white/black	
67	pink/white/black	
68	orange/white/black	
69	transp./white/black	
70	beige/white/black	

### Basic colours with white/blue stripes

71	brown/white/blue	
72	grey/white/blue	
73	red/white/blue	
74	violet/white/blue	
75	pink/white/blue	
76	orange/white/blue	
77	transp./white/blue	
78	beige/white/blue	

### Basic colours with white/brown stripes

79	grey/white/brown	
80	red/white/brown	
81	violet/white/brown	
82	pink/white/brown	
83	orange/white/brown	
84	transp./white/brown	
85	beige/white/brown	

### Basic colours with white/grey stripes

86	red/white/grey	
87	violet/white/grey	
88	pink/white/grey	
89	orange/white/grey	
90	transp./white/grey	
91	beige/white/grey	

### Basic colours with white/red stripes

92	blue/white/red	
93	brown/white/red	
94	violet/white/red	
95	pink/white/red	
96	orange/white/red	

### Basic colours with white/violet stripes

97	brown/white/violet	
98	orange/white/violet	











### Basic colours with black/blue stripes

99	brown/black/blue	
100	grey/black/blue	
101	red/black/blue	








## Colour code for UNITRONIC® 100 cables

It contains colours and colour combinations for up to 102 cores, and consists of 10 basic colours. The different variations of the basic colours are achieved by using one or two coloured stripes, or by ring marking, meaning each core can be easily distinguished from the rest. The cores are counted from the inside to the outside, and the green/yellow core is always the last core in the outer layer.

### Basic colours

0	green/yellow	
1	black	
2	blue	
3	brown	
4	beige	
5	yellow	
6	green	
7	violet	
8	pink	
9	orange	
10	transparent	









### Basic colours with white stripe

11	red/white	
12	blue/white	
13	yellow/white	
14	green/white	
15	violet/white	
16	orange/white	
17	brown/white	







### Basic colours with red stripe

18	blue/red	
19	yellow/red	
20	green/red	
21	white/red	
22	orange/red	
23	brown/red	

### Basic colours with black stripe

24	red/black	
25	blue/black	
26	yellow/black	
27	green/black	
28	violet/black	
29	white/black	
30	orange/black	
31	brown/black	





### Basic colours with green stripe

32	red/green	
33	grey/green	
34	violet/green	
35	white/green	
36	orange/green	
37	brown/green	

### Basic colours with yellow stripe

38	red/yellow	
39	blue/yellow	
40	violet/yellow	
41	white/yellow	
42	brown/yellow	

### Basic colours with blue stripe

43	red/blue	
44	white/blue	
45	orange/blue	
46	brown/blue	

### Basic colours with violet stripe

47	yellow/violet	
48	green/violet	
49	white/violet	
50	orange/violet	
51	brown/violet	




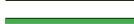



### Basic colour: black, coloured stripe

52	black/white	
53	black/yellow	
54	black/red	
55	black/green	
56	black/blue	
57	black/violet	





### Basic colour: grey, coloured stripe

58	grey/white	
59	grey/black	
60	grey/yellow	
61	grey/red	
62	grey/blue	
63	grey/violet	

### Basic colours with grey stripe

64	red/grey	
65	blue/grey	
66	yellow/grey	
67	green/grey	
68	violet/grey	
69	white/grey	
70	orange/grey	

### Basic colours with white/red stripes

71	blue/white/red	
72	yellow/white/red	
73	green/white/red	
74	brown/white/red	





### Basic colours with white/black stripes

75	red/white/black	
76	blue/white/black	
77	yellow/white/black	
78	green/white/black	
79	violet/white/black	
80	orange/white/black	
81	brown/white/black	





### Basic colours with white/green stripes

82	red/white/green	
83	yellow/white/green	
84	violet/white/green	
85	orange/white/green	
86	brown/white/green	






### Basic colours with white/blue stripes

87	red/white/blue	
88	yellow/white/blue	
89	orange/white/blue	
90	brown/white/blue	




### Basic colours with white/violet stripes

91	yellow/white/violet	
92	green/white/violet	
93	orange/white/violet	
94	brown/white/violet	

### Basic colours with red/black stripes

95	blue/red/black	
96	yellow/red/black	
97	green/red/black	
98	white/red/black	
99	brown/red/black	

### Basic colours with red/green stripes

100	yellow/red/green	
101	white/red/green	
102	orange/red/green	

## Table 8-1: international colour codes for extension and compensating cables

Thermo couple							
		IEC 60584-3	DIN 43710*	ANSI MC 96.1	BS 4937	NF C 42-324	
Material ⊕ ⊖	Designation	XC		XC		XC	
		Designation	CC	Designation	CC	Designation	CC
T	Cu - CuNi	TX  -25 °C up to +100 °C			TX  0 °C up to +100 °C	TX  0 °C up to +100 °C	TX  -25 °C up to +100 °C
U	Cu - CuNi		UX  0 °C up to +200 °C				
J	Fe - CuNi	JX  -25 °C up to +200 °C			JX  0 °C up to +200 °C	JX  0 °C up to +200 °C	JX  -25 °C up to +200 °C
L	Fe - CuNi		LX  0 °C up to +200 °C				
E	NiCr - CuNi	EX  -25 °C up to +200 °C			EX  0 °C up to +200 °C	EX  0 °C up to +200 °C	EX  -25 °C up to +200 °C
K	NiCr - Ni	KX  -25 °C up to +200 °C	KX  0 °C up to +200 °C	KX  0 °C up to +200 °C	KX  0 °C up to +200 °C	KX  -25 °C up to +200 °C	
K	NiCr - Ni	KCA  0 °C up to +150 °C	KCA  0 °C up to +150 °C			WC  0 °C up to +150 °C	
	NiCr - Ni	KCB  0 °C up to +100 °C			VX  0 °C up to +100 °C	VC  0 °C up to +100 °C	
N	NiCrSi - NiSi	NX  -25 °C up to +200 °C    0 °C up to +150 °C					
R S	PtRh 13 - Pt PtRh 10 - Pt	RCB SCB  0 °C up to +200 °C	RCB SCB  0 °C up to +200 °C	SX  0 °C up to +200 °C	SX  0 °C up to +200 °C	SC  0 °C up to +200 °C	
B	PtRh30 - PtRh6			BX  0 °C up to +100 °C		BC  0 °C up to +100 °C	

The stated temperature specifies the application temperature range for each type.  
The application temperature range must be reduced if it is required by the insulation material used for the cable.  
\*DIN 43710 was withdrawn in April 1994.

XC = extension cables  
CC = compensating cables

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

**Table 8-2: temperature measurement with thermo couples**

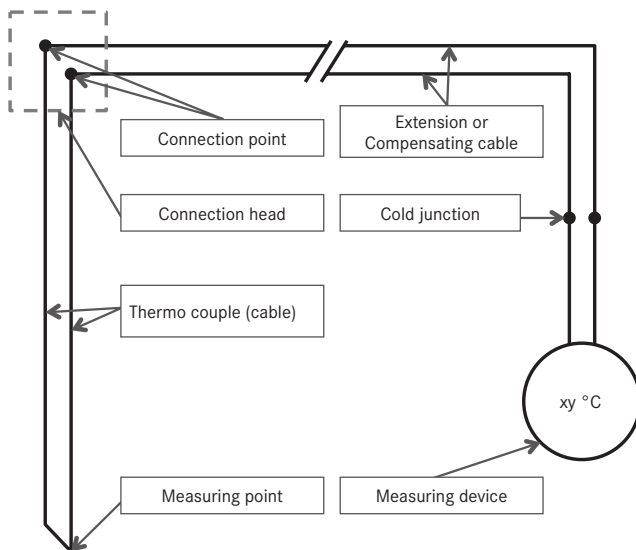
**The measurement principle:**

The thermoelectric effect describes a thermal voltage that arises between two different electrical conductors with a temperature difference between both ends.

This effect can be used by thermocouples, which consist of two metals or alloys that produce a specific thermal voltage as thermocouple.

By means of this thermal voltage, the temperature difference between the contact points, which are usually the measuring point and the cold junction, are determined as being associated with a temperature value for each thermocouple voltage. The cold junction must have a known and constant temperature in order to determine the temperature difference to the measurement point exactly.

For the cabling between measuring point and connection point thermo couple cables are typically used. Between connection point and cold junction extension or compensating cables are typically used to transmit the voltage signal.



**Three types of cables:**

**Thermo couple cables:**

- Type code of the thermo couple (K, R...)
- Approved for the temperature range of the thermo couple (Type K → up to +1200°C)
- Same alloy as thermo couple (NiCr/Ni contains NiCr/Ni)
- Used as thermo couple, between measuring point and connection point or cold junction

**Extension cables (XC):**

- Type code of the thermo couple + "X" (KX, LX...)
- Approved for the application temperature range (Type KX → up to +200°C)
- Same alloy as thermo couple (NiCr/Ni contains NiCr/Ni)
- Generally used as connecting cable between connection point and cold junction

**Compensating cables (CC):**

- Type code of the thermo couple + "C" and sometimes supplemented with code a for different compensating alloys (KCA, RCB/SCB...)
- Approved for the application temperature range (Type KCA → up to +150°C)
- Compensating alloys (KCA (NiCr/Ni) contains special Fe/CuNi)
- Generally used as connecting cable between connection point and cold junction

**These alloys are used for the cables:**

Type	Positive conductor	Negative conductor
TX	Cu	CuNi
JX	Fe	CuNi
LX	Fe	CuNi
EX	NiCr	CuNi
K	NiCr	Ni
KX	NiCr	Ni
KCA	Fe	CuNi
NX	NiCrSi	NiSi
NC	Cu	CuNi
RCB/SCB	Cu	CuNi

**Criteria for the selection of cable:**

**The thermo couple type:**

Each thermo couple has its own specific thermo electric properties. If different thermocouples are mixed, measurement errors arise.

**The ambient temperature to which the cable is exposed:**

The ambient temperature is the decisive factor for the selection of the insulation and jacket material for the cable. The application temperature range must be reduced if it is required by the insulation material used for the cable.

Insulation and jacket material	temperature range fixed installed
PVC	-25 °C up to +80 °C
Silicone	-50 °C up to +180 °C
Glass fibre	-50 °C up to +200 °C
FEP	-100 °C up to +205 °C
E-Glass	-90 °C up to +400 °C
Ceramic yarn	up to +1200 °C

**The ambient temperature at the connection point:**

Each extension and compensating cable is suitable for a specific application temperature range. That means the cable has the same thermo electric properties as the thermo couple within this application temperature range. Please find the application temperature range on table T8.1.

**Specialities of the cables:**

- The iron conductor is often copper-coated. This should protect the conductor from corrosion. The iron conductor is magnetic and can easily be identified by this characteristic.
- For the thermo couples R and S the thermo electric properties are the same within the application temperature up to +200°C, therefore only one compensating cable (RCB/SCB) is used for both types.

Core ID code as per VDE colour code

## VDE 0293-308/HD 308 S2 Core ID code for colour-coded low-voltage cables

For marking cores in multi- and several-core cables for use in electrical systems and distribution systems.  
For the supply of permanently secured or portable supplies and for portable equipment cables. 3a and 4a: only suitable for specific applications.

Number of cores	Cables with protective conductor (code J or G)	Cables without protective conductor (code O or X)	Cables with concentric conductor
2	-	BU/BN	BU/BN
3	GNYE/BN/BU	BN/BK/GY	BN/BK/GY
3a	-	BU/BN/BK	BU/BN/BK
4	GNYE/BN/BK/GY	BU/BN/BK/GY	BU/BN/BK/GY
4a	GNYE/BU/BN/BK	-	-
5	GNYE/BU/BN/BK/GY	BU/BN/BK/GY/BK	BU/BN/BK/GY/BK
6 and above	GNYE/BK with printed numbers	BK with printed numbers	BK with printed numbers

## Colour code for power cables as per VDE 0293 (old) – (colour codes are listed in IEC 60757)

For marking cores in multi- and several-core cables for connecting portable power consumers.

Number of cores	Cables without green/yellow core (currently not yet harmonised)	Cables without green/yellow core (currently not yet harmonised)	Cables with concentric conductor
2	-	BU/BN	-
3	GNYE/BN/BU	BU/BN/BK	-
3	-	BU/BN/BK	-
4	GNYE/BK/BU/BN	BU/BN/BK/GY	-
5	GNYE/BK/BU/BN/BK	BU/BN/BK/GY/BK	-
6 and above	GNYE/further cores in BK with printed numbers, starting from the inside with 1, GNYE in the outer layer	BK with printed numbers	-

For marking cores in multi- and several-core cables and in multi-core cables for fixed installation.

Number of cores	Cables with green/yellow core (code -J-)	Cables without green/yellow core (code -O-)	Cables with concentric conductor
2	-	BK/BU	BK/BU
3	GNYE/BK/BU	BN/BU/BK	BK/BU/BN
3	-	BN/BK/BU	-
4	GNYE/BK/BU/BN	BK/BN/BU/BK	BK/BU/BN/BK
5	GNYE/BK/BU/BN/BK	BK/BN/BU/BK/BK	-
6 and above	GNYE/further cores in BK with printed numbers, starting from the inside with 1, GNYE in the outer layer	Cores in BK with printed numbers, starting from the inside with 1	Cores in BK with printed numbers, starting from the inside with 1

**DIN 47100/January 1988 – colour code for UNITRONIC® twisted pair**

Each pair has an a-core and a b-core. The marking is repeated for the first time as from 23 pairs, and for the second time as from 45 pairs. The first colour is always the basic colour of the core, and the second colour is printed in rings.

Pair no.	Colour of a-core	Colour of b-core	Pair no.	Colour of a-core	Colour of b-core
1	white	brown	13	white/black	brown/black
2	green	yellow	14	grey/green	yellow/grey
3	grey	pink	15	pink/green	yellow/pink
4	blue	red	16	green/blue	yellow/blue
5	black	violet	17	green/red	yellow/red
6	grey/pink	red/blue	18	green/black	yellow/black
7	white/green	brown/green	19	grey/blue	pink/blue
8	white/yellow	yellow/brown	20	grey/red	pink/red
9	white/grey	grey/brown	21	grey/black	pink/black
10	white/pink	pink/brown	22	blue/black	red/black
11	white/blue	brown/blue	23-44	see 1 - 22	see 1 - 22
12	white/red	brown/red	45-66	see 1 - 22	see 1 - 22

**DIN 47100 colour code (but differs from DIN as the colours are not repeated after the 44th core)**

Exception: 4-core line, which has a sequence of white, yellow, brown, green.

Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour
1	white	14	brown/green	27	grey/green	40	pink/red	53	white/grey/black
2	brown	15	white/yellow	28	yellow/grey	41	grey/black	54	grey/brown/black
3	green	16	yellow/brown	29	pink/green	42	pink/black	55	white/pink/black
4	yellow	17	white/grey	30	yellow/pink	43	blue/black	56	pink/brown/black
5	grey	18	grey/brown	31	green/blue	44	red/black	57	white/blue/black
6	pink	19	white/pink	32	yellow/blue	45	white/brown/black	58	brown/blue/black
7	blue	20	pink/brown	33	green/red	46	yellow/green/black	59	white/red/black
8	red	21	white/blue	34	yellow/red	47	grey/pink/black	60	brown/red/black
9	black	22	brown/blue	35	green/black	48	red/blue/black	61	black/white
10	violet	23	white/red	36	yellow/black	49	white/green/black		
11	grey/pink	24	brown/red	37	grey/blue	50	brown/green/black		
12	red/blue	25	white/black	38	pink/blue	51	white/yellow/black		
13	white/green	26	brown/black	39	grey/red	52	yellow/brown/black		

**Colour code for UNITRONIC® 300 & 300 S (20 – 16 AWG)**

Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour
1	black	11	pink	21	white/brown	31	white/black/grey	41	white/green/red
2	red	12	light brown	22	white/orange	32	white/black/violet	42	white/green/green
3	white	13	red/green	23	white/grey	33	white/black/black	43	white/green/blue
4	green	14	red/yellow	24	white/violet	34	white/red/black	44	white/green/brown
5	orange	15	red/black	25	white/black/red	35	white/red/red	45	white/green/violet
6	blue	16	white/black	26	white/black/green	36	white/red/green	46	white/blue/black
7	brown	17	white/red	27	white/black/yellow	37	white/red/blue	47	white/blue/red
8	yellow	18	white/green	28	white/black/blue	38	white/red/brown	48	white/blue/green
9	violet	19	white/yellow	29	white/black/brown	39	white/red/violet	49	white/blue/blue
10	grey	20	white/blue	30	white/black/orange	40	white/green/black	50	white/blue/brown

**Colour code for UNITRONIC® 300 & 300 S (24 – 22 AWG)**

Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour	Core no.	Colour
1	black	11	white/black	21	white/black/red	31	white/brown/green	41	white/orange/yellow
2	brown	12	white/brown	22	white/black/orange	32	white/brown/blue	42	white/orange/green
3	red	13	white/red	23	white/black/yellow	33	white/brown/violet	43	white/orange/blue
4	orange	14	white/orange	24	white/black/green	34	white/brown/grey	44	white/orange/violet
5	yellow	15	white/yellow	25	white/black/blue	35	white/red/orange	45	white/orange/grey
6	green	16	white/green	26	white/black/violet	36	white/red/yellow	46	white/yellow/green
7	blue	17	white/blue	27	white/black/grey	37	white/red/green	47	white/yellow/blue
8	violet	18	white/violet	28	white/brown/red	38	white/red/blue	48	white/yellow/violet
9	grey	19	white/grey	29	white/brown/orange	39	white/red/violet	49	white/yellow/grey
10	white	20	white/black/brown	30	white/brown/yellow	40	white/red/grey	50	white/green/blue



Core ID code as per VDE colour code for telephone cables

## Core ID code as per VDE colour code for telephone cables

### Colour code for J-Y(ST)Y... LG as per DIN VDE 0815

The colour of the a-core of each first pair in a layer is red (counting pair), for all other pairs the a-core is white. The colour of the b-core is blue, yellow, green, brown, black, repeating continuously as follows:

Colour of the b-core	Number of pair									
blue	1	6	11	16	21	26	31	36	41	46
yellow	2	7	12	17	22	27	32	37	42	47
green	3	8	13	18	23	28	33	38	43	48
brown	4	9	14	19	24	29	34	39	44	49
black	5	10	15	20	25	30	35	40	45	50
blue	51	56	61	66	71	76	81	86	91	96
yellow	52	57	62	67	72	77	82	87	92	97
green	53	58	63	68	73	78	83	88	93	98
brown	54	59	64	69	74	79	84	89	94	99
black	55	60	65	70	75	80	85	90	95	100

Beginning with the outer layer, the pairs are numbered consecutively in the same direction through all layers. The count begins with the counting element (the pair with the red a-core).

Example: J-Y(ST)Y 10x2x0.8 LG

Outer layer 8 pairs: rd-bu, wh-ye, wh-gn, wh-bn, wh-bk, wh-bu, wh-ye, wh-gn

Inner Layer 2 pairs: rd-bn, wh-bk

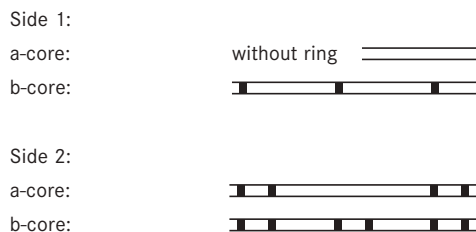
#### Exemption:

The twin-pair installation cable is twisted into a star quad:

- Side 1: a-core: red,  
b-core: black,
- Side 2: a-core: white,  
b-core: yellow.

### Colour code for A-2Y(L)2Y... ST III BD and A-2YF(L)2Y... ST III BD as per DIN VDE 0816 and for J-H(ST)H... BD and J-2Y(ST)Y... ST III BD as per DIN VDE 0815

The cores are marked by black rings. One star quad is:



The cores of a star quad for each bundle are identified by the base colours of the insulation sheath, which are repeated in the same sequence in each bundle:

- Quad 1: base colour red
- Quad 2: base colour green
- Quad 3: base colour grey
- Quad 4: base colour yellow
- Quad 5: base colour white

5 Star quads (10 pairs) are stranded to a base bundle. The bundles to be counted are marked by red helices. The other bundles are marked by white helices.

### Colour code for JE-Y(ST)Y... BD and JE-LiYCY... BD as per DIN VDE 0815

The pair cores for each bundle are identified by the base colours of the insulation sheath, which are repeated in the same sequence in each bundle:

Base colour of the pairs

Pair:	1	2	3	4
a-core:	blue	grey	green	white
b-core:	red	yellow	brown	black

#### Exemption:

The twin-pair installation cable is twisted into a star quad:

- Side 1: a-core: blue,  
b-core: red,
- Side 2: a-core: grey,  
b-core: yellow.

4 pairs are stranded into a bundle. The bundles are identified by the colours of the rings on the core insulation sheaths and the arrangement of the coloured rings in groups. The ring groups are located at intervals of approx. 60 mm.

On cables with more than 12 bundles, the 13th bundle and any subsequent bundles have coloured helices. When counting the bundles, start from the innermost layer.

Bundle	Ring colour	Ring group	Bundle helix
1	pink		-
2	pink		-
3	pink		-
4	pink		-
5	orange		-
6	orange		-
7	orange		-
8	orange		-
9	violet		-
10	violet		-
11	violet		-
12	violet		-
13	pink		blue
14	pink		blue
15	pink		blue
16	pink		blue
17	orange		red
18	orange		red
19	orange		red
20	orange		red

### Conductor resistances and conductor stranding (metric)

**Conductor resistances:** up to 0.38 mm<sup>2</sup> as per DIN VDE 0812 and DIN VDE 0881 for stranded conductors, from 0.5 mm<sup>2</sup> as per IEC 60228/DIN EN 60228 (VDE 0295) for conductors made of soft-annealed copper and single and multi-core cables.

Nominal cross-section in mm <sup>2</sup>	Conductor resistances at 20 °C for 1 km in Ω (max. value)			
	made of wires with metal sheath		made of bare wires	
	Class 2	Class 5 + 6	Class 2	Class 5 + 6
0.08		252.0		243.0
0.14		148.0		138.0
0.25		79.9		79.0
0.34		57.5		57.0
0.38		52.8		48.5
0.5	36.7	40.1	36.0	39.0
0.75	24.8	26.7	24.5	26.0
1	18.2	20.0	18.1	19.5
1.5	12.2	13.7	12.1	13.3
2.5	7.56	8.21	7.41	7.98
4	4.70	5.09	4.61	4.95
6	3.11	3.39	3.08	3.30
10	1.84	1.95	1.83	1.91
16	1.16	1.24	1.15	1.21
25	0.734	0.795	0.727	0.780
35	0.529	0.565	0.524	0.554
50	0.391	0.393	0.387	0.386
70	0.270	0.277	0.268	0.272
95	0.195	0.210	0.193	0.206
120	0.154	0.164	0.153	0.161
150	0.126	0.132	0.124	0.129
185	0.100	0.108	0.0991	0.106
240	0.0762	0.0817	0.0754	0.0801
300	0.0607	0.0654	0.0601	0.0641
400	0.0475		0.0470	
500	0.0369		0.0366	
630	0.0286		0.0283	
800	0.0224		0.0221	
1000	0.0177		0.0176	

### Example conductor stranding (metric)

Cross-section in mm <sup>2</sup>	Multi-wire conductor	Several-wire conductor	Fine-wire conductor	Extra-fine wire conductor			
0.14				~ 18 x 0.10	~ 18 x 0.1	~ 36 x 0.07	~ 72 x 0.05
0.25			~ 14 x 0.15	~ 32 x 0.10	~ 32 x 0.1	~ 65 x 0.07	~ 128 x 0.05
0.34		7 x 0.25	~ 19 x 0.15	~ 42 x 0.10	~ 42 x 0.1	~ 88 x 0.07	~ 174 x 0.05
0.38		7 x 0.27	~ 19 x 0.16	~ 19 x 0.16	~ 48 x 0.1	~ 100 x 0.07	~ 194 x 0.05
0.5	7 x 0.30	7 x 0.30	~ 16 x 0.20	~ 28 x 0.15	~ 64 x 0.1	~ 131 x 0.07	~ 256 x 0.05
0.75	7 x 0.37	7 x 0.37	~ 24 x 0.20	~ 42 x 0.15	~ 96 x 0.1	~ 195 x 0.07	~ 384 x 0.05
1.0	7 x 0.43	7 x 0.43	~ 32 x 0.20	~ 56 x 0.15	~ 128 x 0.1	~ 260 x 0.07	~ 512 x 0.05
1.5	7 x 0.52	7 x 0.52	~ 30 x 0.25	~ 84 x 0.15	~ 192 x 0.1	~ 392 x 0.07	~ 768 x 0.05
2.5	7 x 0.67	~ 19 x 0.41	~ 50 x 0.25	~ 140 x 0.15	~ 320 x 0.1	~ 651 x 0.07	~ 1280 x 0.05
4	7 x 0.85	~ 19 x 0.52	~ 56 x 0.30	~ 224 x 0.15	~ 512 x 0.1	~ 1040 x 0.07	
6	7 x 1.05	~ 19 x 0.64	~ 84 x 0.30	~ 192 x 0.20	~ 768 x 0.1	~ 1560 x 0.07	
10	7 x 1.35	~ 49 x 0.51	~ 80 x 0.40	~ 320 x 0.20	~ 1280 x 0.1	~ 2600 x 0.07	
16	7 x 1.70	~ 49 x 0.65	~ 128 x 0.40	~ 512 x 0.20	~ 2048 x 0.1		
25	7 x 2.13	~ 84 x 0.62	~ 200 x 0.40	~ 800 x 0.20	~ 3200 x 0.1		
35	7 x 2.52	~ 133 x 0.58	~ 280 x 0.40	~ 1120 x 0.20			
50	~ 19 x 1.83	~ 133 x 0.69	~ 400 x 0.40	~ 705 x 0.30			
70	~ 19 x 2.17	~ 189 x 0.69	~ 356 x 0.50	~ 990 x 0.30			
95	~ 19 x 2.52	~ 259 x 0.69	~ 485 x 0.50	~ 1340 x 0.30			
120	~ 37 x 2.03	~ 336 x 0.67	~ 614 x 0.50	~ 1690 x 0.30			
150	~ 37 x 2.27	~ 392 x 0.69	~ 765 x 0.50	~ 2123 x 0.30			
185	~ 37 x 2.52	~ 494 x 0.69	~ 944 x 0.50	~ 1470 x 0.40			
240	~ 37 x 2.87	~ 627 x 0.70	~ 1225 x 0.50	~ 1905 x 0.40			
300	~ 61 x 2.50	~ 790 x 0.70	~ 1530 x 0.50	~ 2385 x 0.40			
400	~ 61 x 2.89		~ 2035 x 0.50				
500	~ 61 x 3.23		~ 1768 x 0.60				
630	~ 91 x 2.97		~ 2286 x 0.60				

**NOTE ON STANDARDS:**

- For single-wire conductors... (class 1), please see DIN EN 60228 (VDE 0295), table 1
- For multi-wire conductors... (class 2), please see DIN EN 60228 (VDE 0295), table 2
- For fine-wire conductors... (class 5), please see DIN EN 60228 (VDE 0295), table 3
- For extra-fine wire conductors... (class 6), please see DIN EN 60228 (VDE 0295), table 4



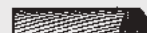
single-wire



multi-/several-wire



fine-wire



extra-fine wire

### Table 12-1: current rating

For cables with a nominal voltage of up to 1000 V and for heat-resistant cables at an ambient temperature of +30 °C. You can find general regulations and recommended values in DIN VDE 0298 part 2 and part 4.

The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 11 and 15, and based on DIN VDE 0891, 1990-05, part 1.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Cable category						
	<b>A</b> Single-core cables • Rubber insulation • PVC insulation • TPE insulation • Heat-resistant	<b>B</b> Multi-core cables for domestic/handheld equipment • Rubber insulation • PVC insulation • TPE insulation		<b>C</b> Multi-core cables excl. domestic/handheld equipment • Rubber insulation • PVC insulation • TPE insulation • Heat-resistant	<b>D</b> Multi-core rubber-sheathed cables min. 0.6/1 kV Single-core Special rubber core cables 0.6/1 or 1.8/3 kV	
Installation type						
Number of cores under load	1 <sup>3)</sup>	2	3	2 or 3	3	1 <sup>3)</sup>
Nominal cross-section in mm <sup>2</sup>	Current rating in A		Current rating in A		Current rating in A	
0.08 <sup>1)</sup>	3		-		2	
0.14 <sup>1)</sup>	4.5		-		3	
0.25 <sup>1)</sup>	7		-		4.5	
0.34 <sup>1)</sup>	8		-		5	
0.5	12 <sup>2)</sup>		3		9 <sup>2)</sup>	
0.75	15		6		12	
1.0	19		10		15	
1.5	24		16		18	
2.5	32		25		26	
4	42		32		34	
					30	41
					41	55

<sup>1)</sup> Current rating values for small conductor cross-sections taken from VDE 0891-1 (0.08 mm<sup>2</sup> - 0.34 mm<sup>2</sup>)

<sup>2)</sup> Extended range for 0.5 mm<sup>2</sup> in line with VDE 0298-4, 2003-08, table 11

<sup>3)</sup> When bundling single-core, touching or bundled cables, when installed on surfaces, in the open air or on cable conduits, please observe DIN VDE 0298-4, 2013-06, table 10

#### IMPORTANT:

The information portrayed in this table differs from that in DIN VDE 0298-4, 2013-06. As such, in the event of any uncertainty the current version of DIN VDE 0298-4 always applies.

Please observe all applicable conversion factors going beyond table 12-1 for:

- differing ambient temperature: table 12-2
- several-core cables up to 10mm<sup>2</sup> with more than 3 cores under load: table 12-3
- heat-resistant cables for ambient temperatures exceeding 50 °C: table 12-4
- for wound cables: table 12-5
- bundling of single-core or multi-core cables in pipes, ducts, walls or flooring: table 12-6
- bundling of multi-core cables on troughs or conduits: table 12-7
- bundling of single-core cables on troughs or conduits: table 12-8

#### Please also observe all applicable current ratings going beyond table 12-1 for:

- Flexible cables with cross-linked Elastomer insulation for industrial applications: table 12-9
- Welding cable H01N2-D: table 12-10
- Operating current and power loss of copper conductors: table 12-11
- Current rating for cables in the USA: see NEC excerpt in table 13
- Cables for fixed installation in buildings: see DIN VDE 0298 part 4, 2013-06, table 3 and 4
- ESUY earthing cable: see DIN VDE 0105-1
- Cables in machinery: see DIN EN 60204-1/VDE 0113-1

**Table 12-2: conversion factors**

For ambient temperatures other than +30 °C. The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 17.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Permissible/recommended operating temperature at the conductor (Details of the maximum value in °C can be found in the field "Technical data, temperature range for fixed or flexible installation" on the relevant product page in the catalogue)					
	60 °C	70 °C	80 °C	85 °C	90 °C
Ambient temperature in °C	Conversion factors to be applied to the current rating values in T12-1				
30	1.00	1.00	1.00	1.00	1.00
40	0.82	0.87	0.89	0.90	0.91
50	0.58	0.71	0.77	-	0.82
60	-	0.50	0.63	-	0.71
70	-	-	0.45	-	0.58
80	-	-	-	-	0.41

**Table 12-3: conversion factors**

For several-core cables with conductor cross-sections up to 10 mm². The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 26.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Number of cores under load	Conversion factor for installation in the open air	Conversion factor for installation underground
5	0.75	0.70
7	0.65	0.60
10	0.55	0.50
14	0.50	0.45
24	0.40	0.35

**Table 12-4: conversion factors for heat-resistant cables**

The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 18.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Permissible/recommended operating temperature at the conductor (Details of the maximum value in °C can be found in the field "Technical data, temperature range for fixed or flexible installation" on the relevant product page in the catalogue)				
	90 °C	110 °C	135 °C	180 °C
Ambient temperature in °C	Conversion factors to be applied to the current rating values for heat-resistant cables in T 12-1, column A, C or D.			
up to 50	1.00	1.00	1.00	1.00
75	0.61	1.00	1.00	1.00
85	0.35	0.91	1.00	1.00
105	-	0.41	0.87	1.00
130	-	-	0.35	1.00
175	-	-	-	0.41

**Table 12-5: conversion factors for wound cables**

The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 27.

Number of layers on the coil, drum, reel	1	2	3	4	5
Conversion factor	0.80	0.61	0.49	0.42	0.38

A conversion factor of 0.8 applies to spiral winding (in one layer).

### Table 12-6: conversion factors

For bundling on walls, in pipes and ducts, on flooring and under ceilings. The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 21.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Configuration for installation	Number of multi-core cables or number of AC or three-phase circuits formed by single-core cables (2 or 3 live conductors)					
	1	2	3	4	6	10
Conversion factors to be applied to the current rating values in table 12-1						
<p>Bundled directly on the wall, on the floor, in pipes or ducts for electrical installations.</p>	1.00	0.80	0.70	0.65	0.57	0.48
<p>In a single layer on the wall or floor, touching.</p>	1.00	0.85	0.79	0.75	0.72	0.70
<p>In a single layer on the wall or floor, with a gap equal to outer diameter d.</p>	1.00	0.94	0.90	0.90	0.90	0.90
<p>In a single layer under the ceiling, touching.</p>	0.95	0.81	0.72	0.68	0.64	0.61
<p>In a single layer under the ceiling, with a gap equal to outer diameter d.</p>	0.95	0.85	0.85	0.85	0.85	0.85

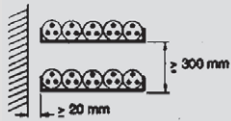
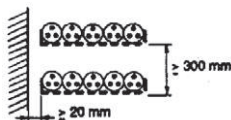
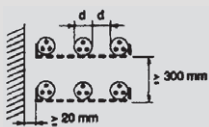
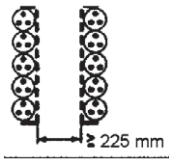
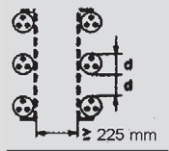
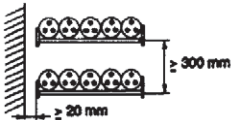
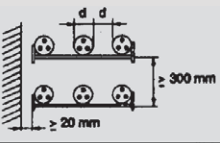
○ = Symbol for single-core or multi-core cable

**IMPORTANT:** The conversion factors must be applied in order to determine the current rating for cables of the same type and under the same load, when bundled in the same installation type. In the process, the nominal conductor cross-sections must not vary by more than one cross-section classification.

**Table 12-7: conversion factors**

For bundling multi-core cables on troughs and conduits. The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 22.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Configuration for installation		Number of troughs or conduits	Number of multi-core cables					
			1	2	3	4	6	9
		Conversion factors						
Non-perforated cable troughs	touching 	1	0.97	0.84	0.78	0.75	0.71	0.68
	touching 	1	1.00	0.88	0.82	0.79	0.76	0.73
Perforated cable troughs	with gap 	1	1.00	1.00	0.98	0.95	0.91	-
	touching 	1	1.00	0.88	0.82	0.78	0.73	0.72
	with gap 	1	1.00	0.91	0.89	0.88	0.87	-
	touching 	1	1.00	0.87	0.82	0.80	0.79	0.78
Cable conduits	with gap 	1	1.00	1.00	1.00	1.00	1.00	-

**IMPORTANT:** The factors stated in this table apply only to groups of cables installed in a single layer in configurations as specified above. However, they do not apply if the cables are touching and installed over one another, or if the actual gap dimensions between the cable troughs or cable conduits fall short of the specified gaps. If this is the case, reduce the conversion factors (e.g. as per table 12-6).

## Table 12-8: conversion factors

For bundling single-core cables on troughs and conduits. The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 23.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Configuration for installation	Number of troughs or conduits	Number of 3-pin circuits formed by single-core cables			To be used as the multiplier for the measurement value of:
		1	2	3	
Perforated cable troughs touching 	1	0.98	0.91	0.87	Three cables arranged horizontally and level
touching 	1	0.96	0.86	-	Three cables arranged vertically and level
Cable conduits touching 	1	1.00	0.97	0.96	Three cables arranged horizontally and level
Perforated cable troughs 	1	1.00	0.98	0.96	Three cables arranged in a horizontal, triangular configuration
touching 	1	1.00	0.91	0.89	Three cables arranged in a vertical, triangular configuration
Cable conduits 	1	1.00	1.00	1.00	Three cables arranged in a horizontal, triangular configuration

**IMPORTANT:** The factors stated in this table apply only to groups of single-core cables installed in a single layer in configurations as specified above. However, they do not apply if the cables are touching and installed over one another, or if the actual gap dimensions between the cable troughs or cable conduits fall short of the specified gaps. If this is the case, reduce the conversion factors (e.g. as per table 12-6). If circuits are connected in parallel, each three-conductor bundle of the parallel connection is to be considered as one circuit.

**Table 12-9: current rating of rubber-sheathed cables**

Current rating of flexible cables with cross-linked Elastomer insulation for industrial applications (H07RN-F and A07RN-F). The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 13. For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Permissible operating temperature at the conductor: 60 °C							
Ambient temperature: 30 °C							
Installation type: in the open air							
Number of cores under load	2	3	2	2	3	3	3
Nominal cross-section of copper cond. in mm <sup>2</sup>	Rating A						
1	-	-	15	15.5	12.5	13	13.5
1.5	19	16.5	18.5	19.5	15.5	16	16.5
2.5	26	22	25	26	21	22	23
4	34	30	34	35	29	30	30
6	43	38	43	44	36	37	38
10	60	53	60	62	51	52	54
Conversion factors for:							
Differing ambient temperature	see table T 12-2						
Bundling	-	T 12-8			T 12-7		
Wound cables	-	-			T 12-5		
Several-core cables			-		T 12-3		-

**Conversion factors** for other ambient temperatures for heat-resistant cables with cross-linked Elastomer insulation. The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 18.1.

Ambient temperature in °C	Permissible operating temperature: 90 °C	
	Conversion factors to be applied to the current rating values in table 12-9	
up to 60		1.00
75		0.71
80		0.58
85		0.41



## Table 12-10: operating conditions and ratings for welding cables

### H01N2-D and H01N2-E

The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 16.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.




Permissible operating temperature at the conductor 85 °C							
Ambient temperature: 30 °C							
Installation type: in the open air							
	Number of cores under load: 1						
Mode of operation	Continuous operation	Intermittent operation					
Run time	-	5 minutes					
Switch-on duration (ED)	100%	85%	80%	60%	35%	20%	8%
Nominal cross-section of copper cond. in mm <sup>2</sup>	Rating A						
10	96	97	98	102	114	137	198
16	130	132	134	142	166	204	301
25	173	179	181	196	234	293	442
35	216	226	229	250	304	384	584
50	274	287	293	323	398	508	779
Mode of operation	Continuous operation	Intermittent operation					
Run time	-	10 minutes					
Switch-on duration (ED)	100%	85%	80%	60%	35%	20%	8%
Nominal cross-section of copper cond. in mm <sup>2</sup>	Rating A						
10	96	96	96	97	102	113	152
16	130	131	131	133	144	167	233
25	173	175	176	182	204	244	351
35	216	220	222	233	268	324	477
50	274	281	284	303	356	439	654
Conversion factors for differing ambient temperature	Table T 12-2						

**Table 12-11: operating current and power loss of copper conductors**

The illustration is taken out of DIN EN 61439-1 (VDE 0660-600-1), 2012-06, Annex H.

The following table provides reference values for operating currents and power losses of conductors inside an assembly of switchgears and controlgears under idealised conditions. The computational methods used to create the values are given in order to calculate values for other conditions.

For copyright reasons, only excerpts from DIN EN 61439-1 can be mapped at this point.

Operating current and power loss of single copper conductors with a permissible conductor temperature of 70 °C (ambient temperature inside of assemblies of switchgears and controlgears: 55 °C)							
Configuration for installation							
		Single-core cable, in a conduit, on walls, arranged horizontally. 6 cables (2 three-phase circuits) continuously charged		Single-core cable, touching, installed in the open air or on a perforated cable trough. 6 cables (2 three-phase circuits) continuously charged		Gap of at least one cable diameter Single-core cable, installed horizontally in the open air with a specified gap	
Conductor cross section	Conductor resistance at 20 °C, R <sub>20</sub> <sup>a</sup>	Max. operating current I <sub>max</sub> <sup>b</sup>	Power loss per core P <sub>v</sub>	Max. operating current I <sub>max</sub> <sup>b</sup>	Power loss per core P <sub>v</sub>	Max. operating current I <sub>max</sub> <sup>b</sup>	Power loss per core P <sub>v</sub>
mm <sup>2</sup>	mΩ/m	A	W/m	A	W/m	A	W/m
1.5	12.1	8	0.8	9	1.3	15	3.2
2.5	7.41	10	0.9	13	1.5	21	3.7
4	4.61	14	1.0	18	1.7	28	4.2
6	3.08	18	1.1	23	2.0	36	4.7
10	1.83	24	1.3	32	2.3	50	5.4

**Table 12-12: rated short circuit current densities for cables with copper and aluminum conductors**

The values given in the table below are reference values and in a simplified form took out of the DIN VDE 0298 part 4, 2013-06, table 28.

For copyright reasons, only excerpts from DIN VDE 0298 part 4 can be mapped at this point.

Insulation material	Permissible operating temperature at the conductor °C	Permissible short circuit temperature $\vartheta_e$ °C	Conductor temperature at the beginning of the short circuit $\vartheta_a$ in °C										
			180	135	110	90	80	70	60	50	40	30	
			rated short circuit current density J <sub>thr</sub> for 1 s A/mm <sup>2</sup>										
<b>Copper conductor</b>													
EPR*	60	250**								159	165	170	176
PVC:													
flexible cable up to 300mm <sup>2</sup>	70	150							109	117	124	131	138
cables for fixed installation:													
up to 300 mm <sup>2</sup>	70	160						115	122	129	136	143	
above 300 mm <sup>2</sup>	70	140						103	111	118	126	133	
PVC, heat-resistant	90	150				93	101	109	117	124	131	138	
Silicone rubber	180	350**	132	153	164	173	178	182	187	192	196	201	
Tinned conductor		200	49	91	109	122	128	135	141	147	153	159	
<b>Aluminium conductor</b>													
PVC cable													
up to 300 mm <sup>2</sup>	70	160						76	81	85	90	95	
above 300 mm <sup>2</sup>	70	140						68	73	78	83	88	

\* Ethylene-Propylene-rubber (EPR) or Ethylene Propylene Diene rubber (EPDM)

\*\* For tinned conductors the temperature is limited to +200°C, for soft solder connection it is limited to +160°C.

Current rating as per National Electrical Code of the USA

## Table 13-1: current rating of cables in the USA

### Excerpt from NEC table T310.15 (B)(16) page 267

Permissible current rating of insulated copper conductors with a nominal voltage of 0 to 2000 V, 60 °C to 90 °C (140 °F to 194 °F). Not more than three current-carrying conductors in any one cable duct, pipe, hose or in one (multi-core) cable or installed underground (direct routing underground), based on an ambient temperature of 30 °C (86 °F).

### Excerpt from NEC T310.15 (B)(17) page 268

Permissible current rating of single-core cables with copper conductor with a nominal voltage of 0 to 2000 V, installed in free air, based on an ambient temperature of 30 °C.

(NEC edition 2014)

Conductor cross-section AWG or kcmil (MCM)	Rating in A with a permissible continuous temperature at the conductor			Conductor cross-section AWG or kcmil (MCM)	Rating in A with a permissible continuous temperature at the conductor		
	60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)		60 °C (140 °F)	75 °C (167 °F)	90 °C (194 °F)
18	-	-	14*	18	-	-	18
16	-	-	18*	16	-	-	24
14	15*	20*	25*	14	25*	30*	35*
12	20*	25*	30*	12	30*	35*	40*
10	30*	35*	40*	10	40*	50*	55*
8	40	50	55	8	60	70	80
6	55	65	75	6	80	95	105
4	70	85	95	4	105	125	140
3	85	100	115	3	120	145	165
2	95	115	130	2	140	170	190
1	110	130	145	1	165	195	220
1/0	125	150	170	1/0	195	230	260
2/0	145	175	195	2/0	225	265	300
3/0	165	200	225	3/0	260	310	350
4/0	195	230	260	4/0	300	360	405
250	215	255	290	250	340	405	455
300	240	285	320	300	375	445	500
350	260	310	350	350	420	505	570
400	280	335	380	400	455	545	615
500	320	380	430	500	515	620	700
600	350	420	475	600	575	690	780

Correction factors for ambient temperatures other than 30 °C				Correction factors for more than 3 current-carrying conductors in any one cable duct, pipe or in a multi-core cable	
Ambient temperature in °C	60 °C	75 °C	90 °C	Number of current-carrying conductors	Correction factor
21 - 25	1.08	1.05	1.04	4 to 6	0.80
26 - 30	1.00	1.00	1.00	7 to 9	0.70
31 - 35	0.91	0.94	0.96	10 to 20	0.50
36 - 40	0.82	0.88	0.91	21 to 30	0.45
41 - 45	0.71	0.82	0.87	31 to 40	0.40
46 - 50	0.58	0.75	0.82	41 and over	0.35
51 - 55	0.41	0.67	0.76		
56 - 60	-	0.58	0.71		
61 - 65	-	0.47	0.65		
66 - 70	-	0.33	0.58		
71 - 75	-	-	0.50		
76 - 80	-	-	0.41		
81 - 85	-	-	0.29		

\*For conductor overcurrent protection please refer to NEC 240.4(D)

NOTE: Please always refer to the valid edition of the NEC. This has to be applied also for all other cases than the above described ones. The current rating of cables in industrial machinery and equipment can be found in section 12, NFPA 79 Edition 2015.

## The European Construction Product Regulation (CPR)

### Requirements for fire behaviour of cables and their classification

#### Cables in buildings

Cables are used for different applications in buildings. In addition to energy supply, they are also used for signal and data transmission.

The increasing number of electrically-powered equipments and the increase in networking (e.g. intelligent controls, Internet distribution etc.) result in a rise in the number of cables required. Therefore, their behaviour in case of fire is becoming increasingly important.

The EU has responded to this situation by including cables in the new regulations for construction products.

#### The Construction Product Regulation and its significance

Regulation no. 305/2011 of the European Parliament and of the Council of 9th March 2011 laid down harmonised conditions for the marketing of construction products and is known as the Construction Product Regulation (CPR).

It has been in force since 1 Juli 2013 and replaces the previous construction products directive (no. 89/106/EEC) from 1988.

Along with many other construction products, the regulation covers energy, control and data cables intended for permanent use (installation) in buildings.

The regulation defines basic requirements for buildings, e.g. fire prevention, but does not set out specific product properties or stipulate the use of particular construction products.

#### Underlying standards – Euro classes

The products intended for use must be classified using standardised rules (harmonised standards), which requires testing and certification by a notified body.

The standards that define the fire behaviour requirements for cables (EN 50575) and describe the classification (EN 13501-6) had not yet been officially adopted at the time when CPR came into force.

Meanwhile the standards are finished and were published in the Official Journal of the EU in July 2015. Since this time the notification of testing bodies is possible and the transitional period during which products with and without CE marking under CPR can be brought into circulation starts at 1 December 2015 and ends at 1 December 2016.

Table 1: Euro classes under EN 13501-6 respectively 2006/751/EG

Class	Test method(s)	Classification criteria	Additional Classification
A <sub>CA</sub>	EN ISO 1716	PCS ≤ 2.0 MJ/kg	
B1 <sub>CA</sub>	EN 50399 (30 kW burner) and	FS ≤ 1.75 m and THR <sub>1200s</sub> ≤ 10 MJ and Peak-HRR ≤ 20 kW and FIGRA ≤ 120 Ws <sup>-1</sup>	Smoke production and Flaming droplets/particles and Acidity
	EN 60332-1-2	H ≤ 425 mm	
B2 <sub>CA</sub>	EN 50399 (20.5 kW burner) and	FS ≤ 1.5 m and THR <sub>1200s</sub> ≤ 15 MJ and Peak-HRR ≤ 30 kW and FIGRA ≤ 150 Ws <sup>-1</sup>	Smoke production and Flaming droplets/particles and Acidity
	EN 60332-1-2	H ≤ 425 mm	
C <sub>CA</sub>	EN 50399 (20.5 kW burner) and	FS ≤ 2.0 m and THR <sub>1200s</sub> ≤ 30 MJ and Peak-HRR ≤ 60 kW and FIGRA ≤ 300 Ws <sup>-1</sup>	Smoke production and Flaming droplets/particles and Acidity
	EN 60332-1-2	H ≤ 425 mm	

Table 1: Euro classes under EN 13501-6 respectively 2006/751/EG

Class	Test method(s)	Classification criteria	Additional Classification
D <sub>CA</sub>	EN 50399 (20.5 kW burner) and	THR <sub>1200s</sub> ≤ 70 MJ and Peak-HRR ≤ 400 kW and FIGRA ≤ 1300 Ws <sup>-1</sup>	Smoke production and Flaming droplets/particles and Acidity
	EN 60332-1-2	H ≤ 425 mm	
E <sub>CA</sub>	EN 60332-1-2	H ≤ 425 mm	
F <sub>CA</sub>		No performance determined	

PCS – Gross calorific potential  
 FS – Flame Spread  
 THR – Total Heat Release  
 HRR – Heat Release Rate  
 FIGRA – Fire Growth Rate

#### Certificate of conformity

The familiar procedure for cables covered by the Low Voltage Directive required the manufacturer to establish the conformity of their products with the directives or compliance with the corresponding standards and to certify this in an EU Declaration of Conformity. However, this is not sufficient for products affected by the Construction Products Regulation. Depending on the intended Euro class, a conformity assessment process will have to be completed, with the scope outlined in table 2.

Except for Class F, a minimum of type testing by a notified body will be required. In association with the certificate of conformity, the manufacturer will have to issue a performance declaration, providing details of the fire behaviour (Euro class A-F).

Table 2: Conformity certification system under EN50575

Euro class	Conformity certification system	Tasks of notified body
A <sub>CA</sub> , B1 <sub>CA</sub> , B2 <sub>CA</sub> , C <sub>CA</sub>	1+	- Type testing - Regular plant auditing - Regular sampling from ongoing production
D <sub>CA</sub> , E <sub>CA</sub>	3	Type testing
F <sub>CA</sub>	4	none

This process for classifying products and obtaining the certificate of conformity will apply equally to all member states and is a response to the requirement to eliminate barriers to trade in the construction product sector and improve the free movement of goods for these products in the internal market.

#### Use of classified cables in buildings

Incorporation of the corresponding cables into building regulations and assignment of fire classes to building types or areas within buildings is the responsibility of the relevant member states.

For example, in Germany, the individual states will implement the standards according to their own state building regulations, as building law is under state jurisdiction.

Definitive assignments of classes to buildings were not set at the time of going to press, although a possible classification can be found in a white paper from the ZVEI (German association of electrical equipment manufacturers), which can be found in German at [www.zvei.de](http://www.zvei.de).

#### Classification/Certification of our products

At the time of going to press we couldn't issue any information about fire classes. The current status of our products can be found in our online catalogue at <http://products.lappgroup.com/online-catalogue/appendix/technical-tables.html>.

## Properties of cable insulation and sheathing

Applies only to the base materials. Deviations are possible depending on the use/design. Please refer to the relevant page in the catalogue.

Usage criteria	Material					
	Material resistant to org. oils	Polyvinylchloride	Polyethylene	Polyurethane	Polytetrafluoroethylene	Tetrafluoroethylene Hexafluoropropylene copolymer
<b>Parameter</b>						
Abbreviations	Special TPE	PVC	PE	PUR	PTFE	FEP
Code as per VDE	–	Y	2Y	11Y	5Y	6Y
Operating temperature	-50 +120	-30 +70	-50 +70	-50 +90	-190 +260	-100 +200
Dielectric constant (10 <sup>-3</sup> )	2.4	4.0	2.3	4.0 – 6.0	2.1	2.1
Volume resistivity (Ω x cm)	10 <sup>15</sup>	10 <sup>12</sup> – 10 <sup>15</sup>	10 <sup>17</sup>	10 <sup>12</sup>	10 <sup>18</sup>	10 <sup>18</sup>
Tensile strength in N/mm <sup>2</sup> (MPa)	5 – 20	10 – 25	15 – 30	15 – 45	15 – 40	20 – 25
Elongation at break in %	400 – 600	150 – 400	400 – 800	300 – 600	240 – 400	250 – 350
Water absorption (20 °C) in %	1 – 2	0.4	0.1	1.5	0.01	0.01
Weather resistance	very good	good	good	very good	very good	very good
Fuel resistance	good	moderate	moderate	good	very good	very good
Oil resistance	Resistance to org. oil: very good	moderate	moderate	good	very good	very good
Flammability	flammable	self-extinguishing	flammable	self-extinguishing*	non-flammable	non-flammable

Usage criteria	Material					
	Ethylene tetrafluoroethylene	Chloroprene rubber	Silicone rubber	Ethylene propylene dien rubber	Thermoplastic elastomer polyolefin based	Thermoplastic elastomer polyester based
<b>Parameter</b>						
Abbreviations	ETFE	CR	SI	EPDM	TPE-O	TPE-E
Code as per VDE	7Y	5G	2G	3G	–	12Y
Operating temperature	-100 +150	-40 +100	-60 +180	-30 +120	-40 +120	-70 +125
Dielectric constant (10 <sup>-3</sup> )	2.6	6.0 – 8.0	2.8 – 3.2	3.2	2.7 – 3.6	3.7 – 5.1
Volume resistivity (Ω x cm)	10 <sup>16</sup>	10 <sup>13</sup>	10 <sup>15</sup>	10 <sup>14</sup>	5 x 10 <sup>14</sup>	10 <sup>12</sup>
Tensile strength in N/mm <sup>2</sup> (MPa)	40 – 50	10 – 25	5 – 10	5 – 25	≥ 6	3 – 25
Elongation at break in %	100 – 300	300 – 450	200 – 350	200 – 450	≥ 400	280 – 650
Water absorption (20 °C) in %	0.01	1	1.0	0.02	1.5	0.3 – 0.6
Weather resistance	very good	very good	very good	good	moderate	very good
Fuel resistance	very good	moderate	low	moderate	moderate	good
Oil resistance	very good	good	moderate	moderate	moderate	very good
Flammability	non-flammable	self-extinguishing	hardly flammable	flammable	flammable	flammable

\* only with additional flame retardant

## Insulation resistance

The insulation of cables and wires is used to electrically isolate the individual conductors. For this reason, as opposed to the conductor, the insulation should have very high electrical resistance (which can also be expressed as a low conductivity).

To achieve this goal, a number of different materials can be used. The mechanical and electrical properties of these materials can differ. The most commonly used materials include mixtures based on PVC, PE or TPE.

### Terminology

A number of different terms are used to describe the insulation resistance. To help differentiate and better understand these terms, they are explained here in brief.

### Volume resistance

Resistance value that results from the measurement of a test specimen when a DC voltage is applied. It results from the test voltage applied to the two electrodes, which are attached to the surfaces of the test specimen (e.g. wire insulation), and the current between these electrodes.

### Volume resistivity (specific contact resistance)

This is a relative value that depends on the properties of the material in terms of electrical insulation. In practice, this value relates to a unit of volume; it is typically specified in  $\Omega \times \text{cm}$ . For PVC core insulation a typical value is:  $> 20 \text{ G}\Omega \times \text{cm}$

### Insulation resistance

The insulation resistance for a cable can be determined from the volume resistivity and the ratio of the core outer diameter to conductor diameter. Typical units of measurement here are  $\text{M}\Omega \times \text{km}$  or  $\text{G}\Omega \times \text{km}$ .

In type standards for cables and wires, minimum values for the insulation resistance are usually required. These values are specified for the maximum operating temperature as a function of the nominal cross section and insulation wall thickness.

Example: For an oil-resistant H05VV5-F control cable, these values are defined in EN 50525-2-51. The minimum value of the insulation resistance of a  $3 \times 1.5 \text{ mm}^2$  cable must be at least  $0.010 \text{ M}\Omega \times \text{km}$ .

The real-world values are often more than an order of magnitude higher than these values, well above the requirements of the standard.

### Measurement methods

A differentiation must be made between lab measurements performed on a core to test the insulation and real-world measurements performed on complete, potentially installed cables and wires.

### Determination of insulation resistance and volume resistivity of the core

Demonstration of compliance with the aforementioned requirements is achieved with measurements according to EN 50395 (VDE 0481-395). For this purpose, a 5-metre sample of the cable is completely stripped and the cores are placed in a water bath for 2 hours. The water bath was previously heated to the maximum operating temperature of the cable (valid for cables with a maximum conductor temperature of up to  $90 \text{ }^\circ\text{C}$ ).

Between the conductor and the water bath, 80 - 500 V DC is applied and after 1 minute the insulation resistance is measured at each core. With this value, the insulation resistance of a 1-km length is calculated for each core. Neither of the calculated values may be below the specified minimum value in the type standard. Refer to the above example under "Insulation resistance".

The volume resistivity can be used for comparisons as it is a material constant and is independent of the insulation wall thickness and the conductor cross-section.

In practical applications these values are used to compare different materials and represent a reproducible measuring method for the manufacturers of cables and wires.

### Measurements on complete cables

The above values cannot be compared with resistance values that are determined using a "dry measurement" on the complete cable or on installed cables. In those cases, the resistance value is determined using the leakage current between two adjacent cores within a cable and the measurement voltage of the meter.

Values determined using this method have a very high variance as they are influenced by numerous factors, such as:

- Conditioning of the cable, in particular moisture absorption by the insulation
- Climate conditions during the measurements, in particular the cable temperature
- Individual contact conditions of the insulation of both cores
- Conductivity of the materials that have a common surface contact to the insulated cores
- Installation situation of the cable, as locations in which the cable is subject to external pressure, for example due to bending or clamping (cable glands), can lead to a deformation of the insulation. This increases the contact area between the insulated cores, which increases the leakage current and results in a lower insulation resistance value.

The aforementioned effects of temperature and air humidity are significant and vary greatly in practical applications, as the conditions are not standardised. For example, measurements have shown that between  $20 \text{ }^\circ\text{C}$  (common ambient temperature) and  $70 \text{ }^\circ\text{C}$  (maximum cable operating temperature) the insulation resistance can change by a factor of 1:100 to 1:1000. This means that the temperature during the measurement has such a great effect that measured results that were performed at different temperatures are no longer comparable.

### Conclusion

The cable data provided above can be used to compare different cable types but under no circumstances can they be used to compare with measurements of finished cables or electrical systems (such as according to VDE 0100-600 Part 6).

## US dimension units for cables – comparison with metric dimensions

In North American markets, cable cross-sections are usually stated as AWG (American Wire Gauge) sizes or, for large cable cross-sections (above AWG 4/0), using the unit “kcmil”. You will find these units in the relevant standards for designing cables by current rating.

Multi-standard cables must comply with both the specifications of the metric system (in which the cross-section in mm<sup>2</sup> is stated as the nominal size) as well the requirements of the AWG system. For this reason, both systems are compared below based on the nominal size.

**Please note that exact correspondences between the two systems do not exist** as the specifications of the two systems differ in terms of the cross-section and conductor resistance. The following table can be used to help you when selecting the correct nominal cross-section.

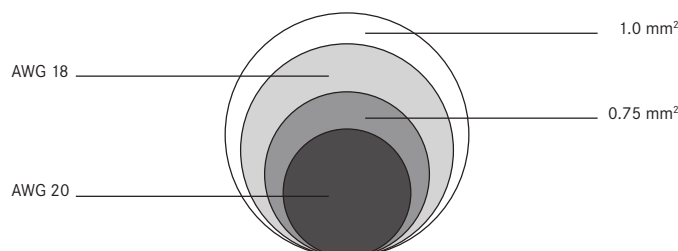
Standards required as part of project planning, such as UL1581 or IEC 60228 (VDE 0295), must be applied accordingly.

Please note that when selecting appropriate connecting elements such as conductor end sleeves, the **actual** conductor cross-section is decisive. This is stated on the relevant product page.

Column 1a		Column 1b	Column 2	Column 3	Column 4	Column 5a	Column 5b
North American cross-section required		Geometric conversion	Metric nominal cross-section that meets the electrical requirements	Metric nominal cross-section required	North American size that meets the electrical requirements		
AWG	kcmil	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	AWG	kcmil	
	<b>750</b>	380.03	<b>400</b>	400		800	
	<b>500</b>	253.35	<b>300</b>	300		750	
	450	228.02	<b>240</b>	240		500	
	<b>400</b>	202.68				450	
	350	177.35	<b>185</b>	185		400	
	<b>300</b>	152.01				350	
	<b>250</b>	126.68	<b>150</b>	150		300	
<b>4/0</b>		107.22	<b>120</b>	120		250	
<b>3/0</b>		85.01	<b>95</b>	95	4/0		
<b>2/0</b>		67.43	<b>70</b>	70	3/0		
<b>1/0</b>		53.49			2/0		
<b>1</b>		42.41	<b>50</b>	50	1/0		
<b>2</b>		33.62	<b>35</b>	35	1		
<b>3</b>		26.67			2		
<b>4</b>		21.15	<b>25</b>	25	3		
<b>5</b>		16.77			4		
<b>6</b>		13.30	<b>16</b>	16	5		
<b>7</b>		10.55			6		
<b>8</b>		8.37	<b>10</b>	10	7		

Column 1a		Column 1b	Column 2	Column 3	Column 4	Column 5a	Column 5b
North American cross-section required		Geometric conversion	Metric nominal cross-section that meets the electrical requirements	Metric nominal cross-section required	North American size that meets the electrical requirements		
AWG	kcmil	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	AWG	kcmil	
9		6.63				8	
<b>10</b>		5.26	<b>6</b>	6		9	
11		4.17				10	
<b>12</b>		3.31	<b>4</b>	4		11	
13		2.62				12	
<b>14</b>		2.08	<b>2.5</b>	2.5		13	
15		1.65				14	
<b>16</b>		1.31	<b>1.5</b>	1.5		15	
17		1.04				16	
<b>18</b>		0.82	<b>1</b>	1		17	
19		0.65	<b>0.75</b>	0.75		18	
<b>20</b>		0.52				19	
21		0.41	<b>0.5</b>	0.5		20	
<b>22</b>		0.33	<b>0.34</b>	0.34		21	
23		0.26				22	
<b>24</b>		0.20	<b>0.25</b>	0.25		23	
25		0.16				24	
<b>26</b>		0.13	<b>0.14</b>	0.14		25	

### Principle of cross-section figures



#### Example 1:

The electro-technical project planning requirements as per North-American standards stipulate that you require a cable of AWG 20.

The relevant product page in the catalogue does not list any cables with this AWG size. A size of AWG 20 is listed in the above table in column 1a. Column 3 lists the metric nominal cross-section that, as a minimum, meets the electrical requirements of size AWG 20. Thus, you will require a cable with a nominal cross-section of 0.75 mm<sup>2</sup>.

#### Example 2:

The electro-technical project planning requirements as per European standards stipulate that you require a cable of 0.75 mm<sup>2</sup>.

The product page in the catalogue lists only AWG figures or large metric cross-sections. Nominal cross-section 0.75 mm<sup>2</sup> is listed in the above table in column 4. Column 5a lists the AWG size that, at a minimum, meets the electrical requirements of a nominal cross-section of 0.75 mm<sup>2</sup>. Thus, you will require a cable with size AWG 18.

**General dimensions\*:**

The base units are as follows:

In the British gravitational system:

**Length (ft) – force (lbf = Lb) – time (s)**

In the British absolute system:

**Length (ft) – mass (lb) – time (s)**

**1. Measures of length**

1 mil	= 0.0254 mm
1 inch (in;")	= 25.4 mm
1 foot (ft;')	= 0.305 m
1 yard (yd)	= 0.914 m
1 chain (ch)	= 20.1 m
1 statue mile	= 1.61 km
1 nautical mile	= 1.835 km
1 statute mile	= 1760 yards

**2. Measures of volume**

1 cubic inch	= 16.39 cm <sup>3</sup>
1 cubic foot	= 0.0283 m <sup>3</sup>
1 cubic yard	= 0.765 m <sup>3</sup>
1 US liquid gallon	= 3.79 l
1 pint	= 0.473 l
1 quart	= 0.946 l
1 brit gallon	= 4.53 l
1 barrel	= 119.2 l

**3. Measures of area**

1 circ. mil (CM)	= 0.507 · 10 <sup>-3</sup> mm <sup>2</sup>
1 kcmil (MCM)	= 0.5067 mm <sup>2</sup>
1 square inch (sq. in.)	= 645.16 mm <sup>2</sup>
1 square foot (sg.ft.)	= 0.0929 m <sup>2</sup>
1 square yard	= 0.836 m <sup>2</sup>
1 acre	= 0.00405 km <sup>2</sup>
1 square mile	= 2.59 km <sup>2</sup>
1 m <sup>2</sup>	= 10.764 sq. ft.

**4. Units of mass**

British gravitation system:

1 slug = 1 lbs · s<sup>2</sup>/ft

British absolute system:

1 pound = 1 lb

1 slug = 32.174 lb, with 32.174 ft/s<sup>2</sup>

as the standard value of gravitational acceleration

1 grain	= 64.80 mg
1 dram	= 1.770 g
1 ounce (oz)	= 16 drams = 28.35 g
1 pound (lb)	= 16 oz = 453.59 g
1 stone	= 14 lbs = 6.35 kg
1 US ton (short ton)	= 0.907 t
1 Brit. ton (long ton)	= 0.016 t

**5. Units of force**

British gravitational system:

pound-force 1 lbf = 1 Lb

British absolute system:

poundal 1 pdl = 1 lb · ft/s<sup>2</sup>

1 lbf = 32.174 pdl = 9.80665 lb · m/s<sup>2</sup>

**6. Conversion to metric units**

1 pound-force (lbf)	= 0.454 kp
1 Brit. ton-force	= 1016 kp
1 poundal (pdl)	= 0.1383 N
1 lbf	= 4.445 N

**7. Electrical units per unit of length**

1µf per mile	= 0.62 µF/km
1 megohm per mile	= 1.61 MΩ · km
1 megohm per 1000 ft	= 3.28 Ω · km
1 ohm per 1000 yd	= 1.0936 Ω/km

**8. Weights per unit of length**

1 lb per foot	= 1.488 kg/m
1 lb per yard	= 0.469 kg/m
1 lb per mile	= 0.282 kg/m

**9. Density**

1 lb/ft<sup>3</sup> = 16.02 kg/m<sup>3</sup>

**10. Specific weight**

1 lbf/ft<sup>3</sup> = 16.02 kp/m<sup>3</sup>

**11. Copper wire weight per mile**

lb/mile	= Ø mm
5	= 0.404
6.5	= 0.51
7.5	= 0.55
10	= 0.64
20	= 0.90
40	= 1.27

**12. Units of energy**

1 horsepower	= 0.746 kW (H.P.)
1 Brit. therm. unit	= 0.252 kcal

Insulation wall thickness is often expressed in n/64 inches with n/64 inch equalling approx. 0.4 mm.

**13. Further dimensions for wire weights**

and electrical field strengths:

lbf pr. MFeet	= 1.488 kg/km
lbf pr. Mile	= 0.282 kg/km
40 V/mil	= 1.6 kV/mm
80 V/mil	= 3.2 kV/mm
100 V/mil	= 4.0 kV/mm
250 V/mil	= 10.0 kV/mm

\* Most of these units are no longer in use and are provided purely for information purposes.



### Table 17-1: example using “copper”

#### Copper prices

Cables, wires and piece goods are sold at daily copper prices (DEL). DEL is the stock exchange listing for German electrolytic copper for conducting purposes, i. e. 99.9% pure copper. The DEL is expressed in euros per 100 kg and can usually be found in the business section of daily newspapers under “Commodity markets”.

**FOR EXAMPLE:** DEL 576.93 means: 100 kg copper (Cu) costs EUR 576.93. Currently a 1% procurement surcharge is added to the daily quotation for cables, wires and piece goods. Further information, particularly concerning the DEL quote, can be obtained from the ZVEI professional association for cables and insulated wires: [www.zvei.org](http://www.zvei.org)

#### Copper price basis

A proportion of the copper price is already included in the list price for many cables and almost all wires and piece goods. This is also expressed in euros per 100 kg.

- EUR 150.00 / 100 kg for most flexible cables (e. g. ÖLFLEX® CLASSIC 110) and piece goods (e. g. ÖLFLEX® SPIRAL 540 P)
- EUR 100.00 / 100 kg for telephone cables (e. g. J -Y(St)Y)
- EUR 0.00 / 100 kg for underground cables (e. g. power cable NYY), i. e. hollow price.

Exact details can be found on each page of the catalogue beneath the article table.

#### Copper index

The copper index is the calculated copper weight of a cable, wire (kg/km) or piece good (kg/1000 pc) and is specified for each catalogue item.

#### Example I: Calculating the copper surcharge for goods sold by the meter:

Cable ÖLFLEX® CLASSIC 110, 3G1.5 mm<sup>2</sup>

Copper index as per catalogue 43 kg/km

The calculated copper weight of the cable is 43 kg per 1 km.

$$\text{Copper index (kg/km)} \times \frac{(\text{DEL} + 1\% \text{ procurement costs}) - \text{copper price basis}}{1000} = \text{Copper surcharge in Euro/100 m}$$

ÖLFLEX® CLASSIC 110, 3G1.5 mm<sup>2</sup>.

DEL: EUR 576.93/100 kg. Cu basis EUR 150.00/100 kg.

Cu index: 43 kg/km

$$43 \text{ kg/km} \times \frac{(576.93 + 5.77) - 150.00}{1000} = \text{Euro } 18.61 / 100 \text{ m}$$

Assuming a DEL quotation of EUR 576.93/100 kg, this figure represents the copper surcharge for 100 m ÖLFLEX® CLASSIC 110 3G1.5 mm<sup>2</sup>.

#### Example II: Calculating the copper surcharge for piece goods:

ÖLFLEX® SPIRAL 540P 3G1.5 mm<sup>2</sup> (item no.: 73220150).

Copper index as per catalogue: 516 kg/1000 pc.

Copper price basis as per catalogue: EUR 150.00/100 kg

The calculated copper weight (copper index) of the piece good spiral cable is 516 kg/1000 pc.

Formula for calculating the copper surcharge for piece goods:

$$\text{Copper index (kg/1000 pc)} \times \frac{(\text{DEL} + 1\% \text{ procurement costs}) - \text{copper price basis}}{1000} = \text{Copper surcharge in Euro/100 pc}$$

$$516 \text{ kg/1000 pc} \times \frac{(576.93 + 5.77) - 150.00}{1000} = \text{Euro } 223.27 / 100 \text{ pc}$$

#### Price including copper:

The net price is calculated as follows:

Gross price - % discount + copper surcharge = net price including copper.

The copper surcharge is shown separately on the invoice.

#### Other metals

This same method is also used for other metals, e. g. “aluminium”. In this case, replace “copper” with “aluminium”. General term: “metal”.

**Table 17-2: background information on cables**

For the majority of our product range, the construction of conductors for cables and insulated wires is governed by the international standard DIN EN 60228 (VDE 0295)/IEC 60228. Normative threshold values are defined for the nominal cross sections and the conductor materials copper/aluminium/aluminium alloy listed in the standard. The application of these threshold values varies for the different conductor classes, however, they all exhibit a maximum conductor resistance at 20 °C.

Conductor resistance at 20 °C is an important normative compliance value. Other geometric requirements in DIN EN 60228 et seqq. and in product standards that reference DIN EN 60228 et seqq., serve to ensure the compatibility of conductors and connectors and do not contain any requirements concerning the weight of the conductor materials used in the wire or cable.

For example, the density of copper used in the manufacture of cables and wires is specified as 8.89 g/cm<sup>3</sup> in accordance with DIN EN 13602. Therefore, a single-core cable with a nominal cross section of 1 mm<sup>2</sup> has a copper content of 8.89 kg/km. This simple formula for calculating the copper content provides an indication. However, the actual value may be lower than this, as it is the maximum conductor resistance at 20 °C that is important.

The extent of the (+/-) deviation from this calculation value depends on the production process employed by individual manufacturers and the semifinished conductors they use.

When it comes to invoicing, e.g. for copper surcharges, the copper index is used. You may also see the term “calculated copper weight” being used instead of “copper index”. This typical industry value\* is 9.6 kg/km\*\* – based on the nominal cross section of 1 mm<sup>2</sup> – and factors in the necessary increased use of material/copper.

This increase generalises individual (manufacturer-dependent) additional expenditure during the manufacturing process. In particular, this includes irreversible losses resulting from lead-in lengths and abrasion on the drawing dies as well as from the widening (wearing) of the dies during wire production. It also includes additional expenditure due to twisting of the conductors and the resulting enlargement of the stretched length. There are also surcharges to ensure the conductor resistance at unavoidable manufacturing tolerances – e.g. cross section reduction due to the tensile load during extrusion and twisting. It should also be mentioned that the copper index calculated in this manner is the only way to enable standardisation across manufacturers – particularly in the case of unshielded cables – and therefore serves as the basis for price comparisons, particularly when calculating copper surcharges.

The aim of this customer information is to explain the technical and commercial background for determining and using the copper index and to demonstrate the benefits and efficiency of its use for manufacturers, traders and customers alike.

\*U.I. Lapp GmbH is a member of the professional association for cables and insulated wires of ZVEI

\*\*The corresponding figure to be used for aluminium is 2.9 kg/km

## Laying guidelines for cables and wires

Cables must be selected in accordance with the laying and operating conditions. They must be protected against mechanical, thermal and chemical effects as well against moisture penetrating through the cable ends.

Insulated power cables must not be laid underground. Temporary covering of NSSHÖU rubber-sheathed cables or trailing cables with soil, sand or a similar material, e.g. on building sites, does not constitute underground installation.

Fasteners and fixtures must not cause any damage to fixed wires and cables. Where cables or wires running horizontally along walls or ceilings are fixed using clips, the following guidelines regarding clip spacing must be observed:

For non-reinforced cables and wires, 20 x outside diameter.

These spacing guidelines also apply when laying cables in conduits and racks. When laying cables vertically, the spacing between clips can be increased depending on the type of cable or clip.

When connecting flexible cables (e.g. ÖLFLEX® cables, UNITRONIC® cables) to portable power consumers, there must be no strain or thrust at the insertion points and the cables must be secured against twisting and kinking. Outer cable sheaths must not be damaged at the insertion points or by the strain relief devices. Standard version flexible PVC cables are not designed for outdoor use.

Special cables must be deployed for permanent underwater use.

### Thermal stress

The temperature limits for the respective cable designs can be found in the technical data. The upper temperature limits must not be exceeded as a result of the cable heating up due to current heat and thermal environmental factors.

The lower temperature limits denote the lowest permitted ambient temperature.

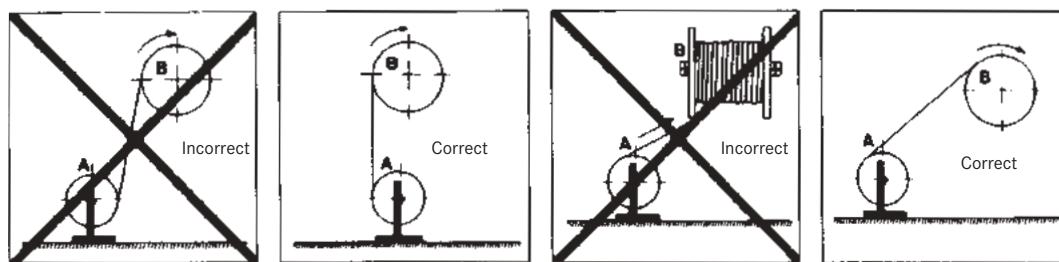
### Tensile strain

Tensile strain on the conductor should be as low as possible.

The following tensile strains for conductors must not be exceeded for cables.

- When laying and operating copper cables for portable equipment: 15 N per mm<sup>2</sup> conductor cross-section; this does not include screening, concentric conductors and divided protective conductors. In the case of cables that are subjected to dynamic stresses, e.g. in crane systems with high acceleration or power chains subject to frequent movement, appropriate measures must be taken, e.g. enlargement of the bending radius in individual cases. A shorter service life may be expected.
- Cables for static installation. When laying permanent cables, 50 N per mm<sup>2</sup> conductor cross-section.
- For fibre optic cables, BUS, LAN, industrial and Ethernet cables, the respective permitted strain must be observed. These values can be found in the product data sheets or are available on request.

For more information on this subject, see tables T3, T4 and T5.

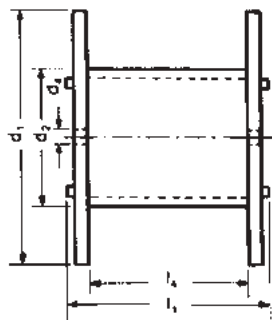


Winding and unwinding cables

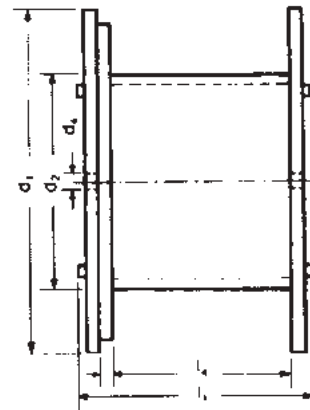
**Wooden drums: holding capacity**

Drum ID number	Cable Ø mm										
	6	9	12	15	20	25	30	40	50	60	80
71	2024	892	468	297	165	-	-	-	-	-	-
81	2755	1152	643	430	219	151	-	-	-	-	-
91	-	2202	1206	749	402	285	162	-	-	-	-
101	-	-	1540	1000	576	365	220	-	-	-	-
121	-	-	-	1991	1139	688	450	249	-	-	-
141	-	-	-	2479	1352	839	564	327	-	-	-
161	-	-	-	-	2435	1608	1028	549	319	-	-
181	-	-	-	-	-	1867	1197	640	373	256	-
201	-	-	-	-	-	2522	1583	812	558	296	163
221	-	-	-	-	-	-	2383	1328	678	566	278
250	-	-	-	-	-	-	-	1892	1107	699	363

Up to drum size 10 with cable bushing



From drum size 12 with spiral



**Wooden drums: dimensions and load-bearing capacity**

Drum ID number	Drum size	Diameter (mm)			Width (mm)		Load-bearing capacity kg	Weight kg
		$d_1$	$d_2$	$d_4$	$l_1$	$l_4$		
071	07	710	355	80	520	400	250	25
081	08	800	400	80	520	400	400	31
091	09	900	450	80	690	560	750	47
101	10	1000	500	80	710	560	900	71
121	12	1250	630	80	890	670	1700	144
141	14	1400	710	80	890	670	2000	175
161	16/8	1600	800	80	1100	850	3000	280
181	18/10	1800	1000	100	1100	840	4000	380
201	20/12	2000	1250	100	1340	1045	5000	550
221	22/14	2240	1400	125	1450	1140	6000	710
250	25/14	2500	1400	125	1450	1140	7500	875
251	25/16	2500	1600	125	1450	1130	7500	900
281	28/18	2800	1800	140	1635	1280	10000	1175

Cable drums – transport damage, losses, rental and handling

## Transport damage

### We take great care when selecting our transport service providers.

However, please inspect all delivered goods to make sure that:

- there are no external signs of damage
- you have received the correct goods and
- the delivery is complete.

If you find any of these faults, please ask the carrier to confirm this on your shipping documents before accepting the goods. You should also always record the fault on the carrier's delivery receipt.

If you fail to write down an obvious fault on the shipping documents, we shall not be legally held liable for any damage claims.

In case of damage or loss, please also contact your local sales representative at our company and provide us with the delivery note and/or invoice number.

If you find a latent defect, please notify your sales representative straight away.

## Information on our cable drums

### Our cable drums. Free of charge to you!

We ship our cables on plywood and solid wood drums (treated according to ISPM 15 IPPC upon request).

We do not charge any rental for drums.

### Any other special requests?

No problem! The Lapp Group has a highly motivated team of experts standing by to help you with your logistics requirements in any way they can. Just get in touch!

[www.lappkabel.com/service/logistics](http://www.lappkabel.com/service/logistics)

### Returning drums. Please note the following.

Our partner responsible for all packaging and disposal matters is the disposal and recycling service provider INTERSEROH Dienstleistungs GmbH. Please address any queries regarding the new packaging regulation to:

Interseroh Dienstleistungs GmbH

Phone: 0049 2203 9147-1366

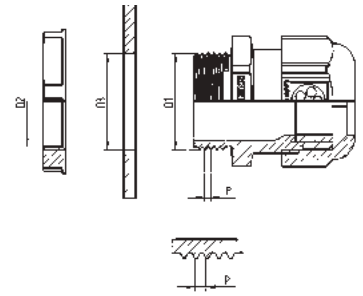
Fax: 0049 2203 9147-1390

E-mail: [kabeltrommeln@interseroh.com](mailto:kabeltrommeln@interseroh.com)

**Thread and hole dimensions – technical data for installation**

**Metric thread to EN 60423 (for screw connections to EN 50 262)**

Nominal size	Ø D1	P	Ø D2	Hole Ø D3
M12 x 1.5	12	1.5	10.6	12.3 - 0.2
M16 x 1.5	16	1.5	14.6	16.3 - 0.2
M20 x 1.5	20	1.5	18.6	20.3 - 0.2
M25 x 1.5	25	1.5	23.6	25.3 - 0.2
M32 x 1.5	32	1.5	30.6	32.3 - 0.2
M40 x 1.5	40	1.5	38.6	40.4 - 0.3
M50 x 1.5	50	1.5	48.6	50.4 - 0.3
M63 x 1.5	63	1.5	61.6	63.4 - 0.3
M75 x 1.5	75	1.5	73.6	75.4 - 0.3
M90 x 2	90	2	88.8	90.4 - 0.3
M110 x 2	110	2	108.8	110.4 - 0.3



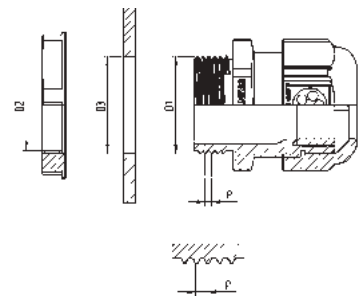
- D1 = External-Ø
- D2 = Core Ø internal thread
- D3 = Hole Ø
- P = Pitch

**Metric thread to DIN 13 part 6 and 7 (for screw connections to DIN 89 280)**

Nominal size	Ø D1	P	Ø D2	Hole Ø D3
M18 x 1.5	18	1.5	16.4	18.3 - 0.2
M24 x 1.5	24	1.5	22.4	24.3 - 0.2
M30 x 2	30	2	27.8	30.3 - 0.2
M36 x 2	36	2	33.8	36.3 - 0.2
M45 x 2	45	2	42.8	45.4 - 0.3
M56 x 2	56	2	53.8	56.4 - 0.3
M72 x 2	72	2	69.8	72.5 - 0.4
M80 x 2	80	2	77.8	80.5 - 0.4
M105 x 2	105	2	102.8	105.5 - 0.4

**PG thread to DIN 40430**

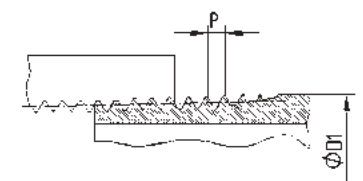
Nominal size	Ø D1	P	Ø D2	Hole Ø D3
PG 7	12.5	1.27	11.3	12.8 - 0.2
PG 9	15.2	1.41	13.9	15.5 - 0.2
PG 11	18.6	1.41	17.3	18.9 - 0.2
PG 13.5	20.4	1.41	19.1	20.7 - 0.2
PG 16	22.5	1.41	21.2	22.8 - 0.2
PG 21	28.3	1.588	26.8	28.6 - 0.2
PG 29	37.0	1.588	35.5	37.4 - 0.3
PG 36	47.0	1.588	45.5	47.4 - 0.3
PG 42	54.0	1.588	52.5	54.4 - 0.3
PG 48	59.3	1.588	57.8	59.7 - 0.3



- D1 = External-Ø
- D2 = Core Ø internal thread
- D3 = Hole Ø
- P = Pitch

**NPT thread to ANSI B1.20.2 – 1983**

Nominal size	Ø D1	P	Hole Ø D3
NPT 1/4"	13.7	1.41	14.1 - 0.2
NPT 3/8"	17.1	1.41	17.4 - 0.2
NPT 1/2"	21.3	1.81	21.6 - 0.2
NPT 3/4"	26.7	1.81	27.0 - 0.2
NPT 1"	33.4	2.21	33.7 - 0.2
NPT 1 1/4"	42.2	2.21	42.5 - 0.2
NPT 1 1/2"	48.3	2.21	48.7 - 0.2
NPT 2"	60.3	2.21	60.7 - 0.2



- D1 = External-Ø
- D3 = Hole Ø
- P = Pitch

Tightening torques and installation dimensions for cable glands

## Tightening torques\* for SKINTOP® metric cable glands

Table of recommended tightening torques (domed cap nut, connection thread) for SKINTOP® metric design to achieve category A protection rating and strain relief to EN 50262. For more information regarding the protection rating, see the product page.

Nominal size	Tightening torque in Nm	
	Plastic	Metal
M12 x 1.5	1.5	8
M16 x 1.5	3.0	10
M20 x 1.5	6.0	12
M25 x 1.5	8.0	12
M32 x 1.5	10.0	18
M40 x 1.5	13.0	18
M50 x 1.5	15.0	20
M63 x 1.5	16.0	20
M63 x 1.5 plus	-	25
M75 x 1.5	-	30
M90 x 2	-	45
M110 x 2	-	55

\*NOTE: The values in the table above constitute the tightening torques for fittings and the maximum tightening torques for domed cap nuts under normal climatic conditions. Note that lower torques must be used with different cable insulation materials; otherwise, the cable insulation may be damaged. For ATEX screw connections, see the corresponding operating instructions for the respective tightening torques (operating instructions can be found in the delivery bag).

## Tightening torques\* for SKINTOP® PG cable glands

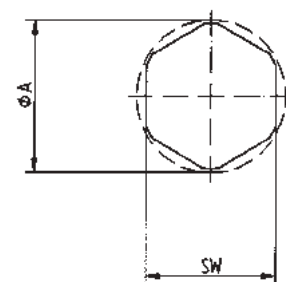
Nominal size	Tightening torques for fittings in Nm		Tightening torques for domed cap nuts in Nm	
	Plastic	Metal	Plastic	Metal
PG 7	3.0	6.25	1.7	6.25
PG 9	4.0	6.25	2.5	6.25
PG 11	4.0	6.25	2.5	6.25
PG 13.5	4.0	6.25	2.5	6.25
PG 16	6.0	7.5	3.3	7.5
PG 21	8.0	10.0	5.0	10.0
PG 29	13.0	10.0	5.0	10.0
PG 36	13.0	10.0	5.0	10.0
PG 42	13.0	10.0	5.0	10.0
PG 48	13.0	10.0	5.0	10.0

\*NOTE: The values in the table above constitute the tightening torques for fittings and the maximum tightening torques for domed cap nuts under normal climatic conditions. Note that lower torques must be used with different cable insulation materials; otherwise, the cable insulation may be damaged. For ATEX screw connections, see the corresponding operating instructions for the respective tightening torques (operating instructions can be found in the delivery bag).

## Installation dimensions and wrench sizes for cable glands

Diameter A indicates the installation space required for the relevant hexagon. This diameter corresponds to the width of the hexagon across corners plus an installation tolerance.

SW	Ø A	SW	Ø A	SW	Ø A	SW	Ø A
9	10.4	22	25.0	37	41.5	54	61.0
11	12.5	24	27.3	39	44.0	55	62.0
13	14.9	25	28.3	40	45.2	57	64.4
14	16.0	26	29.5	41	46.1	60	67.5
15	17.1	27	30.6	42	47.0	64	72.3
16	18.2	28	31.8	45	51.2	65	73.1
17	19.4	29	32.5	45	51.2	66	74.5
18	20.4	30	34.0	46	52.5	67	74.5
19	22.0	32	36.2	47	52.5	95	105.0
20	22.7	33	37.2	50	58.3	115	127.0
21	23.9	36	40.5	53	60.0	135	150.0



## Definition of protection ratings to EN 60529 (DIN 0470-1: 2014-09)

The protection ratings are indicated by a code that is always made up of the same two identification letters IP and the code numbers for the degree of protection, e.g. IP 54.

### Degrees of protection against solid foreign bodies

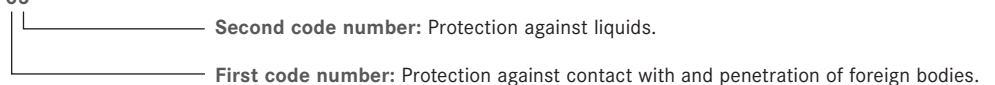
First code number	Short description	Definition
0	Not protected	
1	Protected against solid foreign bodies 50 mm diameter and above	The object probe, sphere of 50mm diameter, shall not fully penetrate.
2	Protected against solid foreign bodies 12.5 mm diameter and above	The object probe, sphere of 12.5 mm diameter, shall not fully penetrate.
3	Protected against solid foreign bodies 2.5 mm diameter and above	The object probe, sphere of 2.5 mm diameter, shall not penetrate at all.
4	Protected against solid foreign bodies 1.0 mm diameter and above	The object probe, sphere of 1.0 mm diameter, shall not penetrate at all.
5	Protected against dust	Intrusion of dust is not completely prevented but dust shall not penetrate in a quantity that would interfere with the satisfactory operation of the device or impair safety.
6	Dust-tight	No penetration of dust.

### Degrees of protection against water

Second code number	Short description	Definition
0	Not protected	
1	Protected against drops of water	Vertically falling drops shall have no harmful effects.
2	Protected against drops of water if the housing is tilted by up to 15°.	Vertically falling drops shall have no harmful effects if the housing is tilted by up to 15° on either side of the vertical.
3	Protected against spraying water	Water sprayed at an angle of up to 60° on either side of the vertical shall have no harmful effects.
4	Protected against splashing water	Water splashed against the housing from any direction shall have no harmful effects.
5	Protected against jets of water	Water projected in jets against the housing from any direction shall have no harmful effects.
6	Protected against powerful jets of water	Water projected in powerful jets against the housing from any direction shall have no harmful effects.
7	Protected against the effects of temporary immersion in water	Water must not penetrate in quantities causing harmful effects when the housing is temporarily immersed in water under standardised pressure and time conditions.
8	Protected against the effects of permanent immersion in water	Water must not penetrate in quantities causing harmful effects when the housing is continually immersed in water under conditions that must be agreed upon between the manufacturer and the user. However, the conditions must be more difficult than for number 7.
9	Protected against high-pressure and steam-jet cleaning (with high temperatures)	Water projected against the housing from any direction under very high pressure shall have no harmful effects

**NOTE:** Starting from September 2014 the description of degree of protection IP 69K has changed to IP 69, all test basics remain the same according to DIN EN 60529 (VDE-01): 2014-09.

**FOR EXAMPLE:** Identification letters IP 65





## Table 23-1: substitution PG/metric

### Getting the link to the future – now

At the turn of the Millennium, the old, familiar PG thread was replaced by the metric thread. On 31 December 1999, the DIN 46320 standard for PG thread connections was withdrawn.

It was replaced by the European Standard EN 50262 for metric threads – means that with the year 2000, only cable glands with metric connection threads have to be used.

The changeover affects not only cable glands, but also all housing systems and appliances into which cables must be inserted.

Sizes PG 7 to PG 48 were replaced by metric sizes M 12 to M 63. Additional sizes have been adopted into the European Standard, covering a range M 6 to M 110.

The ZVEI (Zentralverband Elektrotechnik und Elektroindustrie e. V. – the German Federation of Electrotechnical and Electrical Industries) draws attention to the fact that the European safety standard EN 502262 must be applied as from March 2001 at the latest; furthermore, the present test standard VDE 0619 for glands with PG thread will be withdrawn in March 2001.

EN 50262 is a safety standard, and no longer a construction standard with the function of defining dimensions, like DIN 46319 or DIN 46320.

This means that the functions required by a cable gland can be realised without restrictions applied by prescribed forms, such as:

- strain relief
- degree of protection
- impact strength
- temperature range.

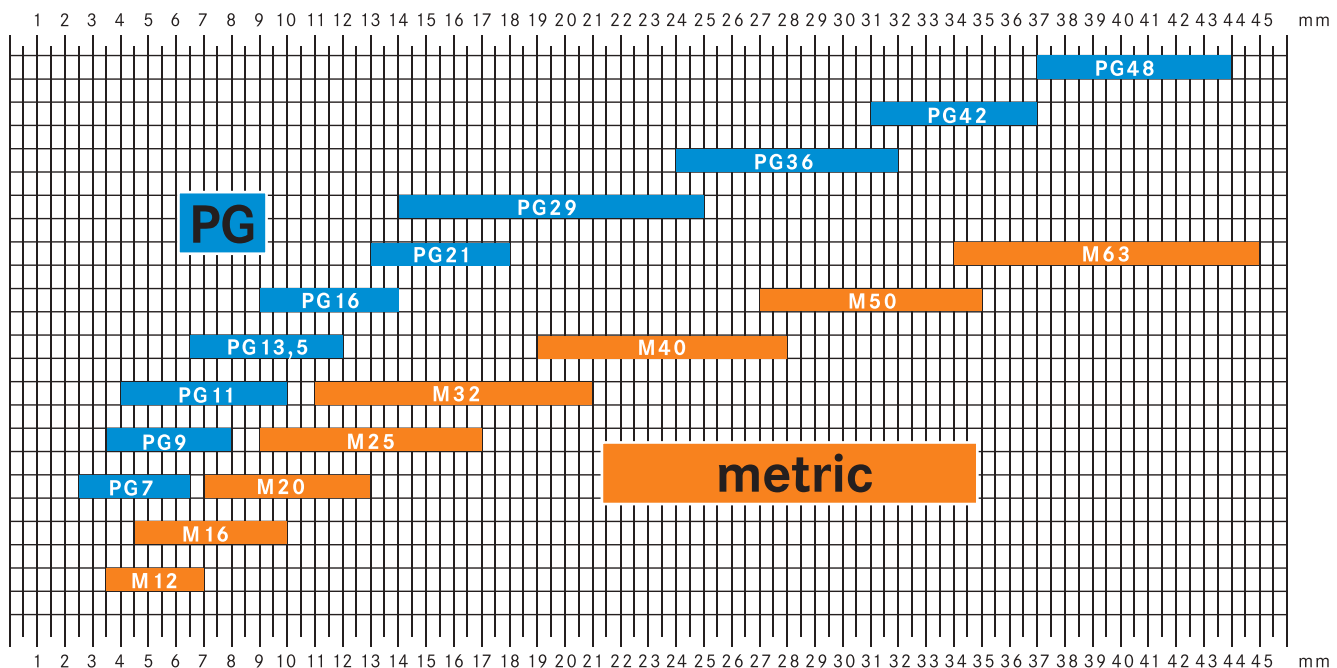
With our cable glands SKINTOP® and SKINDICHT®, we have transposed the requirements of EN 50262. Our metric SKINTOP® glands combine all the features of the proven SKINTOP® series: easy, fast, permanent installation, optimal strain relief, protection against vibration, variable clamping range and sealing according to Protection Class IP 68.

Naturally, we can also supply you with the corresponding supplementary components, such as:

- SKINTOP® GMP-GL-M counter nuts
  - SKINDICHT® SM-M counter nuts
  - SKINTOP® SD-M dust seal
  - SKINTOP® DV-M sealing plugs
  - plugs made of metal or plastic material;
  - O-rings
  - adapters
- and many more.

### Table of clamping ranges PG/metric

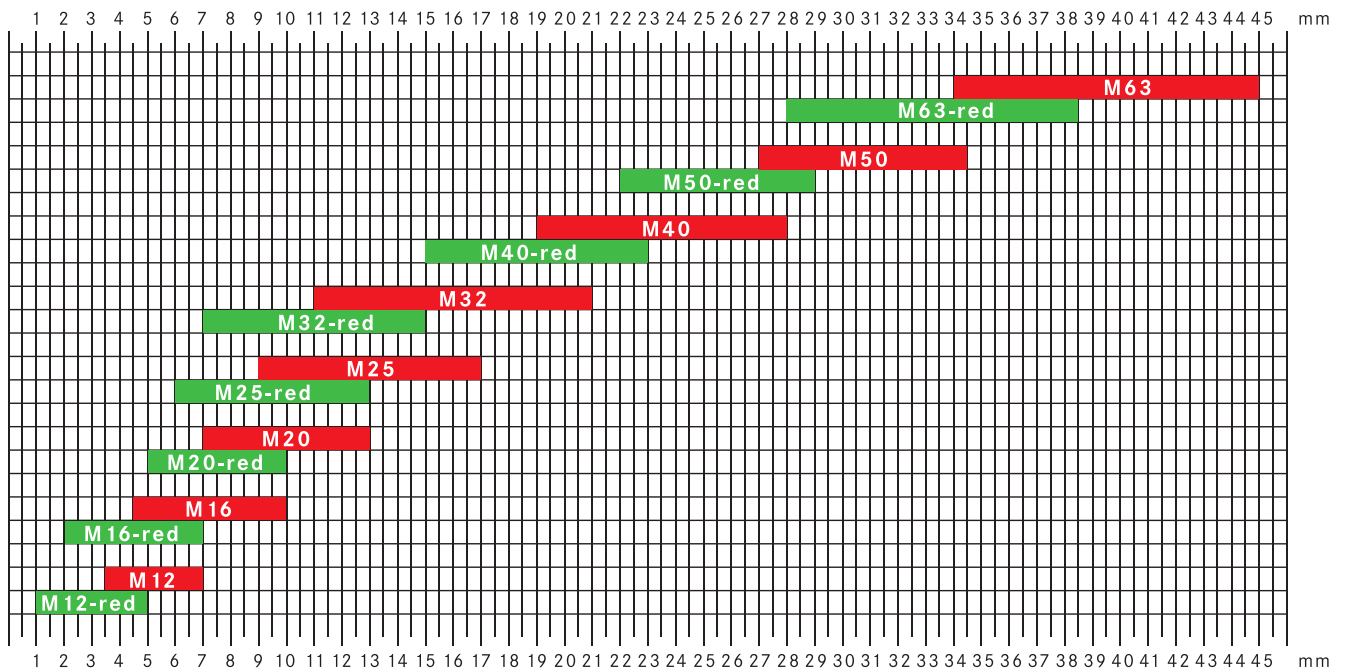
SKINTOP® ST and SKINTOP® ST-M



**Table 23-1: substitution PG/metric**

Clamping ranges SKINTOP® metric

SKINTOP® ST M and SKINTOP® STR-M



Comparison and classification of cable glands spanner size PG/metric

SKINTOP® ST and SKINTOP® ST-M

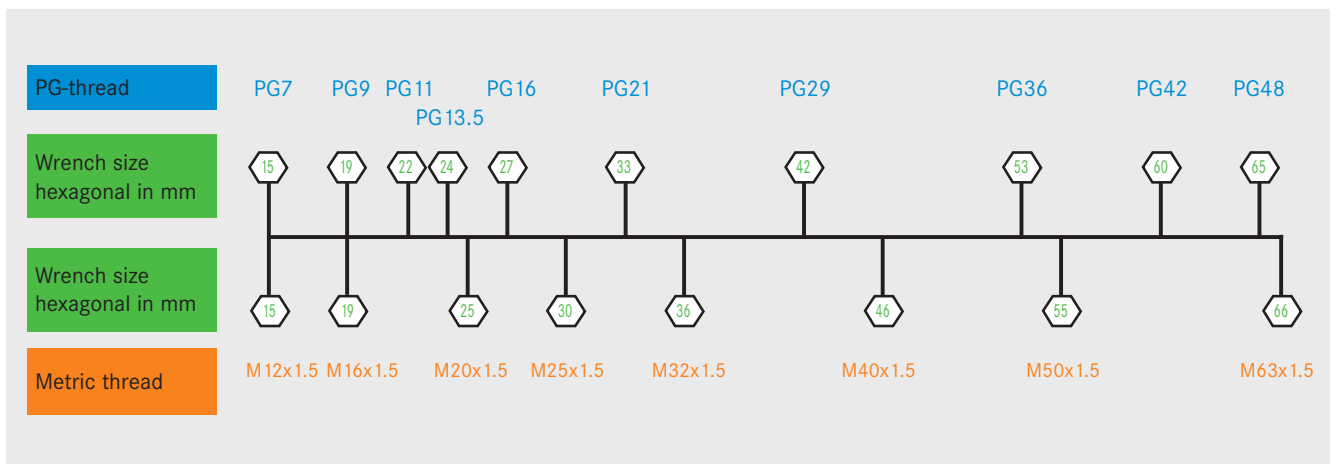


Table 23-2: EMC Optimized screening for use of cable glands

### Optimized screening

In industrial environments, motors, controls and automatic welding machines can seriously impair electromagnetic compatibility (EMC). Particular problems are caused in industrial installations by long cable runs for power supply or data transmission between individual components; appropriate preventive measures are therefore essential.

Due to the antenna radiation effect of such cables, radio interference can be picked up and the useful signal (for example, temperature sensor or shaft encoder) blanketed. Result: functional disturbances of the connected equipment – from undetected false readings to the breakdown of an entire production line. Conversely, cables can function as transmitters causing radio interference. Installation of electronic components in an earthed switch cabinet and the simultaneous use of screened cables has proved to be an effective countermeasure. In practice, however, the location of the cable duct frequently constitutes a weak point in the switch cabinet. Insufficient contact between the cable screening and the metal housing often destroys the desired screening effect.

It is here that the SKINTOP® and SKINDICHT® cable glands from Lapp prove their worth. The newly developed SKINTOP® MS-SC-M and SKINTOP® MS-M BRUSH in particular are distinguished by their excellent EMC characteristics in addition to ease of handling. It enables the use of various different cable designs within a large diameter range.

### Screening concepts

With the interference phenomena typically found in the industrial environment, we must distinguish principally between cable-linked and field-linked interference. Field-linked interference emissions which, for example, are radiated directly from a circuit board or, conversely, exercise an effect upon it, can be effectively checked by installing electrical or electronic assemblies in closed metal housings such as switch cabinets. If the housing does not have any particularly large apertures, a Faraday shield is produced which affords efficient protection against electro-magnetic interferences. In practice, this type of screening is generally extremely expensive and is hardly practicable in the case of moving machine components. An alternative solution is provided by cables with screening braid. In this case, the quality of the screen effect depends to a great extent on the texture and thickness of the braiding. In addition, optimum attachment of the the cable screening to the housing must be ensured by suitable mechanical elements in order to prevent penetration of the interference conducted on the cable screening. Of decisive importance is the derivation resistance, i.e. the resistance which a guide wave “sees” upon the cable screening when it meets the point of intersection cable/housing.

### Practical requirements

Thus, in terms of EMC, we have a series of practical requirements for optimum contact:

- The connection between the cable screening and the housing potential must be of low impedance. To ensure this, the contact surfaces must be as large as possible. Under ideal conditions the cable screening, together with the housing wall, constitute a closed connection and form a continuation of the housing, without permitting any openings to be formed.
- The connection must be of low induction. This means that the cable screening must be led to the housing wall via the shortest possible path and with the widest possible cross-section. Preferably a type of contact should be chosen which completely surrounds the internal conductor. The procedure frequently practised, namely first leading the cable into the housing and placing the screening somewhere inside the housing, whereby the screen braiding is often extended by means of a thin cable strand, makes effective screening almost impossible.
- For practical application, simplicity of handling and installation are desirable. An electrician must be able to carry out installation without difficulty.

### SKINTOP® and SKINDICHT®

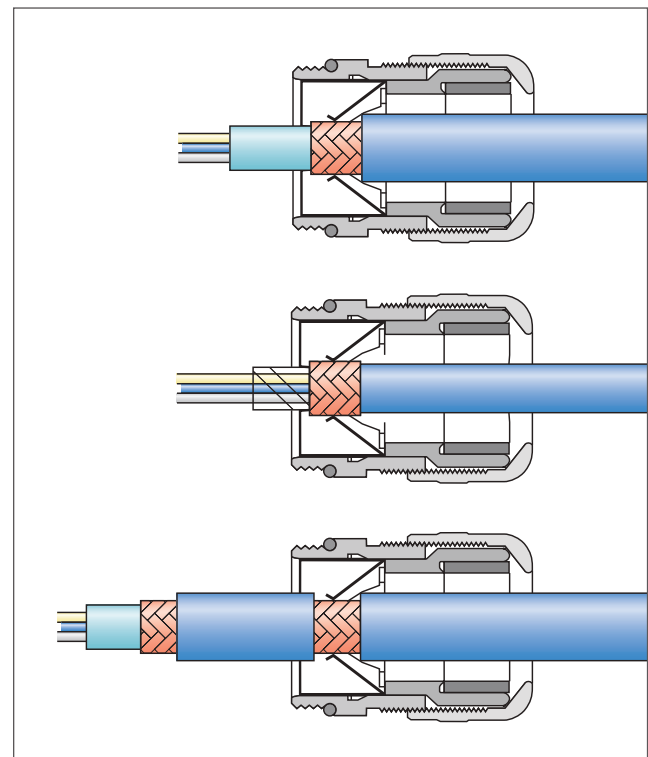
The cable glands SKINTOP® and SKINDICHT® guarantee, in addition to perfect mechanical contact, the necessary low impedance and low induction connection. These glands, which are simple to install, are available in different versions and sizes. With SKINDICHT® SHVE-M, the cable screen is pressed between an earthing sleeve and a conical seal, thus permitting 360° contact over a wide area. In the case of SKINTOP® MS-SC-M, the contact is produced by means of cylindrically arranged contact springs, the SKINTOP® MS-M BRUSH offers a 360° contact with a EMC BRUSH. Only the cable sheathing in the area of the contact springs must be removed, and it is not necessary to open the screen braiding.

For the sake of clarity, this article focuses upon the cable gland SKINTOP® MS-SC-M. In a number of tests, excellent screening properties were demonstrated. Since the appropriate standard for cable glands does not define a particular set-up of test equipment, two possible measuring procedures and their evaluation are described below:

### Derivation impedance, derivation attenuation

As a characteristic quantity for evaluating the quality of a cable connection to the wall of the housing (reference potential), the derivation resistance RA is documented via the frequency. This provides information as to what extent charges on the cable screening can be derived against the potential of the housing. To determine the screen attenuation factor of a cable, the derivation attenuation is calculated: the potential at the derivation resistance is related to the maximum available potential in a 50 W reference system. The derivation attenuation is obtained as follows:

$$aA \text{ (in dB)} = 20 \log (2RA / (2RA + 50 \text{ W})).$$



**Table 23-2: EMC Optimized screening for use of cable glands**

	Triaxial Method	Measurement of the derivation impedance
Application	Pairs of connectors and screened cables	Cable glands
Measurement	Screen attenuation mass from which the interaction impedance is calculated	Derivation impedance is determined directly
Reference to later application	Description of the screening efficiency: how effectively is the re-radiation of irradiation suppressed by field-linked interferences.	Description of how effectively interferences on the screening can be derived to an earthing mass (e.g. wall of switch cabinet)

**Triaxial Method**

In the Triaxial Method, measurement is carried out in accordance with the German Defence Equipment Standard VG 95373 Pt 40 or 41.

These set-ups, using a coaxial structure in a graduated tube (hence the term triaxial), are designed for a male/female socket pair, or employ a piece of cable of defined length for the purpose of qualifying a cable. The values of the screen attenuation mass aS and the coupling impedance ZK are determined for evaluation of the screening effect of the connectors depending upon their material characteristics and their construction, according to the formula:

$$aS = 20 \log (50 W/ZK).$$

A precondition for measurement according to these standards is a solid sheathing of the supply cable used (generally by means of a tube). However, this results in screen attenuation values of almost 100 dB; for practical applications on a switch cabinet wall, depending upon the conditions, these can be achieved only with difficulty or not at all.

**Comparison of both methods**

In order to provide by means of the measured values a description of practical use of the a/m products, the measurement procedure of the derivation impedance and conversion into screen attenuation have been used (see table).

**Measurement Results**

Measurements were made in example upon glands of type SKINTOP® MS-SC-M in various sizes with screened cables ÖLFLEX® CLASSIC CY in diameters of 6–22 mm, by both methods, in order to test and compare the validity of the results for cable glands obtained by each method.

Measuring the derivation impedance: in order to determine the derivation impedance, the cable glands were in each case connected to a piece of cable of approx. 10 cm length. At frequencies up to 10 MHz, all glands reveal a derivation impedance of <1W. This results in attenuation values of 30–50 dB (assuming a 50 W reference system). The amplitudes of high-frequency spurious components which are located in this frequency range are thus reduced at least by the factor 30, maximum by the factor 300. Only at frequencies above 3–4 MHz does the achievable attenuation sink to values <40 db (factor 100). At higher frequencies (100 MHz), derivation impedance values in the range of 5–10 W are obtained. The measurement values confirm the assumed favourable EMC characteristics. Even up to high frequencies, low derivation impedance – or high derivation attenuation values can be obtained. Thus together with effective cable screening, optimum protection against cable-conducted interference signals can be achieved.

**Triaxial measurement**

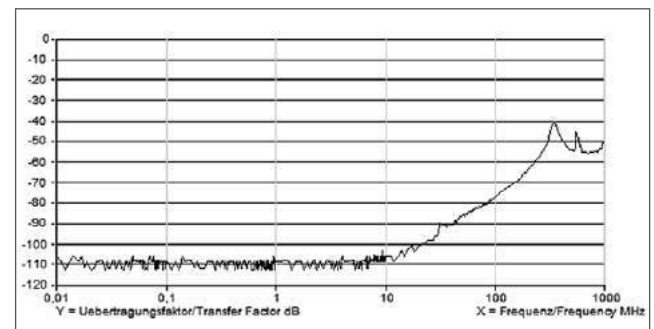
Measurements were performed as described above, in accordance with the German Defence Equipment Standard VG 95373, Procedure KS 01 B. The DC resistance of the glands equals 1 mW; this produces screening attenuation values which, depending upon the size and type of the gland, can amount to >100 dB.

**Comparison of results**

The results reveal a clear difference between derivation attenuation and the screening attenuation in a system with identical components cable/gland. The curve for derivation attenuation is shifted upwards by approx. 40 dB almost parallel to the screening attenuation curve, i. e. shifted to lower attenuation values. Nevertheless, these values are more meaningful with regard to cable-conducted interference, because in reality, attenuation values of between 80 and 100 dB can hardly be achieved.

**Conclusion**

The different measurement methods give different values for the attenuation rate and, with these values, different characteristics are expressed. On the one hand, the value “screening attenuation” expresses how effectively the re-radiation or the irradiation is suppressed by field-linked interferences (Triaxial Method); the value “derivation attenuation”, on the other hand, expresses how effectively interferences on the screening can be derived to an earthing mass (measurement of derivation impedance). This means that attenuation values cannot be simply compared without reservation. It can however be assumed that values for “derivation attenuation” are more meaningful for glands, because the results of the Triaxial Method (screen attenuation) are dependent on the screening of the supply cable used.



Source: Authors Dr.-Ing. U. Bochtler, Dipl.-Ing. M. Jacobsen, Botronic – Bochtler Electronic GmbH, Stuttgart

## Chemical resistance of plastics

Reagent	Concentration	at +°C %	Polyamide PA 6			Thermoplastic polyurethane PU	Polypropylene PP			Polyethylene HD-PE		Polyethylene LD-PE		Polystyrene PS		Nitrile butadiene rubber NBR
			Polyamide PA 6	Polyamide PA 6.6	Polyamide PA 12		Polypropylene PP	Polypropylene PP	Polyethylene HD-PE	Polyethylene LD-PE	Polyethylene LD-PE	Polystyrene PS	Polystyrene PS			
Exhaust gases containing carbon dioxide	all	60							☒	☒						
Exhaust gases, containing SO <sub>2</sub>	low	60							☒	☒						
Acetaldehyde	40%	20	✘	✘	☒		☒									20 °C ☒
Acetone	100%	20	☒	☒	☒	✘	☒		✘	✘						✘
Acrylic acid	100%	> 30	✘	✘	✘											✘
Alums, aqueous	diluted	40					☒		☒	☒			☒	☒		20 °C ☒
Allyl alcohol	96%	20	✘	✘	☒	☒	☒		☒	☒		20% ☒				
Aluminium chloride, aqueous	diluted	40					☒		☒	☒			☒	☒		20 °C ☒
Aluminium sulphate, aqueous	diluted	40					☒		☒	☒			☒	☒		20 °C ☒
Formic acid, aqueous	10%	20	✘	✘	☒		☒		☒	☒				☒		
Ammonia, aqueous	saturated	20	20% ☒	20% ☒	20% ☒		☒		☒	☒				☒	25% ☒	
Ammonium chloride, aqueous	saturated	60				3% ✘	☒		☒	☒						20 °C ☒
Ammonium nitrate, aqueous	diluted	40					☒		☒	☒				☒		20 °C ☒
Ammonium sulphate, aqueous	diluted	40					☒		☒	☒						✘
Aniline, pure	100%	20	✘	✘	✘		☒		☒	☒				✘		
Aniline hydrochloride, aqueous	saturated						☒		✘	✘						
Benzaldehyde, aqueous	saturated	20	pure ✘	pure ✘	pure ✘		☒							✘		✘
Benzine	100%	20	☒	☒	☒		✘		☒	✘				✘		☒
Benzoic acid, aqueous	all	40	20% ✘	20% ✘			☒		☒	☒				☒		✘
Benzole	100%	20	☒	☒	☒		✘		✘	✘				✘		✘
Bleaching liquor	12.5 Cl	20	✘	✘	✘	3% ✘	☒		☒	☒				☒		✘
Drilling oil	all	20	✘	✘	✘		✘		✘	✘				✘		✘
Chrome alum, aqueous	diluted	40					☒		☒	☒						20 °C ☒
Cyclohexanol	-	20	☒	☒	☒		☒		☒	☒				☒		☒
Diesel fuel		85	☒	☒	☒	20 °C ☒	20 °C ☒		20 °C ☒	20 °C ☒						
Ferric chloride, aqueous, neutral	10%	20	☒	☒	☒		☒		☒	☒				☒		☒
Glacial acetic acid	100%	20					☒		☒	☒						✘
Acetic acid	10%	20	✘	✘	☒	3% ✘	☒		☒	☒				✘		
Ethyl alcohol, aqueous	10%	20	40 vol% ☒	40 vol% ☒	40 vol% ☒				☒	☒				☒		
Ethylene chloride	100%	20					✘		✘	✘						✘
Ethylene oxide	100%	20					✘									
Ethyl ether	100%	20					✘									✘
Potassium ferrocyanide, aqueous	saturated	60					☒		☒	☒						
Fluorine	50%	40	pure ✘	pure ✘	pure ✘	✘	✘		✘	✘						
Formaldehyde, aqueous	diluted	40	pure ☒	pure ☒	pure ✘		40% ☒		40% ☒	40% ☒				30% ☒		20 °C ✘
Glucose, aqueous	all	50					☒		☒	☒						
Urea, aqueous	to 10%	40	20% ☒	20% ☒	20% ☒		☒		☒	☒				☒		
Flame-retardant hydraulic fluid		80	☒	☒	☒											
Hydraulic oils H and HL (DIN 51524)		100	☒	☒	☒											
Hydroxylamine sulphate, aqueous	to 12%	30					☒									
Caustic potash, aqueous	50%	20	☒	☒	☒		☒		☒	☒				☒		
Potassium bromide, aqueous	all	20	10% ☒	10% ☒	10% ☒		☒		☒	☒				☒		
Potassium chloride, aqueous	10%	20	☒	☒	☒		☒		☒	☒				☒		☒
Potassium dichromate, aqueous	40%	20	5% ✘	5% ✘	5% ✘		☒		☒	☒						☒
Potassium nitrate, aqueous	all	20	10% ☒	10% ☒	10% ☒		☒		☒	☒				☒		☒
Potassium permanganate, aqueous	saturated	20					☒							☒		
Hydrosilicofluoric acid, aqueous	to 30%	20	✘	✘			☒		☒	☒						

☒ Highly resistant  
 ✘ Limited resistance  
 ✘ Not resistant

The information is given to the best of our knowledge and experience, however, it must be regarded as being for guidance purposes only. In many cases, a final judgement can only be made by performing tests under actual working conditions.

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 HITRONIC®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 FLEXIMARK®  
 ACCESSORIES  
 APPENDIX

Reagent	Concentration										
	at + °C %	Polyamide PA 6	Polyamide PA 6.6	Polyamide PA 12	Thermoplastic polyurethane PU	Polypropylene PP	Polyethylene HD-PE	Polyethylene LD-PE	Polystyrene PS	Nitrile butadiene rubber NBR	
Carbon dioxide, dry	100%	60				⊗	⊗	⊗	50 °C ⊗	20 °C ⊗	
Carbonic acid	100%	60	⊗	⊗	⊗				20 °C ⊗	20 °C ⊗	
Cresylic acid, aqueous	to 90%	20	pure ✗	pure ✗		⊗	⊗	✗	✗	✗	
Coolant DIN 53521		120	✗	✗							
Copper chloride, aqueous	saturated	20				⊗	⊗	⊗		⊗	
Copper sulphate, aqueous	saturated	60				⊗	⊗	⊗		20 °C ⊗	
Magnesium carbonate, aqueous	saturated	100				⊗			50 °C ⊗		
Magnesium chloride, aqueous	saturated	20	10% ⊗	10% ⊗	10% ⊗	⊗	⊗	⊗	⊗	⊗	
Methyl alcohol	100%	20	⊗	⊗	⊗	40 °C ⊗	⊗	⊗	⊗	⊗	
Methylene chloride	100%	20	✗	✗	✗	✗	✗	✗			
Lactic acid, aqueous	to 90%	20	10% ⊗	10% ⊗	10% ⊗	3% ✗	⊗	⊗	⊗	80% ⊗	
Mineral oil			⊗	⊗	⊗		20 °C ⊗	20 °C ⊗	20 °C ⊗		
Sodium chlorate, aqueous	saturated	20	10% ✗	10% ✗	10% ✗		⊗	⊗	⊗		
Sodium hydroxide, aqueous	10%	20	⊗	⊗	⊗	3% ✗	⊗	⊗	⊗		
Nickel chloride, aqueous	saturated	20	10% ✗	10% ✗	10% ✗		⊗		⊗	⊗	
Nickel sulphate, aqueous	saturated	20	10% ✗	10% ✗	10% ✗		⊗	⊗	⊗	⊗	
Nitroglycerin	diluted	20						✗	✗		
Oil and grease		20	⊗	⊗	⊗		✗				
Oleic acid	-	20	⊗	⊗	⊗		⊗	⊗	⊗	✗	
Oxalic acid	all	20	10% ✗	10% ✗	10% ✗	3% ✗	⊗	⊗	⊗	⊗	
Ozone	pure		✗	✗	✗		✗	✗	✗		
Petroleum	100%	80	⊗	⊗	⊗		20 °C ⊗	20 °C ⊗	20 °C ✗	✗	
Phosgene, gaseous	100%	20					✗	✗	✗		
Phosphoric acid, aqueous	diluted	20	10% ✗	10% ✗	10% ✗	3% ✗	⊗	⊗	⊗	86% ⊗	
Phosphorus pentoxide	100%	20					⊗				
Mercury	pure	20	⊗	⊗	⊗		⊗	⊗	⊗	⊗	
Nitric acid, aqueous	50%	20	✗	✗	✗	3% ✗	✗	✗	✗	30% ⊗	
Hydrochloric acid, aqueous	30%	20	20% ✗	20% ✗	20% ✗	3% ✗	⊗	⊗	⊗	15% ⊗	
Lubricating grease, ester oil base		110	✗	✗							
Polyphenyl ester base		110	⊗	⊗	⊗						
Lubricating grease, silicone oil base		110	⊗	⊗	⊗						
Carbon disulphide	100%	20	⊗	⊗	⊗		⊗	✗	✗	✗	
Sodium sulfide, aqueous	diluted	40					⊗	⊗	⊗		
Sulphuric acid, aqueous	10%	20	✗	✗	✗	3% ✗	50% ⊗	50% ⊗	50% ⊗	⊗	
Sea water		40	⊗	⊗	⊗	20 °C ⊗	⊗	⊗	⊗	⊗	
Soap solution, aqueous	all	20	diluted ⊗	diluted ⊗	diluted ⊗	⊗	⊗	⊗	⊗	⊗	
Carbon tetrachloride	100%	20	⊗	⊗	⊗		✗	✗	✗	✗	
Toluene	100%	20	⊗	⊗	⊗	✗		✗	✗	✗	
Trichloroethylene	100%	20	✗	✗	✗		✗	✗	✗		
Vinyl acetate	100%	20					⊗				
Hydrogen	100%	60	20 °C ⊗	20 °C ⊗	20 °C ⊗		⊗	⊗	⊗	20 °C ⊗	
Xylene	100%	20	⊗	⊗	⊗		✗	✗	✗	✗	
Zinc chloride, aqueous	diluted	60	10% ✗	10% ✗			⊗	⊗	⊗	50 °C ⊗	
Zinc sulphate, aqueous	diluted	60					⊗	⊗	⊗	20 °C ⊗	
Zinc chloride, aqueous	diluted	40					⊗	⊗	⊗	✗	
Citric acid	to 10%	40	20 °C ⊗	20 °C ⊗	20 °C ⊗	3% ✗	⊗	⊗	⊗	⊗	

⊗ Highly resistant  
 ✗ Limited resistance  
 ✗ Not resistant

The information is given to the best of our knowledge and experience, however, it must be regarded as being for guidance purposes only. In many cases, a final judgement can only be made by performing tests under actual working conditions.

Registered trademarks

## Lapp Group trademarks registered in multiple countries

LAPP®	SKINTOP®
ÖLFLEX®	SKINMATIC®
HITRONIC®	UNITRONIC®
EPIC®	SILVYN®
FLEXIMARK®	ETHERLINE®
SKINDICHT®	

## Registered trademarks of other companies

Temflex™ 1500	(3M)	PROFIBUS®	(PI, PROFIBUS International)
Scotch™ 1183	(3M)	Netware	(Novell)
NEOPRENE®	(DuPont de Nemours)	Novell	(Novell)
TEFLON®	(DuPont de Nemours)	Arcnet	(Datapoint)
KEVLAR®	(DuPont de Nemours)	Apple	(Apple)
TERMI-POINT®	The Whitaker Corporation	Macintosh	(Apple)
INTERBUS®	(Phoenix Contact)	HP	(Hewlett Packard)
VariNET®	(Pepperl + Fuchs)	SIMATIC®	(SIEMENS®)
DEC®	(Digital Equipment Corporation)	SHIELD-KON®	(ABB)
LAT®	(Digital Equipment Corporation)	TY-FAST™	(ABB)
Thinwire® (net)	(Digital Equipment Corporation)	TY-GUN™	(ABB)
IBM	(International Business Machines)	TY-RAP®	(ABB)
PS/2	(International Business Machines)	TWIST TAIL™	(ABB)
Netview	(International Business Machines)	CIBES®	(Inomec AB)
AS/400	(International Business Machines)	SafetyBUS p	(Pilz)
DYMO®	(Sanford GmbH)	QUICKON®	(PhoenixContact)
VITON®	(DuPont Dow Elastomers)	INDRAMAT®	(Bosch Rexroth)
OS/2	(IBM)	Ecofast	(SIEMENS®)
DeviceNET™	(Open Device Net Vendor Association, ODVA)	DESINA®	VDW (Verein Deutscher Werkzeugmaschinenfabriken – German Machine Tool Builders Association)
Microsoft®	(Microsoft)	NYLON®	(DuPont de Nemours)
Microsoft® Windows	(Microsoft)	EtherCAT®	(EtherCAT Organisation)
SCO®	(Santa Cruz Operation)	EtherNet/IP®	(Open Device Net Vendor Association, ODVA)
Perbunan®	(Bayer AG)	CANopen	(CAN in Automation)
PROFINET®	(PI, PROFINET International)	TRASP®	(3M)

Certificate type		Fire protection	EAC
Product	Page		
<b>Flexible power and control cables, nominal voltage up to 500 V</b>			
ÖLFLEX® CLASSIC 100	26	✓	✓
ÖLFLEX® CLASSIC 100 CY	30	✓	✓
ÖLFLEX® CLASSIC 100 SY	31	✓	✓
ÖLFLEX® SMART 108	33	✓	✓
ÖLFLEX® CLASSIC 110	34	✓	✓
ÖLFLEX® CLASSIC 110 Orange	39	✓	✓
ÖLFLEX® CLASSIC 110 CY	40	✓	✓
ÖLFLEX® CLASSIC 110 SY	41	✓	✓
ÖLFLEX® CLASSIC 115 CY	44	✓	✓
ÖLFLEX® EB	46	✓	✓
ÖLFLEX® EB CY	47	✓	✓
ÖLFLEX® 140	48	✓	✓
ÖLFLEX® 140 CY	49	✓	✓
ÖLFLEX® 150	50	✓	✓
ÖLFLEX® 150 CY	51	✓	✓
ÖLFLEX® 191	52	✓	✓
ÖLFLEX® 191 CY	53	✓	✓
ÖLFLEX® SF	62	✓	✓
ÖLFLEX® ROBUST 210	73		✓
ÖLFLEX® ROBUST 215 C	74		✓
ÖLFLEX® CLASSIC 400 P	75		✓
ÖLFLEX® SPIRAL 400 P	241		✓
ÖLFLEX® CLASSIC 400 CP	77		✓
ÖLFLEX® CLASSIC 415 CP	78		✓
ÖLFLEX® 440 P	81	✓	✓
ÖLFLEX® 440 CP	82	✓	✓
ÖLFLEX® 491 P	83	✓	✓
ÖLFLEX® 450 P	84	✓	✓
ÖLFLEX® 500 P	85	✓	✓
ÖLFLEX® 540 P	86	✓	✓
ÖLFLEX® SPIRAL 540 P	244	✓	✓
ÖLFLEX® 540 CP	87	✓	✓
ÖLFLEX® 550 P	88		✓
ÖLFLEX® SERVO 720 CY	101	✓	
ÖLFLEX® SERVO FD 798 CP	112	✓	
ÖLFLEX® CLASSIC FD 810	119	✓	✓
ÖLFLEX® CLASSIC FD 810 CY	120	✓	✓
ÖLFLEX® CLASSIC FD 810 P	131	✓	✓
ÖLFLEX® CLASSIC FD 810 CP	132	✓	✓
ÖLFLEX® FD 855 P	135	✓	✓
ÖLFLEX® FD 855 CP	136	✓	✓
ÖLFLEX® ROBUST FD	133		✓
ÖLFLEX® FD 891	127	✓	✓
ÖLFLEX® FD 891 CY	128	✓	✓
ÖLFLEX® FD 891 P	138	✓	✓
ÖLFLEX® ROBOT 900 P	140	✓	✓
ÖLFLEX® ROBOT 900 DP	141	✓	✓
ÖLFLEX® ROBOT F1	142	✓	✓
ÖLFLEX® ROBOT F1 C	143	✓	✓

Certificate type		Fire protection	EAC
Product	Page		
ÖLFLEX® CHAIN 809	125	✓	✓
ÖLFLEX® CHAIN 809 CY	126	✓	✓
<b>Flexible power and control cables, nominal voltage up to 750 V</b>			
ÖLFLEX® CLASSIC 100	26	✓	✓
ÖLFLEX® CLASSIC 100 Yellow	29	✓	✓
ÖLFLEX® CLASSIC 100 CY	30	✓	✓
ÖLFLEX® CLASSIC 100 SY	31	✓	✓
ÖLFLEX® ROBUST 200	72		✓
ÖLFLEX® 540 P	86	✓	✓
ÖLFLEX® SPIRAL 540 P	244	✓	✓
ÖLFLEX® 540 CP	87	✓	✓
ÖLFLEX® 550 P	88		✓
<b>Flexible power and control cables, nominal voltage up to 1000 V</b>			
ÖLFLEX® CLASSIC 100 BK 0,6/1 kV	32	✓	✓
ÖLFLEX® CONTROL TM	54	✓	✓
ÖLFLEX® CONTROL TM CY	56	✓	✓
ÖLFLEX® TRAY II	58	✓	✓
ÖLFLEX® TRAY II CY	60	✓	✓
ÖLFLEX® CLASSIC 110 Black	42	✓	✓
ÖLFLEX® CLASSIC 110 CY Black	43	✓	✓
ÖLFLEX® FD 90	123	✓	✓
ÖLFLEX® FD 90 CY	124	✓	✓
ÖLFLEX® SERVO 700	100	✓	✓
ÖLFLEX® SERVO 2YSLCY-JB	102	✓	✓
ÖLFLEX® SERVO 2YSLCYK-JB	102	✓	✓
ÖLFLEX® SERVO 9YSLCY-JB	104	✓	✓
ÖLFLEX® SERVO 9YSLCY-JB BK	104	✓	✓
ÖLFLEX® SERVO FD 781 CY	108	✓	✓
ÖLFLEX® SERVO FD 796 P	109	✓	✓
ÖLFLEX® SERVO FD 796 CP	110	✓	✓
ÖLFLEX® CHAIN 809 SC	121	✓	✓
ÖLFLEX® CHAIN 896 P	139	✓	✓
SERVO LK SMS 6FX 5	106	✓	✓
SERVO LK SMS 6FX 8PLUS	114	✓	✓
ÖLFLEX® TORSION	154	✓	✓
NSSHÖU	96	✓	✓
<b>Halogen-free, flame retardant, flexible power cables, nominal voltage up to 1000 V</b>			
ÖLFLEX® CLASSIC 100 H	63	✓	✓
ÖLFLEX® CLASSIC 110 H	64	✓	✓
ÖLFLEX® CLASSIC 110 CH	65	✓	✓
ÖLFLEX® CLASSIC 130 H	66	✓	✓
ÖLFLEX® CLASSIC 135 CH	67	✓	✓
ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV	69	✓	✓
ÖLFLEX® CLASSIC 135 CH BK 0,6/1 kV	70	✓	✓
ÖLFLEX® PETRO C HFFR	71	✓	✓
ÖLFLEX® TORSION FRNC	154	✓	✓
ÖLFLEX® TORSION D FRNC	154	✓	✓
ÖLFLEX® HEAT 125 SC	189	✓	✓
H07ZZ-F	94	✓	✓

The table displays the state of available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products.



## Products with certification for Russia

Certificate type			
Product	Page	Fire protection	EAC
<b>Flexible rubber cables, nominal voltage 450/750 V</b>			
H05RR-F	80		✓
H05RN-F	81	✓	✓
H07RN-F	82	✓	✓
H07RN8-F	90	✓	✓
<b>Flexible cables for conveyor technology</b>			
ÖLFLEX® CRANE NSHTÖU	152	✓	✓
ÖLFLEX® CRANE VS (N)SHTÖU	153	✓	✓
ÖLFLEX® CRANE	155	✓	✓
ÖLFLEX® CRANE 2S	156	✓	✓
ÖLFLEX® CRANE PUR	154	✓	✓
ÖLFLEX® LIFT	157	✓	✓
ÖLFLEX® LIFT T	158	✓	✓
ÖLFLEX® LIFT S	159	✓	✓
ÖLFLEX® LIFT F	162	✓	✓
ÖLFLEX® CRANE F	160	✓	✓
ÖLFLEX® CRANE CF	161	✓	✓
<b>Heat resistant cables</b>			
ÖLFLEX® HEAT 105 MC	163	✓	✓
ÖLFLEX® HEAT 180 SiHF	166	✓	✓
ÖLFLEX® HEAT 180 SiF	180	✓	✓
ÖLFLEX® HEAT 180 SiF/GL	182	✓	✓
ÖLFLEX® HEAT 180 SiD	181	✓	✓
ÖLFLEX® HEAT 180 SiZ	182	✓	✓
ÖLFLEX® HEAT 180 H05SS-F EWKF	167	✓	✓
ÖLFLEX® HEAT 180 MS	168	✓	✓
ÖLFLEX® HEAT 180 C MS	169	✓	✓
ÖLFLEX® HEAT 180 EWKF	170	✓	✓
ÖLFLEX® HEAT 180 EWKF C	171	✓	✓
ÖLFLEX® HEAT 180 GLS	172	✓	✓
ÖLFLEX® HEAT 205 MC	173	✓	✓
ÖLFLEX® HEAT 205 SC	183	✓	✓
ÖLFLEX® HEAT 205 PTFE/FEP	173	✓	✓
ÖLFLEX® HEAT 260 MC	174	✓	✓
ÖLFLEX® HEAT 260 C MC	174	✓	✓
ÖLFLEX® HEAT 260 MC	174	✓	✓
ÖLFLEX® HEAT 260 SC	175	✓	✓
ÖLFLEX® HEAT 260 GLS	176	✓	✓
ÖLFLEX® HEAT 350 MC	177	✓	✓
ÖLFLEX® HEAT 350 SC	185	✓	✓
ÖLFLEX® HEAT 1565 MC	178	✓	✓
ÖLFLEX® HEAT 1565 SC	186	✓	✓
<b>Single cores, nominal voltage up to 1000 V</b>			
LiFY/LiFY 1 kV	131	✓	✓
H05V-K	191	✓	✓
X05V-K	189	✓	✓
H07V-K	193	✓	✓
X07V-K	194	✓	✓
H05Z-K (90°)	203	✓	✓
H07Z-K (90°)	204	✓	✓

Certificate type			
Product	Page	Fire protection	EAC
<b>PVC power and control cables for fixed installation up to 1000 V</b>			
Multi-Standard SC 1	197	✓	✓
Multi-Standard SC 2.1	198	✓	✓
Multi-Standard SC 2.2	201	✓	✓
LiYCY	206	✓	✓
Li2YCY	206	✓	✓
<b>ETHERLINE®</b>			
ÖLFLEX® STATIC CY BLACK	207	✓	✓
NYM-J	209	✓	✓
NYJ-J	211	✓	✓
NYJ-O	212	✓	✓
NYCY	213	✓	✓
NYCWY	214	✓	✓
NHXMH	210	✓	✓

### Data transmission cables: low/high frequency

ETHERLINE®  
 UNITRONIC®  
 UNITRONIC® BUS  
 UNITRONIC® LAN and  
 Coaxial cables

don't subject to the "Low voltage directive" 2014/35/EU.  
 They don't have mandatory certification and no EAC certificates.

Fire certificates are available. Please contact us.

The table displays the state of available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products.

## Fire load values of cables

### Inclusion in the calculation of fire loads on and in buildings

Current regulations and standards governing the assessment and restriction of consequential fire risks vary from country to country. In Germany, the valid state building regulations stipulate the inclusion of specific thresholds with regard to the accumulation of combustible parts of the building installation – which also includes cables – directly connected to the building.

Flexible cables are not intended for fixed installation in buildings. However, the approximate fire load of such cables can be calculated as follows:

- look up the “Approx. weight in kg/km” in the ordering table on the relevant product page of the catalogue and
- subtract the copper content (see column “Copper index in kg/km” in the catalogue) from this value. This results in the mass of the combustible insulation and sheathing material for the relevant article in kg/km,
- divide this value by a factor of 1000 to obtain the combustible mass in kg/m,
- multiply this value by the material-specific calorimetric value (in kWh/m or MJ/m) of the cable or wire as per table below.

**RESULT:** Average fire load value of this cable in kWh/m or MJ/m:

Material type	Fire load value in kWh/kg Average	Fire load value in MJ/kg Average
PVC	5.8	21
PE	12.2	44
PS	11.5	42
PA	8.1	26
PP	12.8	46
PUR	6.4	23
TPE-E	6.3	23
TPE-O	7.1	26
NR	6.4	23
SIR	5.0	18
EPR	6.4	23
EVA	5.9	21
CR	4.6	17
CSM	5.9	21
PVDF	4.2	15
ETFE	3.9	14
FEP	1.4	5
PFA	1.4	5
PTFE	1.4	5
HFFR	4.8	17
HFFR cross-linked	4.2	15

**NOTE:** The above calculation can only be used for cables of which the combustible content is made up entirely of the same material type and which contain no additional metals other than the copper content. Specific fire load values for the following products are available in tabular format on request: ÖLFLEX® CLASSIC 100 H, ÖLFLEX® CLASSIC 110 H, ÖLFLEX® CLASSIC 110 CH, ÖLFLEX® 120 H, ÖLFLEX® 120 CH. Conversions: 1 kWh/m = approx. 3.6 MJ/m; 1 MJ/m = approx. 0.277 kWh/m.

## Materials of cables and wires exposed to electromagnetic radiation

### Types of radiation and their effects

Electromagnetic radiation is a familiar term in many different areas. It can occur naturally (e.g. solar or natural radioactivity) and can also be produced artificially (e.g. X-ray units, lights or mobile communications). It can be divided up into different types or components – the decisive factor here is the wavelength, or alternatively the frequency, of the radiation. The electromagnetic spectrum is divided up into the following categories, listed here in descending wavelength order, or ascending frequency order:

- alternating currents (e.g. very low frequency broadcasting)
- radio waves (e.g. radio broadcasting)
- microwaves (e.g. microwave ovens, mobile communications, radar)
- infrared radiation (thermal radiation, e.g. thermography, remote control)
- visible light (component of radiation from artificial sources of light and from the sun)
- ultraviolet radiation (UV radiation – component of sunlight, technical applications)
- X-radiation (e.g. image processing within medical technology or material testing)
- gamma radiation (e.g. nuclear energy, technical applications)

Due to the impact they have, gamma rays, x-rays and very short wavelength UV rays are also summarised under “ionising radiation”. This term refers to radiation that carries enough energy to free electrons from atoms or molecules (ionisation).

With organic compounds, such as plastics used for cables and wires, the fundamental factor to consider is the impact of UV radiation and ionising radiation. They have the highest amount of energy and therefore have the greatest impact on the materials out of all the types of electromagnetic radiation.

This influence is used in plastic processing to give materials certain properties – for example using the appropriate radiation conditions to set certain adhesives, coatings, insulation materials and sheath materials of cables and wires, which only in this way achieve the required strength and durability. This is known as “cross-linking” or, to be more precise, “electron beam cross-linking” because there are also other cross-linking processes (e.g. chemical).

When it comes to the practical use of cables and wires, however, UV radiation and ionising radiation tend to have undesired effects. Colours can fade and plastics can become dull or brittle. Ultimately if the plastic becomes brittle or cracks start to form, the cables will no longer be fit for use.

### Use of cables and wires exposed to UV radiation

UV radiation is a component of solar radiation and therefore primarily affects exposed outdoor applications. Here the components which are able to penetrate the ozone layer have an impact: UVA radiation and a proportion of UVB radiation. UVC is filtered by the ozone layer and therefore does not reach the earth’s surface.

While UV radiation also occurs indoors, it is considerably less intense than it is outdoors because glass panes, depending on their design, can filter out a considerable proportion. Furthermore, shading is often installed and artificial sources of light usually only emit a small amount of UV radiation.

Since different products are subjected to remarkably different conditions at their respective sites of application, for example regarding the

duration and angle of irradiation, as well as shading and other influencing factors such as ambient temperature, humidity and air quality, it is not possible to make any universal statements about the durability and service life of products (see also technical appendix T0, 7. Service life).

Testing methods complying with UV resistance-related standards (e.g. ISO 4892-2) enable a general evaluation of products that are to be exposed to UV radiation when in use and make it possible to compare different materials and end products.

The plastics used for cables and wires differ in their sensitivity to the impact of UV rays; using appropriate stabilisers, colour pigments or soot can considerably reduce this sensitivity by absorbing the UV radiation and converting it into less critical thermal radiation. This prevents UV rays from penetrating into the molecular chains of the sheath material, splitting them up into highly reactive radicals which attack the molecular chain structure of the plastic and in the process trigger accelerated ageing.

Cables and wires with black sheaths are generally better protected than those with other colours because black surfaces are considerably better at absorbing UV radiation.

This knowledge has also been applied in standards, thus cables with black sheaths are suitable for outdoor use in accordance with EN 50525-1 and VDE 0285-525-1.

Some plastics demonstrate a good level of resistance even without a black colouring, these are:

- cross-linked polyethylene (XLPE)
- elastomers (e.g. CR or Si)
- thermoplastic elastomers (TPE-E, TPE-O, TPE-U, e.g. PUR)
- fluoropolymers (e.g. PTFE or FEP)

However, these plastics also differ in terms of resistance depending on the colour because the aforementioned effect of black sheaths always improves resistance.

With polyurethane cables which are not black (e.g. orange or yellow cables), it is important to note that, despite fading considerably with time, they will continue displaying a good level of flexibility and strength because the base material is able to withstand the UV radiation, just not the colour pigments.

This means that despite the visible damage caused by UV radiation or weather conditions, these types can be technically still fully functional.

### Use of cables and wires exposed to ionising radiation

Ionising radiation normally only occurs in defined applications and when it is supposed to, meaning that materials with the appropriate resistance can be specially adapted to the prevalent conditions of the application in advance.

Cables are therefore normally only tested for radiation resistance if their intended usage includes exposure to ionising radiation. This means that for all other cables, indications can only be made for the radiation resistance of typically used materials. While these indications are not representative of the resistance of the whole cable, the values can still act as a rough guide and make it possible to compare the cables with one another.

The radiation resistance of materials is defined using the Radiation Index (RI) in IEC 60544-4 and refers to the point at which the elongation at break is reduced to  $\geq 50\%$  of the original value.

## Materials of cables and wires exposed to electromagnetic radiation

The table below lists the typical maximum dose of the individual materials in grays (and rad) of a gamma radiation source at which the elongation at break of the test specimen still remains above 50% of its unaged value.

Conversions:

1 Gy = 100 rad; 1Gy = 1J/kg

The resistance of cables, wires and other products for connection technology against ionising radiation plays a particularly crucial role in nuclear plants. In addition to the suitability of the products themselves, all the processes also need to meet the special requirements of such application areas.

This is why U.I. Lapp GmbH proved itself as qualified supplier of cables, wires, cable glands and cable-related accessories to nuclear plants by passing system-related and product-related quality assurance testing – see “Zertifikat KTA 1401” (Acknowledgement of quality assurance in accordance with regulation KTA 1401). The certificate is available in German at:

[www.lappkabel.de/Service/Downloadcenter/Zertifikate](http://www.lappkabel.de/Service/Downloadcenter/Zertifikate)

## Resistance of plastics to ionising radiation

Material-type	Radiation resistance in Gy approx.	Radiation resistance in rad approx
PVC	8 x 10 <sup>5</sup>	8 x 10 <sup>7</sup>
PE LD	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
PE HD	7 x 10 <sup>4</sup>	7 x 10 <sup>6</sup>
VPE (XLPE)	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
PA	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
PP	1 x 10 <sup>3</sup>	1 x 10 <sup>5</sup>
PETP	1 x 10 <sup>7</sup>	1 x 10 <sup>7</sup>
PUR	5 x 10 <sup>5</sup>	5 x 10 <sup>7</sup>
TPE-E	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
TPE-O	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
NR	8 x 10 <sup>5</sup>	8 x 10 <sup>7</sup>
SIR	2 x 10 <sup>5</sup>	2 x 10 <sup>7</sup>
EPR	1 x 10 <sup>6</sup>	1 x 10 <sup>8</sup>
EVA	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
CR	2 x 10 <sup>5</sup>	2 x 10 <sup>7</sup>
ETFE	1 x 10 <sup>5</sup>	1 x 10 <sup>7</sup>
FEP	3 x 10 <sup>3</sup>	3 x 10 <sup>5</sup>
PFA	1 x 10 <sup>3</sup>	1 x 10 <sup>5</sup>
PTFE	1 x 10 <sup>3</sup>	1 x 10 <sup>5</sup>

Using UL-approved cables

## Table 29-1: UL mark on cables and wires and its significance with regard to intended usage

### or (UL) UL Listing Mark für listed cables & wires

The intended use of cables and wires in this category is for fixed wiring in residential buildings or for commercial or industrial use. For example listed cables and wires not only have to meet individual UL product standards, but must also be applied according to the relevant articles of the National Electrical Code (NEC). The NEC/NFPA 70 contains detailed specifications relating to the correct usage of listed cables and wires.

Such products can be used both for factory wiring of electrical equipment, devices, appliances and machines as well as for on-site or field wiring of industrial machinery and systems according to NFPA 79 or of energy generation installations.

### Typical codes for listed cables and wires:

MTW, TC, PLTC, CM, CL2, THHN, THWN; SO, SOO, ST, STO, SJT, SJTO.

### A selection of Lapp Kabel products with multiple listings/approvals:

ÖLFLEX® CONTROL TM, ÖLFLEX® TRAY II, ÖLFLEX® AUTO-X; UNITRONIC® BUS, UNITRONIC® 300.

See table T29-4 for more details.

### Approval mark on product:

(UL) = UL Listing Mark

### UL Recognition Mark für AWM cables and wires

UL recognized Appliance Wiring Material (abbrev. "AWM") comprises cables and wires intended for **fully factory-wired** electrical equipment, devices, appliances, control cabinets and industrial machinery.

Commonly AWM is not intended for direct on-site wiring (field wiring). Cables and wires with UL AWM style labelling must be used for the applications stipulated by the relevant style description on the UL Style Sheet ([www.ul.com](http://www.ul.com)). Since some UL (AWM) Styles are permitted to be applied by equipment manufacturers with particular ratings out of a shortlist of style ratings depending on the style, it will be very

### Quick and simple: check Lapp UL approvals online

Any Internet user can visit <http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm> to gain direct access to the Online Certification Directory of Underwriters Laboratories. Our UL approvals can be viewed by entering "U. I. Lapp" or "Lapp USA" in the "Company name" field; the individual File Numbers and Control Category Numbers (CCN) are also provided.

recommendable to identify product features considering the product's technical data as per the Lapp catalogue and Lapp's product data sheet, especially when it comes down to UL ratings for possible oil resistance, voltage class, flame retardance and operating temperature on the conductor.

If the manufacturer of an electrical device, appliance or machine wishes to obtain an officially recognised "UL listing" to release the relevant item as a series product or acquire a "field labelling" for a stand-alone machine or system, the body tasked with the certification (the National Recognized Testing Laboratory or NRTL) must be provided with all construction-relevant documentation.

The entire listing process will be significantly faster, simpler and cheaper if all installed cables and wires are already "listed" or "recognized", as any cables that do not meet these criteria will have to be tested for suitability.

### NOTE:

#### Multi-standard cables and wires

Multi-standard cables with mm<sup>2</sup> and AWG/MCM conductor sizes generally have special conductor stranding, as a result of which one of the specified conductor cross-sections is always a little larger (oversized). In individual cases, this may cause problems when connecting terminals designed for AWG conductor sizes.

#### For further information on the topic of this appendix, see:

Table T11 "Conductor resistances and conductor stranding (metric)", Table T16 "Anglo-American dimensions", Table T13 "Current rating of cables according to NFPA 70 (National Electrical Code) NFPA 79 Electrical Standard of Industrial Machinery".

**Table 29-2: NFPA – using cables in industrial installations in the USA (part 1)**

NFPA 79 is the US-american, electrical standard of the USA’s NFPA (National Fire Protection Association) about industrial machinery to be operated in the USA. NFPA 79 generally applies to electrical components used in individual machines and machine configurations operating together (machine groups).

Examples of industrial machinery include: Machine tools, injection moulding, woodworking, assembly and material handling machines – generally, any machines for material processing and transport in the broader sense, but with a clear distinction from “passenger transport”, for example.

Important aspects of NFPA 79 were revised in 2006. One of the main objectives of this revision was the further harmonisation of NFPA 79 with its European “counterpart”, IEC/EN 60204. As a result, the chapter structure of NFPA 79 has been aligned with IEC/EN 60204 and safety standards adopted to represent the latest state of the art.

In NFPA 79-Edition 2007 – unlisted AWM single cores or unlisted multi-core AWM cables were explicitly prohibited, with the exception of those with a discretionary provision. Edition 2012 greatly relaxed the strict restrictions regarding the use of AWM cables. As per 2015 Edition, section 12.9.2, AWM cables are permitted, provided that **at least one** of the following conditions is met:

- cable as part of a, for this purpose, “listed assembly”
- cable specified for use in listed system or machine and utilised according to the instructions of the component supplier
- cable meets all design requirements stipulated by NFPA 79 (sections 12.2 to 12.6) incl. modifications with regard to conductor stranding, flame retardancy, insulation wall thickness and insulation/sheath labelling

“Machine Tool Wire (MTW)” – as a single-core or multi-core cable is a permitted alternative. In the case of wiring between elements of a machine group, “Tray Cable” (TC) is often a standard-compliant and cost-effective solution.



This schematic of an industrial machine shows the main applications of cables and wires with reference to the relevant sections in NEC®/NFPA. “NEC®” is a trademark of the National Fire Protection Association (NFPA).

As of NFPA 79, 2012 Edition, particular significance is attached to the selection of cables. This reflects the high demands placed on the reliability of industrial machines as well as the frequently draconian impact of liability claims. The global means of cable procurement also carry a certain amount of risk. It is therefore all the more important that the relevant technical standards are met.

We are committed to informing our customers of any significant changes to important technical standards. For this purpose, we work closely together with our colleagues at the production and sales location in Florham Park, New Jersey ([www.lappusa.com](http://www.lappusa.com)).

Lapp offers a range of products with the “UL – Recognition Mark” and “UL – Listing”, fully compliant with the specifications of NFPA 79, 2015 Edition.

**Examples are:** ÖLFLEX® TRAY II, UNITRONIC® 300 STP, MULTI-STANDARD SC 2.1.

Further information on this topic can be found at: [www.lappkabel.de](http://www.lappkabel.de) → SERVICE → Knowledge Centre → NFPA 79.

Using UL-approved cables

### Table 29-3: NFPA – using cables in industrial installations in the USA (part 2)

#### The following general rules apply to the construction and operation of machinery in the USA:

The machinery must comply with federal safety laws issued by the Occupational Safety and Health Administration (OSHA.: [www.osha.gov](http://www.osha.gov)) as well as the national or local codes (legal regulations) applicable at the installation location.

Machines are only deemed safe if they have been constructed and manufactured in accordance with the relevant standards (NFPA 70, NFPA 79, ...) and their safety both tested and confirmed by a Nationally Recognized Testing Laboratory (NRTL: [www.osha.gov/dts/otpc/nrtl/](http://www.osha.gov/dts/otpc/nrtl/)). Meeting of the above conditions must be clearly indicated to the local inspector/safety officer/authority (Authority Having Jurisdiction, AHJ) by the attachment of an NRTL label (listing or field labelling) to the machine.

#### NFPA 79 Electrical Standard for Industrial Machinery – 2015 Edition

This important standard is published by the National Fire Protection Association ([www.nfpa.org](http://www.nfpa.org)).

It is basically the US counterpart of IEC 60204-1, which equates to the European standard EN 60204-1 for machine safety. As a rule, only “listed cables” must be used – although “UL AWM recognized cables & wires” can be used for “factory-wired equipment” if one of the conditions specified in table T29-2 is met.

Any lines laid on (open) cable conduits or cable trays must be approved for this purpose (cable tray rating).

In the case of industrial installations, in which permanent maintenance and repair by qualified electricians is assured, cables with the addition “ER” (which stands for “exposed run” and replaces the previous designation “open wiring”) can also be applied for unprotected (Exposed) transitions of not longer than 6 ft. or 1.8 metres each between cable trays or between cable tray and machine/cabinet, for example.

The use of cables with such ratings – such as the Lapp Kabel types: ÖLFLEX® TRAY II, ÖLFLEX® AUTO X, ÖLFLEX® AUTO I, UNITRONIC® 300 – enables significant material and time savings during installation.

In many sections, NFPA 79 refers to the US National Electrical Code (NEC®). This applies particularly to wiring between machines or machine groups where the cable routing utilises the building structures. In such cases, the wiring must comply with the appropriate wiring method specified by the NEC®.

#### NEC® (National Electrical Code) Handbook Edition NEC® <NFPA 70> 2011

This code contains the standard NFPA 70. As well as the normative content, the handbook also provides many useful explanations, tables, graphics, photos and comments. Both the NEC® and the NFPA 79 standard can be ordered via the website at [www.nfpa.org](http://www.nfpa.org).

#### UL 508-A

In addition to the aforementioned basic and technical standards, there are also special standards such as UL 508-A, according to which control cabinets for machines can also be configured and labelled on the basis of this separate standard for industrial control panels ([www.ul.com](http://www.ul.com)).

**Table 29-4: overview of corresponding products in this catalogue – type “Listed”**

Lapp cable type with UL listing	Listed type	Voltage in V	Temperature in °C	Compound	Compliant with NFPA 79, Edition 2015
Multi-Standard SC 2.1	MTW	600	90	PVC	✓
Multi-Standard SC 2.2	MTW	600	90	PVC	✓
ÖLFLEX® CONTROL TM, TM CY	MTW, TC-ER, WTTC	600, 1000	90	Thermopl. Polymer	✓
ÖLFLEX® TRAY II, TRAY II CY	MTW, TC-ER or DP-1, WTTC, SUNRES	600, 1000	90	Thermopl. Polymer	✓
UNITRONIC® 300, 300S, 300 STP	CMG, PLTC, Open Wiring, Oil Res 1	300	105	PVC	✓
UNITRONIC® FD CP plus	CMX	250	75	PUR	✓
UNITRONIC® FD CP (TP) plus	CMX	250	75	PUR	✓
UNITRONIC® BUS IBS A	CMX	250	70	PVC	✓
UNITRONIC® BUS IBS P COMBI	CMX	250	75	PUR	✓
UNITRONIC® BUS IBS FD P	CMX	250	70	PUR	✓
UNITRONIC® BUS IBS FD P COMBI	CMX	450	70	PUR	✓
UNITRONIC® BUS IBS Yv	CMX	250	75	PVC	✓
UNITRONIC® BUS IBS Yv COMBI	CMX	250	75	PVC	✓
UNITRONIC® BUS LD	CMX	250	70	PVC	✓
UNITRONIC® BUS LD FD P	CMX	250	75	PUR	✓
UNITRONIC® BUS PB A	CMX	250	75	PVC	✓
UNITRONIC® BUS PB FC	CMG	100	60	PVC	✓
UNITRONIC® BUS PB 7-W FC	CMX	250	75	PVC	✓
UNITRONIC® BUS PB H FC	CMX	100	75	FRNC	✓
UNITRONIC® BUS PB P FC	CMX	100	75	PUR	✓
UNITRONIC® BUS PB FD P A	CMX	250	70	PUR	✓
UNITRONIC® BUS PB TORSION	CMX	300	75	PUR	✓
UNITRONIC® BUS PB FESTOON	CMG	600	75	PVC	✓
UNITRONIC® BUS PB FRNC FC	CMG	250	60	PUR	✓
UNITRONIC® BUS PB FD FRNC FC	CMG	250	60	PUR	✓
UNITRONIC® BUS PB TRAY	CMG/PLTC-ER	600	75	PVC	✓
UNITRONIC® BUS PA (BU)	CMX	100	75	PVC	✓
UNITRONIC® BUS PA (BK)	CMX	100	75	PVC	✓
UNITRONIC® BUS PA FC	CMG	100	75	PVC	✓
UNITRONIC® BUS FF 3 (YE)	CMG/PLTC	300	105	PVC	✓
UNITRONIC® BUS FF 3 ARM	CMG/PLTC	300	105	PVC	✓
UNITRONIC® BUS FF 2	CMG	300	105	PVC	✓
UNITRONIC® BUS CC	CM/PLTC	300	75	PVC	✓
UNITRONIC® BUS CAN	CMX	250	75	PVC	✓
UNITRONIC® BUS CAN FD P	CMX	250	70	PUR	✓
UNITRONIC® BUS CAN TRAY	CMG/PLTC-ER	600	75	PVC	✓
UNITRONIC® BUS ASI (PVC)	CMG	300	80	PVC	✓
UNITRONIC® BUS SAFETY	CMX	250	75	Compound	✓
UNITRONIC® BUS DN THICK FRNC	CMG	300	80	FPE FRNC	✓
UNITRONIC® BUS DN THIN FRNC	CMG	300	80	FPE FRNC	✓
UNITRONIC® BUS DN THICK Y	CMG	300	80	PVC	✓
UNITRONIC® BUS DN THIN Y	CMG	300	80	PVC	✓
UNITRONIC® BUS DN THICK FD P	CMX	300	80	PUR	✓
UNITRONIC® BUS DN THIN FD Y	CMG	300	80	PVC	✓
UNITRONIC® BUS DN THICK FD Y	CMG	300	80	PVC	✓
UNITRONIC® BUS DN THIN FD P	CMX	300	80	PUR	✓
ETHERLINE® PN Cat.5e Y	CMX	125	75	PVC	✓
ETHERLINE® Y FC Cat.5	CMG/PLTC	600	75	PVC	✓
ETHERLINE® PN Cat.5e YY	CMG	125	70	PVC	✓
ETHERLINE® PN Cat.5 Y Flex FC	CMG	600	70	PVC	✓
ETHERLINE® FD P FC Cat.5e	CMX	300	75	PUR	✓
ETHERLINE® PN Cat.5e FRNC FLEX FC	CMG	100	75	FRNC	✓
ETHERLINE® Y FLEX Cat.5e	CMG	100	75	PVC	✓
ETHERLINE® Y EC FLEX Cat.5e	CMX	300	75	PVC	✓
ETHERLINE® P EC FLEX Cat.5e	CMX	125	75	PUR	✓
ETHERLINE® PN Cat.6 <sub>A</sub> Y FLEX	CMG	300	75	PVC	✓
ETHERLINE® PN Cat.6 <sub>A</sub> FRNC FLEX	CMG	300	75	FRNC	✓
ETHERLINE® PN Cat.6 <sub>A</sub> FD Y	CMX	125	75	PVC	✓
ETHERLINE® PN Cat.6 <sub>A</sub> FD P	CMX	125	75	PUR	✓
ETHERLINE® PN Cat.6 <sub>A</sub> TORSION Y	CMX	125	75	PVC	✓
ETHERLINE® PN Cat.6 <sub>A</sub> TORSION P	CMX	125	75	PUR	✓
ETHERLINE® FD P Cat.6	CMX	125	75	PUR	✓
ETHERLINE® TRAY ER PN Y FC	CMG/PLTC-ER	600	75	PVC	✓
ETHERLINE® MARINE FRNC FC	CMG/PLTC	600	75	FRNC	✓
ETHERLINE® TRAY Cat 5e Y	CMG/CMR/PLTC			PVC	✓
HITRONIC® PCF Duplex PN B PVC-PVC A	OFNG		75	PVC	✓

The table displays the state of available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products.

ÖLFLEX®  
UNITRONIC®  
ETHERLINE®  
HITRONIC®  
EPIC®  
SKINTOP®  
SILVYN®  
FLEXIMARK®  
ACCESSORIES  
APPENDIX



Using UL-approved cables

**Table 29-5: overview of corresponding products in this catalogue – type AWM**

Lapp cable type with AWM style	Style number	Voltage in V	Temperature in °C	Compound	Compliant with NFPA 79, Edition 2015
Multi-Standard SC 2.1	1015	600	105	PVC	✓
Multi-Standard SC 2.2	10269	1000	105	PVC	✓
Multi-Standard SC 1	1007, 1569	300	105	PVC	✓
ÖLFLEX® CLASSIC 110 H	21089	600	75	Special compound, halogen-free	✓
ÖLFLEX® CLASSIC 110 CH	21089	600	75	Special compound, halogen-free	✓
ÖLFLEX® CLASSIC 130 H	21089	600	75	Special compound, halogen-free	✓
ÖLFLEX® CLASSIC 135 CH	21089	600	75	Special compound, halogen-free	✓
ÖLFLEX® CLASSIC 130 H BK	21156	1000	75	Special compound, halogen-free	✓
ÖLFLEX® CLASSIC 135 CH BK	21156	1000	75	Special compound, halogen-free	✓
ÖLFLEX® 150 CY	21098	600	90	PVC	✓
ÖLFLEX® 150	21098	600	90	PVC	✓
ÖLFLEX® 191	21098	600	90	PVC	✓
ÖLFLEX® 191 CY	21098	600	90	PVC	✓
ÖLFLEX® 409 P	20234	1000	80	PUR	✓
ÖLFLEX® 491 P	20234	600	80	PUR	✓
ÖLFLEX® CONTROL TM, TM CY	20886	1000	105	Special PVC compound	✓
ÖLFLEX® CHAIN 809	20886	1000	80	PVC	✓
ÖLFLEX® CHAIN 809 CY	20886	1000	80	PVC	✓
ÖLFLEX® FD 891	2587, 21098	600	90	PVC	✓
ÖLFLEX® FD 891 CY	2587, 21098	600	90	PVC	✓
ÖLFLEX® FD 855 P, CP	21576	1000	80	PUR	✓
ÖLFLEX® FD 891 P	20234	600	80	PUR	✓
ÖLFLEX® CHAIN 896 P	20234	1000	80	PUR	✓
ÖLFLEX® CHAIN 809 SC, SC CY	10107	600	90	PVC	✓
ÖLFLEX® FD 90	10107	600	90	PVC	✓
ÖLFLEX® FD 90 CY	10107	600	90	PVC, DESINA <sub>®</sub> -compliant	✓
ÖLFLEX® TORSION (D) FRNC	21288	1000	80	Special compound, halogen-free	✓
ÖLFLEX® HEAT 180 MS	4476, 3529	600	150	Silicone compound	✓
ÖLFLEX® HEAT 180 C MS	4476, 3529	600	150	Silicone compound	✓
ÖLFLEX® HEAT 180 SiFA	3644	1000	150	Silicone	✓
ÖLFLEX® PETRO C HFFR	10587, 20234	1000	80	PUR	✓
ÖLFLEX® ROBOT F 1	20940	Up to 1.5 mm <sup>2</sup> : From 2.5 mm <sup>2</sup> : 600 1000	80	PUR	✓
ÖLFLEX® SERVO 719 CY	2570	1000	80	PVC	✓
ÖLFLEX® SERVO 9YSLCY-JB	2570, 20886	1000	80	PVC	✓
ÖLFLEX® SERVO 7DSL	2570	1000/300	80	PVC	✓
ÖLFLEX® SERVO FD 796 P	20234	1000	80	PUR	✓
ÖLFLEX® SERVO FD 796 CP	20234	1000	80	PUR	✓
ÖLFLEX® SERVO FD 798 CP	20236	30	80	PUR	✓
ÖLFLEX® SERVO FD 7DSL	21223	1000/300	80	PUR	✓
SERVO cables acc. to INDRAMAT® standard INK	Power cables: 20234 Signalling cables: 20236	Power cables: 600/1000 Signalling cables: 300	80	PUR	✓
SERVO cables acc. to LENZE® standard	Resolver + encoder cable: 2464, 21165 Motor cable: 2570, 20940	Resolver + encoder cable: 300 Motor cable: 600	80	PUR	✓
SERVO cables acc. to SIEMENS® standard 6FX 5008	Power cables: 2570 Signalling cables: 2502	Power cables: 1000 Signalling cables: 30	80	Special PVC compound, DESINA <sub>®</sub> -compliant	✓
SERVO cables acc. to SIEMENS® standard FX 8PLUS	Power cables: 21223 Signalling cables: 20236	Power cables: 1000 Signalling cables: 30	80	PUR	✓
UNITRONIC® 300, 300 S, 300 STP	2464	300	80	PVC	✓
UNITRONIC® LiYCY A	2464	300	80	Special PVC	✓
UNITRONIC® LiYCY(TP) A	2464	300	80	Special PVC	✓
UNITRONIC® LiYY A	2464	300	80	Special PVC	✓
UNITRONIC® FD P plus	21576	1000	80	PUR	✓
UNITRONIC® FD CP plus	21576	1000	80	PUR	✓
UNITRONIC® FD CP (TP) plus	21576	1000	80	PUR	✓
UNITRONIC® BUS CC FD P FRNC	20233	300	80	PUR	✓
UNITRONIC® BUS ASI (TPE)	2103	300	105	TPE	✓
UNITRONIC® BUS ASI FD FRNC	20549	300	80	PUR	✓
UNITRONIC® SENSOR FD	20549	300	80	PUR	✓
UNITRONIC® SENSOR master cable	21198	300	80	PUR	✓
ETHERLINE® Cat.5 FRNC HYBRID	21282	125	70	FRNC	✓
ETHERLINE® TORSION Cat.5	21161	125	80	PUR	✓
ETHERLINE® FD P Cat.5e	21576	1000	80	PUR	✓
ETHERLINE® P Cat.5e	21576	1000	80	PUR	✓
ETHERLINE® P Cat.5e Flex	21576	1000	80	PUR	✓
ETHERLINE® FD BK Cat.5	21576	1000	80	PUR	✓
ETHERLINE® FD P Cat.6	21576	1000	80	PUR	✓
ETHERLINE® FD P Cat.6	21576	1000	80	PUR	✓
ETHERLINE® TRAY ER PN Y	20201	600	75	PVC	✓
ETHERLINE® Y FC Cat.5	21694	600	75	PVC	✓

The table displays the state of available certifications at the time of catalogue printing. Please contact us regarding the current certification status of our products. The use is mentioned in the UL Style pages.

## Our products – contained substances and legislation

The use of hazardous substances in products is subject to ever stricter international laws and restrictions.

Applies to the editorial deadline:

The products in the catalogue meet the following legal requirements (among others):

- REACH – Regulation No 1907/2006/EC
- RoHS – Directive 2011/65/EU
- Regulation No 1005/2009/EC on substances that deplete the ozone layer

### REACH:

Regulation No 1907/2006/EC represents the EU's standard system concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). The purpose of the regulation is to ensure a high level of protection for human health and the environment.

The Lapp Group sells products within the meaning of REACH. The following requirements of the REACH regulation are therefore particularly significant:

1. Information requirement for the manufacturers and importers of products containing a material on the "candidate list" at a concentration in excess of 0.1% of the mass of the product
2. Observance of substances requiring authorisation in accordance with REACH Annex XIV
3. Observance of the manufacturing, marketing and use restrictions specified in REACH Annex XVII.

The Lapp Group has attributed great importance to the subject of safety and the environment from a very early stage. Our aim is to implement the REACH regulation by keeping our products free from substances of very high concern (SVHC) or to replace such substances with non-hazardous materials.

We therefore keep a very close eye on the Candidate List, in which the European Chemicals Agency lists these dangerous substances, continuously evaluate our products and implement any necessary measures. We observe all registration requirements for materials in accordance with REACH Annex XIV as well as the manufacturing, marketing and use restrictions specified in REACH Annex XVII.

To meet the periodic updates of the Candidate List of Substances of Very High Concern (SVHC), we offer the latest information on REACH on [www.lappgroup.com/rohs-reach](http://www.lappgroup.com/rohs-reach). Please contact our competent REACH experts regarding specific substances.

### RoHS:

Directive 2011/65/EU represents the updated version of the EU's directive on the restriction of the use of hazardous substances in electrical and electronic equipment and supersedes the previous directive 2002/95/EC. Directive 2011/65/EC was published on 1 July 2011, different transitional periods apply for the amendments introduced by the directive. This directive results in national laws (e.g. the German ElektroStoffV).

In addition to the extended scope of the directive, which now also comprises "other" electrical and electronic equipment (EEE), one significant new feature is the obligation to assure compliance with the requirements of the RoHS directive by means of a conformity assessment procedure. LAPP certifies the "RoHS-conformity" of EEE covered by the directive with a product-specific EC declaration of conformity and the application of the CE mark. For products that are not within the scope of the directive, the Lapp Group provides statements declaring the exemption from the conformity assessment procedures.

### Applies to the editorial deadline:

All products in this catalogue meet the substance-specific requirements of the RoHS directive.

**As a general rule:** All information is provided to the best of our knowledge and belief. The information given represents the current state of the art. This is supported through continuous random testing of our products.

Given the vast number of our products, complete verification without exception is not possible. Therefore, the specifications above do not constitute a generally applicable guarantee in a legal or warranty sense.

## WEEE directive 2012/19/EU

The WEEE directive governs the disposal and recycling of electrical and electronic goods. A list of products from our range falling under the category of electrical and electronic tools and equipment is provided below, along with the relevant registration numbers:

Article number	Registration number
61801245	DE 39896667
83259601, 83259602, 83259598	DE 42488170
61813817	DE 38694244

The article/registration numbers are subject to change as a result of any modifications to the scope of the WEEE directive after printing of this catalogue.


## Directive 2006/66/EC on batteries and accumulators as well as waste batteries and accumulators

This directive and the resulting national laws (e.g. the German batteries Act – BattG) stipulate obligations for the registration and return of batteries. The products listed in this catalogue do not constitute or contain batteries, nor are any batteries provided with these products.


Therefore, the articles in this catalogue do not fall within the scope of this directive or its associated national laws.

**EXCEPTION:** EPIC® M23 Tool, article 11148001 EPIC® CIRCON CRIMPTOOL DIGITAL is supplied with a standard 3V lithium battery (button cell CR2025) which can be recycled at the designated collection points for waste batteries.


Table 31-1: EPIC® rectangular connectors




① **1. Cable Gland:**  
The Cable Gland provides a seal between the cable and the connector housing. It may also be used to offer additional functions like strain relief and braid continuity for EMC protection.



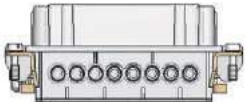
② **2. Upper housing:**  
Hood



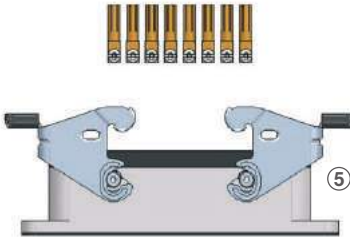
③ **3. Male insert:**  
Types of contact termination  
• Screw  
• Crimp\*  
• Cage clamp  
• Push-In



④ **4. Female insert:**  
Types of contact termination  
• Screw  
• Crimp\*  
• Cage clamp  
• Push-In



⑤ **5. Lower housing:**  
• Panel mounting (cable entry through cut out in panel)  
• Surface mounting (cable entry through a gland into the side of the connector base)  
• Cable Connector Hood, cable to cable connection



\* contacts must be ordered separately

Please pay attention on the EPIC® Selection table A10, this table is a great guide in helping you to find the right insert and suitable housings. It is particularly convenient using the connector with the connector-finder in the internet ([www.lappgroup.com/connectorfinder](http://www.lappgroup.com/connectorfinder)) and the connector housing configurator for customized solutions ([www.lappgroup.com/connector-housing](http://www.lappgroup.com/connector-housing)). You will also find configured connector kits in our webcatalogue.

**High variety of applications with EPIC® rectangular connectors:**


- Number of pins from 1 up to 216
- Currents up to 220A
- Voltage up to 1.000V
- Modular system with inserts for power supply, signal and data transmission, fiber optics, coax connection and compressed air
- Termination technologies: Screw, crimp, cage clamp, solder, Push-In
- Housings for cable connection and for the assembly on devices
- **Degree of protection** (depends on the type of housing and the cable gland. Therefore we recommend to use a brass gland with integrated sealing ring for example SKINTOP® MS-M.)
- **EMC protection** (For applications with EMC requirements, we recommend the EPIC® ULTRA in combination with the SKINTOP® BRUSH.)

**TIP:** Only use tools recommended and approved by Lapp. This ensures the safe and long-term operation of the connector. An assurance of the technical characteristics, as well as the validity of the certificates can only be given if all components are used exclusively by Lapp.


**WARNING:** EPIC® industrial connectors may not be connected or disconnected under load.

Table 31-2: EPIC® housings and inserts


**Hood (fig. 1):**  
It may have a top or angle (side) entry of different PG sizes to accommodate a wide range of cable diameters. The hood can be mated with either a surface or panel mounting base, or a cable coupler hood (for cable to cable connection).




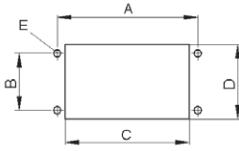
**Panel mount base (fig. 2):**  
It is wired from below through a hole cut in a panel. The panel base is attached to the surface of a control panel for connection of control or power cables.



**Surface mount base (fig. 3):**  
The surface base is a complete enclosure only offering cable entry through a cable gland mounted either on one or both sides of the base.



**Cable Coupler (fig. 4):**  
The cable connector hood mates with a top entry hood to offer cable to cable connection. This is frequently used to extend cables.

Panel cut out for panel mount base (mm)					
Panel mount base	A	B	C	D	E
H-A 3	30	—	21	21	3.3
H-A 10	70	17.5	57.5	24	3.6
H-A 16	86	17.5	73.7	24	3.6
H-A 32	92	42	74.2	48.4	4.3
H-A 48	110	65	85.5	71	5.5
H-B 6	70	32	52.2	35	4.3
H-B 10	83	32	65.2	35	4.3
H-B 16	103	32	85.5	35	4.3
H-B 24	130	32	112.2	35	4.3
H-B 32	110	65	85.5	71	5.5
H-B 48	148	70	117	82	7

Screw connection technology (as DIN EN 60999)				
Screw thread	M3	M4	M5	M6
Starting torque Nm	0.5	1.2	2.0	2.5
Clamping screw: H-A, H-BE, H-BVE	●			
Clamping screw: H-BS		●		
Grounding screw: H-A, H-BE, H-BVE		●		
Grounding screw: H-BS			●	
Clamping screw: Module High-Current				●
Fixing screw: Inserts and Module frames	●			

All EPIC® connectors refer to IEC 61984.

**Table 31-3: EPIC® – definitions and instructions for use**

**General information**

Connectors may not be connected or disconnected under load. The temperature range for connectors can be found in the catalog data. The degree of contamination is given in the technical data of the connector. The rated voltage and rated current are based on a power system with DC or AC (rms) at a frequency of 50 or 60 Hz at 0 ... 2000 m above sea level, and are given in the technical data of the connector. For other applications, the additional loads (e.g. electrical, chemical, climatic, biological, mechanical or radioactive) can mean for the connector, or request mateability with competitive products the user is responsible for the review and approval.

**Connectors**

Connectors are devices that are not for connection or disconnection under load.

**Application Note:** This distinguishes these kind of connectors from plug devices that may be connected or disconnected under load. When connecting or disconnecting a connector under load, sparks and at short-term high temperatures that can cause damage to the contact surface and finally a total failure of the connector.

**Types of connection**

For EPIC® Industrial Connectors different connection types of wire to the electrical contact are available. There is the classic screw, crimping, soldering and the spring-loaded terminals and Push-In.

**Application Note:** Each of these connection types has advantages and disadvantages. Screw is the simplest and a very common practice. Crimping gives with the appropriate crimping tool 100% process-reliable results, but it requires special tools. Spring loaded terminals also allows quick and easy connection and is vibration resistant. Soldering requires little space and is often used with small connector systems. Push-In is ideal for massive conductors and cores with wire end sleeves.

**Rated voltage**

The rated voltage is the voltage according to which the connectors are designed and related to the relevant operating characteristics.

**Application Note:** The rated voltage is defined depending on the environmental degree of contamination for which the connector it is developed and tested. If the same connector is tested for pollution degree 1, the rated voltage given in the catalogue is significantly higher than when he was tested for pollution degree 2. EPIC® connectors are generally designed for pollution degree 3 and therefore have high safety reserves, even if the plug moist inside or should be dirty.

**Rated current**

A current value assigned by the manufacturer, which the connector or PSD can carry continuously (without interruption) and simultaneously through all its contacts wired with the largest conductor preferably at an ambient temperature of 40°C without the upper temperature being exceeded. The rated current is specified for the largest conductor cross-section.

**Rated impulse withstand voltage**

The test voltage is the maximum voltage at which a connector will not be subjected to flashover under the set conditions.

**Application Note:** In this specified voltage there will be no spark damage to the connector.

**EMC (electromagnetic compatibility)**

The capacity of an electrical installation to function satisfactorily in its electromagnetic environment without an unacceptable influence to the environment which also includes other installations (DIN/VDE 0870, Section 1).

**Application Note:** For good EMC shielding, there is a diagram that describes the behavior for different frequencies. This serves as an evaluation criterion to compare different components. In the industrial sector, the interfering frequencies are in the lower frequency range. Typically less than 100kHz. In this frequency range, it depends mainly on a low impedance, high crosssection, 360° shielding. When evaluating the different EMC concepts such qualitative parameters can be recognized easily. The EPIC® ULTRA housing convinces with a highly sophisticated sealing and contact technology. The innovative design allows safe EMC contact and allows the current on the cable screen to flow to the ground. The 360° shield connection is done via the cable gland SKINTOP® BRUSH.

**Coding**

Coding is a system by which it is possible to prevent interfacing confusion between adjacent connectors which are of the same configuration. This is useful if two or more connectors of the same type are mounted on the same unit

**Application Note:** So plugging errors and incorrect wiring is prevented. When coding the rectangular connector with guide pin and guide bushing in addition the plug insert is centered. Uncentred connection is prevented resulting in an increased service life of the contacts. For every EPIC® connectors exists the right coding element.

### Table 31-3: EPIC® – definitions and instructions for use

#### Contact

The coating of the base material with a precious metal is necessary to guarantee a long lasting and good connection. The contacts are plated normally by galvanic processes. To reach a long-lasting plating, there are some requirements for the contact and the plating material.

Lapp uses mainly silver (Ag) and gold (Au) for surface coating,

- Silver has the highest electrical conductivity of all metals and is the most cost effective precious metal. By sulfur or sulfur-containing substances in the ambient air rapidly forms a brownish to black oxide layer of silver sulfide (Ag<sub>2</sub>S). This layer, however, can break during mating or is broken at high currents, so that the required electrical conductivity is maintained. Passivation of the silver surface reduces the formation of the oxide layer and reduces the plug and pulling forces.
- Gold is the most stable precious metal. The oxide and sulfide formation can be neglected. Gold contacts are characterized by low insertion and extraction forces. They are mainly used in the transmission of signals with low current and voltage values. Due to high-precision manufacturing of contacts and selection of the contact materials is the lifetime of the EPIC® connector very high.

#### Mating cycles

Mating cycles are mechanical operations of connectors by insertion and removal.

**Application Note:** The maximum number of mating cycles resulting from the increase in the resistance of the connection after X-time insertion and removal. This must not be more than 50% increase in-or exceed 5mOhm. Another soft factor is the condition of the contacts or the locking elements. There should be no harmful abrasion inside the connector. EPIC® has for the soft factors extremely high internal standards. This internal review can vary widely depending on the manufacturer.

#### Temperature range

The temperature range is determined by the upper and lower limit temperature. These temperatures are the highest and lowest allowable temperatures at which a connector must still be operated.

**Application Note:** The higher temperature limit includes the heating of contacts and the-ambient temperature. It is always measured at the hottest point. These are either the transition of the crimp area or the contacts in general. The temperature of the protective housing is usually much lower than the hottest point of contact.

The lower limit temperature is the lowest permissible temperature at which a connector may be operated. In particular, the sealing materials get stiff at low temperatures and lose elasticity. Is the connector mated or unmated under in this temperature range, separated or assembled, it may cause damage to the seals. At static use depending on the connector system and application can be used at a lower temperature range. Due to the used materials and the design of the housing the temperature range of the EPIC® connectors is very wide.

#### Degree of pollution

Numerical value which states the anticipated pollution in the micro-environment.

The pollution degree 3 is typical for industrial environments, whilst pollution degree 2 is typical for households.

#### Pollution degree 1:

No pollution or only dry, non-conductive pollution occurs. This pollution has no influence.

**Example for environment:** Open, unprotected insulation in air-conditioned or clean, dry rooms.

#### Pollution degree 2:

Only non-conductive pollution occurs. Occasionally, however, it may be anticipated that transient conductivity arises due to condensation.

**Example for environment:** Open unprotected insulations in residential, commercial or business premises (fine mechanical engineering workshops, laboratories, test areas, rooms used for medical purposes).

#### Pollution degree 3:

Conductive pollution arises, or dry, non-conductive pollution which becomes conductive because condensation has to be anticipated.

**Example for environment:** Example: Open unprotected insulations in rooms of industrial, commercial and agricultural companies, unheated storage rooms, boilerhouses and workshops.

#### Pollution degree 4:

The pollution generates persistent conductivity caused by conductive dust, rain or snow.

#### Pre-mating contact

If the construction of the circuit requires that for safety reasons, e.g. for neutral conductors, one or several contacts of a connector have to make contact first upon mating, or have to be separated last upon unmating, then connectors with switch (extended) contacts are used.

#### Safety note:

In the case of EPIC® inserts such as H-BE or H-BS, the protective conductor connection can be changed. When connecting the protective conductor, the low-resistance connection to the protective conductor of the counter piece must not be interrupted. Terminal screw changes must be performed on both sides to ensure that the protective function is maintained.

Otherwise, the relevant specifications apply in accordance with: DIN EN 50110-1 (VDE 0105-1) – Operation of electrical installations.

It is up to the user to assess whether, in specific areas of application not covered by us, the components listed in this catalogue comply with regulations other than those specified here. We reserve the right to make constructional and design modifications due to quality improvements, enhancements or manufacturing requirements. The information in this catalogue serves to specify the components and does not guarantee properties.

Assurance of the technical properties can only be given if all components are supplied by Lapp. Otherwise, any testing and approval is the responsibility of the operator.

#### Certificates:

VDE, certificate number 40016270, 40011894, 40013251, 40019264  
 UL, file number: E75770, E249137, E192484  
 CSA files: E75770, E249137, E192484  
 TÜV

#### For further information on the topic of this appendix, see:

Table T22: Definition of protection according to EN 60529 and DIN 40050

Table T23-1: PG/Metric: Connection thread of EPIC® housing

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
00008746	680	00101244	26	0011182	53	0012621	283	0012928	82	0015202	50	0021802	72
00008747	680	00101254	26	0011183	53	0012622	283	0012929	82	0015203	50	0021803	72
00008749	680	00101264	26	0011184	53	0012624	283	0012931	82	0015204	50	0021805	72
00008779	680	00101274	26	0011185	53	0012626	283	0012932	82	0015205	50	0021806	72
00008822	680	00101284	27	0011186	53	0012640	47	0012933	82	0015206	50	0021807	72
00008825	680	00101294	27	0011187	53	0012641	47	0012934	82	0015207	50	0021808	72
00008829	680	00101304	27	0011188	53	0012642	47	0012940	82	0015212	50	0021809	72
00008854	680	00102034	26	0011189	53	0012643	47	0012941	82	0015218	50	0021810	72
00008867	680	00102044	26	0011190	53	0012644	47	0012942	82	0015225	50	0021811	72
00008899	680	00102054	26	0011191	53	0012645	47	0012943	82	0015234	50	0021812	72
00008939	681	0010210	28	0011192	53	0012646	47	0012944	82	0015241	50	0021813	72
00008978	681	0010301	28	0011193	53	0012647	47	0012945	82	0015250	50	0021814	72
00008979	680	0010302	28	0011194	53	0012650	47	0012946	82	0015302	50	0021816	72
00009005	681	0010303	28	0011195	53	0012651	47	0012947	82	0015303	50	0021817	72
00009045	680	0010304	28	0011196	53	0012652	47	0012949	82	0015304	50	0021818	72
00009057	681	0010305	28	0011197	53	0012653	47	0012950	82	0015305	50	0021822	72
00009082	681	0010306	28	0011202	53	0012654	47	0012951	82	0015307	50	0021823	72
00009135	681	0010307	28	0011204	48	0012655	47	0012952	82	0015312	50	0021825	72
00009371	681	0010308	28	0011205	52	0012656	47	0012953	82	0015318	50	0021826	72
00009470	681	00103093	28	0011206	52	0012660	47	0012954	82	0015325	50	0021828	72
00009894	681	00103113	28	0011207	52	0012661	47	0013009	83	0015334	50	0021829	72
00100004	26	00103123	28	0011208	52	0012662	47	0013017	83	0015341	50	0021831	72
00100014	26	00103133	28	0011222	52	0012663	47	0013018	83	0015402	50	0021833	72
00100024	26	00103143	28	0011223	52	0012664	47	0013019	83	0015403	50	0021836	72
00100034	26	00103153	28	0011224	52	0012666	47	0013020	83	0015404	50	0021880	73
0010004	26	0010400	29	0011234	53	0012752	87	0013021	83	0015405	50	0021881	73
0010005	26	0010401	29	0011241	48	0012753	87	0013023	83	0015407	50	0021882	73
0010006	26	00104023	29	0011302	53	00127553	87	0013024	83	0015412	50	0021883	73
0010007	26	00104033	29	0011304	48	0012757	87	0013025	83	0015418	50	0021884	73
0010008	26	00104043	29	0011341	48	0012758	87	0013208	83	0015425	50	0021885	73
0010009	26	00104053	29	0011404	48	00127603	87	0013210	83	0015602	51	0021886	73
0010010	26	0011000	48	0011504	48	0012761	87	0013212	83	0015603	51	0021888	73
0010011	26	0011001	48	0012101	84	0012762	87	0013213	83	0015604	51	0021889	73
0010012	26	0011002	48	0012102	84	0012763	87	0013214	83	0015605	51	0021890	73
0010016	26	0011003	48	0012202	84	00127643	87	0013215	83	0015607	51	0021891	73
00100214	26	0011004	48	00122033	84	00127653	87	0013220	83	0015612	51	0021892	73
00100224	26	0011005	48	00122043	84	0012766	87	0013222	83	0015702	51	0021893	73
00100234	26	0011006	48	0012302	84	0012767	87	0013223	83	0015703	51	0021897	73
00100244	26	0011009	48	00123043	84	0012768	87	0013225	83	0015704	51	0021898	73
0010025	26	0011010	48	0012345	85	00127693	87	0013226	83	0015705	51	0021899	73
0010026	26	0011011	48	0012346	85	00127703	87	0013227	83	0015707	51	0021900	73
0010027	26	0011012	48	00123473	85	00127753	87	0013600	88	0015712	51	0021901	73
0010028	26	0011013	48	00123483	85	00127783	87	0013601	88	0015802	51	0021902	73
0010029	26	0011014	48	0012351	85	00127793	87	00136023	88	0015803	51	0021903	73
0010030	26	0011015	48	0012352	85	00127813	87	00136033	88	0015804	51	0021904	73
0010031	26	0011018	48	00123533	85	00127823	87	0013610	88	0015805	51	0021905	73
0010032	26	0011019	48	00123543	85	0012800	81	0013611	88	0015807	51	0021907	73
0010033	26	0011020	48	00123553	85	0012801	81	00136123	88	0015812	51	0021908	73
0010034	26	0011021	48	0012365	85	0012802	81	00136133	88	0015903	51	0021909	73
0010036	26	0011022	48	00123663	85	0012803	81	0013620	88	0015904	51	0021910	73
0010037	26	0011023	48	0012401	46	0012804	81	0013621	88	0015905	51	0021911	73
00100414	26	0011024	48	0012402	46	0012805	81	00136223	88	0015907	51	0021912	73
00100424	26	0011027	48	0012403	46	0012806	81	00136233	88	0016022	31	0021913	73
00100434	26	0011028	48	0012404	46	0012807	81	0013630	88	0016023	31	0021914	73
00100444	26	0011029	48	0012420	46	0012813	81	0013631	88	00160243	31	0021915	73
0010045	27	0011030	48	0012421	46	0012814	81	00136323	88	00160253	31	0021916	73
0010046	27	0011031	48	0012422	46	0012815	81	00136333	88	0016027	31	0021917	73
0010047	27	0011032	48	0012423	46	0012816	81	0014150	63	0016031	31	0021918	73
0010049	27	0011033	48	0012425	46	0012817	81	0014151	63	0016042	31	0021919	73
0010050	27	0011036	48	0012427	46	0012818	81	0014152	63	0016043	31	0021920	73
0010052	27	0011037	48	0012429	46	0012819	81	0014153	63	00160443	31	0021921	73
0010053	27	0011038	48	0012430	46	0012820	81	0014156	63	00160453	31	0021922	73
0010054	27	0011039	48	0012440	46	0012825	81	0014157	63	0016047	31	0021923	73
0010056	27	0011040	48	0012441	46	0012826	81	0014158	63	0016064	31	0021924	73
00100634	27	0011041	48	0012443	46	0012827	81	0014159	63	0016065	31	0021925	73
00100644	27	0011045	48	0012444	46	0012828	81	0014162	63	00160663	31	0021926	73
00100654	27	0011104	48	0012446	46	0012829	81	0014163	63	00160673	31	0021927	73
00100664	27	0011113	52	0012448	46	0012830	81	0014164	63	0016069	31	0021928	73
0010068	27	0011114	52	0012452	86	0012831	81	0014166	63	0016072	31	0021929	73
0010069	27	0011115	52	0012453	86	0012832	81	0014167	63	0016075	31	0021930	73
0010071	27	0011116	52	00124543	86	0012833	81	0014168	63	0016077	31	0021931	73
0010072	27	0011117	52	00124553	86	0012834	81	0014170	63	0016087	31	0021932	73
0010074	27	0011118	52	0012456	86	0012837	81	0014171	63	0016088	31	0021933	73
0010076	27	0011119	52	0012457	86	0012838	81	0014173	63	00160893	31	0021934	73
0010086	28	0011125	52	0012458	86	0012839	81	0014174	63	00160903	31	0021936	73
0010087	28	0011136	52	00124593	86	0012840	81	0014176	63	0016092	31	0021937	73
00100883	28	0011137	52	00124603	86	0012841	81	0014177	63	0016101	31	0021938	73
00100893	28	0011138	52	0012461	86	0012842	81	0014179	63	00161023	31	0021940	73
0010091	28	0011139	52	0012462	86	0012843	81	0014180	63	00161033	31	0021941	73
0010092	28	0011140	52	0012463	86	0012844	81	0014182	63	0016106	31	0021942	73
00100933	28	0011142	52	00124643	86	0012846	81	0014184	63	00161073	31	0021943	73
0010100	28	0011143	52	00124653	86	0012850	81	0014186	63	00161083	31	0021945	73
00101013	28	0011144	52	0012466	86	0012851	81	0014188	63	00161103	31	0021946	73
00101023	28	0011150	52	0012467	86	0012852	81	0015002	50	00161113	31	0021947	73
0010103	28	0011151	52	0012468	86	0012853	81	0015003	50	00161133	31	0021949	73
0010105	28	0011152	52	00124693	86	0012854	81	0015004	50	00161143	31	0021951	73
00101063	28	0011153	52	00124703	86	0012901	82	0015005</					

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
0022412	300	0023253	71	0023394	152	0026175	119	0026375	131	0026655	124	0027545	135
0022416	300	0023254	71	0023395	152	0026180	119	0026381	131	0026657	124	0027546	135
0022421	300	0023255	71	0023396	152	0026181	119	0026382	131	0026659	124	0027547	135
0022502	300	0023256	71	0023397	152	0026182	119	0026383	131	0026661	124	0027548	135
0022505	300	0023257	71	0023398	152	0026183	119	0026385	131	0026663	124	0027549	135
0022508	300	0023258	71	0023399	152	0026184	119	0026386	131	0026665	124	0027550	135
0022512	300	0023260	71	0025312	109	0026185	119	0026387	131	0026667	124	0027551	135
0022602	300	0023261	71	0025319	109	0026186	119	0026400	132	0026669	124	0027552	135
0022603	300	0023262	71	0025320	109	0026187	119	0026401	132	0026671	124	0027553	135
0022604	300	0023263	71	0025321	109	0026188	119	0026402	132	0026673	124	0027555	135
0022605	300	0023264	71	0025322	109	0026200	120	0026403	132	0026701	134	0027560	135
0022607	300	0023265	71	0025323	109	0026201	120	0026404	132	0026702	134	0027561	135
0022608	300	0023266	71	0025324	109	0026202	120	0026405	132	0026703	134	0027562	135
0022612	300	0023267	71	0025326	109	0026203	120	0026419	132	0026704	134	0027563	135
0022616	300	0023268	71	0025327	109	0026204	120	0026420	132	0026705	134	0027564	135
0022624	300	0023269	71	0025328	109	0026205	120	0026421	132	0026706	134	0027565	135
0022632	300	0023270	71	0025329	109	0026206	120	0026422	132	0026707	134	0027566	135
0022642	300	0023271	71	0025330	109	0026207	120	0026423	132	0026709	134	0027567	135
0022700	74	0023272	71	00257001	106	0026208	120	0026424	132	0026716	134	0027568	135
0022701	74	0023273	71	00257011	106	0026219	120	0026425	132	0026717	134	0027570	135
0022702	74	0023274	71	00257021	106	0026220	120	0026426	132	0026721	134	0027571	135
0022703	74	0023275	71	00257031	106	0026221	120	0026427	132	0026722	134	0027575	135
0022704	74	0023276	71	0025704	106	0026222	120	0026430	132	0026723	134	0027576	135
0022705	74	0023278	71	0025705	106	0026223	120	0026431	132	0026724	134	0027577	135
0022706	74	0023279	71	0025706	106	0026224	120	0026432	132	0026725	134	0027578	135
0022708	74	0023280	71	0025707	106	0026226	120	0026433	132	0026726	134	0027579	135
0022709	74	0023281	71	0025708	106	0026227	120	0026434	132	0026727	134	0027580	135
0022711	74	0023282	71	00257151	106	0026229	120	0026435	132	0026731	134	0027582	135
0022712	74	0023283	71	00257161	106	0026230	120	0026438	132	0026732	134	0027584	135
0022713	74	0023284	71	00257171	106	0026231	120	0026439	132	0026733	134	0027585	135
0022717	74	0023300	137	00257181	106	0026232	120	0026449	132	0026734	134	0027586	135
0022718	74	0023301	137	0025719	106	0026233	120	0026450	132	0026741	134	0027587	135
0022719	74	0023302	137	0025724	106	0026234	120	0026451	132	0026751	134	0027590	62
0022720	74	0023303	137	0025725	106	0026235	120	0026452	132	0026761	134	0027591	62
0022721	74	0023304	137	0025726	106	0026238	120	0026453	132	0026771	134	00275923	62
0022722	74	0023305	137	0026001	173	0026239	120	0026454	132	0027001	168	00275933	62
0022723	74	0023306	137	0026002	173	0026240	120	0026456	132	0027002	168	0027594	62
0022724	74	0023307	137	00260033	173	0026241	120	0026457	132	0027004	168	0027600	62
0022725	74	0023308	137	00260043	173	0026242	120	0026470	132	0027005	168	0027601	62
0022727	74	0023309	137	0026005	173	0026243	120	0026471	132	0027006	168	00276033	62
0022728	74	0023310	137	0026006	173	0026249	120	0026472	132	0027007	168	0027605	136
0022729	74	0023311	137	0026007	173	0026250	120	0026473	132	0027008	168	0027606	136
0022730	74	0023312	137	00260083	173	0026251	120	0026474	132	0027009	169	0027607	136
0022733	74	0023313	137	00260093	173	0026252	120	0026475	132	0027010	169	0027608	136
0022734	74	0023314	137	0026010	173	0026253	120	0026481	132	0027020	167	0027609	136
0022735	74	0023315	137	0026011	173	0026254	120	0026483	132	0027022	167	0027610	136
0022736	74	0023316	137	0026012	173	0026255	120	0026484	132	0027024	167	0027611	136
0022737	74	0023317	137	00260133	173	0026256	120	0026485	132	0027027	167	0027612	136
0022738	74	0023318	137	00260143	173	0026257	120	0026487	132	0027029	167	0027613	136
0022739	74	0023319	137	0026015	173	0026259	120	0026501	133	0027370	135	0027615	136
0022740	74	0023320	137	0026100	119	0026270	120	0026502	133	0027371	135	0027616	136
0022742	74	0023321	137	0026101	119	0026271	120	0026503	133	0027372	135	0027620	136
0022743	74	0023322	137	0026102	119	0026272	120	0026504	133	0027373	135	0027621	136
0022744	74	0023323	137	0026103	119	0026273	120	0026505	133	0027374	135	0027622	136
0022748	74	0023324	137	0026104	119	0026281	120	0026506	133	0027375	135	0027623	136
0022749	74	0023325	137	0026105	119	0026282	120	0026507	133	0027376	135	0027624	136
0022750	74	0023326	137	0026106	119	0026283	120	0026509	133	0027380	136	0027625	136
0022751	74	0023327	137	0026107	119	0026285	120	0026510	133	0027381	136	0027626	136
0022752	74	0023328	137	0026108	119	0026287	120	0026511	133	0027382	136	0027628	136
0022753	74	0023329	137	0026109	119	0026300	131	0026516	133	0027383	136	0027630	136
0022754	74	0023330	137	0026110	119	0026301	131	0026517	133	0027384	136	0027635	136
0022756	74	0023331	137	0026119	119	0026302	131	0026518	133	0027385	136	0027636	136
0022757	74	0023332	137	0026120	119	0026303	131	0026521	133	0027386	136	0027637	136
0022760	74	0023333	137	0026121	119	0026304	131	0026522	133	0027411	306	0027638	136
0022761	74	0023334	137	0026122	119	0026305	131	0026523	133	0027412	306	0027639	136
0022762	74	0023335	137	0026123	119	0026306	131	0026524	133	0027413	306	0027640	136
0022763	74	0023336	137	0026124	119	0026319	131	0026525	133	0027414	306	0027641	136
0022767	74	0023337	137	0026125	119	0026320	131	0026526	133	0027416	306	0027643	136
0022768	74	0023338	137	0026126	119	0026321	131	0026527	133	0027418	306	0027645	136
0022769	74	0023339	137	0026127	119	0026322	131	0026531	133	0027420	306	0027646	136
0022770	74	0023340	137	0026130	119	0026323	131	0026532	133	0027422	306	0027649	136
0022771	74	0023341	137	0026131	119	0026324	131	0026533	133	0027425	306	0027650	136
0022774	74	0023342	137	0026132	119	0026326	131	0026534	133	0027426	306	0027651	136
0022776	74	0023343	137	0026133	119	0026327	131	0026541	133	0027427	306	0027652	136
0022777	74	0023344	137	0026134	119	0026330	131	0026551	133	0027428	306	0027653	136
0022778	74	0023345	137	0026135	119	0026331	131	0026561	133	0027429	306	0027654	136
0022780	74	0023346	137	0026136	119	0026332	131	0026571	133	0027431	306	0027656	136
0023104	152	0023347	137	0026137	119	0026333	131	0026600	123	0027434	306	0027659	136
0023105	152	0023348	137	0026138	119	0026334	131	0026601	123	0027436	306	0027661	136
0023136	152	0023349	137	0026139	119	0026335	131	0026603	123	0027438	306	0027701	62
0023137	152	0023350	137	0026140	119	0026338	131	0026604	123	0027440	306	00277023	62
0023138	152	0023351	137	0026141	119	0026339	131	0026607	123	0027441	306	00277033	62
0023175	151	0023352	137	0026142	119	0026341	131	0026608	123	0027442	306	00277101	114
0023176	151	0023353	137	0026143	119	0026342	131	0026610	123	0027443	306	002771	





Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
00354603	30	0036442	102	0037602	298	0041053	170	0044733	301	00462223	182	00469023	177
0035461	30	0036443	102	0037603	298	0041054	170	0044735	301	0046224	182	00469033	177
0035700	49	0036444	102	0037604	298	0041055	170	0044738	301	0046226	182	0046904	177
0035701	49	0036445	102	0037605	298	0041056	170	0044850	301	00462273	182	0046905	177
0035702	49	0036446	102	0037606	298	0041057	170	0044851	301	00462283	182	00469063	177
0035703	49	0036447	102	0037607	298	0041059	170	0045207	164	00462313	182	00469073	177
0035704	49	0036448	102	0037608	298	0041060	170	0045209	164	00462343	182	0046908	177
0035710	49	0036449	102	0037610	298	0041061	170	0045210	164	00462353	182	0046909	177
0035711	49	0036450	102	0037612	298	0041062	170	0045211	164	0046237	182	00469103	177
0035712	49	0036451	102	0037618	298	0041063	170	0045212	164	0046301	181	00469113	177
0035713	49	0036453	102	0037702	298	0041075	171	0045213	164	0046302	181	0046912	177
0035714	49	0036479	102	0037703	298	0041076	171	0045214	164	00463033	181	0046913	177
0035715	49	0036910	112	0037704	298	0041077	171	0045215	164	00463043	181	00469143	177
0035716	49	0036911	112	0037802	298	0041078	171	0045216	164	0046307	181	00469153	177
0035717	49	0036912	112	0037803	298	0041079	171	0045218	164	0046308	181	0046916	177
0035720	49	0036913	112	0037804	298	0041080	171	0045220	164	00463093	181	00469173	177
0035721	49	0036914	112	0037807	298	0041081	171	0045221	164	00463103	181	0046919	177
0035722	49	0036915	112	0037902	298	0041082	171	0045222	164	0046312	181	00469203	177
0035723	49	0036916	112	0037903	298	0041083	171	0045223	164	0046313	181	0047000	177
0035724	49	0036917	112	0038060	107	0041084	171	0045224	164	0046314	181	0047001	191
0035725	49	0036918	112	0038061	107	0041085	171	0045225	164	00463153	181	0047002	191
0035726	49	0036920	112	0038062	107	0041086	171	0045227	164	00463163	181	0047003	191
0035727	49	0036921	112	0038063	107	00420013	172	0045228	164	0046318	181	0047005	191
0035730	49	0036923	112	0038064	107	00420023	172	0045229	164	0046320	181	0047006	191
0035731	49	0036924	112	0038302	299	0042003	172	0045230	164	00463213	181	0047007	191
0035732	49	0036926	112	0038303	299	0042004	172	0045231	164	00463223	181	0047008	191
0035733	49	0036927	112	0038304	299	0042005	172	0045232	164	00463273	181	0047009	191
0035734	49	0036928	112	0038308	299	0042006	172	0045233	164	00463283	181	0047104	191
0035735	49	0036929	112	0038312	299	00420073	172	0045234	164	0046330	181	0047105	191
0035736	49	0036930	112	0038316	299	00420083	172	0045235	164	00463313	181	0047106	191
0035740	49	0037000	104	0038325	299	0042009	172	0045237	164	00463323	181	0048000	191
0035741	49	0037001	104	0038402	299	0042010	172	0045238	164	0046500	180	0048001	191
0035742	49	0037002	104	0038403	299	00420113	172	0045240	164	0046501	180	0048002	191
0035743	49	0037003	104	0038404	299	0042012	172	0045241	164	00465023	180	0048003	191
0035744	49	0037004	104	0038406	299	00420133	172	0045242	164	00465033	180	0048005	191
0035800	282	0037005	104	0038408	299	00420143	172	0046001	176	0046506	180	0048006	191
0035801	282	0037006	104	0038412	299	00420153	172	0046002	176	0046507	180	0048007	191
0035802	282	0037007	104	0038416	299	00420163	172	00460033	176	00465083	180	0048008	191
0035803	282	0037008	104	0038602	299	0042020	172	00460043	176	00465093	180	0048009	191
0035804	282	0037009	104	0038603	299	0042021	172	0046005	176	0046511	180	0048104	191
0035805	282	0037010	104	0038604	299	0042022	172	0046006	176	0046512	180	0048105	191
0035806	282	0037011	104	0038606	299	0042023	172	0046007	176	00465133	180	0048106	191
0035807	282	0037012	104	0038608	299	0042050	172	0046008	176	00465143	180	0049000	191
0035808	282	0037013	104	0038612	299	00430003	162	00460093	176	0046520	180	0049001	191
0035810	282	0037014	104	0038616	299	00430053	162	00460103	176	0046521	180	0049002	191
0035811	282	0037015	104	0038702	299	0043006	162	0046012	176	00465223	180	0049003	191
0035812	282	0037016	104	0038704	299	00430073	162	0046013	176	00465233	180	0049005	191
0035813	282	0037017	104	0038708	299	0043008	162	0046014	176	0046600	178	0049006	191
0035814	282	0037018	104	0038802	299	0043009	162	00460153	176	0046601	178	0049007	191
0035816	282	0037019	104	0038803	299	0043010	162	00460163	176	00466023	178	0049008	191
0035817	282	0037020	104	0038804	299	0043011	162	0046018	176	00466033	178	0049009	191
0035820	282	0037021	104	0039001	165	0043012	162	0046019	176	0046604	178	0049104	191
0035821	282	0037022	104	0039002	165	0043013	162	0046020	176	0046612	178	0049105	191
0035822	282	0037023	104	00390033	165	00430143	162	00460213	176	0046613	178	0049106	191
0035823	282	0037024	104	00390043	165	0043015	162	00460223	176	00466143	178	0050000	191
0035824	282	0037025	104	0039017	165	0043016	162	0046024	176	00466153	178	0050001	191
0035825	282	0037026	104	0039018	165	0043017	162	0046025	176	0046616	178	0050002	191
0035827	282	0037027	104	00390193	165	0043018	162	0046026	176	0046617	178	0050003	191
0035830	282	0037028	104	00390203	165	0043019	162	00460273	176	0046618	178	0050005	191
0035831	282	0037104	297	0039034	165	00430203	162	00460283	176	0046619	178	0050006	191
0035832	282	0037120	297	0039035	165	00430213	162	0046030	176	00466203	178	0050007	191
0035836	282	0037121	297	00390363	165	00430223	162	0046031	176	00466213	178	0050008	191
0036001	100	0037122	297	00390373	165	00430233	162	0046032	176	0046622	178	0050009	191
0036015	100	0037124	297	00390463	165	00430243	162	00460333	176	0046623	178	0050104	191
0036020	100	0037125	297	00390473	165	00430253	162	00460343	176	0046625	178	0050105	191
0036025	100	0037126	297	00390483	165	00430263	162	0046036	176	0046626	178	0050106	191
0036026	100	0037128	297	00390493	165	00430283	162	00460373	176	0046628	178	0051000	191
0036140	100	0037140	297	00390503	165	00430293	162	00460383	176	0046629	178	0051001	191
0036145	100	0037141	297	00390513	165	00430303	162	0046039	176	00466303	178	0051002	191
0036150	100	0037142	297	00390523	165	00430323	162	0046040	176	00466313	178	0051003	191
0036151	100	0037143	297	00390533	165	00430333	162	0046041	176	0046633	178	0051005	191
0036152	100	0037147	297	0039054	165	00430343	162	0046042	176	00466343	178	0051006	191
0036154	100	0037150	297	0039055	165	0044008	163	00460453	176	00466353	178	0051007	191
0036168	101	0037151	297	0039056	165	0044009	163	0046110	180	0046636	178	0051008	191
0036170	101	0037152	297	0039057	165	0044010	163	0046115	180	00466373	178	0051009	191
0036175	101	0037153	297	0039058	165	0044011	163	0046116	180	00466383	178	0051104	191
0036177	101	0037154	297	0039059	165	0044015	163	0046117	180	0046701	179	0051105	191
0036178	101	0037160	297	0039060	165	0044016	163	0046119	180	0046702	179	0051106	191
0036181	101	0037162	297	0039061	165	00440223	163	0046131	180	0046703	179	0052000	191
0036320	108	0037165	297	0039107	165	00440233	163	00461323	180	0046708	179	0052001	191
0036321	108	0037171	297	0039109	165	00440243	163	00461333	180	0046709	179	0052002	191
0036322	108	0037172	297	0039208	165	00440253	163	0046141	180	0046710	179	0052003	191
0036324	108	0037302	298	0039209	165	00440263	163	00461423	180	0046711			

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
0054006	191	0081002S	195	0089104	195	0097001	196	0151035	158	0162023	159	10019922	64
0054104	191	0081003	195	0089105	195	0097002	196	0151040	158	0162030	158	10019927	64
0054105	191	0081003S	195	0089106	195	0097003	196	0151050	158	0162035	158	10019930	64
0054106	191	0081005	195	0090000	195	0097104	196	0151051	158	0162040	158	10019931	64
0055000	191	0081006	195	0090001	195	0097105	196	0151052	158	0162045	158	10019932	64
0055001	191	0081009	195	0090002	195	0098000	196	0152001	158	0162051	158	10019933	64
0055002	191	0081010	195	0090104	195	0098001	196	0152003	158	0162052	158	10019934	64
0055003	191	0081104	195	0091100	183	0098002	196	0152005	159	0163005	159	10019935	64
0055009	191	0081104S	195	0091103	183	0098003	196	0152006	159	0163006	159	10019936	64
0055104	191	0081105	195	0091102	183	0098006	196	0152007	159	0163007	159	10019937	64
0055105	191	0081106	195	0091103S	183	0098104	196	0152010	158	0163010	158	10019938	64
0055106	191	0082000	195	0091120	186	0098105	196	0152011	158	0163015	159	10019944	64
0056000	191	0082001	195	0091121	186	0098106	196	0152015	159	0163022	158	10019945	64
0056001	191	0082001S	195	0091122S	186	0099001	196	0152017	158	0163023	159	10019946	64
0056002	191	0082002	195	0091123S	186	0099002	196	0152019	159	0163051	158	10019947	64
0056104	191	0082002S	195	0091124	186	0099003	196	0152022	158	0163052	158	10019948	64
0056105	191	0082003	195	0091200	183	0099005	196	0152023	158	0164010	158	10019949	64
0056106	191	0082003S	195	0091201	183	0099006	196	0152030	158	0164011	158	10019950	64
0057000	191	0082005	195	0091202S	183	0099007	196	0152035	158	0164012	158	10019951	64
0057001	191	0082006	195	0091210	183	0099104	196	0152040	158	0164013	158	10019952	64
0057002	191	0082007	195	0091211	183	0099105	196	0152045	158	0164014	158	10019953	64
0057104	191	0082009	195	0091212S	183	0100001	196	0152051	158	0165001	160	10019954	64
0057106	191	0082010	195	0091220	183	0100002	196	0152052	158	0165002	160	10019960	64
0058000	191	0082104	195	0091221	183	0100003	196	0153005	159	0165003	160	10019961	64
0058001	191	0082104S	195	0091222S	183	0100005	196	0153006	159	0165005	160	10019962	64
0058002	191	0082105	195	0091230	183	0100009	196	0153007	159	0165007	160	10019963	64
0058104	191	0082106	195	0091231	183	0100104	196	0153010	158	0165010	160	10019964	64
0059000	191	0083000	195	0091232S	183	0100105	196	0153015	159	0165501	160	10019965	64
0059001	191	0083000S	195	0091235S	183	0101001	196	0153019	159	0165502	161	10019967	64
0059104	191	0083001	195	0091236	183	0101002	196	0153022	158	0165503	161	10019968	64
0060001	191	0083001S	195	0091237S	183	0101003	196	0153023	159	0165505	161	10019969	64
0060002	191	0083002	195	0091242S	183	0101006	196	0153051	158	0165507	161	10019970	64
0061000	191	0083002S	195	0091243S	183	0101104	196	0153052	158	0165510	161	10019971	64
0061001	191	0083003	195	0091300	184	0101105	196	0154010	158	0166001	160	10019972	64
0061105	191	0083003S	195	0091301	184	0102000	196	0154011	158	0166002	160	10019973	64
0062000	191	0083005	195	0091302	184	0102001	196	0154012	158	0166003	160	10019975	64
0062001	191	0083006	195	0091305	184	0102002	196	0154013	158	0166007	160	10019980	64
0063001	191	0083010	195	0091306	184	0102003	196	0154014	158	0166010	160	10019981	64
0064001	191	0083104	195	0091307	184	0102005	196	0155001	160	0166501	160	10019982	64
0065102	194	0083104S	195	0091310	184	0102006	196	0155002	160	0166502	161	10021000	611
0065103	194	0083105	195	0091311	184	0102007	196	0155003	160	0166503	161	10022000	611
0065104	194	0084000	195	0091312	184	0102009	196	0155005	160	0166505	161	10024000	616
0065105	194	0084000S	195	0091315	184	0102104	196	0155007	160	0167001	160	10030099	33
0065106	194	0084001	195	0091316	184	0102105	196	0155010	160	0167002	160	10030200	621
0065107	194	0084001S	195	0091317	184	0102106	196	0155501	160	0167501	161	10032900	621
0065108	194	0084002	195	0091320	184	0103001	196	0155502	161	0167502	161	10033000	621
0065109	194	0084002S	195	0091321	184	0103104	196	0155503	161	0167513	158	10033900	621
0065110	194	0084003	195	0091322	184	0104000	196	0155505	161	0167514	158	10034000	626
0065111	194	0084003S	195	0091320	185	0104001	196	0155507	161	0167515	158	10034700	622
0065112	194	0084005	195	0091331	185	0104002	196	0155510	161	0168500	161	10034900	622
0065113	194	0084006	195	0091332	185	0104003	196	0156001	160	0168501	161	10035000	626
0065201	194	0084007	195	0091333	185	0104005	196	0156002	160	0168503	161	10035030	65
0065202	194	0084010	195	0091334	185	0104006	196	0156003	160	0168504	161	10035031	65
0066202	302	0084104	195	0091335	185	0104007	196	0156007	160	0168506	161	10035032	65
0066204	302	0084104S	195	0091336	185	0104009	196	0156010	160	0168507	161	10035033	65
0066205	302	0084105	195	0091337	185	0104104	196	0156501	160	0168509	161	10035034	65
0066208	302	0084106	195	0091338	185	0104105	196	0156502	161	0168510	161	10035035	65
0066210	302	0085000	195	0091339	185	0105000	196	0156503	161	10003000	612	10035036	65
0066212	302	0085000S	195	0091350	197	0105001	196	0156505	161	10004000	612	10035037	65
0066216	302	0085001	195	0091351	197	0105002	196	0157001	160	10005000	613	10035040	65
0066232	302	0085001S	195	0091352	197	0105003	196	0157002	160	10006000	613	10035041	65
0066233	302	0085002	195	0091353	197	0105005	196	0157501	160	10007000	614	10035042	65
0066234	302	0085002S	195	0091354	197	0105006	196	0157502	161	10009000	614	10035043	65
0066235	302	0085003	195	0091355	197	0105007	196	0157513	158	10011000	611	10035044	65
0066238	302	0085003S	195	0091356	197	0105009	196	0157514	158	10012000	611	10035045	65
0066239	302	0085005	195	0091357	197	0105104	196	0157515	158	10014000	616	10035046	65
0066240	302	0085010	195	0091358	197	0105105	196	0158500	161	10015000	660	10035047	65
0066242	302	0085104	195	0091359	197	0106000	196	0158501	161	10015100	660	10035048	65
0066243	302	0085104S	195	0091360	197	0106001	196	0158503	161	10016500	660	10035050	65
0066244	302	0085105	195	0091361	197	0106002	196	0158504	161	10017000	661	10035051	65
0066262	302	0086000	195	0091375	187	0106003	196	0158506	161	10017100	661	10035052	65
0068001	193	0086000S	195	0091376	187	0106005	196	0158507	161	10018920	661	10035055	65
0068105	193	0086001	195	0091377	187	0106006	196	0158509	161	10018921	661	10035056	65
0069000	193	0086001S	195	0091380	187	0106011	196	0158510	161	10018922	661	10035057	65
0069001	193	0086002	195	0091381	187	0106104	196	0161001	158	10018923	661	10035058	65
0069002	193	0086002S	195	0091382	187	0106105	196	0161003	158	10019000	659	10035059	65
0069003	193	0086003	195	0091383	187	0106106	196	0161005	159	10019849	64	10035060	65
0069105	193	0086003S	195	0091390	187	0107000	196	0161006	159	10019851	64	10035061	65
0070000	193	0086007	195	0091391	187	0107001	196	0161007	159	10019852	64	10035062	65
0070001	193	0086010	195	0091392	187	0107002	196	0161010	158	10019853	64	10035063	65
0070002	193	0086104	195	0094000	196	0107003	196	0161011	158	10019854	64	10035064	65
0070003	193	0086104S	195	0094001	196	0107005	196	0161015	159	10019855	64	10035065	65
0070105	193	0086105	195	0094002	196	0107006	196	0161017	158	10019856	64	10035067	6

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
10035381	65	10180400	556	10239110	559	1026614	127	1027307	128	1028318	138
10035382	65	10181000	549	10240010	559	1026624	127	1027312	128	1028325	138
10035383	65	10181400	556	10240110	559	1026634	127	1027318	128	1028334	138
10035384	65	10182000	551	10240300	174	1026644	127	1027325	128	1028403	138
10035386	65	10182400	556	1024301	174	1026700	125	1027403	128	1028404	138
10035900	622	10183000	551	1024307	174	1026701	125	1027404	128	1028405	138
10036000	627	10183400	556	1024308	174	1026702	125	1027405	128	1028407	138
10036900	623	10184000	553	1024309	174	1026703	125	1027407	128	1028412	138
10038000	627	10184400	557	1024310	174	1026704	125	1027412	128	1028503	138
10038900	624	10185000	553	1024311	174	1026705	125	1027503	128	1028504	138
10040000	620	10185400	557	1024315	174	1026706	125	1027504	128	1028507	138
10040099	33	10186000	555	1024316	174	1026707	125	1027507	128	1028604	138
10040100	620	10186400	557	1024317	174	1026708	125	1027604	128	1028614	138
10040700	618	10187000	555	1024318	174	1026709	125	1027624	128	1028624	138
10040900	618	10187400	557	1024319	174	1026710	125	1027634	128	1028634	138
10041000	617	10190000	549	1024320	174	1026711	125	1027644	128	1028752	138
10042000	617	10190100	549	1024323	174	1026712	125	1027700	129	1028952	138
10042100	617	10191000	549	1024324	174	1026713	125	1027701	129	1032000	294
10042800	618	10191100	549	1024325	174	1026714	125	1027702	129	1032001	294
10042900	618	10192000	551	1024326	174	1026715	125	1027703	129	1032002	294
10045000	619	10192100	551	1024327	174	1026716	125	1027704	129	1032003	294
10046000	629	10193000	551	1024328	174	1026717	125	1027705	129	1032004	294
10046900	629	10193100	551	1024333	174	1026718	125	1027706	129	1032005	294
10047000	660	10194000	553	1024334	174	1026719	125	1027707	129	1032006	294
10047100	660	10194100	553	1024335	174	1026720	125	1027708	129	1032007	294
10048500	660	10195000	553	1024336	174	1026721	125	1027709	129	1032009	294
10048600	660	10195100	553	1024337	174	1026722	125	1027710	129	1032011	294
10048700	660	10196000	555	1024341	174	1026723	125	1027711	129	1032012	294
10049000	661	10196100	555	1024342	174	1026724	125	1027712	129	1032013	294
10049100	661	10197000	555	1024346	174	1026725	125	1027713	129	1032014	294
10050099	33	10197100	555	1024347	174	1026726	125	1027714	129	1032015	294
10051000	659	1020010	103	1024400	175	1026727	125	1027715	129	1032016	294
10051200	659	1020011	103	1024401	175	1026728	125	1027716	129	1032017	294
10051400	659	1020012	103	1024407	175	1026729	125	1027717	129	1032018	294
10051600	659	1020013	103	1024408	175	1026730	125	1027718	129	1032019	294
10052000	659	1020014	103	1024409	175	1026731	125	1027719	129	1032021	294
10070099	33	1020015	103	1024410	175	1026732	125	1027720	129	1032024	294
10072000	635	1020016	103	1024411	175	1026733	125	1027721	129	1032025	294
10072900	635	1020017	103	1024412	175	1026734	125	1027722	129	1032026	294
10073000	631	1020018	103	1024415	175	1026737	125	1027723	129	1032027	294
10073900	635	1020019	103	1024416	175	1026751	126	1027724	129	1032028	294
10074000	634	1020020	103	1024417	175	1026752	126	1027725	129	1032030	294
10074900	631	1020021	103	1024418	175	1026753	126	1027726	129	1032031	294
10075000	634	1020022	103	1024419	175	1026754	126	1027727	129	1032032	294
10075900	631	1020023	103	1024420	175	1026755	126	1027728	129	1032033	294
10076000	641	1020024	103	1024423	175	1026756	126	1027729	129	1032035	294
10076900	633	1020025	103	1024424	175	1026757	126	1027730	129	1032038	294
10078900	632	1020026	103	1024425	175	1026758	126	1027731	129	1032050	295
10080000	639	1020027	103	1024426	175	1026759	126	1027732	129	1032051	295
10080900	640	1020028	103	1024427	175	1026760	126	1027733	129	1032052	295
10081000	637	1020029	103	1024428	175	1026761	126	1027734	129	1032053	295
10082000	637	1020030	103	1024433	175	1026762	126	1027737	129	1032055	295
10082900	640	1020031	103	1024434	175	1026763	126	1027751	130	1032056	295
10083000	636	1020032	103	1024435	175	1026764	126	1027752	130	1032057	295
10086000	643	1020033	103	1024436	175	1026765	126	1027753	130	1032058	295
10086900	643	1020034	103	1024437	175	1026766	126	1027754	130	1032061	295
10087000	660	10210010	559	1024438	175	1026767	126	1027755	130	1032062	295
10087100	660	10210110	559	1024441	175	1026768	126	1027756	130	1032063	295
10088500	660	10211010	559	1024446	175	1026769	126	1027757	130	1032064	295
10088600	660	10211110	559	1024451	175	1026770	126	1027758	130	1032065	295
10088700	660	1023229	139	1024480	175	1026771	126	1027759	130	1032067	295
10090000	639	1023230	139	1024481	175	1026772	126	1027760	130	1032068	295
10092000	637	1023238	139	1024482	175	1026773	126	1027761	130	1032069	295
10092900	640	1023239	139	1024483	175	1026774	126	1027762	130	1032070	295
10102000	650	1023245	139	1024484	175	1026775	126	1027763	130	1032073	295
10102900	650	1023246	139	1024485	175	1026776	126	1027764	130	1032074	295
10103000	650	1023248	139	1024486	175	1026777	126	1027765	130	1032075	295
10103900	650	1023249	139	1024487	175	1026778	126	1027766	130	1032076	295
10104000	654	1023250	139	1024488	175	1026779	126	1027767	130	1032077	295
10104900	651	1023251	139	1024489	175	1026780	126	1027768	130	1032079	295
10105000	654	1023252	139	1024490	175	1026781	126	1027769	130	1032080	295
10105900	651	1023253	139	1026012	127	1026782	126	1027770	130	1032081	295
10107000	655	1023254	139	1026103	127	1026783	126	1027771	130	1032082	295
10107900	652	1023255	139	1026104	127	1026784	126	1027772	130	1032084	295
10109000	655	1023274	113	1026105	127	1026785	126	1027773	130	1032086	295
10109900	653	1023275	113	1026107	127	1026788	126	1027774	130	1032100	296
10111000	646	1023276	113	1026112	127	10270010	559	1027775	130	1032101	296
10111900	645	1023277	113	1026118	127	1027003	128	1027776	130	1032102	296
10112000	648	1023278	113	1026125	127	1027004	128	1027777	130	1032103	296
10113000	648	1023279	113	1026127	127	1027005	128	1027778	130	1032104	296
10113900	645	1023280	113	1026128	127	1027007	128	1027779	130	1032105	296
10114000	649	1023290	105	1026129	127	10270110	559	1027780	130	1032106	296
10117000	657	1023291	105	1026130	127	1027012	128	1027781	130	1032107	296
10117900	657	1023292	105	1026131	127	1027018	128	1027782	130	1032108	296
10118000	660	1023293	105	1026132	127	1027025	128	1027783	130	1032109	296
10118020	660	1023294	105	1026133	127	10271010	559	1027784	130	1032110	296
10118100	660	1023295	105	1026303	127	1027103	128	1027785	130	1032111	296
10118600	660	1023501	153	1026304	127	1027104	128	1027788	130	1032112	296
10118700	660	1023502	153	1026305	127	1027105	128	1028007	138	1032113	296
10119500	660	1023503	153	1026307	127	1027107	128	1028103	138	1032114	296
10121000	646	1023504	153	1026312	127	10271110	559	1028104	138	1032115	296
10121900	645	1023505	153	1026318	127	1027112	128	1028105	138	1032116	296
10122000	648	1023521	153	1026325	127	1027118	128	1028107	138	1032117	296
10123000	648	1023522	153	1026334	127	1027292	128	1028112	138	1032118	296
10123900	645	1023523	153	1026403	127	1027293	128	1028118	138	1032119	296
10124000	649	1023524	153	1026404	127	1027294	128	1028125			

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
10457800	660	11147000	579	1119205	35	1119805	35	1120350	42	1120824	27	1123012	66
10458000	661	11147000	581	1119206	35	1119807	35	1120351	42	1120825	27	1123013	66
10462000	602	11147000	582	1119207	35	1119809	37	1120353	42	1120826	27	1123017	66
10468000	661	11147000	583	1119208	35	1119812	35	1120360	42	1120827	27	1123020	66
10469500	660	11147000	585	1119209	35	1119852	35	1120361	42	1120828	27	1123021	66
10469600	660	11147000	586	1119210	35	1119853	35	1120362	42	11208500	584	1123032	66
10469700	660	11147000	588	11192100	581	1119854	35	1120366	42	11209000	584	1123033	66
10469800	660	11147001	578	1119212	35	1119855	35	1120367	42	11209500	584	1123034	66
10481500	660	11147001	579	1119214	35	1119857	35	1120368	42	11210000	585	1123035	66
10481600	660	11147001	581	1119216	35	1119862	35	1120370	42	11210100	585	1123036	66
10481700	660	11147001	582	1119218	35	1119868	35	1120371	42	11210200	585	1123037	66
10481800	660	11147001	583	1119220	35	1119870	35	1120374	42	11210600	585	1123038	66
10485200	536	11147001	585	11192200	581	1119871	37	1120375	42	11210700	585	11230400	580
10486100	536	11147001	588	1119225	35	1119872	37	1120376	42	1121232	43	1123041	66
10487200	536	11147100	578	1119226	35	1119873	37	1120378	42	1121233	43	1123042	66
10488100	536	11147100	581	1119234	35	1119874	37	1120379	42	1121235	43	1123046	66
10490200	537	11147100	582	1119236	35	1119875	37	1120382	42	1121236	43	1123047	66
10491100	537	11147110	585	1119241	35	1119876	37	1120383	42	1121237	43	1123048	66
10492200	537	11147111	586	1119244	37	1119877	37	1120385	42	1121241	43	11230500	580
10493100	537	11147120	585	1119245	37	1119878	37	1120387	42	1121247	43	1123051	66
10500200	538	11147130	588	1119246	37	1119879	37	1120389	42	1121251	43	1123054	66
10501100	538	11147170	579	1119247	37	1119880	37	1120390	42	1121254	43	1123056	66
10502200	538	11147180	579	1119248	37	1119881	37	1120457	32	1121266	43	1123066	66
10503100	538	11147180	583	1119249	37	1119882	37	1120459	32	1121267	43	1123067	66
10512100	589	11147190	579	1119250	35	1119883	37	1120462	32	1121268	43	1123068	66
10512300	590	11147190	583	1119251	37	1119884	37	1120463	32	1121269	43	1123069	66
10512700	592	11147200	578	1119252	37	1119885	37	1120464	32	1121270	43	1123070	66
10512900	593	11147200	581	1119256	35	1119886	37	1120465	32	1121271	43	11230700	580
10513000	660	11147200	582	1119261	35	1119887	37	1120469	32	1121274	43	1123071	66
10513100	660	11147210	585	1119265	35	1119888	37	1120470	32	1121280	43	1123072	66
10530000	535	11147300	579	1119280	35	1119889	37	1120474	32	1121284	43	1123074	66
10531000	535	11147300	583	1119300	35	1119890	37	1120475	32	1121290	43	1123075	66
10532000	535	11148000	679	1119303	35	1119891	37	11205000	583	1121300C	582	1123076	66
10533000	535	11148000	688	1119304	35	1119892	37	11206000	583	1121306	43	1123078	66
10563000	605	11148001	679	1119305	35	1119893	37	1120730	38	1121307	43	1123080	66
10564000	601	11148001	688	1119306	35	1119894	37	1120731	38	1121308	43	1123081	66
10564500	601	11148002	679	1119307	35	1119895	37	1120732	38	1121309	43	1123083	66
10565000	600	11148002	688	1119308	35	1119896	37	1120733	38	1121310	43	1123084	66
10565300	600	11148003	1036	1119309	35	1119897	37	1120734	38	1121310C	582	1123090	66
10567000	603	11148300	679	1119310	35	1119898	37	1120735	38	1121311	43	1123094	66
10567100	603	11148300	688	1119311	35	1119899	37	1120736	38	1121314	43	1123106	66
10568000	603	11158400	577	1119312	35	1119900	37	1120737	38	1121320	43	1123107	66
10568100	603	11160000	583	1119313	35	1119902	35	1120738	38	1121320C	582	1123108	66
10607100	659	11160000	584	1119314	35	1119903	35	1120739	38	1121324	43	1123109	66
10607200	659	11161000	578	1119316	35	1119904	35	1120740	38	1121328	43	1123110	66
10607300	659	11161000	579	1119318	36	1119905	35	1120741	38	1121330C	582	11231100	579
10607600	659	11161000	580	1119321	36	1119907	35	1120742	38	1121340	43	1123111	66
10620300	593	11161000	688	1119325	36	1119911	37	1120743	38	1121340C	582	1123112	66
10620600	590	11171000	582	1119326	36	1119912	35	1120744	38	1121342	43	1123114	66
10629000	121	11171100	585	1119332	36	1119913	37	1120745	38	1121344	43	1123115	66
1062901	121	11171100	588	1119334	36	1119914	37	1120746	38	1121346	43	1123116	66
1062902	121	11171200	575	1119341	36	1119915	37	1120747	38	1121349	43	1123118	66
1062903	121	11182500	581	1119350	36	1119916	37	1120748	38	1121360	43	1123120	66
1062904	121	11182500	688	1119361	36	1119917	37	1120749	38	1121361	43	1123124	67
1062905	121	11190000	581	1119365	36	1119918	37	1120750	38	1121362	43	1123128	67
1062906	121	1119003	34	1119403	36	1119919	37	1120751	38	1121367	43	1123130	67
1062907	121	1119004	34	1119404	36	1119920	37	1120752	38	1121368	43	1123139	67
1062908	121	1119005	34	1119405	36	1119921	37	1120753	38	1121372	43	1123140	67
1062909	121	1119007	34	1119407	36	1119922	37	1120754	38	1121373	43	1123142	67
1062910	121	1119010	34	1119412	36	1119923	37	1120755	38	1121377	43	1123144	67
1062911	121	11190100	581	1119414	36	1119952	36	1120756	38	1121378	43	1123146	67
1062912	121	1119012	34	1119418	36	11201000	583	1120757	38	1121381	43	1123149	67
1062913	121	1119014	34	1119425	36	11202000	583	1120758	38	1121385	43	1123151	67
1062914	121	1119018	34	1119434	36	1120232	42	1120759	38	1121388	43	1123153	67
1062915	121	1119020	37	1119450	36	1120233	42	1120760	38	1121391	43	1123159	67
1062916	121	11190200	581	11195000	581	1120234	42	1120761	38	1121394	43	1123160	67
1062917	121	1119021	34	1119503	36	1120235	42	1120762	38	1121397	43	1123161	67
1062918	121	1119025	34	1119504	36	1120237	42	1120763	38	11214200	588	1123162	67
1062919	121	1119030	34	1119505	36	1120241	42	1120764	38	1121500C	585	1123166	67
1062920	121	11190300	581	1119507	36	1120248	42	1120765	38	1121510C	585	1123167	67
1062921	121	1119035	34	11195100	581	1120251	42	1120766	38	1121520C	585	1123168	67
1062922	121	1119040	34	1119511	36	1120259	42	1120767	38	1121560C	585	1123169	67
1062923	121	11190400	581	1119512	36	1120266	42	1120768	38	1121570C	585	1123172	67
1062940	122	1119052	35	11195200	581	1120267	42	1120769	38	1121800C	582	1123173	67
1062941	122	1119061	35	11195300	581	1120268	42	1120770	38	1121810C	582	1123177	67
1062942	122	1119065	35	11195400	581	1120269	42	1120771	38	1121820C	582	1123178	67
1062943	122	1119080	35	1119603	36	1120270	42	1120772	38	1121830C	582	1123181	67
1062944	122	1119100	35	1119604	36	1120271	42	1120773	38	1121840C	582	1123182	67
1062945	122	1119103	35	1119605	36	1120274	42	1120800	27	11219200	588	1123185	67
1062946	122	1119104	35	1119607	36	1120280	42	11208000	584	11220000	580	1123200	68
1062947	122	1119105	35	1119613	36	1120284	42	1120801	27	11220100	580	1123201	68
1062948	122	1119107	35	1119614	36	1120290	42	1120802	27	11220700	580	1123202	68
1062949	122	1119109	35	1119615	36	1120294	42	1120803	27	11221000	579	1123203	68
1062950	122	1119110	35	1119617	36	1120298	42	1120804	27	11221300	579	1123204	68
1062951	122	1119112	35	1119624	36	1120306	42	1120805	27	11222700	580	1123205	68

From part number 1123254 to 1308307

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
1123254	68	1123483	70	1125902	41	1135852	40	1150279	155	1235009	189	1249562	192
1123266	68	1123485	70	11260000	543	1135853	40	1150311	155	1235009K	189	1249563	192
1123267	68	1123486	70	11261000	543	1135854	40	1150312	155	1235104	190	1249564	192
1123268	68	1123487	70	11265000	544	1135902	40	1150313	155	1235104K	190	1249565	192
1123269	68	1123488	70	11265200	544	1135903	40	1150350	155	1235105	190	1249566	192
1123270	68	1123489	70	11266000	544	1135904	40	1150351	155	1235105K	190	1249567	192
1123271	68	1123490	70	11266200	544	1135905	40	1150357	155	1235106	189	1249568	192
1123272	68	1123492	70	11270000	545	1135907	40	1150362	155	1235106K	189	1249569	192
1123274	68	1123493	70	11271000	545	1136003	44	1150373	155	1235114	190	1249570	192
1123275	68	1123494	70	11272000	545	1136004	44	1150378	155	1235114K	190	1249580	192
1123280	68	11235000	580	11273000	545	1136005	44	1161007	158	1236000	189	1249582	192
1123281	68	11235200	580	11280000	659	1136007	44	1161008	158	1236001	189	1249583	192
1123284	68	11235700	580	11281000	659	1136012	44	1161009	158	1236001K	189	1249584	192
1123290	68	11236100	579	11282200	542	1136018	44	1161011	158	1236002	189	1249585	192
1123291	68	11238100	579	11282300	543	1136025	44	1161012	159	1236003	189	1249586	192
1123306	68	11240000	580	11283200	542	1136103	44	11764200	661	1236005	190	1249587	192
1123307	68	11240400	580	11283300	543	1136104	44	11764201	661	1236006	190	1249588	192
1123308	68	11240500	580	11285000	546	1136105	44	11764202	661	1236007	190	1249589	192
1123309	68	11240700	580	11285100	546	1136107	44	11764203	661	1236009	189	1249590	192
1123310	68	11241100	579	11285200	547	1136112	44	11764300	661	1236104	190	1249591	192
11233100	579	11243100	579	11285300	547	1136118	44	11764301	661	1236105	190	1249592	192
1123311	68	11250000	540	11286000	546	1136125	44	11764400	661	1236106	189	1249593	192
1123312	68	1125003	41	11286100	546	1136203	44	12030099	33	1236114	190	1249600	192
1123314	68	1125004	41	11286200	547	1136204	44	12040099	33	1237000	189	1249602	192
1123315	68	1125005	41	11286300	547	1136205	44	12050099	33	1237001	189	1249603	192
1123320	68	1125007	41	1135003	40	1136207	44	12070099	33	1237002	189	1249604	192
1123324	68	1125010	41	1135004	40	1136212	44	1232000	189	1237003	189	1249605	192
1123328	68	1125012	41	1135005	40	1136218	44	1232001	189	1237009	189	1249606	192
1123339	68	1125014	41	1135007	40	1136225	44	1232001K	189	1237104	190	1249607	192
1123340	68	1125018	41	1135012	40	1136303	44	1232002	189	1237105	190	1249608	192
1123342	68	1125021	41	1135018	40	1136304	44	1232003	189	1237106	189	1249609	192
1123344	68	1125025	41	1135025	40	1136305	44	1232005	190	1237114	190	1249610	192
1123346	68	1125030	41	1135030	40	1136307	44	1232006	190	1238000	189	1249611	192
1123349	68	1125040	41	1135040	40	1136312	44	1232007	190	1238001	189	1249620	192
1123359	68	11250500	540	1135103	40	1136318	44	1232009	189	1238002	189	1249622	192
1123360	68	1125061	41	1135104	40	1136325	44	1232104	190	1238003	189	1249623	192
1123361	68	11251000	540	1135105	40	1136334	44	1232105	190	1238104	190	1249624	192
1123362	68	1125103	41	1135107	40	1136403	44	1232106	189	1238106	189	1249625	192
1123366	68	1125104	41	1135112	40	1136404	44	1232114	190	1238114	190	1249626	192
1123367	68	1125105	41	1135118	40	1136405	44	12322650	199	1239000	189	1249627	192
1123368	68	1125107	41	1135125	40	1136407	44	12322651	199	1239001	189	1249628	192
1123369	68	1125109	41	1135134	40	1136412	44	12322652	199	1239002	189	1249640	192
1123372	68	1125112	41	1135141	40	1136418	44	12322653	199	1239003	189	1249642	192
1123373	68	1125115	41	1135203	40	1136425	44	12322654	199	1239104	190	1249643	192
1123374	68	1125118	41	1135204	40	1136450	102	12322655	199	1240000	189	1249644	192
1123377	68	1125125	41	1135205	40	1136451	102	12322656	199	1240001	189	1249645	192
1123378	68	1125134	41	1135207	40	1136452	102	12322657	199	1240002	189	1249646	192
1123381	68	1125150	41	1135212	40	1136453	102	12322658	199	1240003	189	1249660	192
1123382	68	11251500	540	1135216	40	1136454	102	12322659	199	1240104	190	1249662	192
1123385	68	1125203	41	1135218	40	1136455	102	12322660	199	1240114	190	1249663	192
1123410	69	1125204	41	1135225	40	1136456	102	12322661	199	1241000	189	1249664	192
1123411	69	1125205	41	1135234	40	1136457	102	1233000	189	1241001	189	1249665	192
1123412	69	1125207	41	1135241	40	1136458	102	1233001	189	1242000	189	1249666	192
1123413	69	1125208	41	1135250	40	1136459	102	1233001K	189	1242001	189	1249680	192
1123414	69	1125209	41	1135303	40	1136460	102	1233002	189	1243000	189	1249682	192
1123415	69	1125212	41	1135304	40	1136461	102	1233002K	189	1243001	189	1249683	192
1123418	69	1125214	41	1135305	40	1136462	102	1233003	189	1244000	189	1249684	192
1123419	69	1125218	41	1135307	40	1136463	102	1233003K	189	1244001	189	1249685	192
1123420	69	1125220	41	1135312	40	1136504	44	1233005	190	1245000	189	1249686	192
1123421	69	1125225	41	1135318	40	1136507	44	1233006	190	1245001	189	1249700	192
1123422	69	1125234	41	1135325	40	1136604	44	1233007	190	1246001	189	1249702	192
1123423	69	1125241	41	1135334	40	1136607	44	1233009	189	1247000	189	1249703	192
1123424	69	1125250	41	1135341	40	1136614	44	1233009K	189	1247001	189	1249704	192
1123425	69	11252500	541	1135350	40	1136615	44	1233104	190	1248001	189	1249705	192
1123427	69	1125303	41	1135402	40	1136624	44	1233104K	190	1249001	189	1249706	192
1123428	69	1125304	41	1135403	40	1136625	44	1233105	190	1249500	192	1249720	192
1123429	69	1125305	41	1135404	40	1136634	44	1233105K	190	1249502	192	1249722	192
1123430	69	1125307	41	1135405	40	1136635	44	1233106	189	1249503	192	1249723	192
1123431	69	1125308	41	1135407	40	1136638	44	1233106K	189	1249504	192	1249724	192
1123432	69	1125312	41	1135412	40	1136752	44	1233114	190	1249505	192	1249725	192
1123433	69	1125314	41	1135502	40	1136753	44	1233114K	190	1249506	192	1249726	192
1123434	69	1125318	41	1135504	40	1136754	44	1234000	189	1249507	192	13030099	33
1123435	69	1125325	41	1135505	40	1136755	44	1234000K	189	1249508	192	13040099	33
1123436	69	1125332	41	1135602	40	1136757	44	1234001	189	1249509	192	13050099	33
1123438	69	1125350	41	1135604	40	1136762	44	1234001K	189	1249510	192	13070099	33
1123439	69	11253500	541	1135605	40	1136768	44	1234002	189	1249511	192	1308003	79
1123440	69	1125403	41	1135607	40	1136775	44	1234002K	189	1249520	192	1308004	79
1123441	69	1125404	41	1135614	40	1136802	44	1234003	189	1249522	192	1308005	79
1123443	69	1125405	41	1135615	40	1136803	44	1234003K	189	1249523	192	1308007	79
1123444	69	1125407	41	1135616	40	1136804	44	1234005	190	1249524	192	1308010	79
1123460	70	1125412	41	1135617	40	1136805	44	1234006	190	1249525	192	1308012	79
1123461	70	1125418	41	1135622	40	1136807	44	1234007	190	1249526	192	1308018	79
1123462	70	1125425	41	1135623	40	1136825	44	1234009	189	1249527	192	1308025	79
1123463	70	11255000	542	1135624	40	1136852	44	1234009K	189	1249528	192	1308103	79
1123464	70	1125503	41	1135625	40	1136853	44	1234104	190	1249529			

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
1308312	79	1312218	75	1313954	77	1550009	223	1550556	225	16001083	91	16005323	96
1308318	79	1312225	75	1313955	77	15500103	223	1550557	225	16001093	91	16005333	96
1308325	79	1312234	75	1313957	77	15500113	223	1550581	225	16001103	91	16005343	96
1308403	79	1312241	75	1314000	78	15500123	223	1550633	226	16001113	91	16005353	96
1308404	79	1312303	75	1314001	78	1550013	223	1550649	226	16001123	91	16005363	96
1308405	79	1312304	75	1314002	78	15500153	224	1550650	226	16001133	91	16005373	96
1308407	79	1312305	75	1314003	78	15500163	224	1550651	226	16001143	91	16005383	96
1308412	79	1312307	75	1314004	78	15500173	224	1550652	226	16001153	91	1600544	96
1308504	79	1312312	75	1314005	78	15500183	224	1550653	226	16001163	91	1600554	96
1308505	79	1312318	75	1314006	78	15500193	224	1550654	226	1600117	91	1600600	99
1308507	79	1312325	75	1314007	78	15500203	223	1550655	226	1600118	91	1600601	99
1308514	79	1312334	75	1314008	78	15500213	224	1550696	227	1600119	91	1600602	99
1308604	79	1312341	75	1314010	78	15500223	224	1550697	227	1600120	91	1600604	99
1308605	79	1312403	75	1314011	78	15500233	224	1550701	227	1600121	91	1600606	99
1308607	79	1312404	75	1314012	78	15500243	224	1550702	227	1600122	91	1600607	99
1308615	79	1312405	75	1314013	78	15500253	224	1552010	230	16001233	91	1600609	99
1308617	79	1312407	75	1314014	78	15500263	224	1552011	230	1600124	91	1600610	99
1308624	79	1312412	75	1314015	78	15500273	224	1552012	230	1600126	91	1600611	99
1308802	79	1312504	76	1314017	78	1550030	223	1552013	230	16001283	91	1600612	99
1308803	79	1312505	76	1314018	78	1550032	223	1552014	230	16001293	91	1600613	99
1308804	79	1312507	76	1314019	78	1550033	223	1552015	230	16001303	91	1600614	99
1308805	79	1312604	76	1314020	78	1550037	223	1552016	230	16001313	91	1600615	99
1308807	79	1312605	76	1314021	78	1550038	223	1552017	230	16001323	91	1600616	99
1308852	79	1312607	76	1314022	78	15500583	223	1591028	320	16001363	91	1600620	99
1308853	79	1312614	76	1314023	78	15500593	224	1591029	320	1600141	91	1600621	99
1308854	79	1312615	76	1314024	78	15500603	224	1591030	320	1600148	91	1600810	94
1308855	79	1312617	76	1314025	78	15500613	224	1591031	320	1600151	91	1600811	94
1308857	79	1312624	76	1314026	78	15500713	224	1591032	320	1600152	91	1600812	94
1308902	79	1312802	75	1314027	78	15500723	224	1591033	320	1600154	91	1600815	94
1308903	79	1312803	75	1314028	78	15500733	224	1591035	320	1600156	91	1600816	94
1308904	79	1312804	75	1314029	78	15500743	224	1591037	320	1600157	91	1600820	94
1308905	79	1312805	75	1314032	78	15500753	224	1591050	320	1600161	91	1600821	94
1308907	79	1312807	75	1314033	78	15500763	224	1591052	320	1600166	91	1600822	94
1308952	79	1312852	75	1314034	78	15500773	224	1591053	320	1600175	91	1600823	94
1308953	79	1312853	75	1314035	78	15500783	224	1591150	320	1600177	91	1600825	94
1308954	79	1312854	75	1314036	78	15500793	224	1591151	320	1600183	91	1600836	94
1308955	79	1312855	75	1314037	78	15500803	224	1591152	320	1600186	91	1600837	94
1308957	79	1312857	75	1314038	78	15500813	224	1591153	320	1600187	91	1600841	94
1311103	80	1312902	75	1314039	78	15500823	224	1591154	320	1600189	91	1600842	94
1311104	80	1312903	75	1314040	78	15500833	224	1591217	320	1600190	91	1600844	94
1311105	80	1312904	75	1314041	78	1550084	223	1591218	320	1600191	91	1600845	94
1311107	80	1312905	75	1314042	78	1550086	223	1591221	320	1600193	91	1600847	94
1311110	80	1312952	75	1314043	78	1550090	223	1591222	320	1600194	91	1600849	94
1311112	80	1312953	75	1314046	78	1550091	223	1591223	320	1600195	91	1600851	94
1311118	80	1312954	75	1314047	78	1550092	223	1591224	320	1600196	91	1600852	94
1311125	80	1312955	75	1314048	78	1550094	223	1591225	320	1600197	91	16010223	221
1311203	80	1312957	75	1314049	78	1550096	223	1591226	320	1600198	91	16010233	221
1311204	80	1312970	76	1314050	78	1550097	223	1591228	320	1600199	91	16020003	222
1311205	80	1312973	76	1314051	78	15502003	224	1591301	316	1600200	89	16020013	222
1311207	80	1312974	76	1314052	78	1550205	224	1591302	316	16002013	89	16020023	222
1311210	80	1312975	76	1314053	78	1550206	224	1591303	316	16002023	89	1602003	222
1311212	80	1312976	76	1314054	78	1550207	224	1591304	316	1600203	89	16020103	222
1311218	80	1312978	76	1314055	78	1550208	224	1591305	316	1600204	89	16020123	222
1311225	80	1312981	76	1314056	78	1550209	224	1591306	316	1600205	89	1708001	317
1311303	80	1312983	76	1314057	78	1550210	224	1591307	316	1600206	89	1708002	317
1311304	80	1313103	77	1314058	78	1550211	224	1591308	316	1600207	89	1708004	317
1311305	80	1313104	77	1314061	78	1550212	224	1591310	316	1600208	89	1708010	317
1311307	80	1313105	77	1314062	78	1550213	224	1591311	316	1600209	89	17520099	33
1311312	80	1313107	77	1314063	78	1550214	224	1591312	316	16002113	89	17530099	33
1311318	80	1313112	77	1314064	78	1550215	224	1591313	316	16002123	89	17540099	33
1311325	80	1313118	77	1314065	78	1550216	224	1591315	316	16002133	89	18020099	33
1311403	80	1313125	77	1314066	78	1550218	224	1591318	316	1600250	90	18030099	33
1311404	80	1313134	77	1314067	78	15502193	224	1591500	316	1600251	90	18040099	33
1311405	80	1313141	77	1314068	78	15502203	224	1591501	316	1600252	90	18520099	33
1311407	80	1313203	77	1314070	78	15502213	224	1591502	316	1600253	90	19005000	613
1311412	80	1313204	77	1314071	78	15502223	224	1591503	316	16002583	90	19006000	613
1311504	80	1313205	77	1314073	78	15502533	224	1591505	316	1600259	91	19007000	614
1311505	80	1313207	77	1314074	78	15502543	224	1591506	316	1600263	91	19009000	614
1311604	80	1313212	77	1314075	78	15502563	224	1591507	316	1600300	97	19011000	611
1311605	80	1313218	77	1314076	78	15502573	224	1591508	316	1600301	97	19012000	611
1311704	80	1313225	77	1314077	78	15502583	224	1591511	316	1600302	97	19014000	616
1311705	80	1313234	77	13162000	578	15503003	228	16000003	221	1600303	97	19020099	33
1311804	80	1313241	77	13162100	578	15503103	228	16000013	221	1600304	97	19021000	611
1311805	80	1313303	77	13162200	578	15503113	228	16000023	221	1600305	97	19022000	611
1311852	80	1313304	77	13162300	578	15503203	228	1600003	221	1600306	97	19024000	616
1311902	80	1313305	77	13162400	578	15503213	228	16000053	221	1600307	97	19034000	626
1311952	80	1313307	77	13162500	578	15503223	228	16000063	221	1600308	97	19034100	626
1312003	75	1313312	77	13162600	578	15503233	228	1600008	221	1600309	97	19034700	622
1312004	75	1313318	77	13162700	578	1550330	228	1600009	221	1600310	97	19034900	622
1312005	75	1313325	77	13162800	578	1550332	228	1600010	221	1600311	97	19035000	626
1312007	75	1313334	77	13162900	578	1550337	228	1600011	221	1600312	97	19035100	626
1312010	75	1313341	77	13163000	578	1550350	228	1600012	221	1600313	97	19035900	622
1312012	75	1313403	77	13163100	578	1550355	228	16000213	221	1600314	97	19036000	627
1312018	75	1313404	77	13163200	578	15505003	229	16000313	221	1600500	96	19036100	627
1312025	75	1313405	77	13163300	578	15505143	229	16000323	221	1600501	96	19036900	623
1312													

From part number 19076000 to 2172002

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
19076000	641	21700530	347	2170260	359	2170830	326	2171079	440	2171269	457	2171720	444
19076900	633	21700536	362	2170261	359	2170831	326	2171080	440	2171270	457	2171721	444
19078900	632	21700537	362	2170263	359	2170842	325	2171081	440	2171271	457	2171722	444
19080000	639	21700538	362	2170264	359	2170843	325	2171082	440	2171272	457	2171723	444
19080500	639	21700540	476	2170266	359	2170844	325	2171083	440	2171273	457	2171724	444
19080900	640	21700541	347	2170267	359	2170850	433	2171084	440	2171274	457	2171725	444
19081000	637	21700542	347	2170269	359	2170853	333	2171085	441	2171275	457	2171726	444
19082000	637	21700543	347	2170270	359	2170854	341	2171086	441	2171276	457	2171727	444
19082900	640	21700544	348	2170272	359	2170856	328	2171087	441	2171277	457	2171728	444
19083000	636	21700546	348	2170273	359	2170857	360	2171088	441	2171278	458	2171729	444
19086000	643	21700547	348	2170275	359	2170875	344	2171089	441	2171279	458	2171730	444
19086900	643	2170056	322	2170276	359	2170879	418	2171090	441	2171280	458	2171731	444
19090000	639	21700561	350	2170278	359	2170885	371	2171091	442	2171281	458	2171732	444
19092000	637	21700562	350	2170279	359	2170886	419	2171092	442	2171282	458	2171733	444
19092900	640	21700563	350	2170280	412	2170887	426	2171093	442	2171283	458	2171734	444
19104000	654	21700564	350	2170281	412	2170888	421	2171094	442	2171284	458	2171735	444
19104900	651	21700565	350	2170283	413	2170889	424	2171095	442	2171285	458	2171736	449
19105000	654	21700566	350	2170284	413	2170890	419	2171096	442	2171286	458	2171737	449
19105900	651	21700568	351	2170289	414	2170891	418	2171097	437	2171287	458	2171738	449
19107000	655	21700569	351	2170295	371	2170893	418	2171098	437	2171288	458	2171739	449
19107900	652	21700570	351	2170296	412	2170894	420	2171099	437	2171289	458	2171740	449
19109000	655	21700590	363	2170297	412	2170901	422	2171100	437	2171290	458	2171741	449
19109900	653	21700591	363	2170298	412	2170904	434	2171101	437	2171291	458	2171742	449
19111000	646	21700600	462	2170299	413	2170930	429	2171102	437	2171300	443	2171743	449
19111900	645	21700601	462	2170300	413	2170931	429	2171103	437	2171301	443	2171744	449
19112000	648	21700602	465	2170310	337	2171001	450	2171104	437	2171302	443	2171745	449
19113000	648	21700605	461	2170317	326	2171002	450	2171105	437	2171303	443	2171746	449
19113900	645	21700611	462	2170318	326	2171003	450	2171106	437	2171304	443	2171747	449
19114000	649	21700612	462	2170322	340	2171004	450	2171107	437	2171305	443	2171748	449
19117000	657	21700613	464	2170323	336	2171005	450	2171108	437	2171306	443	2171749	449
19117900	657	21700614	464	2170326	329	2171006	450	2171109	438	2171307	443	2171750	447
19121000	646	21700615	462	2170330	329	2171007	450	2171110	438	2171308	443	2171751	447
19121900	645	21700616	462	2170331	346	2171008	450	2171111	438	2171320	443	2171752	447
19122000	648	21700617	465	2170332	345	2171009	450	2171112	438	2171321	443	2171753	447
19123000	648	21700618	465	2170333	329	2171010	450	2171113	438	2171322	443	2171754	447
19123900	645	21700621	465	2170334	356	2171011	450	2171114	438	2171323	443	2171755	447
19124000	649	21700622	465	2170335	356	2171012	450	2171115	439	2171324	443	2171756	447
19127000	657	21700623	466	2170340	357	2171013	450	2171116	439	2171325	443	2171757	445
19127900	657	21700630	463	2170341	357	2171014	450	2171117	439	2171326	443	2171758	445
19421900	592	21700631	463	2170342	357	2171015	450	2171118	439	2171327	443	2171759	445
19424500	592	21700632	463	2170343	357	2171016	450	2171119	439	2171328	443	2171760	445
19425500	589	21700633	463	2170344	358	2171017	450	2171120	439	2171350	443	2171761	445
19426000	589	21700636	463	2170345	358	2171018	450	2171164	451	2171351	443	2171762	445
19426500	589	21700637	463	2170346	358	2171019	450	2171165	451	2171352	443	2171763	445
19427000	590	21700638	461	2170347	358	2171020	450	2171166	451	2171353	443	2171764	448
19427300	590	21700639	463	2170350	369	2171021	450	2171167	451	2171354	443	2171765	448
19427500	590	21700640	463	2170351	369	2171022	450	2171168	451	2171355	443	2171766	448
19429000	593	21700641	355	2170352	369	2171023	450	2171169	451	2171356	443	2171767	448
19429200	593	21700641	367	2170353	369	2171024	450	2171170	451	2171357	443	2171768	448
19439000	599	21700641	394	2170357	326	2171025	453	2171171	451	2171358	443	2171769	448
19445000	595	2170125	466	2170358	326	2171026	453	2171172	451	2171370	443	2171770	448
19445500	595	2170126	466	2170360	370	2171027	453	2171173	451	2171371	443	2171771	448
19446000	594	2170127	473	2170370	370	2171028	453	2171174	451	2171372	443	2171772	448
19446100	594	2170128	466	2170371	325	2171029	453	2171175	451	2171373	443	2171773	448
19448000	597	2170129	473	2170372	325	2171030	453	2171176	451	2171374	443	2171774	448
19448100	597	2170138	466	2170430	416	2171031	453	2171177	451	2171375	443	2171775	448
19450100	597	2170139	473	2170431	416	2171032	453	2171178	452	2171376	443	2171776	448
19512100	589	2170142	473	2170450	434	2171033	453	2171179	452	2171377	443	2171777	448
19512300	590	2170143	468	2170451	435	2171034	453	2171180	452	2171378	443	2171778	446
19512700	592	2170144	473	2170452	435	2171035	453	2171181	452	2171501	439	2171779	446
19512900	593	2170172	473	2170453	435	2171036	453	2171182	452	2171502	439	2171780	446
19515200	592	2170173	466	2170454	436	2171037	453	2171183	452	2171503	439	2171781	446
19517200	592	2170186	467	2170455	436	2171038	453	2171184	452	2171504	439	2171782	446
19520099	33	2170193	467	2170456	436	2171039	453	2171185	452	2171505	439	2171783	446
19563000	605	2170194	467	2170463	434	2171040	453	2171186	452	2171506	439	2171784	446
19563200	605	2170195	468	2170464	428	2171041	453	2171187	452	2171507	439	2171785	446
19564000	601	2170196	468	2170465	428	2171042	453	2171188	452	2171508	439	2171786	446
19564500	601	2170197	472	2170466	428	2171043	453	2171189	452	2171509	439	2171787	446
19565000	600	2170198	472	2170474	432	2171044	453	2171190	452	2171510	439	2171788	446
19565300	600	2170199	471	2170475	432	2171045	453	2171191	452	2171511	439	2171789	446
19567000	603	2170203	323	2170476	432	2171046	453	2171214	454	2171512	439	2171790	446
19567100	603	2170204	323	2170482	431	2171047	453	2171215	454	2171513	442	2171791	446
19568000	603	2170205	323	2170483	431	2171048	453	2171216	454	2171514	442	2171792	446
19568100	603	2170206	372	2170484	430	2171049	456	2171217	454	2171515	442	2171793	446
21124030	1002	2170207	373	2170485	430	2171050	456	2171218	454	2171516	442	2171794	446
21124040	1002	2170208	372	2170486	413	2171051	456	2171219	454	2171517	442	2171795	446
21124041	1002	2170209	372	2170488	427	2171052	456	2171220	454	2171518	442	2171796	446
2170000	321	2170213	324	2170489	414	2171053	456	2171221	454	2171519	442	2171797	446
2170001	321	2170214	324	2170494	418	2171054	456	2171222	454	2171520	442	2171798	446
2170002	321	2170215	324	2170495	343	2171055	456	2171223	454	2171521	442	2171870	446
2170003	321	2170216	374	2170496	425	2171056	456	2171224	454	2171522	442	2171871	446
2170005	321	2170217	373	2170500	361	2171057	456	2171225	454	2171523	442	2171872	446
2170006	321	2170218	374	2170560	368	21							

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
2172003	459	221412	59	22260083	393	22260245	380	22260418	385	22260618	402	22260996	391
2172004	459	2214120	61	22260084	393	22260246	380	22260450	388	22260619	402	22260997	391
2172005	459	221418	59	22260085	393	22260247	380	22260451	388	22260620	402	22260999	393
2172006	459	2214180	61	22260086	393	22260248	380	22260452	388	22260621	402	22261001	354
2172007	459	221425	59	22260087	393	22260249	384	22260453	388	22260636	391	22261016	464
2172008	459	2214250	61	22260088	393	22260250	384	22260454	388	22260638	391	22262004	364
2172009	459	221603	58	22260089	393	22260251	384	22260455	388	22260640	391	22262010	405
2172010	459	2216030	60	22260090	393	22260252	384	22260456	388	22260641	391	22262011	405
2172011	459	221604	58	22260091	385	22260253	384	22260457	388	22260644	391	22262012	405
2172012	459	2216040	60	22260092	385	22260254	384	22260458	388	22260646	353	22262013	405
2172013	459	221605	58	22260093	385	22260255	384	22260459	388	22260647	391	22262014	406
2172028	459	2216050	60	22260094	385	22260256	384	22260460	388	22260648	391	22262015	406
2172029	459	221607	58	22260095	385	22260257	384	22260461	388	22260649	391	22262016	406
2172030	459	2216070	61	22260096	385	22260258	384	22260462	388	22260651	391	22262017	406
2172031	459	221609	58	22260097	386	22260259	384	22260463	388	22260653	353	22262020	365
2172032	459	221612	58	22260098	386	22260260	384	22260464	388	22260661	389	22262020	392
2172033	459	2216120	61	22260099	386	22260261	386	22260465	388	22260663	389	22262021	354
2172034	459	221618	59	22260100	383	22260262	386	22260466	388	22260665	381	22262022	465
2172100	460	2216180	61	22260101	383	22260263	386	22260467	388	22260675	388	22262023	391
2172101	460	221625	59	22260102	383	22260264	386	22260500	397	22260678	389	22262024	391
2172102	460	2216250	61	22260103	383	22260265	384	22260501	399	22260680	388	22262025	382
2172103	460	221641	59	22260105	393	22260266	384	22260502	399	22260683	389	22262026	382
2172104	460	221803	58	22260106	393	22260267	387	22260503	399	22260685	389	22262027	382
2172105	460	2218030	60	22260107	393	22260268	387	22260504	399	22260688	389	22262028	382
2172106	460	221804	58	22260108	393	22260269	387	22260505	399	22260689	389	22262040	390
2172107	460	2218040	60	22260111	393	22260270	387	22260506	399	22260705	389	22262041	390
2172108	460	221805	58	22260112	393	22260271	380	22260507	399	22260714	388	22262042	390
2172109	460	2218050	60	22260113	393	22260272	380	22260508	399	22260722	354	22262043	390
2172110	460	221807	58	22260114	393	22260273	380	22260509	399	22260726	385	22262044	390
2172111	460	2218070	60	22260115	393	22260274	380	22260510	399	22260728	385	22262045	390
2172112	460	221812	58	22260116	393	22260275	378	22260511	399	22260729	385	22262046	390
2172113	460	2218120	60	22260117	393	22260276	378	22260512	399	22260761	355	22262047	390
2172128	460	221818	58	22260118	393	22260277	378	22260513	397	22260765	367	22262048	390
2172129	460	2218180	60	22260119	382	22260300	378	22260514	398	22260765	394	22262049	392
2172130	460	221825	58	22260120	382	22260301	384	22260515	398	22260766	366	22262050	392
2172131	460	2218250	60	22260121	382	22260302	384	22260516	398	22260767	352	22262051	392
2172132	460	22260001	402	22260122	382	22260303	384	22260517	398	22260768	352	22262060	390
2172133	460	22260002	402	22260123	382	22260304	386	22260518	398	22260769	352	22262061	390
2172134	460	22260003	402	22260124	382	22260305	386	22260519	398	22260770	352	22262062	390
2172170	459	22260004	402	22260125	382	22260306	386	22260520	398	22260771	352	22262063	390
2172171	459	22260005	402	22260126	382	22260307	386	22260521	398	22260772	352	22262064	390
2172172	459	22260006	402	22260127	391	22260308	378	22260522	398	22260773	352	22262065	390
2172173	459	22260007	402	22260128	391	22260309	378	22260523	398	22260774	352	22262078	353
2172174	459	22260008	402	22260129	391	22260310	378	22260524	398	22260775	352	22262081	381
2172175	459	22260010	402	22260130	391	22260311	378	22260525	398	22260776	352	22262083	389
2172176	459	22260011	402	22260131	391	22260312	378	22260526	397	22260777	352	22262093	381
2172177	460	22260012	402	22260132	391	22260313	379	22260550	396	22260778	404	22262095	389
2172178	460	22260013	402	22260133	391	22260314	379	22260551	396	22260779	404	22262096	389
2172179	460	22260014	402	22260134	391	22260315	379	22260552	396	22260780	404	22262097	389
2172180	460	22260015	402	22260135	365	22260316	379	22260553	396	22260781	404	22262098	389
2172181	460	22260016	402	22260135	391	22260317	378	22260554	396	22260782	404	22262099	389
2172182	460	22260017	402	22260136	365	22260318	378	22260555	396	22260783	404	22262100	389
2172183	460	22260018	402	22260136	391	22260319	378	22260556	396	22260784	404	22262101	389
21920004	1006	22260019	402	22260137	386	22260320	384	22260557	396	22260785	404	22262102	389
21920005	1006	22260020	402	22260138	386	22260321	384	22260558	396	22260786	404	22262103	389
21920006	1006	22260021	402	22260139	386	22260322	384	22260559	396	22260787	404	22262104	389
21920008	1006	22260022	402	22260140	386	22260323	384	22260560	396	22260788	404	22262105	381
21920009	1006	22260023	402	22260141	385	22260324	384	22260561	396	22260789	364	22262106	381
21920120	1006	22260024	402	22260200	378	22260325	384	22260562	396	22260790	364	22262107	381
21920122	1006	22260025	402	22260201	378	22260326	384	22260563	396	22260791	364	22262108	391
21920125	1006	22260026	401	22260202	378	22260327	384	22260564	396	22260792	364	22262109	391
21920126	1006	22260027	401	22260203	378	22260328	386	22260565	396	22260793	364	22262110	382
21920129	1006	22260028	401	22260204	378	22260329	386	22260566	396	22260794	364	22262111	382
21920130	1006	22260029	401	22260205	378	22260330	386	22260567	396	22260795	364	22262112	382
21920131	1006	22260030	401	22260206	379	22260331	386	22260568	396	22260796	364	22262113	382
21920135	1006	22260031	401	22260207	379	22260332	386	22260569	396	22260797	364	2310026	95
21920140	1006	22260032	401	22260208	379	22260333	386	22260570	396	22260798	364	24420054	669
21920141	1006	22260033	401	22260209	379	22260334	386	22260571	396	22260799	364	24420055	669
220204	59	22260034	401	22260210	379	22260335	386	22260572	396	22260800	327	24420056	683
2202040	61	22260035	401	22260211	379	22260336	386	22260573	396	22260801	327	24420057	683
220404	59	22260036	401	22260212	379	22260337	386	22260574	395	22260802	327	24420058	683
2204040	61	22260037	401	22260213	379	22260338	386	22260575	395	22260803	327	24420059	683
220604	59	22260038	401	22260214	379	22260339	386	22260576	395	22260804	327	24441122	480
2206040	61	22260039	401	22260215	379	22260340	385	22260577	395	22260805	327	2510001	194
220605	59	22260042	386	22260216	379	22260341	384	22260578	395	22260806	327	2510005	194
220804	59	22260043	382	22260217	379	22260342	384	22260579	395	22260820	464	26000102	521
2208040	61	22260044	382	22260218	378	22260343	384	22260580	395	22260825	391	26000104	521
220805	59	22260045	382	22260219	378	22260344	384	22260581	395	22260826	391	26000108	521
221004	59	22260046	382	22260220	378	22260345	384	22260582	395	22260832	389	26000112	521
2210040	61	22260053	378	22260221	384	22260346	384	22260583	395	22260833	389	26000202	521
221005	59	22260055	378	22260222	384	22260347	387	22260584	39				



Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
26300202	509	27400324	519	281004	55	29125099	494	29500031	497	30017698	227
26300204	509	27400904	519	281004CY	57	29125798	503	29500032	497	30017699	227
26300208	509	27400908	519	281005	55	29125799	503	29500033	497	30017700	227
26300212	509	27400912	519	281203	55	29126798	503	29500034	497	30017701	227
26300302	509	27400924	519	281204	55	29126799	503	29500035	497	30017702	227
26300304	509	27500104	520	281204CY	57	29130088	494	29500036	497	30017703	227
26300308	509	27500108	520	281205	55	29130089	494	29500037	497	30017704	227
26300312	509	27500112	520	281205CY	57	29130098	494	29500070	498	30017705	227
26300402	509	27500124	520	281207	55	29130099	494	29500071	498	30017706	227
26300404	509	27500204	520	281403	55	29130198	525	29500072	498	30017707	227
26300408	509	27500208	520	281403CY	57	29130199	525	29500073	498	30017708	227
26300412	509	27500212	520	281404	55	29130988	525	29500074	498	30017709	227
26300902	509	27500224	520	281404CY	57	29130989	525	29500075	498	30017710	227
26300904	509	27500304	520	281405	55	29130998	525	29500076	498	30017711	227
26300908	509	27500308	520	281405CY	57	29130999	525	29500077	498	30017712	227
26300912	509	27500312	520	281407	55	29132088	494	29500080	498	30017713	227
26310102	507	27500324	520	281407CY	57	29132089	494	29500081	498	30017714	227
26310104	507	27500404	520	281602	54	29135088	494	29500082	498	30017715	227
26310108	507	27500408	520	281603	54	29135089	494	29500083	498	30017716	227
26310112	507	27500412	520	281603CY	56	29135098	494	29500084	498	30017717	227
26310202	507	27500424	520	281604	54	29135099	494	29500089	498	30017718	227
26310204	507	27500904	520	281604CY	56	29135798	503	29500701	504	30017719	227
26310208	507	27500908	520	281605	54	29135799	503	29500702	504	30017720	227
26310212	507	27500912	520	281605CY	56	29136798	503	29500703	504	30017721	227
26310302	507	27500924	520	281607	55	29136799	503	29500704	504	30017722	227
26310304	507	27560104	506	281607CY	56	29137098	494	29500711	505	30017723	227
26310308	507	27560108	506	281609	55	29137099	494	29500712	505	30017724	227
26310312	507	27560112	506	281612	55	29140098	493	29500713	505	30017725	227
26310902	507	27560124	506	281612CY	56	29140099	493	29500714	505	30017726	227
26310904	507	27560204	506	281618	55	29140199	525	29500715	505	30017727	227
26310908	507	27560208	506	281618CY	56	29140798	503	29500733	497	30017728	227
26310912	507	27560212	506	281625	55	29140799	503	29500770	505	30017729	227
26400324	519	27560224	506	281803	54	29140999	525	29500771	505	30017730	227
26400348	519	27560304	506	281803CY	56	29141098	493	29500772	505	30017731	227
26400924	519	27560308	506	281804	54	29141099	493	29500773	505	30017732	227
26400944	519	27560312	506	281804CY	56	29141798	503	30010542	53	30017733	227
26400948	519	27560324	506	281805	54	29141799	503	30010543	53	30017734	227
26400972	519	27560904	506	281805CY	56	29142098	493	30010544	53	30017735	227
26400996	519	27560908	506	281807	54	29142099	493	30010545	53	30017736	227
26600224	513	27560912	506	281807CY	56	29143098	493	30010546	53	30017737	227
26600248	513	27560924	506	281812	54	29143099	493	30010547	53	30017738	227
26600324	513	27600104	512	281812CY	56	29144098	493	30010548	53	30017739	227
26600348	513	27600108	512	281818	54	29144099	493	30010639	53	30017740	227
26600924	513	27600112	512	281818CY	56	29145098	493	30010928	53	30017787	319
26600948	513	27600124	512	281825	54	29145099	493	30015435	91	30017788	319
26601924	513	27600204	512	281825CY	56	29146098	493	30016373	183	30017798	319
26601944	513	27600208	512	28320001	489	29146099	493	30016600	188	30017801	319
26601948	513	27600212	512	28320002	491	29147098	493	30016603	188	30020808	188
26601972	513	28320024	512	28320702	501	29147099	493	30016606	188	30020809	188
26601996	513	27600304	512	28351002	492	29148098	493	30016609	188	30020810	188
26609912	511	27600308	512	28351702	502	29148099	493	30017645	225	30020811	188
26609924	511	27600312	512	28352702	502	29150098	494	30017646	225	3013234	198
26609944	511	27600324	512	28600701	499	29150099	494	30017647	225	301602	303
26609948	511	27600904	512	28620702	500	29161097	495	30017648	225	301602S	303
26609972	511	27600908	512	29011102	523	29165797	504	30017649	225	301606S	303
26609996	511	27600912	512	29011202	523	29166797	504	30017650	225	3016697	198
26610104	508	27600924	512	29011302	523	29310102	524	30017651	225	3016698	198
26610106	508	27900104	514	29011402	523	29310202	524	30017652	225	3016699	198
26610108	508	27900108	514	29011902	523	29310302	524	30017653	225	3016771	198
26610204	508	27900112	514	29021102	523	29310402	524	30017654	225	3017600	225
26610206	508	27900124	514	29021202	523	29310902	524	30017655	225	3017601	225
26610208	508	27900204	514	29021302	523	29320102	524	30017656	225	3017602	225
26610304	508	27900208	514	29021402	523	29320202	524	30017657	225	3017603	225
26610306	508	27900212	514	29021902	523	29320302	524	30017658	225	3017604	225
26610308	508	27900224	514	29022102	523	29320402	524	30017659	225	3017605	225
26610404	508	27900304	514	29022202	523	29320902	524	30017660	225	3017606	225
26610406	508	27900308	514	29022302	523	29330102	524	30017661	225	3017607	225
26610408	508	27900312	514	29022402	523	29330202	524	30017662	225	3017608	225
26610904	508	27900324	514	29022902	523	29330302	524	30017663	225	3017609	225
26610906	508	27900904	514	29031102	523	29330402	524	30017664	225	3017610	225
26610908	508	27900908	514	29031202	523	29330902	524	30017665	225	3017611	225
26610912	508	27900912	514	29031302	523	29401099	526	30017666	225	3017612	226
26640912	517	27900924	514	29031402	523	29410989	526	30017667	225	3017613	226
26640924	517	27920104	516	29031902	523	29410999	526	30017668	225	3017614	226
26640948	517	27920108	516	29032102	523	29420099	495	30017669	225	3017615	226
26640972	517	27920112	516	29032202	523	29420199	526	30017670	225	3017616	226
26640996	517	27920124	516	29032302	523	29420999	526	30017671	225	3017617	226
26644912	518	27920204	516	29032402	523	29421199	526	30017672	225	3017618	226
26644924	518	27920208	516	29032902	523	29421999	526	30017673	225	3017619	226
26644948	518	27920212	516	29033102	523	29430089	495	30017674	225	3017620	226
26644972	518	27920224	516	29033202	523	29430099	495	30017675	225	3017621	226
26644996	518	27920304	516	29033302	523	29430199	526	30017676	225	3017622	226
26900924	515	27920308	516	29033402	523	29430989	526	30017677	225	3017741	227
26900944	515	27920312	516	29033802	523	29430999	526	30017678	225	3017861	198
26900948	515	27920324	516	29033902	523	29440099	493	30017679	225	301801STP	304
26900972	515	27920904	516	29039902	523	29441099	493	30017680	225	301802	303
26900996	515	27920908	516	29044102	523	29450099	494	30017681	225	301802S	303
27009802	510	27920912	516	29044202	523	29500001	496	30017682	225	301802STP	304
27009804	510	27920924	516	29044302	523	29500002	496	30017683	225	301803S	303
27009806	510	28000001	488	29044402	523	29500004	496	30017684	225	301804S	303
27009808	510	28000002	490	29110198	525	29500010	496	30017685	225	301806STP	304
27009812	510	28020001	489	29110199	525	29500011	496	30017686	226	3018942	198
27400104	519	28020002	491	29110988	525	29500012	496	30017687	226	302002S	303
27400108	519	28020702	500	29110989	525	29500013	496</				

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
4150610	215	4160414	213	4161201	212	44420122	677	44420283	696	44423117	666	44429011	577
4150614	215	4160414K	213	4161202	212	44420123	677	44420284	700	44423118	666	44429012	577
4150700	215	4160426	213	4161211	213	44420124	677	44420285	700	44423119	666	44429013	577
4150701	215	4160426K	213	4161300	213	44420125	677	44420286	696	44423120	668	44429014	577
4150702	215	4160444	214	4161301	212	44420126	677	44420287	696	44423121	668	44429015	591
4150704	215	4160500	213	4161400	213	44420127	677	44420288	700	44423122	668	44429017	588
4150706	215	4160500K	213	4161401	212	44420128	677	44420289	700	44423123	668	44429018	588
4150800	215	4160501	212	4161402	212	44420129	677	44420290	701	44423124	668	44429019	588
4150801	215	4160501K	212	4161500	213	44420130	677	44420291	701	44423125	668	44429020	588
4150802	215	4160502	212	4161501	212	44420131	677	44420292	701	44423126	668	44429021	588
4150900	215	4160502K	212	4161502	212	44420132	677	44420293	701	44423127	668	44429022	588
4150901	215	4160503	212	4180400	211	44420133	677	44420294	701	44423128	668	44429300	690
4151000	215	4160504	213	4180401	211	44420134	677	44420295	701	44423129	668	44429301	690
4151001	215	4160504K	213	4180402	211	44420135	677	44420301	695	44423130	668	44429302	690
4151100	215	4160505	213	4180403	211	44420148	673	44420305	695	44423131	668	44429303	690
4151101	215	4160505K	213	4180404	211	44420149	673	44420316	698	44423132	668	44429304	690
4151201	215	4160506	212	4180405	211	44420150	673	44420317	698	44423133	668	44429305	690
4151301	215	4160506K	212	4180406	211	44420151	673	44420318	699	44423134	668	44429306	689
4151401	215	4160507	213	4180409	211	44420152	673	44420319	699	44423135	668	44429307	689
4160100	213	4160509	213	4180414	211	44420153	673	44420320	694	44423136	668	44429308	689
4160101	212	4160509K	213	4180414K	211	44420154	673	44420321	694	44423140	662	44429309	689
4160101K	212	4160510	213	4180500	211	44420155	673	44420330	701	44423141	662	44429310	690
4160102	212	4160511	213	4180501	211	44420156	673	44420331	701	44423142	662	44429311	690
4160102K	212	4160514	213	4180502	211	44420157	673	44420332	701	44423143	662	44429312	690
4160103	212	4160514K	213	4180503	211	44420158	673	44420333	701	44423144	662	44429313	690
4160104	213	4160526	213	4180504	211	44420159	673	44420334	701	44423145	662	44429314	690
4160104K	213	4160544	214	4180506	211	44420211	699	44420335	701	44423146	662	44429315	690
4160105	213	4160544K	214	4180507	211	44420212	699	44420336	701	44423147	662	44429316	689
4160106	212	4160600	213	4180514	211	44420213	699	44420337	701	44423200	549	44429317	689
4160106K	212	4160600K	213	4180514K	211	44420214	699	44422018	638	44423201	549	44429318	691
4160107	213	4160601	212	4180600	211	44420215	699	44422019	646	44423202	551	44429319	691
4160109	213	4160601K	212	4180600K	211	44420216	699	44422020	646	44423203	551	44429320	691
4160109K	213	4160602	212	4180601	211	44420217	699	44422021	647	44423204	553	44429321	691
4160110	213	4160603	212	4180602	211	44420218	699	44423017	659	44423205	553	44429322	691
4160111	213	4160604	213	4180603	211	44420219	699	44423018	659	44423206	555	44429323	691
4160114	213	4160605	213	4180604	211	44420220	699	44423026	625	44423207	555	44429324	691
4160114K	213	4160606	212	4180605	211	44420221	698	44423050	665	44424004	574	44429325	691
4160126	213	4160609	213	4180606	211	44420222	698	44423051	665	44424005	574	44429326	691
4160144K	214	4160609K	213	4180609	211	44420223	698	44423052	665	44424006	574	44429327	691
4160200	213	4160610	213	4180614	211	44420224	698	44423053	665	44424007	574	44429328	691
4160201	212	4160610K	213	44420001	672	44420225	698	44423054	665	44424008	574	44429329	691
4160202	212	4160611	213	44420002	672	44420226	698	44423055	665	44424009	574	44429330	691
4160202K	212	4160614	213	44420003	672	44420227	698	44423056	665	44424010	574	44429331	691
4160203	212	4160626	213	44420004	672	44420228	698	44423057	665	44424011	574	44429332	691
4160203K	212	4160644	214	44420005	672	44420229	698	44423058	665	44424012	564	44429333	691
4160204	213	4160700	213	44420006	672	44420230	698	44423059	665	44424013	564	44429334	691
4160205	213	4160700K	213	44420007	672	44420231	701	44423060	665	44424014	586	44429335	691
4160206	212	4160701	212	44420008	672	44420232	697	44423061	665	44424015	586	44429336	691
4160207	213	4160701K	212	44420009	672	44420233	701	44423062	665	44424017	565	44429337	691
4160209	213	4160702	212	44420010	672	44420234	701	44423063	665	44424018	565	44429338	691
4160209K	213	4160702K	212	44420011	672	44420235	701	44423064	665	44424019	586	44429339	691
4160210	213	4160703	212	44420012	672	44420236	701	44423065	665	44424020	586	44429340	691
4160214	213	4160704	213	44420015	669	44420237	697	44423066	665	44424021	586	44429341	691
4160214K	213	4160704K	213	44420016	669	44420238	701	44423067	665	44424022	586	44429342	691
4160226	213	4160705	213	44420017	669	44420239	701	44423068	665	44424023	586	44429343	691
4160226K	213	4160706	212	44420018	669	44420240	701	44423069	665	44424024	586	44429344	692
4160244	214	4160709	213	44420019	669	44420241	697	44423070	663	44424025	586	44429345	692
4160244K	214	4160709K	213	44420020	669	44420242	697	44423071	663	44424026	586	44429346	692
4160300	213	4160710	213	44420021	671	44420243	697	44423072	663	44424027	586	44429347	692
4160300K	213	4160711	213	44420022	671	44420244	701	44423073	663	44424028	560	44429348	692
4160301	212	4160714	213	44420023	671	44420244	697	44423074	664	44424029	586	44429349	692
4160301K	212	4160714K	213	44420024	671	44420245	697	44423075	663	44424030	566	44429350	692
4160302	212	4160726	213	44420025	671	44420246	697	44423076	663	44424031	566	44429351	692
4160302K	212	4160744	214	44420026	671	44420247	697	44423077	663	44424032	587	44429352	692
4160303	212	4160800	213	44420029	670	44420250	697	44423078	663	44424033	587	44429353	692
4160303K	212	4160801	212	44420030	670	44420250	700	44423079	664	44424034	587	44429354	693
4160304	213	4160802	212	44420031	670	44420251	697	44423080	664	44424035	587	44429355	693
4160304K	213	4160803	212	44420032	670	44420251	700	44423081	664	44424036	587	44429356	693
4160305	213	4160804	213	44420033	670	44420252	697	44423082	664	44424037	587	44429357	693
4160305K	213	4160805	213	44420035	671	44420252	700	44423083	664	44424038	587	44429358	693
4160306	212	4160806	212	44420036	672	44420253	697	44423084	664	44424039	587	44429359	693
4160307	213	4160809	213	44420037	672	44420253	700	44423085	664	44424040	587	44429360	693
4160308	213	4160810	213	44420038	672	44420254	700	44423086	664	44424041	561	44429361	693
4160309	213	4160811	213	44420039	672	44420254	700	44423087	664	44424042	561	44429362	693
4160309K	213	4160814	213	44420040	672	44420255	697	44423088	664	44424043	561	44429363	693
4160310	213	4160826	213	44420041	672	44420255	700	44423089	664	44424044	561	44429364	693
4160311	213	4160844	214	44420043	670	44420256	701	44423090	664	44424049	539	44429365	693
4160314	213	4160900	213	44420044	670	44420257	701	44423091	664	44424050	539	44429366	693
4160314K	213	4160901	212	44420045	670	44420259	697	44423092	664	44424052	659	44429367	691
4160326	213	4160902	212	44420046	670	44420259	700	44423093	664	44428200	703	44429368	691
4160326K	213	4160903	212	44420047	670	44420260							

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
4510012K	204	4510263K	204	4520021K	209	4520923K	209	4533067	92	4725001K	216	4726019	217
4510012S	203	4510921	203	4520021S	207	4520924K	209	4533069	93	4725002	216	4726021	217
4510013	203	4510921K	204	4520022	207	4521001	207	4533071	93	4725002K	216	4726021K	217
4510013E	204	4510922	203	4520022E	209	4521002	207	4533073	93	4725003	216	4726022	217
4510013K	204	4510922K	204	4520022K	209	4521003	207	4533075	93	4725003K	216	4726022K	217
4510013S	203	4510923	203	4520022S	207	4521004	207	4533077	93	4725011	216	4726023	217
4510021	203	4510923K	204	4520023	207	4521005	207	4533079	93	4725011K	216	4726023K	217
4510021E	204	4511060E	204	4520023K	209	4521006	207	4533081	93	4725012	216	4726024	217
4510021K	204	4511061E	204	4520024	207	4521007	207	4533083	93	4725012K	216	4726024K	217
4510021S	203	4511062E	204	4520024E	209	4521008	207	4533085	93	4725013	216	4726025	217
4510022	203	4511064K	204	4520024K	209	4521009	207	4533087	93	4725013K	216	4726026	217
4510022E	204	4511065K	204	4520025	207	4521011	207	4533089	93	4725021	216	4726027	217
4510022K	204	4511068K	204	4520026	207	4521012	207	4533091	92	4725021K	216	4726028	217
4510022S	203	4511071K	204	4520031	207	4521013	207	4533093	92	4725022	216	4726029	217
4510023	203	4511072K	204	4520031K	209	4521014	207	4533095	92	4725022K	216	4726031	217
4510023E	204	4511073K	204	4520031S	207	4521015	207	4533097	92	4725023	216	4726031K	217
4510023K	204	4512221S	205	4520032	207	4521016	207	4533099	93	4725023K	216	4726032	217
4510023S	203	4512222S	205	4520032K	209	4521017	207	4533101	93	4725031	216	4726032K	217
4510031	203	4512223S	205	4520032S	209	4521018	207	4533103	93	4725031K	216	4726033	217
4510031S	203	4512231S	205	4520033	207	4521019	207	4533105	93	4725032	216	4726033K	217
4510032	203	4512232S	205	4520033K	209	4521021	207	4533107	93	4725032K	216	4726034	217
4510032K	204	4512233S	205	4520034	207	4521022	207	4533109	93	4725033	216	4726034K	217
4510032S	203	4512241S	205	4520035	207	4521023	207	4533111	92	4725033K	216	4726035	217
4510033	203	4512242S	205	4520036	207	4521024	207	4533113	92	4725041	216	4726036	217
4510033K	204	4512243S	205	4520041	208	4521025	207	4533115	92	4725041K	216	4726037	217
4510033S	203	4512251S	205	4520041E	209	4521031	207	4550115	219	4725042	216	4726038	217
4510041	203	4512252K	205	4520041K	209	4521032	207	4550116	219	4725042K	216	4726039	217
4510041S	203	4512252S	205	4520041S	208	4521041	208	4550117	219	4725043	216	4726041	218
4510042	203	4512253S	205	4520042	208	4521042	208	4550118	219	4725043K	216	4726041K	218
4510042K	204	4512261S	205	4520042K	209	4521043	208	4550119	219	4725051	216	4726042	218
4510042S	203	4512262S	205	4520042S	208	4521044	208	4560011S	145	4725051K	216	4726042K	218
4510043	203	4512263S	205	4520043	208	4521062	207	4560012S	145	4725052	216	4726043	218
4510043K	204	4512272S	205	4520043K	209	4521091	207	4560013S	144	4725052K	216	4726043K	218
4510043S	203	4512291S	205	4520044	208	4521092	207	4560014S	144	4725053	216	4726044	218
4510051	203	4512292S	205	4520044E	209	4522211S	210	4560016S	144	4725053K	216	4726044K	218
4510051S	203	4512293S	205	4520044K	209	4522221S	210	4560017S	144	4725061	216	4726045	218
4510052	203	4512321S	205	4520045	208	4522222S	210	4560021S	145	4725061K	216	4726046	218
4510052K	204	4512322S	205	4520046	208	4522231S	210	4560022S	145	4725062	216	4726047	218
4510052S	203	4512351S	205	4520051	207	4522251S	210	4560023S	144	4725062K	216	4726048	218
4510053	203	4512352S	205	4520051K	209	4522252S	210	4560024S	144	4725063	216	4726049	218
4510053K	204	4512353S	205	4520051S	207	4522261S	210	4560026S	144	4725063K	216	4726051	218
4510053S	203	4512371S	205	4520052	207	4522262S	210	4560027S	144	4725071	216	4726051K	217
4510061	203	4512372S	205	4520052K	209	4522291S	210	4560033S	144	4725071K	216	4726052	217
4510061S	203	4512373S	205	4520052S	207	4522292S	210	4560034S	144	4725072	216	4726052K	217
4510062	203	4512381S	205	4520053	207	4522311S	210	4560036S	144	4725072K	216	4726053	217
4510062K	204	4512382S	205	4520054	207	4522321S	210	4560037S	144	4725073	216	4726053K	217
4510062S	203	4512383S	205	4520055	207	4522371S	210	4560041S	145	4725073K	216	4726054	217
4510063	203	4512391S	205	4520056	207	4522381S	210	4560042S	145	4725081	216	4726054K	217
4510063K	204	4512392S	205	4520061	207	4522391S	210	4560053S	144	4725081K	216	4726055	217
4510063S	203	4512393K	205	4520061K	209	4522392S	210	4560054S	144	4725082	216	4726056	217
4510071	203	4512393S	205	4520061S	207	4522401S	210	4560056S	144	4725082K	216	4726057	217
4510071S	203	4512401S	205	4520062	207	4522421S	210	4560057S	144	4725083	216	4726058	217
4510072	203	4512402S	205	4520062K	209	4522422S	210	4560063	144	4725083K	216	4726059	217
4510072K	204	4512403S	205	4520062S	207	4522441S	210	4560064	144	4725091	216	4726061	217
4510072S	203	4512421S	205	4520063	207	4522461S	210	4560067	144	4725091K	216	4726061K	217
4510073	203	4512422S	205	4520063K	209	4522921S	210	4560073	144	4725092	216	4726062	217
4510073K	204	4512423K	205	4520064	207	4522922S	210	4560074	144	4725092K	216	4726062K	217
4510073S	203	4512423S	205	4520065	207	4530101	219	4560076	144	4725093	216	4726063	217
4510081	203	4512431S	205	4520066	207	4530102	219	4560077	144	4725093K	216	4726063K	217
4510082	203	4512432S	205	4520071	208	4530103	219	4560083	144	4725111	216	4726064	217
4510082K	204	4512433S	205	4520071K	209	4530104	219	4560086	144	4725111K	216	4726064K	217
4510082S	203	4512441S	205	4520072	208	4530105	219	4560087	144	4725112	216	4726065	217
4510083	203	4512442S	205	4520074	208	4530106	219	4571101	146	4725112K	216	4726066	217
4510091	203	4512443S	205	4520091	207	4530107	219	4571102	146	4725113	216	4726067	217
4510091S	203	4512471S	205	4520091K	209	4533000	92	4571103	146	4725113K	216	4726068	217
4510092	203	4512472S	205	4520092	207	4533001	92	4571104	146	4725121	216	4726069	217
4510092K	204	4512473S	205	4520092K	209	4533002	92	4571105	146	4725121K	216	4726071	218
4510092S	203	4512921S	205	4520093	207	4533003	92	4571106	146	4725122	216	4726071K	218
4510093	203	4512922S	205	4520093K	209	4533004	93	4571110	147	4725122K	216	4726072	218
4510093K	204	4512923S	205	4520094	207	4533005	93	4571111	147	4725123	216	4726072K	218
4510093S	203	4520001	207	4520094K	209	4533006	93	4571112	147	4725123K	216	4726073	218
4510102S	203	4520001E	209	4520095	207	4533007	93	4571113	147	4725141	216	4726073K	218
4510103S	203	4520001K	209	4520096	207	4533008	93	4571114	147	4725141K	216	4726074	218
4510111	203	4520001S	207	4520111	207	4533009	93	4571115	147	4725142	216	4726074K	218
4510111S	203	4520002	207	4520111K	209	4533010	93	4571120	1053	4725142K	216	4726075	218
4510112	203	4520002E	209	4520112	207	4533011	93	4571121	1053	4725143	216	4726076	218
4510112K	204	4520002K	209	4520113	207	4533012	93	4571122	1053	4725143K	216	4726077	218
4510112S	203	4520002S	207	4520114	207	4533013	93	4571123	1053	4725263K	216	4726078	218
4510113	203	4520003	207	4520121	207	4533014	93	4571124	1053	4726001	217	4726079	218
4510113K	204	4520003K	209	4520122	207	4533015	93	4571125	1053	4726001K	217	4726081	218
4510121	203	4520004	207	4520122K	209	4533016	93	4571126	1053	4726002	217	4726081K	218
4510121S	203	4520004E	209	4520123	207	4533017	93	457					

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
4726098	217	52000160	816	52002710	807	52004260	801	52006127	765	52010360	827	52020930	825
4726099	217	52000170	816	52002790	819	52004270	801	52006129	765	52010370	827	52020940	825
4726111	218	52000180	816	52002827	844	52004280	802	52006130	764	52010380	827	52020950	825
4726111K	218	52000190	816	52002828	844	52004290	802	52006131	764	52010390	827	52020960	825
4726112	218	52000200	816	52002839	844	52004300	802	52006133	764	52010400	805	52020970	825
4726112K	218	52000210	795	52002840	844	52004310	802	52006136	765	52010405	805	52020980	825
4726113	218	52000220	795	52002841	844	52004320	802	52006137	765	52010410	827	52020990	825
4726113K	218	52000240	795	52002842	844	52005080	805	52006139	765	52010415	805	52021000	825
4726114	218	52000241	795	52002843	844	52005090	805	52006140	764	52010420	805	52021010	825
4726114K	218	52000251	795	52002844	844	52005100	805	52006141	764	52010440	805	52021070	847
4726115	218	52000260	795	52002845	844	52005110	805	52006143	764	52010450	805	52021080	847
4726116	218	52000270	795	52002846	844	52005120	805	52006146	765	52010460	805	52021120	831
4726117	218	52000280	795	52002847	844	52005130	805	52006147	765	52010470	805	52021130	831
4726118	218	52000290	795	52002980	847	52005140	805	52006149	765	52010480	805	52021140	831
4726119	218	52000320	795	52002990	847	52005150	805	52006150	764	52010490	805	52021146	831
4726121	218	52000330	795	52003020	847	52005160	805	52006151	764	52010500	805	52021150	831
4726121K	218	52000340	795	52003030	847	52005170	805	52006153	764	52010510	805	52021160	831
4726122	218	52000350	795	52003040	847	52005180	805	52006156	765	52010520	805	52021170	831
4726122K	218	52000360	795	52003050	847	52005190	805	52006157	765	52010530	805	52021180	831
4726123	218	52000380	799	52003060	847	52005200	805	52006159	765	52010540	805	52021190	831
4726123K	218	52000840	799	52003070	847	52005210	805	52006160	764	52010550	805	52021200	831
4726124	218	52000850	799	52003080	847	52005240	805	52006161	764	52010560	805	52021210	831
4726124K	218	52000860	799	52003090	847	52005310	806	52006163	764	52010570	805	52021220	831
4726125	218	52000870	799	52003100	847	52005320	806	52006166	765	52010580	805	52021230	831
4726126	218	52000880	799	52003110	847	52005330	806	52006167	765	52010590	805	52021240	831
4726127	218	52000890	799	52003130	848	52005340	806	52006169	765	52010600	805	52021250	831
4726128	218	52000900	799	52003140	848	52005350	806	52006170	764	52010610	805	52021259	831
4726129	218	52000910	799	52003160	848	52005360	806	52006171	764	52010620	805	52021260	831
4726141	217	52000920	799	52003170	848	52005370	806	52006173	764	52010630	805	52021261	831
4726141K	217	52000930	800	52003390	819	52005380	806	52006176	765	52010640	805	52021262	831
4726142	217	52000940	800	52003400	819	52005390	806	52006177	765	52010650	807	52021263	831
4726142K	217	52000950	800	52003410	819	52005400	806	52006179	765	52010660	807	52021265	831
4726143	217	52000960	800	52003420	819	52005410	806	52006321	747	52010670	807	52021266	831
4726143K	217	52000970	800	52003430	819	52005411	806	52006345	747	52010680	807	52021267	831
4726144	217	52000980	800	52003440	819	52005412	806	52006355	747	52010690	807	52021268	831
4726144K	217	52000990	803	52003450	819	52005414	806	52006365	747	52010700	807	52021269	831
4726145	217	52001000	803	52003460	819	52005420	810	52006375	747	52010710	807	52021271	831
4726146	217	52001010	803	52003490	817	52005430	811	52006401	747	52010720	807	52021272	831
4726147	217	52001020	803	52003500	817	52005470	796	52006425	747	52010730	807	52021385	914
4726148	217	52001030	803	52003510	817	52005480	797	52006460	747	52010740	807	52023340	861
4726149	217	52001040	803	52003520	817	52005490	797	52006461	747	52010750	807	52023350	861
4726261K	218	52001050	803	52003530	817	52005500	797	52006465	747	52010760	807	52023360	861
4726262K	218	52001060	803	52003540	817	52005510	797	52006470	747	52010770	807	52023370	861
4727001	217	52001070	803	52003550	817	52005520	797	52006475	747	52010780	806	52023380	861
4727002	217	52001080	803	52003560	817	52005530	797	52006480	747	52010790	806	52023390	861
4727011	217	52001090	803	52003570	817	52005540	795	52006485	747	52010800	806	52023400	861
4727012	217	52001100	803	52003580	817	52005550	795	52006490	747	52010810	806	52023410	861
4727021	217	52001110	803	52003585	806	52005560	795	52006491	747	52010820	806	52023430	861
4727022	217	52001120	803	52003690	826	52005570	802	52006495	747	52010830	806	52023586	806
4727031	217	52001130	803	52003700	826	52005575	802	52006500	747	52010840	806	52023601	828
4727032	217	52001140	803	52003710	826	52005576	802	52006505	747	52010850	806	52023602	828
4727041	218	52001150	803	52003720	826	52005577	802	52006510	747	52010860	806	52023603	828
4727042	218	52001160	803	52003730	826	52005590	800	52006515	747	52010870	806	52023604	828
4727051	217	52001170	803	52003740	826	52005600	800	52006520	747	52010880	806	52023606	828
4727052	217	52001180	803	52003750	821	52005610	800	52006530	747	52010890	806	52023607	828
4727061	217	52001190	803	52003760	821	52005620	800	52006531	747	52010900	806	52023608	828
4727062	217	52001200	803	52003770	821	52005680	796	52006535	747	52010910	806	52023609	828
4727071	218	52001210	803	52003780	821	52005690	796	52006540	747	52010980	830	52023611	828
4727072	218	52001220	803	52003790	821	52005700	796	52006541	747	52010985	830	52023620	804
4727081	218	52001230	803	52003800	821	52005710	796	52006545	747	52010996	830	52023621	804
4727082	218	52001860	758	52003810	821	52005720	796	52006550	747	52013000	847	52023622	804
4727091	217	52001880	758	52003820	821	52005740	827	52006564	747	52015700	792	52023623	804
4727092	217	52001970	832	52003830	821	52005750	827	52006565	747	52015710	792	52023624	804
4727111	218	52001980	832	52003840	821	52005760	827	52006572	772	52015720	792	52023625	804
4727112	218	52001990	832	52003850	821	52005770	827	52006575	771	52015730	792	52023626	804
4727121	218	52002000	832	52003860	821	52005780	826	52006579	771	52015740	792	52023627	804
4727122	218	52002010	832	52003870	821	52005790	826	52006600	764	52015750	792	52023628	804
4727141	217	52002020	832	52003880	821	52005800	826	52006610	764	52015760	792	52023629	804
4727142	217	52002030	832	52003890	821	52005810	846	52006620	764	52015765	792	52023717	800
50200800	682	52002040	832	52003900	821	52005820	846	52006630	764	52015766	792	52023718	800
50201120	682	52002050	832	52003910	821	52005830	846	52006640	764	52015767	792	52023719	800
50201203	682	52002060	832	52003920	821	52005840	846	52006650	764	52015770	792	52023720	800
50202203	682	52002070	832	52003930	821	52005850	846	52006660	764	52015780	792	52023721	800
51712740	801	52002080	832	52003940	821	52005860	846	52006670	764	52015790	792	52023722	800
51730010	820	52002090	832	52003950	821	52005870	846	52008010	798	52015800	792	52023723	800
51730020	820	52002100	832	52003970	821	52005880	846	52008020	798	52015810	792	52023970	810
51730025	820	52002110	832	52003980	821	52005900	846	52008030	798	52015820	792	52023980	810
51730030	820	52002120	832	52003990	822	52005949	818	52008040	798	52015830	792	52023990	810
51730035	820	52002130	832	52004000	822	52005950	818	52008050	798	52015831	792	52024000	810
51730040	820	52002140	832	52004010	822	52005960	818	52009040	848	52015832	792	52024010	

From part number 52024935 to 53018170

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
52024935	808	52100321	823	52103220	817	52104494	824	52105880	753	52107080	754	53015130	789
52024936	808	52100322	823	52103230	817	52104495	824	52105890	753	52107102	730	53015140	789
52024937	808	52100323	823	52103240	817	52104496	824	52105900	753	52107320	749	53015150	789
52024961	808	52100324	823	52103250	817	52104497	824	52105910	753	52107340	749	53015160	789
52024962	808	52100325	823	52103260	817	52104498	824	52106000	777	52107350	749	53015170	789
52024964	808	52100326	823	52103270	817	52104499	824	52106005	777	52107360	749	53015180	789
52024965	808	52100327	823	52103300	763	52104500	824	52106010	777	52107370	749	53015190	789
52024966	808	52100328	823	52103310	763	52104501	824	52106015	777	52107380	749	53015200	788
52024967	808	52100329	823	52103320	763	52104502	824	52106020	777	52107800	760	53015210	788
52024968	808	52100330	823	52103330	763	52104503	824	52106025	777	52107801	761	53015220	788
52024969	808	52100331	823	52103340	763	52104504	770	52106030	777	52107810	760	53015230	788
52024970	808	52100332	823	52103350	763	52104505	770	52106035	777	52107811	761	53015240	788
52024971	808	52100333	823	52103360	763	52104570	773	52106040	777	52107820	760	53015250	788
52024973	808	52100334	823	52103370	763	52104571	773	52106045	777	52107821	761	53015260	788
52024974	808	52100335	823	52103371	763	52104572	773	52106050	777	52107830	760	53015270	788
52025040	820	52100336	823	52103372	763	52104573	773	52106055	777	52107831	761	53015280	788
52025050	820	52100337	823	52103373	763	52104574	773	52106060	777	52107840	760	53015290	788
52025060	820	52100338	823	52103405	767	52104575	773	52106065	777	52107841	761	53015300	789
52025070	820	52100339	823	52103415	767	52104576	773	52106070	777	52107850	760	53015310	789
52025100	820	52100340	823	52103425	767	52104580	774	52106080	777	52107851	761	53015320	789
52025110	820	52100341	823	52103435	767	52104581	774	52106090	777	52107900	748	53015330	789
52025120	820	52100342	823	52103445	767	52104582	774	52106210	760	52107901	748	53015340	789
52025130	820	52100343	823	52103455	767	52104583	774	52106220	760	52107902	748	53015350	789
52025140	820	52100344	823	52103465	767	52104584	774	52106230	760	52107903	748	53015360	789
52025150	820	52100345	823	52103475	767	52104585	774	52106240	760	52107904	748	53015370	789
52025160	820	52100346	823	52104010	776	52104586	774	52106410	752	52107905	748	53015380	789
52025170	820	52100347	823	52104050	777	52104800	746	52106420	752	52108000	761	53015390	789
52025180	820	52100600	778	52104200	775	52104810	746	52106430	752	52108001	762	53015410	791
52025190	820	52100601	778	52104210	775	52104820	746	52106440	752	52108010	761	53015420	791
52025200	822	52100602	778	52104220	775	52104830	746	52106450	752	52108011	762	53015430	791
52025210	822	52100603	778	52104230	775	52104840	746	52106460	752	52108020	761	53015440	791
52025220	822	52100604	778	52104240	775	52104850	746	52106470	752	52108021	762	53015450	791
52025230	822	52100605	778	52104250	775	52104860	746	52106480	752	52108040	762	53015600	790
52025235	815	52100606	778	52104260	775	52104870	746	52106481	752	52108041	762	53015610	790
52025240	815	52100607	778	52104270	775	52104890	746	52106490	752	52108050	762	53015620	790
52025250	815	52100610	778	52104280	775	52104900	746	52106500	752	52108051	762	53015630	790
52025260	815	52100611	778	52104290	775	52104910	746	52106510	752	52109013	765	53015640	790
52025270	815	52100612	778	52104300	775	52104920	746	52106520	752	52109014	765	53015650	790
52025280	815	52100613	778	52104310	771	52104930	746	52106530	752	52109015	765	53015800	790
52025290	815	52100614	778	52104311	771	52104940	746	52106540	752	52110023	730	53015810	790
52025291	815	52100615	778	52104312	771	52104980	746	52106550	752	52110024	730	53015820	790
52025530	800	52100616	778	52104313	771	52104990	746	52106560	752	52110025	730	53015830	790
52026000	1077	52100617	778	52104314	771	52105000	746	52106570	752	52110026	730	53015840	790
52026010	1077	52100620	779	52104315	771	52105002	746	52106580	752	52110027	730	53015850	790
52026011	1077	52100621	779	52104316	771	52105003	746	52106590	752	52110028	730	53016010	784
52026012	1077	52100622	779	52104317	771	52105004	746	52106600	752	52110029	730	53016030	784
52026020	1075	52100623	779	52104318	771	52105005	746	52106610	752	52110030	730	53016050	784
52026022	1075	52100624	779	52104319	771	52105006	746	52106620	752	52110031	730	53016060	784
52026024	1075	52100625	779	52104320	771	52105010	746	52106630	752	52110032	730	53016110	784
52026028	1075	52100626	779	52104321	771	52105020	781	52106640	752	52110033	730	53016130	784
52026030	1075	52100627	779	52104322	771	52105030	781	52106670	751	52110034	730	53016150	784
52026031	1076	52101965	772	52104330	776	52105040	781	52106705	751	52110035	730	53016210	784
52026032	1076	52101966	772	52104335	776	52105050	781	52106710	751	52110036	730	53016230	784
52026033	1076	52101967	772	52104340	776	52105060	781	52106715	751	52110037	730	53016250	784
52026034	1076	52101968	772	52104345	776	52105070	781	52106720	751	52110038	730	53016260	784
52026050	1076	52101969	772	52104360	776	52105080	781	52106725	751	52110039	730	53016310	784
52026051	1075	52101972	772	52104365	776	52105090	781	52106730	751	52110040	730	53016330	784
52026060	1076	52101973	772	52104370	776	52105100	781	52106735	751	52110041	730	53016350	784
52026061	1076	52101974	772	52104375	776	52105110	781	52106740	751	52110042	730	53016360	784
52026062	1077	52101975	772	52104380	776	52105120	781	52106745	751	52122000	780	53016630	784
52026063	1077	52101976	772	52104385	776	52105130	781	52106750	751	52122001	780	53016650	784
52032520	809	52101977	772	52104400	776	52105140	781	52106755	751	52122010	780	53016810	784
52032525	809	52101979	772	52104405	776	52105150	781	52106760	751	52122011	780	53016830	784
52032540	809	52102997	758	52104410	776	52105160	781	52106765	751	52122020	780	53016850	784
52032550	809	52102998	758	52104415	776	52105170	781	52106770	751	52122021	780	53017010	713
52032560	809	52103000	763	52104420	776	52105180	781	52106775	751	52122030	780	53017030	713
52032570	809	52103010	763	52104425	776	52105190	781	52106780	751	52122040	780	53017040	713
52032580	759	52103020	763	52104430	776	52105200	781	52106785	751	52122050	780	53017110	713
52032585	759	52103030	763	52104435	776	52105210	781	52106790	751	52122060	780	53017130	713
52032590	759	52103040	763	52104440	776	52105220	781	52106795	751	52122070	780	53017140	713
52032600	759	52103050	763	52104445	776	52105230	781	52106800	750	52220000	743	53017210	713
52032610	759	52103060	763	52104450	774	52105240	781	52106805	750	52220001	743	53017230	713
52032615	759	52103070	763	52104452	774	52105250	781	52106810	750	52220002	743	53017240	713
52032620	759	52103071	763	52104454	774	52105260	781	52106815	750	52220003	743	53017310	713
52032625	759	52103072	763	52104456	774	52105270	781	52106820	750	52220004	743	53017330	713
52032630	759	52103073	763	52104458	774	52105280	781	52106825	750	52220005	743	53017340	713
52032635	759	52103100	766	52104460	774	52105290	781	52106830	750	52220006	743	53017420	721
52032640	759	52103103	767	52104462	774	52105300	781	52106835	750	52220007	743	53017430	721
52032645	759	52103105	766	52104463	774	52105310	781	52106840	750	52220008	743	53017440	721
52032650	759	52103110	766	52104469									

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
53018180	789	53111410	712	53112500	733	53112937	720	53350870	740	54001640	819
53018190	789	53111417	718	53112501	733	53112940	786	53420250	740	54001650	819
53019000	812	53111420	712	53112503	733	53112950	786	53420260	740	54001660	819
53019001	812	53111427	718	53112504	733	53112960	786	53440969	740	54001670	819
53019010	812	53111430	712	53112505	733	53113300	717	53440970	741	54001680	819
53019011	812	53111437	718	53112510	724	53113310	717	53440980	741	54020100	775
53019020	812	53111440	712	53112511	724	53113321	717	53607225	813	54020110	775
53019021	812	53111447	718	53112512	724	53113331	717	53607417	813	54020120	775
53019030	812	53111450	712	53112514	724	53113500	727	53609230	813	54020125	775
53019031	812	53111457	718	53112515	724	53113510	727	53611000	814	54020130	775
53019040	812	53111460	712	53112516	732	53113520	727	53611001	741	54020140	775
53019041	812	53111467	718	53112620	732	53113530	727	53611004	741	54020152	775
53019050	812	53111470	712	53112625	732	53113540	727	53611225	813	54020153	775
53019051	812	53111477	718	53112630	732	53113550	727	53611240	813	54110839	734
53019060	812	53111500	713	53112635	732	53113560	727	53611330	813	54110840	734
53019061	812	53111510	713	53112640	732	53113570	727	53611430	813	54110841	734
53019070	812	53111520	713	53112645	732	53113600	727	53613250	813	54110842	734
53019071	812	53111530	713	53112650	732	53113610	727	53613340	813	54110843	734
53019080	812	53111540	713	53112655	732	53113620	727	53613440	813	54110844	734
53019081	812	53111550	713	53112660	732	53113630	727	53616140	813	54110845	734
53019090	812	53111560	713	53112665	732	53113640	727	53616225	813	54110846	734
53019091	812	53111570	713	53112670	732	53113650	727	53616240	813	54113000	742
53019200	812	53111600	719	53112675	732	53113660	727	53616260	813	54113002	731
53019210	812	53111610	719	53112676	733	53113670	727	53616340	813	54113010	742
53019220	812	53111620	719	53112677	733	53119000	738	53616350	813	54113012	731
53019230	812	53111630	719	53112678	733	53119003	738	53616356	813	54113013	731
53019240	812	53111640	719	53112679	733	53119010	738	53616360	813	54113020	742
53019250	812	53111700	719	53112680	733	53119013	738	53616440	813	54113022	731
53019260	812	53111710	719	53112681	733	53119020	738	53616450	813	54113023	731
53019270	812	53111720	719	53112686	715	53119023	738	53616540	813	54113030	742
53019280	812	53111730	719	53112687	715	53119030	738	53621270	813	54113032	731
53019290	812	53111740	719	53112688	715	53119033	738	53621280	813	54113033	731
53100003	742	53111800	719	53112689	715	53119040	738	53621370	813	54113040	742
53100003	815	53111810	719	53112690	715	53119043	738	53621380	813	54113042	731
53100004	742	53111820	719	53112691	715	53119050	738	53621460	813	54113043	731
53100004	815	53111830	719	53112692	715	53119053	738	53621550	813	54113050	742
53100005	742	53111840	719	53112694	715	53119060	738	53621640	813	54113052	731
53100005	815	53112000	724	53112695	716	53119063	738	53629290	813	54113060	742
53100006	742	53112004	785	53112700	729	53119070	738	53629390	813	54113062	731
53100006	815	53112005	725	53112705	729	53119073	738	53629470	813	54113070	742
53100007	742	53112006	785	53112710	729	53119100	738	53629480	813	54113072	731
53100007	815	53112010	724	53112715	729	53119110	738	53629490	813	54113100	742
53100008	742	53112014	785	53112720	729	53119120	738	53629556	813	54113110	742
53100008	815	53112015	725	53112725	729	53119130	738	53629570	813	54113120	742
53100009	742	53112016	785	53112730	729	53119140	738	53629675	813	54113130	742
53100009	815	53112020	724	53112735	729	53119150	738	53800020	847	54113140	742
53100055	742	53112024	785	53112740	729	53119160	738	53800080	847	54113150	742
53100055	815	53112025	725	53112745	729	53119170	738	53800579	815	54113150	742
53102000	779	53112026	785	53112750	729	53119200	739	53800583	815	54113160	742
53102001	779	53112030	724	53112755	729	53119210	739	53800640	815	54113170	742
53102010	779	53112034	785	53112760	729	53119220	739	53800641	815	54115200	722
53102011	827	53112035	725	53112765	729	53119230	739	53800642	815	54115205	722
53102020	779	53112036	785	53112770	729	53119240	739	53800643	815	54115210	722
53102021	779	53112037	787	53112775	729	53119250	739	53800643	815	54115215	722
53102030	779	53112040	724	53112779	729	53119260	739	53801030	780	54115220	722
53102040	779	53112044	785	53112780	728	53119270	739	53801035	829	54115225	722
53102050	779	53112045	725	53112790	728	53310444	741	53801040	780	54115230	722
53102060	779	53112046	785	53112800	729	53316220	740	53801045	829	54115235	722
53102070	779	53112047	787	53112810	729	53316230	740	53801050	780	54115240	722
53105100	737	53112050	724	53112820	729	53316240	740	53801055	829	54115245	722
53105110	737	53112054	785	53112830	729	53316420	740	53801060	780	54115250	722
53105120	737	53112055	725	53112840	729	53320250	740	53801065	829	54115255	722
53105130	737	53112056	785	53112850	729	53320260	740	53801070	780	54115260	722
53105200	737	53112057	787	53112860	729	53320340	740	53801075	829	54115265	722
53105210	737	53112060	724	53112876	715	53320353	740	53801080	780	54115270	722
53105220	737	53112064	785	53112877	715	53320430	740	53801085	829	54115275	722
53105230	737	53112065	725	53112878	715	53320440	740	53801090	780	54115280	722
53110030	714	53112066	785	53112879	715	53320920	740	53801095	829	54115285	722
53110031	744	53112067	787	53112880	715	53325250	740	53801100	780	54115290	722
53111000	712	53112070	724	53112881	715	53325260	740	53801105	829	54115295	722
53111010	712	53112074	785	53112882	715	53325350	740	53801115	829	54115300	723
53111020	712	53112076	785	53112883	715	53325360	740	53801125	829	54115305	723
53111030	712	53112077	787	53112884	715	53325370	740	53801128	829	54115310	723
53111040	712	53112080	724	53112885	715	53325450	740	53806720	736	54115315	723
53111050	712	53112087	787	53112886	715	53325540	740	53806724	736	54115320	723
53111060	712	53112100	724	53112887	715	53325540	740	53806726	736	54115325	723
53111070	712	53112105	725	53112888	720	53325640	740	53806728	736	54115330	723
53111100	713	53112110	724	53112888	720	53332270	740	53806739	735	54115335	723
53111110	713	53112115	725	53112889	720	53332280	740	53806740	735	54115340	723
53111120	713	53112120	724	53112890	720	53332290	740	53806741	735	54115345	723
53111130	713	53112125	725	53112906	720	53332370	740	53806742	735	54115350	723
53111140	713	53112130	724	53112907	720	53332380	740	53801035	829	54115355	723
53111150	713	53112130	725	53112908	720	53332460	740	53801040	780	54115360	723
53111160	713	53112135	725	53112909	720	53332470	740	53801045	829	54115365	723
53111170	713	53112145	725	53112910	720	53332470	740	53801050	780	54115370	723
53111200	712	53112150	724	53112911	720	53332560	740	53801055	829	54115375	723
53111210	712	53112155	725	53112912	720	53332650	740	53801060	780	54115380	723
53111220	712	53112160	724	53112921	715	53332840	740	53801065	829	54115385	723
53111230	712	53112165	725	53112922	715	53332850	740	53801070	780	54115390	723
53111240	712	53112170	724	53112923	715	53332850	740	53801075	829	54115395	723
53111250	712	53112210	794	53112924	715	53340310	740	53801080	780	54115400	723
53111260	712	53112220	794	53112925	715	53340480	740	53801085	829	54115405	723
53111270	712	53112220	794								

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
55001083	891	55501640	889	55502489	856	55502770	928	55503515	915	55506116	901	55506750	884
55001085	891	55501650	889	55502490	856	55502780	928	55503516	915	55506120	901	55506755	884
55001086	891	55501660	889	55502493	856	55502790	928	55503517	915	55506121	901	55506760	884
55001090	891	55501670	889	55502494	856	55503168	910	55503518	915	55506122	901	55506765	884
55001091	891	55501720	889	55502495	856	55503169	910	55503519	915	55506123	901	55506770	884
55001092	891	55501850	844	55502496	856	55503170	910	55503520	915	55506124	901	55506775	884
55001093	891	55501860	844	55502497	856	55503171	910	55503521	915	55506125	901	55506780	884
55001200	867	55501870	844	55502498	856	55503172	910	55503522	915	55506126	901	55506785	884
55001230	867	55501880	844	55502499	856	55503173	910	55503523	915	55506135	876	55506790	884
55001240	867	55501890	844	55502601	905	55503174	910	55503524	915	55506145	876	55506795	884
55001310	688	55501900	844	55502602	905	55503175	910	55503525	915	55506155	876	55506800	884
55001312	679	55501910	844	55502603	905	55503176	910	55503526	915	55506165	876	55506805	884
55500400	916	55501920	844	55502604	905	55503177	910	55503527	915	55506175	876	55506810	884
55500410	916	55501930	844	55502605	905	55503178	910	55503528	915	55506185	876	55506815	884
55500420	916	55501940	844	55502606	905	55503179	911	55503529	915	55506195	876	55506820	884
55500430	916	55501950	844	55502607	905	55503180	911	55503530	915	55506205	876	55506825	884
55500440	916	55501960	844	55502608	905	55503181	911	55503531	915	55506215	876	55506900	885
55500450	916	55501981	928	55502609	905	55503182	911	55503532	915	55506225	876	55506905	885
55500460	916	55501982	928	55502611	905	55503183	911	55503533	915	55506235	876	55506910	885
55500800	866	55502001	928	55502612	905	55503184	911	55503534	915	55506245	876	55506915	885
55500805	866	55502002	928	55502613	905	55503185	911	55503535	915	55506255	876	55506920	885
55500810	866	55502003	928	55502614	905	55503186	911	55503536	915	55506265	876	55506925	885
55500815	866	55502004	928	55502615	905	55503187	911	55503537	915	55506275	876	55506930	885
55500820	866	55502021	928	55502616	905	55503188	911	55503538	915	55506285	876	55506935	885
55500825	866	55502022	928	55502617	905	55503200	910	55503539	915	55506295	876	55506940	885
55500830	866	55502023	928	55502618	905	55503201	910	55503540	915	55506300	879	55506945	885
55500835	866	55502024	928	55502619	905	55503202	910	55503541	915	55506305	879	55506950	885
55500840	866	55502031	928	55502621	905	55503203	910	55503542	915	55506310	879	55506955	885
55500845	866	55502032	928	55502622	905	55503204	910	55503543	915	55506315	879	55506960	885
55500850	866	55502041	928	55502623	905	55503205	910	55503544	915	55506320	879	55506965	885
55500855	866	55502042	928	55502624	905	55503206	910	55506010	903	55506325	879	55506970	885
55500860	866	55502051	928	55502625	905	55503207	910	55506011	903	55506330	879	55506975	885
55500865	866	55502052	928	55502626	905	55503210	909	55506012	903	55506335	879	55506980	885
55500870	866	55502061	928	55502627	905	55503211	909	55506013	903	55506340	879	55506985	885
55500875	866	55502062	928	55502628	905	55503212	909	55506014	903	55506345	879	55506990	884
55500990	864	55502071	928	55502629	905	55503213	909	55506015	903	55506350	879	55506995	884
55500995	864	55502072	928	55502631	905	55503214	909	55506016	903	55506355	879	55507000	886
55501000	864	55502073	928	55502632	905	55503215	909	55506017	903	55506360	879	55507001	886
55501005	864	55502366	854	55502633	905	55503220	929	55506018	903	55506365	879	55507005	886
55501010	864	55502367	854	55502634	905	55503221	929	55506019	903	55506370	879	55507006	886
55501015	864	55502368	854	55502636	905	55503222	929	55506020	902	55506375	879	55507010	886
55501020	864	55502369	854	55502637	905	55503223	929	55506021	902	55506380	879	55507011	886
55501025	864	55502370	856	55502638	905	55503224	929	55506022	902	55506385	879	55507015	886
55501030	864	55502371	856	55502639	905	55503225	929	55506023	902	55506390	879	55507016	886
55501035	864	55502372	856	55502641	905	55503226	929	55506024	902	55506395	879	55507020	886
55501040	864	55502373	856	55502642	905	55503227	929	55506025	902	55506400	879	55507025	886
55501045	864	55502374	856	55502643	905	55503228	929	55506026	902	55506405	879	55507030	886
55501050	864	55502375	856	55502644	905	55503230	929	55506027	902	55506470	879	55507031	886
55501055	864	55502431	855	55502645	905	55503231	929	55506028	902	55506475	879	55507032	886
55501060	864	55502432	855	55502646	905	55503232	929	55506029	902	55506480	880	55507035	886
55501065	864	55502433	855	55502647	905	55503233	929	55506030	904	55506485	880	55507036	886
55501070	864	55502434	855	55502648	905	55503234	929	55506031	904	55506490	880	55507037	886
55501075	864	55502435	855	55502649	905	55503235	929	55506032	904	55506495	880	55507040	887
55501080	864	55502436	855	55502651	906	55503279	923	55506033	904	55506500	880	55507041	887
55501085	864	55502437	855	55502652	906	55503280	923	55506034	904	55506505	880	55507042	887
55501090	864	55502438	855	55502653	906	55503281	923	55506035	904	55506510	880	55507043	887
55501095	864	55502439	854	55502654	906	55503282	923	55506036	903	55506515	880	55507044	887
55501110	865	55502441	854	55502655	906	55503283	923	55506037	903	55506520	880	55507045	887
55501115	865	55502442	854	55502656	906	55503284	923	55506038	903	55506525	880	55507046	887
55501120	865	55502443	854	55502657	906	55503285	923	55506039	903	55506530	880	55507047	887
55501125	865	55502444	854	55502658	906	55503370	924	55506040	903	55506535	880	55507050	879
55501130	865	55502445	854	55502659	906	55503371	924	55506041	903	55506540	880	55507055	879
55501135	865	55502446	854	55502661	906	55503372	924	55506042	904	55506545	880	55507070	880
55501140	865	55502447	854	55502662	906	55503373	924	55506043	904	55506550	880	55507075	880
55501145	865	55502448	854	55502663	906	55503374	924	55506044	904	55506555	880	55507080	880
55501150	865	55502449	854	55502664	906	55503375	924	55506045	904	55506560	880	55507085	880
55501155	865	55502451	856	55502665	906	55503376	924	55506070	859	55506565	880	55507090	880
55501160	865	55502452	856	55502666	906	55503470	929	55506071	859	55506570	880	55507095	880
55501165	865	55502453	856	55502667	906	55503471	929	55506072	859	55506575	880	55507097	887
55501170	865	55502454	856	55502668	906	55503472	929	55506073	859	55506580	884	55507098	887
55501175	865	55502455	856	55502669	906	55503473	929	55506074	859	55506585	884	55507099	887
55501180	865	55502456	856	55502671	906	55503474	929	55506075	859	55506590	884	55507100	887
55501185	865	55502457	856	55502672	906	55503475	929	55506076	859	55506595	884	55507101	887
55501190	865	55502458	854	55502673	906	55503476	930	55506077	859	55506600	884	55507102	887
55501195	865	55502459	854	55502674	906	55503477	930	55506080	901	55506605	884	55507105	881
55501200	865	55502460	854	55502675	906	55503478	930	55506081	901	55506610	884	55507115	881
55501205	865	55502461	854	55502676	906	55503479	930	55506082	901	55506615	884	55507125	881
55501210	865	55502462	854	55502677	906	55503489	909	55506083	901	55506620	884	55507135	881
55501215	865	55502463	854	55502678	906	55503490	909	55506084	901	55506625	884	55507145	881
55501220	865	55502464	854	55502679	906	55503491							

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
55507318	877	61600070	1054	61715120	1060	61721868	1007	61725992	992	61743215	1039	61749620	1040
55507319	877	61600080	1054	61715180	1060	61721869	1007	61725993	992	61743225	1039	61749630	1040
55507340	878	61610000	782	61715240	1060	61721871	1007	61726000	992	61743235	1039	61749640	1040
55507341	878	61610012	782	61715300	1060	61721880	1007	61726001	992	61743245	1039	61749650	1040
55507342	878	61610013	782	61715360	1060	61721890	1007	61726002	992	61743290	1041	61749660	1040
55507343	878	61710040	1064	61715420	1062	61721900	1007	61726003	992	61743933	1036	61749670	1040
55507344	878	61710041	1064	61715480	1062	61721910	1007	61726150	960	61743934	1036	61749680	1040
55507350	878	61710042	1064	61715540	1062	61721940	1007	61726160	960	61743935	1036	61749690	1040
55507351	878	61710043	1064	61715600	1062	61721950	1007	61726170	960	61743936	1036	61749700	1040
55507352	878	61710200	1065	61715780	1063	61721960	1007	61726180	960	61743937	1036	61749710	1040
55507353	878	61710201	1065	61715840	1063	61721970	1007	61726190	960	61743938	1036	61749720	1040
55507360	878	61710202	1065	61715880	1063	61721980	1007	61735800	1004	61743939	1036	61749730	1040
55507361	878	61710203	1065	61715920	1063	61721990	1007	61735801	1004	61743941	1036	61749740	1040
55507362	878	61710204	1065	61715950	1063	61722050	1024	61735802	1004	61743942	1036	61749750	1040
55507363	878	61710205	1065	61716020	1063	61722060	1024	61735803	1004	61743943	1036	61749810	1040
55507364	878	61710206	1065	61716080	1063	61722070	1024	61735805	1004	61743944	1036	61749820	1040
55507365	878	61711550	857	61716250	1060	61722071	1024	61735806	1004	61743945	1036	61749830	1040
55507366	878	61711590	857	61716310	1060	61722110	1026	61735807	1004	61743946	1036	61749840	1040
55507367	878	61711630	857	61716370	1060	61722130	1026	61735810	1001	61743947	1036	61749850	1040
55507368	878	61711670	857	61716430	1060	61722240	918	61735811	1001	61743948	1036	61749860	1040
55507369	878	61711710	857	61716490	1060	61722270	916	61735813	1004	61743949	1036	61749870	1040
55507370	878	61711750	857	61716550	1060	61722280	936	61735814	1004	61743951	1036	61749880	1040
55507371	878	61711790	857	61716650	1063	61722285	936	61735815	1004	61743952	1036	61749890	1040
55507372	878	61711830	857	61716700	1045	61722286	936	61735820	1000	61743953	1036	61749900	1040
55507373	878	61711910	857	61716720	1045	61722320	916	61735821	1000	61744160	998	61749910	1040
55507400	885	61712460	916	61716740	1045	61722330	916	61735822	1000	61744161	998	61749920	1040
55507405	885	61712470	918	61716760	1045	61722340	916	61735823	1000	61744228	919	61749930	1040
55507410	885	61712480	918	61716780	1045	61722825	1039	61735831	1002	61744229	919	61749940	1040
55507415	885	61712490	918	61716800	1045	61722835	1039	61735833	1003	61744230	919	61749950	1040
55510000	937	61712500	918	61716820	1045	61722840	1054	61735980	998	61744231	919	61749960	1040
55510010	937	61712510	918	61716840	1045	61722850	1054	61735993	1003	61744240	919	61749970	1040
55510020	937	61712520	918	61716860	1045	61722851	1054	61737162	875	61744242	919	61749980	1040
55510030	937	61712530	918	61716880	1045	61722852	1054	61737163	875	61744244	919	61749990	1040
55510040	937	61712840	918	61717000	1074	61722856	1054	61737164	875	61746500	1008	61750000	1040
55510050	937	61712850	918	61717040	1074	61722875	1039	61737253	875	61746501	1008	61750010	1040
55510060	937	61712860	918	61717070	1074	61722905	1039	61742400	1047	61746502	1008	61750020	1040
55510070	937	61712870	918	61718611	1069	61722915	1039	61742401	1047	61746503	1008	61750030	1040
55510200	933	61712880	918	61718612	1069	61722925	1039	61742402	1047	61746504	1008	61750040	1040
55510210	933	61712890	918	61718613	1069	61722935	1039	61742403	1047	61746505	1008	61750050	1040
55510220	933	61712900	918	61718614	1069	61722945	1039	61742404	1047	61746506	1008	61750060	1040
55510230	933	61712910	916	61718790	1003	61723001	1061	61742405	1047	61746507	1008	61750070	1040
55510240	933	61712930	916	61718800	1003	61723002	1061	61742406	1047	61746720	1007	61751590	850
55510250	933	61713000	914	61720000	1062	61723003	1061	61742407	1047	61746770	1007	61751591	850
55510260	933	61713003	914	61720070	1062	61723004	1061	61742408	1047	61746780	1007	61751592	850
55510270	933	61713005	914	61721030	1042	61723005	1061	61742409	1047	61746790	1007	61751593	850
55510280	933	61713007	914	61721040	1042	61723006	1061	61742416	1048	61746800	1007	61751595	850
55510290	933	61713010	914	61721045	1042	61723007	1061	61742417	1048	61746870	1074	61751596	850
55510300	933	61713011	914	61721050	1042	61723008	1061	61742418	1048	61746880	1074	61751597	850
55510301	933	61713014	914	61721060	1042	61723009	1061	61742419	1048	61746890	1074	61751598	850
55510302	933	61713015	914	61721070	1042	61723010	1061	61742420	1048	61746935	862	61751600	853
55510303	933	61713016	914	61721080	1042	61723011	1061	61742421	1048	61746939	862	61751601	853
55510304	933	61713017	914	61721090	1042	61723012	1061	61742422	1048	61746940	862	61751602	853
55510305	933	61713018	914	61721100	1042	61723020	1061	61742423	1046	61746945	862	61751603	853
55510306	933	61713019	914	61721101	1064	61723030	1061	61742424	1046	61746950	862	61751604	853
55510310	934	61713021	914	61721102	1064	61723040	1061	61742425	1046	61746955	862	61751605	853
55510311	934	61713022	914	61721103	1064	61723050	1061	61742426	1046	61746960	862	61751606	853
55510312	934	61713025	914	61721104	1064	61723060	1061	61742427	1046	61746965	862	61751607	853
55510313	934	61713027	914	61721110	1042	61723070	1061	61742428	1046	61746970	862	61751610	851
55510400	933	61713028	914	61721120	1042	61723100	1061	61742429	1046	61746975	862	61751611	851
55510410	933	61713029	914	61721130	1042	61723120	1061	61742430	1046	61746980	862	61751620	851
55510420	933	61713037	914	61721140	1042	61723130	1061	61742431	1046	61746985	862	61751621	851
55510430	933	61713038	914	61721260	840	61723140	1061	61742433	1046	61746990	862	61751630	851
55510440	933	61713039	914	61721261	840	61723150	1061	61742434	1046	61746995	862	61751631	851
55510450	933	61713040	914	61721262	840	61723160	1061	61742435	1046	61747000	862	61751640	851
55510460	933	61713080	1042	61721263	840	61723350	1062	61742436	1046	61747005	862	61751641	851
55510470	933	61713210	841	61721264	840	61723351	1059	61742437	1046	61747010	862	61751650	851
55510480	933	61713240	841	61721265	840	61723352	1059	61742438	1046	61747015	862	61751660	851
55510600	933	61713270	841	61721270	840	61723353	1059	61742439	1046	61747360	849	61751661	851
55510610	933	61713300	841	61721271	840	61723354	1059	61742440	1046	61747361	849	61751670	851
55510620	933	61713330	841	61721272	840	61723355	1059	61742441	1046	61747370	849	61751671	851
55510630	933	61713360	841	61721273	840	61723356	1059	61742442	1046	61747371	849	61751680	851
55510640	933	61713390	841	61721274	840	61723357	1059	61742443	1046	61747380	849	61751681	851
55510650	933	61713420	841	61721280	840	61723358	1059	61742449	1049	61747381	849	61751690	851
55510700	925	61713520	781	61721281	840	61723360	1059	61742450	1049	61747390	849	61751691	851
55510701	925	61713530	781	61721282	840	61723361	1059	61742451	1049	61747391	849	61751700	852
55510702	925	61713540	781	61721283	840	61723362	1059	61742452	1049	61747400	849	61751701	852
55510703	925	61713550	781	61721284	840	61723363	1059	61742453	1049	61747410	849	61751710	852
55510704	925	61713560	781	61721340	1037	61723380	1062	61742454	1049				



From part number 61753762 to 61811190

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
61753762	1038	61794720	1011	61797080	1028	61801120	870	61802300	934	61803829	921	61806190	893
61753763	1038	61794730	1011	61797400	1029	61801125	870	61802301	934	61803830	921	61806200	893
61753764	1038	61794740	1011	61797401	1029	61801130	870	61802302	934	61803831	921	61806210	893
61754000	875	61794760	1008	61797402	1029	61801135	870	61802303	934	61803832	922	61806550	895
61754005	875	61794770	1008	61797403	1029	61801140	870	61802304	934	61803833	922	61806555	895
61754010	875	61794780	1008	61797404	1029	61801145	870	61802305	934	61803834	922	61806560	895
61754015	875	61794790	1008	61797405	1029	61801150	870	61802306	934	61803835	922	61806565	895
61754020	875	61794800	1008	61797406	1029	61801155	870	61802307	934	61803836	922	61806570	895
61754025	875	61794810	1008	61797407	1029	61801160	870	61802308	934	61803837	922	61806575	895
61754030	875	61794910	972	61797408	1029	61801165	870	61802330	900	61803838	922	61806580	895
61754035	875	61794911	972	61797409	1029	61801170	870	61802331	900	61803839	922	61806615	893
61754040	875	61794951	1021	61797410	1029	61801175	870	61802332	900	61803840	922	61806616	893
61754045	875	61794952	1021	61797411	1029	61801180	870	61802333	900	61803841	922	61806617	893
61754050	875	61794953	1021	61797412	1029	61801185	870	61802334	900	61803842	922	61806618	893
61754055	875	61794955	1021	61797413	1029	61801190	870	61802335	900	61803843	922	61806619	893
61754060	875	61794960	1021	61797414	1029	61801195	870	61802336	900	61803844	922	61806620	893
61754065	875	61794969	1021	61797415	1029	61801200	870	61802337	900	61803845	922	61806621	893
61754070	875	61794970	1021	61797416	1029	61801202	870	61802380	898	61803850	920	61806622	893
61754075	875	61794971	1021	61797417	1029	61801205	870	61802390	898	61803851	920	61806625	893
61754270	875	61795925	1030	61797418	1029	61801246	1052	61802400	898	61803852	920	61806630	893
61754275	875	61795941	1032	61799815	912	61801580	1007	61802410	898	61803853	920	61806631	893
61754300	875	61795942	1032	61799816	912	61801590	1007	61802420	898	61803854	920	61806635	893
61754305	875	61795950	1032	61799817	912	61801600	1007	61802430	898	61803870	913	61806640	893
61760060	1043	61795951	1032	61799818	912	61801620	1007	61802440	898	61803871	913	61806641	893
61760070	1043	61795960	1032	61799819	912	61801630	1007	61802450	898	61803872	913	61806645	893
61760080	1043	61795970	1032	61799820	912	61801640	1007	61802470	898	61803873	913	61806650	893
61760090	1043	61795971	1032	61799822	912	61801650	1007	61802480	907	61803874	913	61806651	893
61760100	1043	61795972	1032	61800274	991	61801660	1007	61802490	907	61803875	913	61806655	893
61760110	1043	61795980	1032	61800275	991	61801670	1007	61802500	907	61803876	913	61806660	893
61760120	1043	61795981	1032	61800276	991	61801680	1007	61802510	907	61803877	913	61806665	893
61760130	1043	61795990	1032	61800277	991	61801690	1007	61802520	907	61803878	913	61806670	893
61760140	1043	61795991	1032	61800278	991	61801700	1007	61802530	907	61803879	913	61806671	893
61784650	961	61796000	1032	61800279	991	61801710	1007	61802540	907	61803880	913	61806672	893
61784660	961	61796001	1032	61800280	991	61801720	1007	61802550	907	61803881	913	61806675	893
61784670	961	61796010	1032	61800281	991	61801730	1007	61802570	907	61803882	913	61806676	894
61789480	1041	61796020	1032	61800282	991	61801750	1007	61803020	1028	61803883	913	61806677	894
61789490	1041	61796021	1032	61800283	991	61801760	1007	61803030	1028	61803884	913	61806678	894
61789500	1041	61796030	1032	61800284	991	61801770	1007	61803040	1028	61803885	913	61806679	894
61789510	1041	61796031	1032	61800285	991	61801780	1007	61803050	1028	61803886	913	61806680	894
61789520	1041	61796032	1032	61800290	991	61801790	1007	61803060	1028	61803887	913	61806681	894
61789530	1041	61796042	1032	61800291	991	61801800	1007	61803070	1028	61804600	908	61806682	894
61789540	1041	61796043	1032	61800292	991	61801810	1007	61803080	1028	61804601	908	61806683	894
61789550	1041	61796044	1032	61800293	991	61801820	1007	61803090	1028	61804602	908	61806684	894
61789560	1041	61796045	1032	61800295	991	61801830	1007	61803110	1028	61804603	908	61806685	894
61790910	1024	61796046	1032	61800296	991	61801840	1007	61803120	1028	61804604	908	61806686	894
61790920	1026	61796480	1027	61800297	991	61801850	1007	61803130	1028	61804605	908	61806687	894
61790930	1025	61796490	1027	61800337	990	61801860	1007	61803140	1028	61804612	908	61806688	894
61790940	1025	61796500	1027	61800340	991	61801870	1007	61803160	1028	61804613	908	61806689	894
61790950	1025	61796510	1027	61800344	991	61801890	1007	61803170	1028	61804702	926	61806690	894
61790961	1030	61796520	1027	61800391	945	61801900	1007	61803180	1028	61804712	926	61806691	894
61791055	1017	61796530	1027	61800392	945	61801920	1007	61803190	1028	61804722	926	61806692	894
61791065	1016	61796540	1027	61800393	945	61801930	1007	61803200	1028	61804732	926	61806693	894
61791095	1016	61796550	1027	61800394	945	61801940	1007	61803210	1028	61804742	926	61806694	894
61791100	1025	61796560	1027	61800395	945	61801950	1007	61803220	1028	61804752	926	61806695	894
61791150	890	61796570	1027	61800396	945	61801960	1007	61803230	1028	61804762	926	61806696	894
61791155	890	61796580	1027	61800397	945	61801970	1007	61803240	1028	61804772	926	61806697	894
61791160	890	61796590	1027	61800398	945	61801980	1007	61803250	1028	61804782	926	61806698	894
61791165	890	61796600	1027	61800399	945	61801990	1007	61803260	1028	61804788	927	61806699	894
61791260	783	61796610	1027	61800400	945	61801999	1010	61803270	1028	61804789	927	61806700	894
61791267	782	61796620	1027	61800401	945	61802000	1010	61803280	1028	61804792	926	61806710	894
61791268	782	61796630	1027	61800402	945	61802010	1010	61803290	1028	61804793	927	61806720	894
61791269	782	61796631	1027	61800403	945	61802020	1010	61803300	1028	61804794	927	61806730	894
61791273	782	61796632	1027	61800404	945	61802030	1010	61803310	1028	61804795	927	61806740	894
61791274	783	61796633	1027	61800406	945	61802032	1010	61803330	1028	61804796	927	61806760	894
61791275	783	61796640	1027	61800407	945	61802033	1010	61803340	1028	61804797	927	61806770	894
61791276	783	61796650	1027	61800412	945	61802034	1010	61803350	1028	61804798	927	61806780	894
61791277	783	61796660	1027	61800413	945	61802035	1010	61803360	1028	61804799	927	61806790	894
61791278	783	61796670	1027	61800850	868	61802040	1011	61803370	1028	61805170	1009	61806800	894
61791279	783	61796680	1027	61800855	868	61802041	1011	61803380	1028	61805180	1009	61809400	935
61791280	783	61796690	1027	61800860	868	61802042	1011	61803390	1028	61805190	1009	61809410	935
61791282	783	61796700	1027	61800865	868	61802046	1011	61803400	1028	61805200	1009	61809420	935
61791283	783	61796710	1027	61800870	868	61802052	1009	61803420	1028	61805210	1009	61809430	935
61791284	783	61796720	1027	61800875	868	61802054	1009	61803430	1028	61805300	1014	61809440	935
61791286	782	61796730	1027	61800880	868	61802056	1009	61803440	1028	61805301	1014	61809450	935
61791287	782	61796740	1027	61800885	868	61802058	1009	61803800	920	61805302	1014	61810350	1058
61791288	782	61796750	1027	61800890	868	61802060	1009	61803801	920	61805400	932	61810360	1058
61792250	1041	61796760	1027	61800895	868	61802061	1012	61803802	920	61805410	932	61810380	1058
61793030	1043	61796770	1027	61800900	868	61802062	1012	61803803	920	61805420	932	618	



Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
61919544	975	61919647	976	63101070	1021	63204465	1020	65500220	874	70002630	241	70044200	618
61919545	975	61919648	976	63101080	1021	63204475	1020	65500225	874	70002631	241	70044400	618
61919546	975	61919649	976	63101110	1021	63204485	1020	65500230	874	70002634	241	70045200	628
61919547	975	61919650	976	63101120	1021	63204495	1020	65500235	874	70002635	241	70045400	628
61919548	975	61919651	976	63102010	1021	63204505	1020	65500240	874	70002636	241	70046200	628
61919549	975	61919652	976	63102020	1021	63204515	1020	65500245	874	70002637	241	70050400	620
61919550	975	61919653	976	63103010	1021	63204525	1020	65500250	874	70002640	241	70050600	620
61919551	975	61919654	976	63103020	1021	63204535	1020	65500255	874	70002641	241	70052400	619
61919552	975	61919655	976	63103040	1021	63204545	1020	65500260	874	70002642	241	70052600	619
61919553	975	61919656	976	63104	478	63204555	1020	65500265	874	70002643	241	70054200	620
61919554	975	61919657	976	63104010	1018	63204565	1020	65500270	874	70002646	241	70054400	620
61919555	975	61919658	976	63104020	1018	63204575	1020	65500275	874	70002647	241	70055200	617
61919556	975	61919659	976	63104030	1018	63204585	1020	65500390	883	70002648	241	70055400	617
61919557	975	61919660	976	63104040	1018	63204595	1020	65500395	883	70002649	241	70057200	619
61919558	975	61919661	976	63104050	1018	63204605	1020	65500403	882	70002651	241	70057400	619
61919559	975	61919662	976	63104060	1018	63204615	1020	65500404	882	70002652	241	70060200	623
61919560	975	61919663	976	63104070	1018	63204625	1020	65500405	882	70002653	241	70060400	623
61919561	975	61919664	976	63104080	1018	63204635	1020	65500410	882	70002654	241	70061200	623
61919562	975	61919665	976	63104160	1018	63204645	1020	65500415	882	70002656	241	70061400	623
61919563	975	61919666	976	63104170	1018	63204655	1020	65500420	882	70002657	241	70064200	624
61919564	975	61919667	976	63104180	1018	63204665	1020	65500425	882	70002658	241	70064400	624
61919565	975	61919668	976	63104190	1018	63204675	1020	65500430	882	70002659	241	70065200	624
61919566	975	61919669	976	63104200	1018	63204685	1020	65500435	882	70002661	241	70065400	624
61919567	975	61919670	976	63104340	1018	63204695	1020	65500440	882	70002662	241	70085200	634
61919568	975	61919671	976	63104350	1018	63204705	1020	65500445	882	70002663	241	70085400	634
61919569	975	61919672	976	63104360	1018	63300100	1023	65500455	882	70002664	242	70086200	641
61919570	975	61919673	976	63104370	1018	63300110	1023	65500458	882	70002666	242	70086400	641
61919571	975	61919674	976	63104380	1018	63300120	1023	65500459	882	70002667	242	70090200	644
61919572	975	61919675	976	63105010	1018	63300130	1023	65500460	882	70002668	242	70090400	644
61919573	975	61919676	976	63105020	1018	63300140	1023	65500465	882	70002669	242	70092200	643
61919574	975	61919677	976	63105040	1018	63300150	1023	65500466	882	70002670	242	70092400	643
61919575	975	61919678	976	63105050	1018	63300160	1023	65500467	882	70002671	242	70094200	640
61919576	975	61919679	976	63105060	1018	63300170	1023	65500468	882	70002672	242	70094400	640
61919577	975	62000100	1033	63105070	1018	63501010	1023	65500469	882	70002673	242	70095200	642
61919578	975	62000102	1033	63105110	1018	63501012	1023	65500470	883	70002681	242	70095400	642
61919579	975	62000105	1033	63105120	1018	63501020	1023	65500475	883	70002682	242	70096000	641
61919580	975	62000110	1033	63105130	1018	63501022	1023	65500480	883	70002683	242	70096200	642
61919581	975	62000111	1033	63105140	1018	63501060	1022	65500485	883	70002684	242	70100200	638
61919582	975	62000112	1033	63105150	1018	63501070	1022	65500490	883	70002687	242	70100400	638
61919583	975	62000113	1033	63105210	1018	63501071	1022	65500495	883	70002688	242	70102200	636
61919584	975	62000114	1033	63105220	1018	63501080	1022	65500600	882	70002689	242	70102400	636
61919585	975	62000115	1033	63105230	1018	63501090	1022	65500610	882	70002690	242	70104200	639
61919586	975	62000116	1033	63106020	1019	63501120	1022	65500620	883	70002699	242	70104400	639
61919587	975	62000117	1033	63106040	1019	63501130	1022	65500630	873	70002700	242	70105200	637
61919588	975	62000118	1033	63106080	1019	63501140	1022	65500631	873	70002701	242	70105400	637
61919589	975	62000120	1033	63107010	1019	63501150	1022	65500632	873	70002702	242	70107200	636
61919590	975	62000121	1033	63107020	1019	63501520	1022	65500633	873	70002705	242	70107400	636
61919591	975	62000122	1033	63107040	1019	63501530	1022	65500634	873	70002706	242	70110200	633
61919592	975	62000123	1033	63107070	1019	64400010	897	65500635	873	70002707	242	70110400	633
61919593	975	62000124	1033	63108010	1018	64400020	897	65500636	873	70002708	242	70111200	633
61919594	975	62000125	1033	63108040	1018	64400030	897	65500637	873	70002709	242	70111400	633
61919595	975	62000126	1033	63108050	1018	64400040	897	65500638	873	70002710	242	70114200	632
61919596	975	62000127	1033	63110010	1019	64400050	897	65500639	873	70002711	242	70114400	632
61919597	975	62000128	1033	63110020	1019	64400060	897	65500640	873	70002712	242	70115200	632
61919598	975	62104	477	63111010	1019	64400070	897	65500641	873	70002716	242	70115400	632
61919599	975	62105	477	63111020	1019	64400080	897	65500642	873	70002717	242	70135200	654
61919600	975	62106	478	63112010	1019	64400090	897	65500643	873	70002718	242	70135400	654
61919601	975	62120010	998	63112020	1019	64400100	897	65500644	873	70002719	242	70136200	655
61919602	975	62120020	998	63204015	1019	64400110	897	65500645	873	70002721	242	70136400	655
61919603	976	62120045	999	63204025	1019	64400120	897	65500646	873	70002722	242	70140400	658
61919604	976	62120120	1067	63204035	1019	64400130	897	65500647	873	70002723	242	70140600	658
61919605	976	62120125	1067	63204045	1019	64400140	897	68100050	883	70002724	242	70142400	657
61919606	976	62120126	1067	63204055	1019	64400150	897	68100055	883	70002726	241	70144400	645
61919607	976	62120189	1017	63204065	1019	64400160	897	68100060	883	70002727	241	70144600	645
61919608	976	62120200	1013	63204075	1019	64400170	897	68100065	883	70002728	241	70145200	656
61919609	976	62120210	1013	63204085	1019	64400180	897	68100075	883	70002729	241	70145400	656
61919610	976	62120220	1013	63204095	1019	64400200	919	68100080	883	70002731	241	70146200	656
61919611	976	62120230	1013	63204105	1019	64400210	919	68100085	883	70002732	241	70146400	656
61919612	976	62120240	1013	63204115	1019	64400220	919	68100090	883	70002734	241	70150400	647
61919613	976	62120250	1013	63204125	1019	64400230	919	68100095	883	70002735	241	70150600	647
61919614	976	62120260	1013	63204135	1019	64400240	919	68100100	882	70002750	243	70152400	649
61919615	976	62120270	1013	63204145	1019	64400250	919	68100105	882	70002751	243	70152600	649
61919616	976	62120280	1013	63204155	1019	64400251	919	68100110	882	70002752	243	70154400	646
61919617	976	62120321	1068	63204165	1019	64400252	919	68100115	882	70002753	243	70154600	646
61919618	976	62200420	1073	63204175	1019	64400500	899	68100120	882	70002754	243	70155400	648
61919619	976	62200421	1073	63204185	1019	64400501	899	68100125	882	70002755	243	70155600	648
61919620	976	62200422	1073	63204195	1019	64400502	899	68100130	882	70002756	243	70157400	649
61919621	976	62200423	1073	63204205	1019	64400503	899	68100135	882	70002757	243	70157600	649
61919622	976	62200424	1073	63204215	1020	6440							

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page		
70250217	609	70301578	236	70474000	602	72044230	672	73002761	673	73220852	246	74880148	259
70250219	610	70301583	236	70480200	605	72064000	672	73002762	673	73220853	246	74880149	259
70250220	610	70301585	236	70480400	605	72064010	672	73002763	673	73220854	246	74880151	259
70250221	610	70301586	236	70485200	604	72064020	672	73002764	673	73220855	246	74880152	259
70250222	610	70301588	236	70485400	604	72064030	672	73002765	673	73220856	246	74880153	258
70261130	248	70301594	236	70486200	604	72064100	672	73002766	673	73220860	246	74880158	258
70261131	248	70301597	236	70486400	604	72064120	672	73002767	673	73220861	246	74880159	258
70261132	248	70301598	236	70490200	600	72064130	672	73002768	673	73220862	246	74880160	258
70261133	248	70301600	236	70490400	600	72064200	672	73002769	673	73220863	246	74880161	258
70261134	248	70301601	236	70492200	601	72064210	672	73002770	673	73221558	250	74880162	258
70261135	248	70314100	562	70492400	601	72064220	672	73002771	673	73221559	250	74880163	258
70261136	248	70315100	562	7072400	116	72064230	672	73008000	676	73221560	250	74880164	258
70261137	248	70316100	562	7072401	116	72400000	678	73008010	676	73221561	250	74880167	258
70261138	248	70317100	562	7072402	116	72400001	678	73008500	676	73221562	250	74880168	258
70261139	249	70335583	238	7072403	116	72401000	678	73008510	676	73221563	250	74880169	258
70261140	249	70335584	238	7072404	116	72401600	678	73018000	676	73222322	251	74880170	258
70261141	249	70335595	238	7072405	116	72401601	678	73018010	676	73222323	251	74880171	260
70261143	249	70335596	238	7072406	116	72402000	678	73018500	676	73222324	251	74880173	260
70261144	249	70345476	237	7072407	116	72402001	678	73018510	676	73222325	251	74880174	260
70261145	249	70345503	237	7072408	116	72402600	678	73028000	676	73222326	251	74880200	263
70261146	249	70345521	237	7072409	116	72402601	678	73028010	676	73222327	251	74880201	263
70261147	249	70345522	237	7072410	116	72403000	678	73028500	676	73222334	249	74880202	263
70261148	249	70345541	237	7072414	116	72403100	678	73028510	676	73222335	249	74880203	263
70261149	249	70345542	237	7072415	116	72404000	678	73220107	244	73222336	249	74880204	263
70261150	249	70345543	237	7072416	116	72404100	678	73220108	244	73222337	251	74880205	263
70261151	249	70345545	237	7072417	116	73000000	685	73220109	244	73222375	251	74880206	263
70261152	249	70362272	249	7072500	117	73000001	685	73220110	244	73222381	249	74880207	263
70261153	249	7038859	377	7072501	117	73000002	685	73220111	244	73222385	251	74880208	263
70261154	249	7038860	377	7072502	117	73000003	685	73220112	244	73222386	251	74880209	263
70261155	249	7038861	377	7072507	117	73000004	685	73220113	244	74020601	678	74880210	263
70261156	249	7038862	377	7072508	117	73000005	685	73220114	244	74020601	687	74880211	263
70261160	249	7038864	377	7072509	117	73000006	685	73220123	244	74033000	687	74880212	263
70261163	249	7038865	377	7072510	117	73000007	685	73220124	244	74033001	687	74880213	263
70261166	249	7038866	377	7072511	117	73000008	686	73220125	244	74033100	687	74880214	263
70261185	249	7038867	377	7072512	117	73000009	686	73220126	244	74033101	687	74880215	263
7027000	148	7038868	377	7072513	117	73000010	686	73220127	244	74034000	687	74880216	263
7027001	148	70388718	118	7072514	117	73000011	686	73220128	244	74034001	687	74880217	263
7027004	148	70388719	118	7072515	117	73000012	686	73220129	244	74034100	687	74880218	263
7027007	148	70388720	118	7072516	117	73000013	686	73220130	244	74034101	687	74880219	263
7027010	148	70388721	118	7072517	117	73000014	686	73220139	244	74034500	678	74880220	263
7027012	148	70388722	118	71002843	253	73000015	686	73220140	244	74034500	687	74880221	263
7027015	148	70388724	118	71002844	253	73000016	686	73220141	244	74034501	678	74880222	263
7027016	148	70388726	118	71002846	253	73000017	686	73220142	244	74034501	687	74880223	264
7027017	148	70388727	118	71002847	253	73000020	686	73220143	245	74034600	687	74880224	264
7027020	149	70388728	118	71220115	244	73000021	686	73220144	245	74034601	687	74880225	264
7027021	149	70388730	118	71220116	244	73000023	686	73220145	245	74200600	678	74880226	264
7027022	149	70388731	118	71220117	244	73000024	685	73220146	245	74200600	687	74880227	264
7027024	149	70388732	118	71220118	244	73000025	685	73220147	245	74303559	236	74880228	264
7027025	149	70388733	118	71220119	244	73000026	685	73220148	245	74305559	235	74880229	264
7027030	149	70388734	118	71220120	244	73000027	685	73220149	245	74305659	235	74880230	265
7027031	149	70388735	118	71220121	244	73000028	685	73220150	245	74305759	235	74880231	265
7027032	149	7038880	376	71220122	244	73000029	685	73220155	245	74305859	235	74880232	265
7027034	148	7038881	376	71220131	244	73000030	685	73220156	245	74306059	235	74880233	265
7027035	148	7038882	376	71220132	244	73000031	685	73220157	245	74306159	235	74880234	265
7027038	149	7038883	377	71220133	244	73002700	675	73220158	245	74306659	235	74880235	265
7027046	149	7038884	377	71220134	244	73002701	675	73220159	245	74306759	235	74880236	265
7027052	150	7038885	377	71220135	244	73002702	675	73220160	245	74306859	235	74880237	266
7027054	150	7038886	377	71220136	244	73002703	675	73220161	245	74307059	235	74880238	266
7027055	150	7038887	377	71220137	244	73002704	675	73220162	245	74307159	235	74880239	266
7027056	150	70389020	236	71220138	244	73002705	675	73220200	247	74307259	235	74880240	266
7027057	150	70391522	236	71220151	245	73002706	675	73220201	247	74307459	235	74880241	267
7027058	150	70392839	237	71220152	245	73002707	675	73220202	247	74308259	235	74880242	267
7027059	150	70399984	238	71220153	245	73002708	675	73220203	247	74308559	235	74880243	267
7027060	148	70399965	1053	71220154	245	73002709	675	73220204	247	74308659	235	74880244	267
7027061	148	70399966	1053	71220163	245	73002710	675	73220205	247	74308959	235	74880245	267
7027062	148	70399967	1053	71220164	245	73002711	675	73220206	247	74309159	235	74880246	268
7027063	148	70399968	1053	71220165	245	73002712	675	73220207	247	74309960	235	74880247	268
7027064	148	70399969	1053	71220166	245	73002713	675	73220208	247	74313361	235	74880248	268
7027065	148	70410000	237	71222231	252	73002714	675	73220209	247	74313661	235	74880249	268
7027066	148	70410001	237	71222232	252	73002715	675	73220210	247	74320092	249	74880250	268
7027067	148	70410002	238	71222234	252	73002716	675	73220211	247	74320106	249	74880251	268
7027068	148	70415001	239	71222239	252	73002717	675	73220212	247	74320320	239	74880252	269
7027069	148	70415002	239	71222240	252	73002718	675	73220213	247	74320499	239	74880253	269
7027070	148	70415005	239	71222241	252	73002719	675	73220214	247	74320540	239	74880254	269
7027071	148	70430001	235	71222242	252	73002720	675	73220215	247	74321272	239	74880255	269
7027073	148	70430002	235	71222243	252	73002721	675	73220216	247	74321426	239	74880256	269
7027074	148	70430003	235	71222292	252	73002722	675	73220217	247	74322480	239	74880257	269
7027080	149	70430004	235	71222295	252	73002723	675	73220218	247	74322629	239	74880258	270
7027081	149	70430005	236	71222296	252	73002724	674	73220219	247	74323073	239	74880259	270
7027082	149	70430006	236	71222298	252	73002725	674	73220220	247	74323522	239	74880260	270
7027083	149												

Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page	Part-Number	Page
76004510	683	79102800	636	83250043	984	83254171	957	83256160	948	83260038	953	83290117	959
76083000	684	79104200	639	83251060	982	83254172	957	83256161	948	83260039	953	83290118	959
76083510	684	79104400	639	83251061	982	83254173	957	83256198	977	83260040	953	83290119	959
76084000	684	79104800	639	83251080	979	83254174	957	83256199	977	83260041	953	83290120	959
76123000	685	79105200	637	83251101	962	83254175	957	83256200	977	83260042	953	83290121	959
76123100	685	79105400	637	83251111	962	83254177	957	83256203	977	83260043	953	83290122	959
76123510	685	79107200	636	83251121	962	83254178	957	83256204	977	83260044	953	83290123	959
76123610	685	79107400	636	83251131	962	83254179	957	83256206	977	83260045	953	83290124	959
76124000	685	79110200	633	83251141	962	83254180	957	83256207	977	83260046	953	83290125	959
76124100	685	79110400	633	83251300	946	83254181	957	83256209	977	83260047	953	83290126	959
76124510	685	79111200	633	83251301	946	83254182	957	83256210	977	83260048	953	83290127	959
76124610	685	79111400	633	83251320	946	83254183	957	83256212	977	83260049	953	83290128	959
76133000	686	79114200	632	83251321	946	83254184	957	83256213	977	83260050	953	83290129	959
76133510	686	79114400	632	83251350	946	83254185	957	83256215	977	83260051	953	83290130	959
76134000	686	79115200	632	83251351	946	83254186	957	83256216	977	83260164	978	83290131	959
76134510	686	79115400	632	83251402	944	83254189	957	83256218	977	83260165	978	83290132	959
76143000	686	79128600	638	83251406	944	83254191	957	83256219	977	83260166	978	83290133	959
76144000	686	79135200	654	83251422	944	83254192	957	83256221	977	83260167	978	83290134	959
76144510	686	79135400	654	83251426	944	83254193	957	83256222	977	83260168	978	83290135	959
76153000	684	79136200	655	83251450	944	83254194	957	83256224	977	83260169	978	83290136	959
76153510	684	79136400	655	83251451	944	83254195	957	83256225	977	83260170	978	83290137	959
76154000	684	79140400	658	83251454	944	83254196	957	83256228	977	83260171	978	83290138	959
76154510	684	79140600	658	83251456	944	83254198	957	83256229	977	83260172	978	83290139	959
79005200	613	79142400	657	83251466	944	83254199	957	83256230	977	83260173	978	83290140	959
79005400	613	79142600	657	83251468	944	83254200	957	83256231	977	83260174	978	83290141	959
79005600	613	79144400	645	83251478	944	83254201	957	83256232	977	83260175	978	83290142	959
79006200	614	79144600	645	83251479	944	83254202	957	83256233	977	83260176	978	83290143	959
79006400	614	79144800	645	83251575	992	83254210	958	83256234	977	83260177	978	83290144	959
79006600	613	79145400	656	83251576	992	83254211	958	83256235	977	83260178	978	83290145	959
79010200	616	79146400	656	83251670	954	83254212	958	83256236	977	83260179	978	CE17489	415
79015200	615	79150400	647	83251671	954	83254213	958	83256237	977	83260180	978	CE5076	482
79015400	615	79150600	647	83251672	954	83254214	958	83256238	977	83260181	978	CE5091	478
79015600	614	79150800	647	83251673	954	83254222	956	83256239	977	83260182	978	CE5092	479
79016200	615	79152400	649	83251674	954	83254223	956	83256240	977	83260183	978	CE5093	479
79016400	615	79152600	649	83251680	954	83254224	956	83256241	977	83260184	978	CE6147	475
79016600	614	79152800	649	83251681	954	83254354	965	83256242	977	83260185	978	CE6148	475
79020200	611	79154400	646	83251682	954	83254359	965	83256243	977	83260186	978	CE6149	475
79020400	611	79154600	646	83251683	954	83254372	965	83256244	977	83260187	978	CE6150	475
79022200	612	79154800	646	83251684	954	83254374	965	83256245	977	83260188	978	CE6151	475
79022400	612	79155400	648	83251690	954	83254375	965	83256542	948	83260189	978	CE6152	475
79035200	626	79155600	648	83251691	954	83254376	965	83256544	948	83260190	978	CE6154	475
79035400	626	79157400	649	83251692	954	83254378	965	83256545	948	83260191	952	CE6155	475
79036200	627	79157600	649	83251693	954	83254406	964	83256546	948	83260192	952	CE6321	476
79036400	627	79160200	652	83251694	954	83254420	964	83256548	948	83260193	952	CE6323	476
79040200	629	79160400	652	83251995	960	83254426	964	83256549	948	83260194	952	CE6324	477
79040400	630	79161200	652	83252005	982	83254440	964	83256550	948	83260195	952	CE6326	573
79040600	630	79161400	652	83252010	984	83254446	964	83256551	948	83260196	952	CE6382	482
79042200	629	79164200	653	83252011	984	83254460	964	83256553	948	83260197	961	CE6547	474
79042400	629	79164400	653	83252014	984	83254466	964	83256555	948	83260198	961	CE6548	474
79042600	629	79165200	653	83252020	982	83254480	964	83257103	990	83260199	961	CE6549	474
79044200	618	79165400	653	83252024	988	83254486	964	83257104	990	83260200	981	CE6550	474
79044400	618	79178500	647	83252027	982	83254500	964	83259070	983	83260201	981	CE6551	474
79045200	628	79450000	599	83252028	982	83254506	964	83259078	983	83260205	981	CE6552	474
79046200	628	79450400	599	83252047	988	83254520	964	83259079	983	83260206	981	CE6553	474
79046400	628	79455200	598	83252081	982	83254526	964	83259080	983	83260260	981	CE6554	474
79046600	627	79455400	598	83252084	982	83254620	950	83259081	983	83260261	981	CE6555	474
79050400	620	79456200	598	83252642	986	83254650	950	83259084	983	83260262	981	CE6556	474
79050600	620	79456400	598	83252650	985	83254660	950	83259086	983	83274670	946	CE6647	474
79052400	619	79460200	594	83252651	985	83254670	950	83259087	983	83280005	964	CE6648	474
79052600	619	79460400	594	83252653	985	83254680	950	83259088	983	83280006	983	CE6649	474
79054200	620	79462200	595	83252654	985	83254690	950	83259091	983	83280029	947	CE6650	474
79054400	620	79462400	595	83252656	985	83254701	950	83259584	980	83280030	947	CE6651	474
79055200	617	79480200	605	83252657	985	83254710	950	83259598	980	83280031	947	CE6652	474
79055400	617	79480400	605	83252660	985	83254714	950	83259602	980	83280032	947	CE6653	474
79055700	617	79485200	604	83252670	986	83254718	950	83259603	980	83280033	947	CE6654	474
79057200	619	79485400	604	83252671	986	83254719	950	83259604	981	83280034	947	CE6655	474
79057700	619	79486400	604	83252672	986	83254750	949	83259609	981	83280035	947	CE6656	474
79060200	623	79490200	600	83252673	986	83254760	949	83259874	955	83280036	947	CE6660	475
79060400	623	79490400	600	83252674	986	83254765	949	83259875	955	83280037	947	CE6661	475
79061200	623	79492200	601	83252675	986	83254960	983	83259876	955	83280038	947	CE6662	475
79061400	623	79492400	601	83252676	986	83254961	983	83259877	955	83280039	947	CE6664	475
79061600	622	8110003	202	83252693	986	83254963	983	83259878	955	83280040	947	CE6847	474
79064200	624	8110013	202	83252694	986	83254964	983	83259879	955	83280041	947	CE6848	474
79064400	624	8110023	202	83252695	985	83254965	983	83259881	955	83280042	947	CE6849	474
79064600	623	8110033	202	83252887	986	83254974	983	83259882	955	83280043	947	CE6850	474
79065200	624	8110063	202	83252889	986	83254976	983	83259883	955	83280044	947	CE6851	474
79065400	624	8120001	206	83253012	982	83254977	983	83259884	955	83280045	947	CE6852	474
79065600	624	8120002	206	832534120	957	83254978	983	83259885	955	83280046	947	CE6853	474
79085200	634	8120003	206	83254122	957	83254982	983	83259886	955	83280249	963	CE6854	474
79085400	634	8120004	206	83254150	957	83255011	965	83259887	955	83280250	963	CE6855	474
79086200	641	8120011	206	83254151	957	83255012	965						

# GLOSSARY

Simply and quickly find the most important terms relating to electrical engineering.

## A

### Absorption

Cause for attenuation of a fibre optic cable.

### ACR

Abbreviation for Attenuation to Crosstalk Ratio. The ACR value indicates the relationship between the near-end crosstalk and the attenuation at a certain frequency.

### Address bus

System of associated cables, to which address bits can be transferred.

### Adhesion

Adhesive, cohesive and density property of the outer sheath of a cable. "Low adhesion" property important e.g. for drag chain use in order to avoid the cables from sticking to each other.

### Aging

The change in the properties (predominantly tensile strength and expansion) of a material over time under specific conditions such as temperature, UV radiation, ozone influence, chemical and thermal loads, etc.

### Aging resistance

As cables are often subject to environmental influences over decades (life cycle), i. e. chemical, electrical and climatic exposure, it is these properties that are to be tested. Here, all the materials found in cables are briefly tested under extreme conditions. All materials should have a very high aging resistance.

### Alternating current

The alternating current is produced by linking three alternating currents with identical oscillation values and frequencies. Also known as multi-phase alternating current.

### Aluminium sheath

The aluminium sheath is lighter than the lead sheath, has better conductivity and greater resistance, however must include a plastic sheath to protect against corrosion.

### American wire gauge

Cables or cores according to American cross-sections/dimensions. High AWG number → small cross-section, low AWG number → large cross-section (see Table T16).

### Ampacity

Maximum permitted current that can be transmitted under defined conditions. VDE0298, Part 4.

### Ampere

The strength of an electric current that flows through a conductor. Unit of measurement for the electric current (A).

### Analog signal transmission

Transmission of continuously variable signals with which the light output is modulated.

### Angle of beam spread

Half the vertical angle of the cone within which the injected power in a light waveguide with uniform illumination is equal to a specified fraction of the total injected power.

### ANSI

Abbreviation for the American National Standards Institute. An American committee which, similar to the German DIN, develops and publishes standards.

### Antenna cable

Antenna cables are coaxial high-frequency cables for receiver connections, domestic distribution grids and single antenna installations. They are mainly used in receiving and distribution stations for sound and television broadcasting. They must guarantee a low-reflection signal transmission.

### Anti-kink cable glands

Mechanism that is part of a cable gland and provides additional protection if a flexible cable is frequently subjected to bending (e.g. SKINDICHT® SR-SV-M at Lapp).

### Antioxidant, Oxidation inhibitor

As antioxidants may colour rubber compounds, they are generally only ever used for dark compounds. They prevent the compounds from becoming brittle too early.

### Approved cables

Approved control and data network cables with certification, standards such as VDE, UL/CSA.

### Armouring

Also known as reinforcement. Armouring is a mechanical protection for cables. It is produced in a variety of ways and using a wide range of materials, depending on the expected loads on the cable. It can be made of steel wire braiding, circular or flat steel wires, strip iron or combinations of these materials.

### Armouring types

Commonly used are the flat steel wire, steel band, profile steel wire and round steel wire armouring with outer protective cover. There are also steel wire armourings with an anti-twist tape (steel band), however without an outer protective cover (for interior spaces).

### Armouring, armour

A special electromechanical or mechanical protection against external stresses, for the improvement of the reduction factor and for the absorption of tensile forces. Plastic fibres are used instead of metallic armouring for fibre optic cables.

## Glossary

**AS**

Abbreviation for Australian Standard.

**ASI (Actor-Sensor-Interface)**

Bus system for the lowest level of automation. Facilitates the simple connection of sensors, actuators and integrated systems to the first control level. See → Master-Slave principle. Up to 248 binary inputs and outputs per grid, one cable for information and energy, reversepolarity protected connection technology, 100 m cable length or up to 300 m with repeaters, open tree structure of grid, protection class up to IP 67, cycle time <5 ms, high immunity to interference and fault tolerance.

**ASME**

Abbreviation for the American Society of Mechanical Engineers (USA).

**Assembly**

A ready-to-install cable. It is cut to the appropriate length and fitted with connecting elements (plugs, cable lugs, etc.) at the ends.

**ASTM**

Abbreviation for the American Society of Testing and Materials.

**ATEX approval**

This approval is required for the intended use of devices and protection systems in areas at risk to explosions.

**Attenuation**

Attenuation is the reduction of the signal amplitude during transmission to a medium. It increases with the rising frequency and cable length. The signal level is impaired in the process.

**Attenuation a**

The reduction of the optical signal power between two cross-sectional surfaces of a fibre optic cable due to losses. The unit of measurement is decibels (dB).

**Attenuation coefficient a**

The attenuation relative to the length of a fibre optic cable. The standard unit of measurement is decibel/kilometre (dB/km).

**Automotive cable**

Vehicle cables are cores and cables used in passenger cars and trucks (e.g. ÖLFLEX® TRUCK at Lapp).

**AWG**

Abbreviation for American Wire Gauge. Standard expression for the wire diameter. The smaller the AWG value, the bigger the wire diameter. The actual values (mm) depend on the core resolution, regardless of whether a fixed conductor or a strand is used.

**AWM**

UL marking for Appliance Wiring Material.

**B****Backbone**

Backbone or secondary wiring is the connection between the building distributor and the individual floor distributors in a structured wiring system.

**Backscatter**

A small fraction of the light that is deflected from its course due to dispersion travels in a reverse direction, i. e. in the light waveguide back to the transmitter. By observing the chronological progression of

the backscattered light using a beam splitter on the transmitter, it is possible to measure not only the length and damping of an installed light waveguide from one end but also local irregularities, e.g. light losses in splices.

**Backtwist**

The term relates to the stranding process. The technical design of the stranding machine twists the elements to be processed into a strand without torsion.

**BALUN**

Balun is a term combining “balanced” and “unbalanced”. Baluns are used for adjusting impedance and symmetry in the various transmission media in copper grids.

**Banding**

Wrapping a bundle of wires with relatively narrow paper, textile, plastic or metal strips.

**Bandwidth**

Frequency range of a fibre optic cable within which data can be transmitted within a particular time frame. The greater the bandwidth, the more data that can be transmitted. The transmission speed depends on the bandwidth of the entire network.

**Bandwidth product**

The bandwidth product is what results when the bandwidth of a glass fibre cable is multiplied with the length of the measured section.

**Bandwidth-length product**

Measurement for the frequency range that can be transmitted by a fibre optic cable one kilometre in length. It is a constant value.

**BASEC**

Abbreviation for the British Approvals Service for Cables. Certification body – Great Britain and Northern Ireland.

**Basic raw materials**

In addition to the basic raw material, synthetic materials contain a range of other components such as stabilisers, softeners, filler and colour.

**Batteries Act**

The Battery Act came into force in 2009 and also covers the registration and return of batteries.

**Battery cables**

Link between battery and generator in the engine. They are developed, manufactured and delivered in accordance with customer requirements/product specifications.

**Baud**

Unit for a modulation rate in the transmission of communications. One step per second. 1 bit/s = baud, 1 Mbit/s = 1 Mbaud → see Bit

**Bel**

1 Bel = 10 decibels. In highfrequency technology, the common unit of measurement for attenuation and, like decibel, a dimensionless ratio.

**Bending capacity**

The bending capacity indicates how far a product can bend without forfeiting function.

**Bending cycle**

Number of bends repeated in the drag chain (How often was a cable actively stressed during testing or during application?)

**Bending radii**

Permissible radius for occasional or constant bending of cables. The bending radius is defined as a multiple of the cable diameter. The construction of the cables determines the minimum permissible bending radius, which allows it to be increased or reduced. The permissible bending radii must be adhered to when laying power lines and cables. The standard values are between 15 x D and 30 x D, depending on construction type and regulation. D is the outer diameter of the cable. (At Lapp: ÖLFLEX® FD with 5 x D or 7.5 x D).

**Bending test at low temperature**

Cold flexibility test for cables. A cold cable is wrapped around a pin and no cracks may occur in the insulation.

**Binary**

Property restricted to just two values.

**Bit**

The smallest unit for representing binary data, significance either 0 or 1. It is the basic unit for transmission information in digital systems. A byte is a group of 8 bits.

**Bit error rate, BER**

Ratio of error bits to the overall number of bits received during a specific period.

**Blue cable**

Cable for intrinsically safe systems in hazardous locations. The compulsory colour code here is blue, RAL 5015. (For Lapp, ÖLFLEX® EB. These cable types are also available with shielding, e.g. ÖLFLEX® EB CY, UNITRONIC® EB CY).

**Braid angle**

Variation in degrees between the longitudinal axis and the wire routing within the braid.

**Braiding**

Arrangement of interlaced wires or threads forming part of the structure of a cable. Copper wire braiding is used for screening, while braiding made of textile, plastic thread or steel wire performs supporting or carrying, i. e. mechanical, functions. Braiding can be close or wide meshed (coverage density in percent) with different angles of twist.

**Breakdown**

This refers to electrical breakdown between two conductors or a conductor in water during the testing process, when the insulation can no longer withstand the constantly increasing voltage (breakdown voltage) or if a fault in the insulation results in a breakdown within a specified time at a constant voltage.

**Breaking load, ultimate load**

The product of nominal cross-section and tensile strength is the breaking load.

**British Standard Wire Gauge**

Also known as NBS (New British Standard), SWG (Standard Wire Gauge), Legal Standard and Imperial Wire Gauge. A modified version of the Birmingham Wire Gauge, a standard from Great Britain valid for all wires.

**Broadband**

Transmissions in which the signals are transmitted by a high number of oscillations per second (glass fibre technology).

**BS**

Abbreviation for British Standard. Standards body for Great Britain, similar to VDE in Germany.

**BSI**

Abbreviation for British Standard Institution – Great Britain.

**Bundle**

Several cores or pairs that are stranded into a group and in turn make up one element of a strand assembly.

**Bus system**

The bus system is a system of cables that transmits information and data.

**C****Cable**

Combination of several cores with protective layers (sheath) or sheathing of a single core. The sheathing protects the cores against all kinds of harmful influences. Cables are used to transport electric current (power cables), transmit information using an electric current (data cables) or to transfer information using light waves (light waveguide cables). The term line is also commonly used, depending on the application. It is not possible to exactly delineate the two terms. In general, the term “cable” is used for installations outside buildings. In practice, however, the terms are used interchangeably. Combination of any number of cores under a sheath.

**Cable carrier**

An assembly of linked, hinged support elements for directional, dynamic routing of all types of flexible bending power cables.

**Cable data**

The cable type file is part of the CAE software from ePLAN®. The cable type file defines the number of cores, their colour code, the PE core and the screening for all cables. In the Lapp item master data for ePLAN®, the cable type is assigned to the relevant item. This means that when a Lapp item is selected, each core is automatically assigned the appropriate colour code in the ePLAN® circuit diagram.

**Cable gland**

The brand name is SKINTOP® at Lapp. A cable gland is a device that is designed to guide a cable or an insulated conductor into a sheath and provides a seal and a restraint mechanism. It can also have other functions, e.g. kink prevention, strain relief, potential equalisation, earthing, insulation or a combination of these.

**Cable gland size**

The following sizes are currently defined in EN 60562: M 12 x 1.5; M 16 x 1.5; M 20 x 1.5; M 25 x 1.5; M 32 x 1.5; M 40 x 1.5; M 50 x 1.5; M 63 x 1.5; M 75 x 1.5; M 90 x 2; M 110 x 2. M stands for metric.

**Cable print**

Coloured marking on the outer sheath of individual elements or cables using symbols, names and other markings.

**Cable set-up**

Describes (from inside to out) the materials used for cables, their design and properties and the position of the individual elements.



## Glossary

**Cable tree**

Combination of individual cores or cables tied together with nylon ties, spirals or hose sheathing. The form of the harness is created when joining the wires, as the various consumers in the device and system circuits are physically separated and the connection with the individual cables makes constant branches necessary.

**Cable type letter code**

Identification of cables according to their design, nominal cross-section and number of cores, nominal voltage and conductor shape, which results in specific combinations of predetermined letters and numbers. For rules and standards, each of the letters and numbers has a specific meaning.

**Cables for hand-held machinery**

Handheld device cables are connecting and extension cables for power tools used in the open air or in enclosed spaces (e.g. ÖLFLEX® 540 P/CP, ÖLFLEX® 550 P, ÖLFLEX® 400, ÖLFLEX® 500 P, ÖLFLEX® SF ... at Lapp).

**Caloric load values**

Caloric load is the energy that is released when cables and other building materials are burned.

**Campus**

The campus or primary wiring establishes the connection between the various buildings within a structured wiring system.

**CAN**

Controller Area Network. Result-controlled communication system. As a generator of information, this reports to all connected nodes.

**Canadian Electrical Code**

See → CEC

**Capacity**

Electrical unit of measure, measured in Farad, or electrical unit of measure  $V \times A = \text{Watts}$ .

**Carrier frequency**

The frequency of the oscillation whose amplitude, phase or frequency is influenced by a signal.

**Carrier frequency, hook-up wire**

In carrier frequency systems, they are used to transmit signals. Up to 120 carrier frequency channels can be simultaneously transmitted in a cable.

**CCC**

Abbreviation for China Compulsory Certificate. Products requiring certification can only be imported to China, sold in China or used in Chinese business activities after the relevant CCC certification has been requested and granted.

**CE**

Abbreviation for Communauté Européenne (European Community).

**CE marking**

Comprises the “CE” symbol and indicates a product’s compliance with all applicable EU directives. CE indicates that the natural or legal entity which carries out or initiates the connection is satisfied that the product meets the requirements of all relevant harmonised standards and has been subjected to all mandatory conformity assessment procedures.

**CEBEC**

Abbreviation for Comité Electronique Belge – Belgian certification body.

**CEC**

Abbreviation for the Canadian version of the US National Electrical Code (NEC).

**CEE**

Mark for the European standards institution: International Commission on Rules of Electrical Equipment.

**CEI**

Abbreviation for Commission Electrotechnique Internationale – International.

**CENELEC**

Abbreviation for Comité Européen de Normalisation Electrotechniques (Europe).

**Central element**

See → Core.

**Central filler**

The core is a design element onto which the other design elements are attached.

**Characteristic impedance**

Apparent impedance of an electronic quadrupole; it is made up of the Ohmic resistance and the frequency-dependent resistances of inductances and capacitances. The impedance of a cable represents the ratio of the voltage waves advancing in a direction to the current wave moving in the same direction. Common values are 100, 120 and 150 Ohm. It is important that the impedance of the cable corresponds to the input/output impedance of the connected equipment.

**Chromatic dispersion**

Grouping of wavelength-dependent effects which lead to a bandwidth limitation, such as waveguide dispersion and sheath dispersion.

**Circular Mil (CM)**

Measurement for conductor cross-sections in 1/1000 inch (0.001”) from circuit diameter.

**Cladding**

Cladding is the glass layer which surrounds the core of the fibre optic cable.

**Clamping range**

Cable diameter range for which the assured properties of a cable gland apply.

**CNOMO**

Abbreviation for Comité de Normalisation des Moyens de Production. Commission for the standardisation of machine tools and tools used in the French automotive industry. With fibre optic cables, the plastic layer on the surface of the sheath for preserving the original surface condition.

**Coating**

Coating is a form of mechanical surface protection. It is a primary plastic layer which is applied directly to the sheath glass for fibre optic cables.

**Coaxial cable**

Concentric pair of conductors consisting of an inner conductor and an outer conductor, which completely surrounds the inner conductor. Coaxial cables are suitable for low-attenuation and distortion free transmission of high bandwidth signals. Because of their self-screening construction, they are much less sensitive to external interference (e.g. RG coaxial cable at Lapp). Coaxial cables are used in high frequency telecommunications systems (cable TV, Ethernet applications) for transmission of high frequency signals.

**Colour code**

For uniform marking of metallic cables and waveguides, various institutions including the EIA, DIN and IEC, have developed a standardised colour coding system. The colour codes for metallic cores assign totally different colours to the insulation of the pairs of cores for the individual standards. In addition to these standards, which are not consistently applied by manufacturers, colour codes specific to the manufacturer are often used.

**Colour print**

Sheaths and insulation covers are usually printed with colour, using a metallic disc whose lettering is engraved inversely on its periphery. Using a scraper, the excess colour can be scraped away.

**Communication**

Interaction between two independent systems. Used for one-way or two-way exchange of messages in the form of voice, text, images or data.

**Compensating cable**

Compensating cables are used together with a thermal element for temperature measurements. (Thermal elements such as Fe/CuNi iron-constantan (blue); NiCr/Ni nickel-chromium-nickel (green); PtRh/Pt platinum-rhodium-platinum (white). A thermal element consists of two conductors made from different materials, between which there is an electric potential depending on temperature. A compensating cable transmits this potential from the thermal element to a cold junction. There, based on the value of the potential, the temperature can be assigned at the point of measurement.

**Composite layer, composite sheath**

The combination of an aluminium foil with the plastic/ polyethylene sheath of a cable. The foil covers the core of the cable lengthways and overlapping, while the plastic part is placed on the outside. The outer sheath extruded onto it forms a homogeneous connection with the foil due to the effect of temperature, resulting in an interconnected "laminated" aluminium foil sheath. Used in outdoor telecommunications cables.

**Compound**

A material compound of polymer plastics with filler. Polymers are often compounded with colours, processing aids, fibres and other fillers.

**Concentric conductor**

The concentric conductor (e.g. NYCWY) may be used as a PE or PEN wire and can also act as the screening.

**Conditioning**

Division of production length of cables into storage or delivery lengths. Standard forms include coils with lengths of 50, 100 and 250 m and drums with 250, 500 and 1,000 m, depending on weight.

**Conductance**

The electrical conductivity is the inverse of the electrical resistance.

**Conductor**

Single-conductor cables are single- or multi-wire cables, used mainly for fixed laying with rubber or plastic insulation (ground wire). A non-insulated wire of a material whose high number of free electrons makes it suitable for carrying electric current (particularly copper and aluminium). Component allowing a connection that is easy to break and reestablish between two light waveguides. The insertion loss from a connector is normally higher than that from a splice. In signal and power engineering, connectors are used for connecting cables with different numbers of poles and in a variety of different designs. Because of the associated ease of service compared to fixed cable connections, connectors are being used in an increasing number of applications. (e.g. EPIC® at Lapp). Plugs are components that enable electrical conductors to be connected and are designed to create detachable electrical connections with an appropriate counterpart. Plugs may not be inserted or removed during proper use (under electrical voltage). A distinction is made between free and fixed plugs according to the mounting. The plug is made up of the plug housing and the contact elements. (e.g. EPIC® brand from Contact at Lapp). Central component for star-shaped passive light waveguide networks. It connects numerous transmitters and receivers and distributes the signal light output supplied by a connected transmitter evenly to all connected receivers.

**Contact voltage**

Part of an error voltage which may be contacted by members of the general public.

**Control cable**

The Lapp ÖLFLEX® brand is synonymous with connecting and control cables. The key features of control cables are: Bare or tin plated fine copper wire conductors, PVC insulation, stranding of cores with back twist, special PVC compound outer sheath. Different ÖLFLEX® designs include:

- a) Different coloured cores,
- b) Numbered cables. ÖLFLEX® cables have the following properties: Flexible, largely resistant to all kinds of oils, alkalis and acids. ÖLFLEX® are used in the following areas: As control cables in machine tool manufacture and general engineering, plant construction, in all kinds of industrial plants, in measurement and control engineering, process engineering, data processing etc. ÖLFLEX® control cables are highly recommended for these applications due to their excellent flexibility, the good general chemical resistance, the clear core coding and the problem-free compatibility with multi-pole machine connectors.

**Copolymer**

Mixture which polymerises from two or three monomers to form a chain.

**Copper**

The best material for producing electrical conductors. Excellent conductivity of heat and electricity. In addition, copper (Cu) has very good ductility and good strength properties.

**Copper base**

The monetary value used to value the copper contained in cables in the price.

**Copper weight**

It expresses the mass of the copper contained in the cables.

**Copper-clad aluminium wire**

This wire is made up of an aluminium core and a copper sheath.

## Glossary

**Core**

The optical core in glass fibre cable technology.

**Core check, response at increased temperature**

In order to determine the influence of heat on the mechanical properties of, for example, insulating covers, a test item is placed in a device for heat pressure testing which has already reached the testing temperature. The wall thickness of the test item determines the test load. After a specific storage period in the heating cabinet and subsequent cooling, the impression depth is measured with the reading microscope.

**Core check, response with thermal shock**

The core insulating cover is checked for thermal shock by wrapping the cores or strips from the insulating cover around a defined mandrel and storing them in a heating cabinet for approx. 1 hour at 150 °C. After removing the cores/strips and cooling them to room temperature, these test items should not display any visible cracks.

**Core diameter**

The core diameter is the diameter of the central light-carrying section of a light waveguide.

**Core group**

For the transmission of signals or energy, two or more stranded cores are required. Using two cores, it is possible to form a circuit that can transmit energy or signals.

**Core Ident Code**

VDE-DIN-colour code for colour-coded low-voltage cables according to VDE 0293-308/HD 308 S2.

**Core identification**

Coloured or numbered identification of single cores. A Lapp development: The internationally proven ÖLFLEX® colour code is based on the colour-coded identification of the single cores. Ten basic colours are combined with 2 mm wide colour spirals. This results in 102 colour variations. This colour marking is particularly advantageous compared to cores printed with numbers, as it means the cores can be assigned much more quickly in a device (saving time).

**Core joint**

Core joints combine synthetically insulated signal cable and telecommunication cores in a conductor diameter range of 0.35 – 0.9 mm. The cores are pressed together using a special core-joining pliers and thus placed solderless into the connection sleeve.

**Core print**

In the manufacture of cables, cores are principally identified by four methods:

1. Cores can be manufactured in one primary colour.
2. Marked with various colour codes.
3. Printed.
4. A combination of the different colour codes with printing. It must be noted that only earth conductors are to be green-yellow in colour and that these colours may not be used if there is any risk of confusion with other cables.

**Core stranding**

Without stranding, wires positioned parallel to one another would deform when bent. The outer wires would be overstretched and the inner wires compressed. The individual wires are twisted together in a spiral to maintain the flexibility and mobility of the conductor. The result is known as core stranding.

**Core stranding with more than four cores**

When constructing a cable, the best layer structure of the stranding elements is always selected, to obtain cables that are as circular as possible. Gaps in the layer structure are filled with insulated fillers or central cores (filling elements). In flat cables, the structural elements (groups or cores) are parallel to one another and can be stranded.

**Core wrapping**

Core wrappings are used to protect the insulating covers of rubber-insulated cables. They are mainly made from foil or fabric tape.

**Core, conductor, insulated wire**

Individually insulated conductor, e.g. made of single- or multi-wire copper or aluminium. Core = conductive component of cables with insulation coloured or marked numerically.

**Corrosion**

Degradation of minerals and materials due to mechanical and chemical environmental influences.

**Coupler**

Passive optical components for transmission of light between a light source and a light waveguide or between several light waveguides. Couplers that allow light waveguide networks for connecting multiple transmitters and receivers to be set up are of particular importance (see → T coupler).

**Crane cables**

Crane cables are supply cables for cranes in the open air or indoors (e.g. ÖLFLEX® CRANE at Lapp).

**Crimp connection**

Mechanical joining technology. When joining, for example, coaxial connectors with a coaxial cable using a crimping tool, a metal sleeve is pulled over the shielding and pressed together.

**Cross-linked**

The term refers to a manufacturing process for elastomers, thermoplastics and duroplastics. It describes the fact that particular chemicals are used to change the original linear alignment of the macromolecules from planar to solid structures. The materials used include sulphur compounds for rubber and peroxides for thermoplastics and duroplastics. Cross linking is carried out under the influence of heat and pressure, and high energy rays for thermoplastics. Cross linking is a permanent and irreversible process and plays a critical role in determining the actual material properties (it gives rubber its permanent elasticity and improves the thermal, mechanical and electrical properties of polyethylene).

**Cross-linked polyethylene XLPE**

Cross-linked polyethylene.

**Cross-linking agent**

Cross-linking agents or vulcanising materials in rubber compounds are either sulphur (for natural or synthetic rubber) or peroxide (for silicone, EPDM). Sulphur cross linking begins at room temperature and intensifies as the temperature is increased. With peroxide cross linking, oxygen is released for cross linking at a specific temperature.

**Cross-section**

Cross-sectional area of the conductor. A distinction is made between the geometrically defined nominal cross-section and the conductive cross-section, which is derived from the electrical → resistance.

A certain maximum resistance is assigned to the nominal cross-section, within which the conductor structure is specified. The cross-section is normally specified in mm<sup>2</sup>. However, for certain types of cables, which are always made up of single-core conductors (telecommunications cables), the conductor diameter is used for marking or description.

**CSA**

Abbreviation for "Canadian Standards Association". Canadian standards and testing body. Similar to VDE in Germany.

**Current**

Electrical unit, measured in Amperes. Current = Voltage/Resistance.

**D****D.C.**

Abbreviation for direct current.

**Dark current**

Current at the output of an optical receiver if no radiation is present.

**Data bus**

A system of associated cables, to which data bits are transferred.

**Data transmission cable**

Cables whose structure make them suitable for transmitting electric data processing pulses with minimum errors. Simple (pair) or more complex (screening) constructions are required depending on the susceptibility of the data pulses to faults (brand: UNITRONIC® at Lapp). Computer cables (Li2YCY-PIMF) or other, at least twisted in pairs, normally screened and often individually screened cables, e.g. UNITRONIC® LIYCY (TP), UNITRONIC® BUS; UNITRONIC® LAN, telephone cable, also light waveguide cables. TP = Twisted pair.

**Data transmission rate**

Unit of measure for the transmission speed of a data transmission. It is measured in bit/s or byte/s.

**Data transmission, data transfer**

Optical data transmission is always serial. Before data transmission, pending parallel data is always prepared for serial transfer and is post-processed to a parallel form after the transmission. We also refer to bit serial data transmission, as all of this data is always transferred as digital signals.

**Decibel**

A decibel is the logarithmic ratio of two levels (e.g. input level to output level). The unit of measure has no dimension and is specified in dB.

**Degrees of protection**

Protection of electrical equipment by housing, covers etc. Protection of equipment against the ingress of foreign bodies and water.

**DEL**

Abbreviation for Deutsches Elektrolytkupfer für Leitzwecke (German electrolyte copper for conduction) DEL is the stock market code for 99.5% pure copper in Euro/100 kg (see T17).

**DEMKO**

Abbreviation for Danmarks Elektriska Materialkontroll – Danish standards and testing body, testing and certification body, tasks similar to VDE/UL.

**Density**

Ratio of the mass to the volume of a body. If the mass is M and the volume is V, the ratio is the density  $d = M/V$ .

**Density unit**

Result of the density of a body relative to the density of water (= 1). Corresponds to the specific weight.

**Designation label**

Fixing elements with which single wires, bundles, cables and cables on machine parts or walls can be permanently fixed in place. They are transparent or coloured, usually made from nylon and can display indelible information about their content.

**DESINA®**

The Verein Deutscher Werkzeugmaschinenfabriken e. V. (VDW) [German Machine Tool Manufacturing Federation] developed DESINA® (DEcentralised and Standardised INstallation technology), a comprehensive overall concept for standardisation of electrical installation of equipment and machinery. Colour codes of cables:

- Servo cable, screened: Sheath colour orange RAL 2003
- Cable for measuring systems, screened: Sheath colour green RAL 6018
- Power cable, unscreened: Sheath colour black RAL 9005
- 24 Volt control cable, unscreened: Sheath colour grey RAL 7040 (similar to 7001)
- Field bus hybrid cable, Cu and light waveguide: Sheath colour violet RAL 4001
- Sensor/actuator cable, unscreened: Sheath colour yellow RAL 1021

**DeviceNet™**

Simple CAN-based communication system for networking of industrial automation equipment (limit transmitters, photo sensors, motor starters, frequency controlled drives, control terminals and similar) with master control equipment. Two screened twisted pairs of conductors within a cable are used as the transmission medium. One is used for communication (with transmission rates of 125, 250 or 500 kBit/s for cable lengths of 500 m, 250 m or 100 m) and the other to supply power to the connected equipment (max. 8 A for 24 V DC voltage).

**Dielectric**

Dielectric refers to the characteristic of certain substances to be electrically non-conductive – therefore insulating. Any electrically insulating material in which an external electrical field (e.g. between the plates in a capacitor) builds up an opposing field is referred to as dielectric. A dielectric causes a static electrical field to be retained even without a continuous supply of electric charge.

**Dielectric constant (DC)**

A material constant for a dielectric. The dielectric constant specifies how many times greater the capacitance of the capacitor will be if the insulating material is used as the dielectric instead of air. Multiplying the DC of the empty space by the dielectric constant gives the DC of the dielectric.

**Diffusion**

The primary cause of attenuation in a light waveguide. It is the result of microscopic fluctuations in the density of the glass, which deflect part of the guided light sufficiently from its course that it actually leaves the light waveguide. With light wavelengths above 1600 nm, this effect is very weak, however it increases at short wavelengths by the wavelength to the power of four (Rayleigh dispersion).

## Glossary

**Digital signal transmission**

Transmission of a signal using binary light pulses in a period time pattern.

**Dimension**

A term for the geometric size of a wire or strand, expressed as a diameter or cross-section. Often used in conjunction with the number of cores, e. g. 18 x 1.5 mm<sup>2</sup>.

**DIN**

Abbreviation for Deutsches Institute für Normung [German Standardisation Institution]. It is based in Berlin, Germany.

**DIN EN**

European standard added to the German body of standards.

**Direct line, connecting cable**

A connecting cable is a cable that has a coupling connector through which the network connection is established. The fixed connection is found inside the device. The device is portable. The coupling connector contains earthed contacts and is thermoplastically moulded to the cable. Connecting cables are, for example, used to connect portable telephones.

**Dispersion**

Dispersion of the signal running time in a light waveguide. It is made up of various components: mode dispersion, material dispersion and waveguide dispersion. As a result of its dispersion, a light waveguide acts as a low-pass filter for the signals to be transmitted (see → Transmission function).

**DKE**

Abbreviation for Deutsche Kommission Elektrotechnik und Elektronik Informationstechnik [German Electrical Engineering, Electronics and Information Technology] in DIN und VDE. It is a branch of the DIN and its agency the VDE (Electrical Engineering, Electronics and Information Technology Federation). As a national organisation for formulating standards in electrical engineering and information technology, the DKE deals with important interdisciplinary issues such as safety, EMC, components and performance of conventional electric circuits, mobile wireless communication, software and Internet protocols. DKE is the German member of the European and global standardisation organisations. The DKE implements and publishes the results of standardisation work by the → IEC, → CELENEC and → ETSI in national standards.

**Drag chain cables**

Drag chain cables are cables used in power chains (e. g. ÖLFLEX® FD, ÖLFLEX® SERVO FD, UNITRONIC® FD plus at Lapp).

**Drain wire**

Single- or multi-wire non-insulated conductor that is run in close metallic contact under a screening.

**Ductility, flexibility**

As all cables and cores are liable to mechanical stress, they are also checked for flexibility, i. e. bent several times around various bending radii. There may be no visible damage to the cables, sheaths, inner or outer protective covers after testing. All stranded elements, braidings and wrappings must also remain correctly in place. In addition to the diameter of the strand assembly and the number of elements to be stranded, the length of lay plays a significant role in the flexibility of a cable. Based on the following principle: The shorter the length of lay, the more flexible the strand assembly.

**Dummy**

If there are “openings” detected in the cable, dummy elements or dummy cores are inserted and stranded together with the cable assembly. Dummy elements are generally made from cheap, inferior materials such as polyethylene twine, spun rayon and cotton. They are usually the same size as the real stranding elements.

**Duplex operation**

Transmission of two independent signals over a particular distance.

**Duroplastic**

In contrast to thermoplastics, after heating duroplastics cannot be deformed by heating them again. Duroplastics are required in the cable industry, e. g. as cable fittings or connectors.

**E****Earth connection**

Earthing of a point of the circuit, such as the neutral point, neutral conductor, midpoint or outer conductor.

**Earth electrocode, ground system**

Conductor that provides a conductive connection to earth. For example, it can be embedded in the ground or have a large area in contact with the ground.

**Earthing**

Earthing guarantees a clear reference potential for screening the active and passive components of a network.

**ECAD**

The ECAD component standard is a manufacturer-independent standard for describing item and engineering data in electrical engineering, specifically for machine and equipment manufacture.

**EIA**

Abbreviation for Electronic Industries Associations.

**Elastomere**

Elastomers are widely used for sheathing and insulating cables because of their excellent electrical and mechanical properties. Elastomers are high-molecular materials, whose elasticity depends on the degree of cross-linking. The biggest difference between elastic and plastic materials lies in loading and relief. After relief, an elastic material reverts to its original shape.

**Electric circuits**

In a cable, circuits with different voltages can be operated if they are insulated for the maximum voltage that occurs – VDE 0113 Part 1 and VDE 0100 Part 520.

**Electric diameter of conductors**

Determined on cables by electrical resistance measurements.

**Electric Field**

When voltages are applied to cables, electrical fields are formed, which can take on different shapes depending on the cable construction. In the low voltage range, up to approx. 1 kV, electrical fields have only a negligible influence on the dimensions of the insulating walls. To guarantee operational safety, there are high demands on the materials and dimensions in the high voltage range. An electrical field is represented by field lines. The density of these field lines indicates the force that exists between the two points on a field line (voltage).

**Electric resistance**

Resistance with which an electric circuit opposes the passage of the current. Resistance is specified and measured in Ohms.

**Electricity**

Form of energy based on the flow of free electrons. Electricity is produced in generators.

**Electromagnetic protection**

Protection against faults that could affect the cable from outside (immisions). Protection against faults caused by the cable (emissions). Braid, e. g. copper (tin plated) → flexible → coverage. Protection against external influences: mechanical, e.g. cables over edges; stepping on; pulling of cables; chemical: e. g. oils; thermal: heat, cold.

**Element**

Individual component of cables, a collective term for cores, pairs, bundles and carrier organs.

**Elongation at break, ultimate elongation**

Elongation at break is the ratio of the elongation to the initial length when a break occurs.

**Elongation, extension, stretch**

Extension of a body by mechanical forces. In the cable industry, it is tested using a mechanical testing method to determine the tensile strength of all components.

**ELOT**

Hellenic Organization for Standardization. Certification body for Greece.

**EMC**

Abbreviation for Electromagnetic Compatibility. The ability of a system, machine or item of equipment to work satisfactorily in the electromagnetic environment without itself causing any electromagnetic interference that would be unacceptable for all systems, machines or equipment in that environment.

**EMK**

Abbreviation for electromotive force.

**EMS**

Abbreviation for Electromagnetic Susceptibility. This is the functional resistance of a specific object to electromagnetic interference factors.

**EN**

Abbreviation for European Standards.

**EPDM**

Abbreviation for Ethylene Propylene Dien Monomer rubber. Chemically cross-linked elastomer with good electrical insulating properties and outstanding flexibility at low and high temperatures.

**EPIC®**

Abbreviation for Environmental Protected Industrial Connector. Registered trademark, a robust industrial connector from Contact.

**ePLAN®**

ePLAN® is the leading CAE software for planning electrical designs and documentation in machine and plant construction. The Lapp item data and the cable type file enable the individual cores in the ePLAN® circuit diagram to be assigned automatically. ePLAN® is produced by ePLAN® Software & Service GmbH & Co.KG. See [www.eplan.de](http://www.eplan.de)

**EPR**

Abbreviation for Ethylene Propylene Rubber.

**Ethylene-Propylene- Rubber**

See → EPDM

**ETSI**

Abbreviation for European Telecommunication Standards Institute. Its duties include developing harmonised standards for an integrated European communication system.

**Explosive atmospheres**

See VDE 0165 Part 1. Cables with a thermoplastic, duroplastic or mineral insulated metal sheath can be used for fixed routing. There may not be any cavities in the core bundle (not hose cable). The extruded embedding material and the fillers, if used (press extruded), must be "non-hygroscopic". Flame retardant in compliance with IEC 60332-1. Cables for mobile and transportable equipment must have connecting cables with an outer sheath made of heavyduty polychloroprene or an equivalent synthetic elastomer or a heavy-duty rubber insulated cable or connecting cables with a comparably robust construction.

**Extension cord**

A mobile cable assembled with a coupling connector and socket. The couplings are integrally moulded onto the cable using thermoplastics and contain protective contacts.

**Extrusion line**

It is powered by a motor and coils through a cylinder in a spiral. The filler is made up of thermoplastic prepared in the form of granules. Granules, i. e. a free-flowing mixture of grains of equal size, are the delivery form of various plastics for cable manufacture; in other words, an extruder is a system in which a continuous supply of granules is heated, compressed, mixed and homogenised.

**F****Farad**

Unit of measurement for electrical capacitance.

**FDDI**

Abbreviation for Fibre Distributed Data Interface. Network type made up of a double ring with a 100 Mbit/s transmission rate and using waveguides as the transmission medium.

**Fibre cover**

Made up of one or more materials and is used to mechanically insulate the fibres and to protect them against damage.

**Fieldbus technology**

Sensors and actuators are conventionally connected to a controller or evaluation unit using an analogue 4 – 20 mA signal. With this technology, a 2-core cable is necessary for each connection between the sensor or actuator and the controller. In addition, an input/output circuit (I/O) must be provided for each sensor and actuator in the controller (normally a PLC or PC). The picture looks very different when using a field bus system. In this case, all devices are connected to a bus cable (2, 4 or 5 cores depending on the field bus system). An interface card is used instead of the input/output circuits. This saves on I/O cards, reduces the space required in the control cabinet and permanently cuts the wiring costs. In conventional systems, information (e. g. measured values or a fault signal) can only be transmitted in one direction and in very limited amounts. This can be from the sensor to the controller or from the controller to the actuator. By contrast, in a field

## Glossary

bus system information can be exchanged bidirectionally via the digital bus. As well as the actual process data such as measured values (e.g. temperature) and control variables (e.g. speed), parameters such as the measuring range, measuring point codes (TAG), filter properties, maintenance or fault signals etc. can be transmitted. The advantages that this brings are obvious. Commissioning and maintenance are simplified and the flexibility of the system (e.g. with central measuring range selection) is improved. This normally also enables cost benefits to be achieved compared to conventional solutions.

**Filler**

Used as a component of insulating and sheathing compounds. The fillers in rubber compounds, for example, mesh directly into the rubber molecules and give them good mechanical abrasion resistance. Important fillers include siliceous chalk, soot and aluminium oxide.

**Filler wire**

Usually a tin-coated copper wire which should have contact with the aluminium layer of the screen along the entire cable length. In order to ensure the filler wire doesn't break when the cable bends, it must lie very loosely (undulating) on the cable core. The filler wire should be able to pass over any possible breaks in the screen.

**Filler, valley sealer**

Filler or support element in individual stranding layers in cables.

**Fire behavior**

Property which describes the behaviour of the cable when on fire (in particular, fire propagation).

**Fire resistant**

Property of materials used for insulation and sheathing that are slow to catch fire when exposed to heat and are self-extinguishing when the heat source is removed (→ hard to inflame).

**Flame retardant**

Thermoplastic and elastomer compounds for insulation and sheathing are influenced by additives so that they are slow to catch fire when heat acts on them.

**Flat cable**

Ribbon cable in which the individual strands are welded together to form a ribbon (often with multiple colours) and normally with small cross-sections (0.08, 0.14 or 0.25). The individual cores can normally be separated. Application: In electronics, for connecting circuit boards.

**Flat type cable**

Several individually insulated conductors in parallel with a sheath for mechanical protection, produced in such a way as to give a rectangular cable cross-section. Used in crane systems (ÖLFLEX® – Crane F).

**Flexibility**

A product (relating to cables in this case) is flexible if it can be moved around without impairing its functionality (e.g. lift cable or robot cable).

**Fluorethylenpropylen (FEP)**

Product from the TEFLON® series. A plastic for high temperatures, with excellent chemical resistance and excellent electrical properties but not economical. TEFLON® is a registered trademark of the company Du Pont de Nemours.

**Foil**

Plastic foil, metal foil and metal clad plastic foil are used for different purposes. Plastic foil provides mechanical protection, e.g. as padding under a screening braid or around the cores below when stripping to protect against incisions. Metal foil is used for electrical screening.

**Frequency**

Number of changes of polarity in an alternating current per second; the unit of measure is Hertz (Hz).

**FTP**

Abbreviation for Foil Shielded Twisted Pairs; in these cables the twisted pairs of cores are screened by a common plastic clad aluminium foil.

**Full duplex**

Full duplex transmission allows simultaneous transmission and reception of signals.

**G****GAEB**

Abbreviation for "Gemeinsamer Ausschuss Elektronik im Bauwesen" [Joint Committee for Electronics in Construction] and describes the data format in which engineering and planning offices create specifications and tenders for industry, infrastructure and building services projects. Lapp tender texts in the common formats GAEB 90 (\*.d81) and GAEB 2000 (\*.p81) are available for download from [www.lappkabel.de](http://www.lappkabel.de).

**General cable tie**

General cable ties are coloured or transparent fixing elements (normally made of nylon) that can be used to secure individual wires or cables in a bundle. The teeth on the inside provide a permanent connection.

**Glass fibre cable**

Used to transmit data. They use light as the transmission medium rather than electric current. Dielectric waveguide, used to transmit signals using light waves. Also known as a fibre.

**GOST**

Standards institute in Russia (comparable with the VDE in Germany, British Standards in the UK, IMQ in Italy and UTE in France)

**Gradient fibre**

Light waveguide with a gradient profile, i. e. with a → refraction index profile that constantly changes across the cross-sectional area of the light waveguide. The profile of standard gradient fibres can be approximated as  $1 < g < 3$  by an exponent profile.

**Grid**

The exact spacing between the conductors in a ribbon cable.

**Gusset**

Cavities that inevitably occur between the cores twisted into a strand due to their circular cross-section. When using sector-shaped conductors, practically no gussets occur.

**H****Halogen free**

Refers to materials that do not contain any halogens such as chlorine (Cl), bromine (Br), iodine (I) or fluorine (F).

**HAR**

Quality mark for a harmonised cable complying with CENELEC HD standards, issued only by HAR testing bodies, e.g. VDE, USE, BASEC, USE, SEV.

**Hardness**

See → Shore

**Harmonizing key**

→ See Table T6.

**HD**

Abbreviation for harmonisation document. In the EU, HDs have the status of a harmonised European standard (like ENs).

**Heat of combustion**

The temperature or heat released when a cable is burned (see → Thermal load).

**Hertz**

Unit of measure for the frequency of an alternating current (in Germany 50 Hz for mains cables).

**Hood**

The upper section of the housing can have a straight or lateral cable outlet. The hood can be freely combined with an externally mounted, surface mounted or coupling housing.

**Hood termination**

The insides of the end plates are coated with a thermoplastic adhesive. The end plates are used for sealing pressure monitored, moisture-resistant cables and tubes with a diameter of 5 to 10 mm.

**Hybrid cable**

Cable with different transmission media, such as light waveguide, copper conductor, HF conductor.

**I****ICEA**

Abbreviation for Insulated Cable Engineers' Association. A sub-committee of NEMA – USA.

**IEC**

Abbreviation for International Electrotechnical Commission. Standards committee for international standardisation of electrical materials and international commission for standardisation in the electrical engineering and electronics sector.

**Imprinting**

Marking of cables using a relief imprint (no colour). This technique is only possible when the sheath is warm as the marking is impressed into the material positively or negatively.

**Industrial machinery for USA**

The following general rules apply to construction and operation of machinery in the USA: The machinery must comply with federal safety laws issued by the Occupational Safety and Health Administration (O.S.H.A.: [www.osha.gov](http://www.osha.gov)) and the applicable national codes (statutory regulations) at the installation location. Machinery is only classed as safe if it has been designed and manufactured in compliance with applicable standards (NFPA 70, NFPA 79....) and its safety has been tested and declared safe by a Nationally Recognized Testing Laboratory (N.R.T.L., [www.osha.gov/dts/otpca/nrtl/](http://www.osha.gov/dts/otpca/nrtl/)).

**Industry 4.0**

This term refers to the extensive networking of industry, from office to field level. In factories – but also for example in logistics – machinery, workpieces and office infrastructure are networked together and permanently exchange information. For this purpose, systems, machinery and objects are fitted with sensors and controls and are interconnected to form a so-called cyber-physical system (CPS). A CPS can also receive additional information from the internet. Industrial processes should thus become more flexible and efficient in future. Machinery, for example, is expected to switch between different tasks fully automatically and almost in real time, or help installation engineers to carry out their work flexibly. This means that customised special productions should be possible without high additional costs. We at the Lapp Group want to help our customers to implement their own Smart Factory. This is why we provide them with solutions which enable extensive data networking within production. We make our products intelligent so that our customers can increase the productivity and flexibility of their productions. We also use Industry 4.0 technology in our own value-creation processes – for example within logistics and production – in order to increase our efficiency and to offer our customers the best possible service.

**Insertion loss, insertion attenuation**

Attenuation caused by inserting an optical component into an optical transmission system. The attenuation that is caused in an optical transmission system by inserting an optical component, e.g. a plug or a → coupler.

**Insulation**

Preventing the passage of electrical currents using non-conductive materials. Materials are non-conductive (suitable for use as insulators) if they do not contain conduction electrons or only isolated electrons. These materials include various plastics, rubber, ceramic, porcelain, glass, paper, resin. (Insulation in capacitors and radio frequency cables is referred to as → dielectric).

**Insulation resistance**

The electrical resistance of a non-metallic material between two electrodes, measured using a DC voltage.

**Intensity**

Power density at a surface through which radiation penetrates, e.g. at the radiating surface of a light source or at the cross-sectional area of a light waveguide (standard unit  $W/cm^2$ ).

**Interactive**

Property of two systems to influence one another in order to exchange messages.

**Interbus**

At the lowest level of the automation hierarchy model, there are particular requirements for a communication system. Connection costs, real time capability and short cycle times are of crucial importance. The data to be transmitted, normally measured and control values, are typically only a few bits in length. INTERBUS-S, standardised in DIN E 19258, has a summation frame protocol and is designed specifically to meet these requirements. With a clock speed of 500 Kbit/s and a net data rate of approx. 50%, even time-critical controllers can be implemented using a bus system. With around 1,000,000 INTERBUS-S nodes in use worldwide, the system is one of the leading field bus systems. In some areas, e.g. networking of frequency converters and drive technology, it is actually the market leader.



## Glossary

**Interface**

Connecting point in a technical system that has particular properties enabling connection to another technical system.

**Internet**

Worldwide virtual data network.

**Intrinsically safe**

Electrical installation that is, in its own right, safe from the point of view of risk of explosion, i. e. no ignitable sparks can occur in the installation. All parts, including the cables, should be blue (RAL 5015) – e. g. at Lapp ÖLFLEX® EB, ÖLFLEX® EB CY, UNITRONIC® EB CY).

**IP Code**

A system of designations used to indicate the degree of protection provided by a housing against access to hazardous components, ingress of solid foreign bodies and/or water and to provide additional information relating to this protection (e. g. EN 602529).

**ISDN**

Abbreviation for Integrated Services Digital Network. Integrated service digital telecommunications network. Suitable for transmission of voice, text, images and data.

**ISO**

Abbreviation for International Organisation for Standardisation. Committee that develops internationally recognised standards.

**J****Joint**

Interconnection point between (data) transmission paths.

**K****Kink**

The cable has been forcefully bend over a sharp edge, causing plastic deformation of the individual strands and wires. This results in grooves that promote breakages on the individual wires.

**kV**

Abbreviation for Kilovolts. 1 kilovolt equals 1,000 Volts.

**L****LAN**

Abbreviation for Local Area Network. Physically limited network used for communication within a building or company.

**Laser-printer, ink-jet printer**

With this method, small production batches can be printed at low cost as there is no need for a print wheel to be made. The downside, however, is that it produces a print result of lesser quality.

**Laying temperature**

When installed, the cable temperature should not be below +3 °C. Cables with sheathing and insulation are sensitive to bending and impacts when exposed to cold.

**Leading protective ground**

The PE contact in a plug establishes the first contact and is the last to disconnect, and is marked as the protective earth symbol.

**Leakage current**

Leakage current is the current that flows via the functional insulation of a consumable to earth or an external conductive part. It can appear as a pure active current or as an active current with a capacitive value. In VDE 0700-1 “Household and Similar Electrical Appliances – Safety”, the following leakage currents are specified:

- For devices of protection class 0 and 0I 0.5 mA
- For portable devices of protection class I 0.75 mA
- For non-portable motorised equipment of protection class I 3.5 mA
- For non-portable heating equipment of protection class I 0.75 mA or 0.75 mA/kW, max. 5 mA
- For devices of protection class II 0.25 mA
- For devices of protection class III 0.5 mA

When taking leakage currents for an entire system (also important for residual current protective equipment) into consideration, both the leakage current (residual current) of the cables and the leakage current of the consumable must be accounted for.

**Length of lay, length of twist**

The twist length is the distance (measured in the direction of the longitudinal axis) covered by the elements of a layer after being twisted by 360°, e. g. 40 mm. It is usual to specify the number of twists per metre, e. g. 40 mm = 25 twists.

**Lever series**

To lock the EPIC® rectangular connector, there are single or central levers available for the one-handed locking of upper and lower housing sections, the double levers are used for the two-hand locking.

**Li2YCY**

Polyethylene screened individual cores.

**Li5YCY**

TEFLON® PTFE screened individual cores. TEFLON® is a brand name of the company DuPont de Nemours.

**Lift cable**

Lift cables are control cables with strain relief used for lifts, gantry cranes, teach pads, etc. (e. g. ÖLFLEX® LIFT, ÖLFLEX® CRANE at Lapp).

**Link**

A link represents a complete section of cabling from the floor distribution board to the data terminal input. It includes all connecting sockets and plugs, installation cables and patch cables. The quality of a link is defined using classes, the quality of the individual components using categories.

**LiY**

Individual cores (strand) predominantly 0.14 and 0.25 mm<sup>2</sup> LiYv: Tin plated individual cores (strand).

**LiYCY**

Individual cores with copper screening (C stands for copper).

**LiYY**

Multi-core stranded cable (ÖLFLEX®, UNITRONIC®).

**Longitudinal water tightness**

Achieved by filling the gaps between the core arrangements with various kinds of filler (e. g. petroleum jelly filling).

**Loss factor**

The loss factor depends on frequency, temperature and capacitance. This factor is the ratio of effective power to idle power with a sinusoid voltage.

**M****Machine set-up for core insulation – Extrusion**

The following single units have mainly conventional extrusion lines for core and insulating covers: Overend take-off, wire straightener, wire pre-heater, capacitance bridge, extruder, embossing or marking device, cooling section, eccentricity measuring device, diameter scanner, high-voltage testing device, double roller haul-off machine, accumulator and double bobbin winder.

**Master**

Central bus subscriber that controls bus access. All other subscribers operate as slaves (see → ASI).

**Master-Slave principle**

The master element issues instructions and the slave elements follow them. With decentralised bus control, for example, an automation device acts as the master element and issues access rights for the other components (slave elements – see → ASI).

**Material dispersion**

With a non-monochromatic light source, the dispersion that results from the dependency of a material's refraction index  $n$  on the wavelength and from the light velocity in that material.

**Mica powder**

Natural mineral product that is pulverised and used as a separating agent and lubricant either on its own or mixed with talcum. In the form of foils and strips, mica is also used for insulating conductors exposed to high thermal loads.

**Microbending**

Bending of fibres that have local axial deviations of a few micrometers and physical wavelengths of a few millimetres, for example. Microbending causes light losses and thus increases the → attenuation of the fibres.

**Mode**

Discrete light wave forms that can propagate in a light waveguide.

**Mode dispersion**

The signal distortion in a light waveguide caused by overlapping modes with different running times.

**Modem**

Device for adapting digitally operating data stations for analogue telecommunications channels.

**Modulation**

A network signal to be transmitted is modified by a carrier signal.

**Monomode fibre**

Light waveguide with small → core diameter in which only one mode, the basic mode, can be propagated. This fibre type is particularly suitable for broadband transmission over long distances as its → transmission bandwidth is only limited by → chromatic dispersion.

**Motor cable**

Motor cables are supply cables for electric motors (e.g. ÖLFLEX® SERVO FD at Lapp).

**Multimode fibre**

Light waveguide whose core diameter is large compared to the light wavelength and in which a large number of modes can therefore be propagated. A gradient profile (→ gradient fibre) allows the → mode dispersion to be kept low, allowing large transmission bandwidths to be achieved, although these can be exceeded using → monomode fibres.

**Mutual capacity, operating capacity**

For four, pair or phantom cable circuits: the capacity between the cores a and b of these cable circuits. With one core: the capacity between a conductor and all remaining interconnected conductors of a cable.

**N****Nanosecond**

Billionth of a second. Time unit for the internal switching speed of computers.

**Near-end crosstalk, far end crosstalk**

In multi-pair data cables, the field effect of the signal transmission for one pair induces an interference signal in adjacent pairs. Crosstalk does not depend on the length and is greater as the frequency increases. The difference between the effective signal and the interference signal measurable at the adjacent pair is referred to as crosstalk attenuation and is specified in dB. We differentiate between: NEXT (Near End Crosstalk) and FEXT (Far End Crosstalk).

**NEC**

Abbreviation for National Electrical Code. Group of standards for the safety of electrical equipment, e.g. electrical equipment installations in the low voltage range up to 600 V – USA.

**NEMA**

Abbreviation for National Electrical Manufacturers' Association. The NEMA works in conjunction with the IECA to produce and promote standards for cables – Washington D.C., USA.

**NEMCO**

Norwegian testing body, similar to the VDE in Germany.

**Neoprene®**

Trade name of the company DuPont de Nemours for synthetic chloroprene rubber.

**Network**

Cable network used to create connections between data stations.

**Neutral conductor**

Neutral conductors, where used, may not have a smaller cross-section than the outer conductor, see VDE 0100 Part 520, Section 524.2.

**NFPA**

Abbreviation for National Fire Protection Association. Issuer of NFPA standards and NEC – USA.

**NFPA 79**

NFPA 79 is the section of the National Electric Code (NEC®) which includes the requirements for electrical wiring of industrial machinery. NFPA 79 generally applies to electrical components used in individual

## Glossary

machines and machine configurations operating together (machine groups). The National Fire Protection Association ([www.nfpa.org](http://www.nfpa.org)) is the issuer of this important standard. NFPA 79 applies to all electrical and electronic components in machinery with a maximum nominal voltage of 600 V. NFPA 79 was revised in 2006. The aim of this revision was to harmonise NFPA 79 with its European counterpart IEC/EN 60204.

**Nominal voltage**

The nominal voltage is the voltage to which the structure of the cable relates in terms of its electrical properties. The nominal voltage is expressed by specifying two AC voltages  $U_0/U$  in V :  $U_0$  = Effective value between an outer conductor and earth (non-insulating environment).  $U$  = Effective value between two outer conductors in a multi-core cable or a system of single-core cables.

**Norms**

The German Federal Supreme Court gave the following statement on engineering rules on 14.05.1998: Recognised engineering rules are those that are recognised as correct by the theory and have demonstrated their effectiveness in practice. By contrast, according to the BGH DIN standards are only private engineering regulations with the nature of recommendations, which do reflect the recognised engineering rules but lag behind them or could actually be incorrect.

**Numeral identification**

See → Colour codes/Numerical identification

**Numerical aperture**

Sine of the maximum possible launch angle of a light waveguide.

**NYM**

These cables (standard cable for fixed installation) are designed for installation above, on and below ground, in dry, damp and wet areas and within walls and concrete, except for direct embedding in shaken, vibrated or compressed concrete.

**O****Ohmic resistance**

The resistance per unit length records the losses in the metallic conductors. The conductor dimensions, material and the temperature determine the DC resistance  $R_0$ . Because of skin effect, the conductor resistance increases as the frequency rises. It also shows a linear increase as the cable length increases.

**ÖNORM-Format**

Austrian format for invitations to tender.

**Operating supplies**

All objects needed when using electrical energy, e.g. switch, motors and cables.

**Operating temperature range**

The range between the lower (lowest permissible temperature) and upper (highest permissible temperature) limit temperature that may be utilised by the operator.

**Operating voltage**

The actual voltage in a grid. This can fluctuate by up to 5%, caused by the alternating use of consumers.

**Opposite direction of lay**

See → Stranding

**Order length**

The length of cable ordered by the customer.

**OTDR**

Measuring method for testing glass fibres for faults or transmission quality. OTDR stands for Optical Time Domain Reflectometer.

**Outdoor cable**

Cables suitable for outdoor laying in the ground, in pipes, in the air, in rivers and lakes, in mines, on ships, for interior spaces or the most varied of industrial plants, etc. The design of the cable depends on the electrical, thermal, mechanical and chemical laying and operating conditions.

**Outer conductor**

Conductors that connect current sources with consumables. For example, C1, C2 or C3 in a three-phase system but not conductors come from the midpoint or neutral point. The conductor is arranged concentrically around the inner conductor of a coaxial pair.

**Outer diameter**

Diameter of the smallest circle that will enclose the surface of the sheath.

**Outer sheath**

Enclosed cover for protection of the elements underneath.

**Outer sheath**

On the one hand, refers to the outer covering of a cable. On the other hand, it is the entire optically transparent material in a light waveguide, excluding the core.

**Overcurrent**

If the permitted ampacity is exceeded, this is referred to as overcurrent.

**Overcurrent protection devices**

Overcurrent protection devices break the current supply in case of overcurrent. They include overcurrent protective switches and safety fuses.

**Oxygen index**

Percentage oxygen content in the ambient air that is necessary to maintain combustion after removal of a flame. As the natural oxygen content in the air is approx. 23%, materials with an oxygen index of greater than 24 are generally self-extinguishing when the flame is removed. This term comes up primarily in connection with halogen free cables.

**P****Pad**

Non-conductive element made of insulating material (PVC) or textile, used to fill up gaps in a strand group. Also known as a dummy core.

**Pair**

Two stranded → cores within a larger strand group (see → Element). The inductive coupling of two parallel conductors is reduced by twisting the two cores together as tightly as possible (→ twist length).

**Panel mount base**

Panel mount bases are designed for the feeding through of cables from below. The panel mount base is mounted to control cabinet walls for connecting control or power cables.

**Patch cable**

Patch cable complying with EN 50173/ISO IEC 11801 is used to provide a flexible connection between ports in patch fields and the connection to telecommunication sockets.

**Patch field**

A patch field is the switching device that is used to set up, establish and route connections.

**PE**

Abbreviation for polyethylene.

**Photodiode**

Semiconductor diode that absorbs light and feeds the charged particles released to an external circuit as a photoelectric current. A distinction is made between PIN photodiodes and avalanche photodiodes.

**Photovoltaic**

Photovoltaics refers to the direct conversion of solar energy into electrical energy using solar cells. Photovoltaics is a branch of solar technology, which includes other technical uses of solar energy.

**Pigtail**

Short part of a fibre optic cable on a laser diode or connector. The pigtail is the coupling link between a component and transmission fibre and is permanently fixed to the component.

**PiMF**

Abbreviation for pairs in metal foil.

**Pollution level**

Numerical value specifying the anticipated pollution of the micro-environment. Pollution levels 1, 2 and 3 are used. The pollution level is used to assign air gaps and creep distances. In industrial environments, the pollution level is typically 3.

**Polyamide**

Polyamide is a polymer. Polyamide is cold resistant with impact loads, impact resistant and abrasion resistant.

**Polycarbonate**

The prerequisite for resistance is that no aggressive components such as emollients (PVC) or solvents attach the polycarbonate. The material swells up, which can lead to stress cracks.

**Polychloroprene-rubber**

Synthetic rubber is resistant to solvents, has very good strength properties and is flame resistant, however very expensive (high-quality rubber cables, Pattex glue).

**Polyethylene**

Polyethylene is a halogen-free plastic, but is highly flammable. By adding additional materials, PE can be made flame retardant and smokeless.

**Polyuretane**

Extremely impact resistant, difficult to strip, strong reset forces. (PUR, 11Y, Q).

**Polyvinylchloride**

Polyvinylchloride is a halogenated plastic. The halogens are chlorine, bromine, fluorine, iodine and astatine. Chlorine and fluorine are used to make plastics flame retardant and more resistant to external influences. Cables with PVC sheathing are flame retardant. Halogenated

plastics produce highly toxic gases when they burn, which form aggressive acids when they mix with extinguishing water and can, in turn, cause extremely severe corrosion damage.

**Power dissipation factor**

Power that is converted into heat or other energy losses.

**Preform**

Glass rod from which the glass fibres for light waveguides are drawn. When drawing the glass fibres, the ratio of core glass to shell glass is maintained.

**Print wheel**

This procedure is generally only a cost-effective option for average or large batches as a new print wheel is required for every change made to the print. Print wheels can, however, be used for geometrical logos and inverse printing. Print wheel results are also relatively easy to remove and wipe away.

**PROFIBUS**

The PROFIBUS network is based on the principle of master-slave communication. A central controller – the field bus master – cyclically reads the information from the field devices – the field bus slaves – and writes their output values. In a PROFIBUS DP network, a high-speed transmission rate of up to 12 Mbit/s is possible. It is based on the European standard EN 50170.

**Protective conductor**

(Symbol PE) A conductor that is necessary for certain protective measures against shock currents to create the electrical connection to subsequent parts. The protective conductor is marked in green/yellow (GNYE) in cables.

**PTFE**

Abbreviation for polytetrafluoroethylene, TEFLON® plastic (PTFE); a trade name of the company Du Pont de Nemours.

**PUR**

Abbreviation for polyurethane; a ductile, abrasion resistant thermoplastic alternative to rubber, e.g. in ÖLFLEX® 400P, ÖLFLEX® 540P.

**PVC**

Abbreviation for polyvinylchloride.

**PVC-powder additive**

Additives are added to PVC mixtures as matting agents, lubricants, colour pigments, wax for smooth surfaces.

**Q****Quad**

Stranding type in which the four individual cores are twisted into a quad (telecommunications cables).

**R****RAL**

The RAL colours with four-digit numbers have been a yardstick in colouring for more than 70 years. The collection of colours currently includes more than 200 colours. The basic collection for mat shades is the RAL 840-HR register. The collection for gloss shades is the RAL 841-GL register. The basic collections are continuously updated in line with the requirements of industry. These collections cover a wide range

## Glossary

of applications. The registers provide a colour template for designs, but also include safety and signal colours and comply with the colour specifications in DIN standards.

**Rated current**

Current determined by the manufacturer, primarily at an ambient temperature of 40°C, which the connector can carry on a permanent basis and which simultaneously flows through all contacts which are connected to the largest possible conductor. In the process, not exceeding the upper limit temperature.

**Rated voltage**

Value of a voltage, measured according to the connector assembly and referring to specific operating conditions.

**REACH**

REACH directive (EC) No. 1907/2006 on registration, evaluation, authorisation and restriction of chemical substances. With the REACH directive, the EU created a harmonised system for the registration, evaluation, authorisation and restriction of chemicals – referred to as REACH for short. The purpose of the directive is to ensure a high level of protection for human health and the environment.

**Receiver sensitivity**

The light output required by the receiver for low interference signal transmission. For digital signal transmission, the average light output (in W or dBm) required to achieve a bit error rate of  $10^{-9}$  is normally specified.

**Receiver, optical**

Assembly for converting optical signals into electrical signals. It consists of a photodiode with a connecting fibre and plug and a low-noise amplifier and electronic signal processing circuits. Where possible, the main components of the receiver are normally combined into a compact sub-unit known as the reception module.

**Reel**

To keep setup times and transport costs down, the cable industry tries to supply large cables and long cable lengths on reels. In addition, this saves on connecting points and the associated fittings with longer cable lengths. The length supplied is limited by various factors, including the tensile strength and flexibility of the cable and the mass or cable volume. There are a large number of different reel sizes in the cable industry.

**Reel size choice**

Most winding systems in the cable industry now have tables showing the capacity and the product lengths and bending radii that can be wound, ensuring that the correct choice of reel can be made.

**Reel structure**

Reels consist of a circular core, which is bounded on both sides by flanges of larger diameter. The flange diameter is also the nominal size of the reel. Steel sockets are fitted in the centre of the reel flanges to hold the drive axes or barrels. These prevent damage to the reel flanges when winding and unwinding. On one reel flange (up to 1800 mm nominal size) there is a through hole for inserting one end of the cable; on larger reels, an inlet spiral is fitted to hold the end of the cable. This means that both ends of the wound length of cable are accessible and final inspection of the cable length can be carried out. Shipping reels are normally made of pine or spruce wood.

**Reeling**

This refers to the ability of cables to withstand constant winding and unwinding over a long period of time without sustaining damage. For mobile consumers (e.g. a crane), the cable length required for the different working positions is carried on a reel. Constant winding and unwinding makes high demands on the cable construction, which means that only special cables are suitable.

**Reference earth**

Part of earth considered as conductive that lies outside the zone of influence of any earthing arrangement.

**Reflexion**

Signal reflections occur at coupling points between components such as plugs and cables and, in copper networks, can be attributed to different characteristic impedances: In cases of extreme differences in characteristic impedance, this leads to signal distortion.

**Refractive index**

The factor  $n$ , by which the light velocity in an optically dense medium (e.g. glass) is smaller than in free space. More accurate term: Phase refraction index.

**Refractive index distribution, index profile**

Progression of the refractive index  $n$  across the cross-sectional area of a fibre optic cable.

**Resistance**

Resistance = Voltage/Current: "Obstruction" of the current flow, expressed in Ohm. The lower the cross-section, the greater the resistance. The more Ohms, the weaker the current flow. See also → Corrosion resistance, ozone resistance, radiation-resistant cables.

**Resistant**

The cable has a resistance to certain substances, i. e. they do not destroy it.

**Retention of cable glands**

The ability of a cable gland to limit the movement of a secured cable under static load.

**RFID**

RFID stands for Radio Frequency Identification and means that data can be transmitted with no contact or line of sight.

**RJ45**

An RJ45 connection is an eight-pin miniature connector system, e.g. for patch cables. The connector is standardised to comply with the ISO/IEC 11801 cabling standard.

**RoHS**

The EC directive 2011/65/EU for limiting the use of certain hazardous substances in electrical and electronic equipment governs the use of hazardous substances in equipment and components. Along with the applicable implementation in national law are referred to by the abbreviation RoHS (Restriction of (the use of certain) hazardous substances).

**Route warning tape**

In excavations, the greatest damage occurs on cables already laid in the ground. For this reason, route warning tapes are laid around 40 cm above the laid cables, which draws the attention of excavator drivers to the cable route when excavating.

**Rubber insulated cable**

Cable with rubber sheathing. For example, H05 RR/RN, H07 RR/RN at Lapp (previously: NMHöu/NSHöu).

**S**

**S-FTP**

The structure of shielded foil and braid twisted pair (S-FTP) cables is made up of a foil screen over all pairs, over which an additional screen of tin plated copper braiding is placed.

**Same direction of lay**

See → Stranding

**Sample test, screening**

Testing of production lengths or production parts in relation to production quantity.

**Screened cable**

Cables with screen in outer layer, over the cores or in double sheath. The screen can be made from braiding, foil or solid metal. With the foil version, a drain wire from the filler strand is used. Identified with a “C”, and with “CY” for additional PVC sheathing if copper braiding used.

**Self-extinguishing**

Property of a (synthetic) material to extinguish itself when a flame is removed from the material.

**SEMCO**

Swedish testing body, similar to the VDE.

**Semi-conductor**

Materials whose electrical conductivity depends on various influences, e.g. current direction, temperature, incidence of light. By mixing with conductive materials (carbon, graphite), insulating materials (PVC) can be modified to give semiconductor properties.

**Semiconductor bandgap**

Energetic distance between the valence band and the conduction band of a semiconductor.

**Separating layer**

Foils positioned between the individual layers on the cable core to prevent harmful influences.

**Separator**

Polyethylene terephthalate foils are used in the cable industry as insulating foils. They have excellent dielectric and mechanical properties. They are used as separating foils in PVC insulated cables.

**SEV**

Abbreviation for Schweizerischer Elektrotechnischer Verein [Swiss Electrical Engineering Association], testing body similar to the VDE.

**Sheath print**

The customer receives information about the printing of cable sheaths regarding design, testing- and operation- related markings, colour codes, customer-specific markings and manufacturer markings. The prints are created using laser and ink-jet printers or print wheels. They are, however, of inferior quality to the embossed letters as they wear away relatively quickly or can be rubbed off.

**Sheathed cable**

Designation for NYM and other sheathed cables.

**Shielding**

A cover made of conductive material that is placed over an individual core, a group of cores or all cores in a cable. Screening is used to protect the cable against penetration by electrical and/or magnetic fields and to prevent electrical interference from escaping from a cable. Screening takes various forms: a copper wire braid or → covering, copper or aluminium foil wrapping or enclosed tubular copper or aluminium bodies. For the screening, the covering density is defined in percent, relative to the area located below the braiding.

**Shipping reels**

The correct choice of shipping reel is a crucial factor in the quality of a cable from winding to installation. The reel size and thus the winding volume is determined by the diameter and length of the material to be wound and the mass of the cable. The delivery agreement between the manufacturer and the customer is determined by the diameter and mass from the production design and the product length. It is critical that the bending radius of the cable, which determines the size of the reel core, is maintained.

**Shore**

Hardness of the cable sheath. The definition is: The resistance to penetration by another body, which is measured without exception before the occurrence of damage. Shore A test is used for soft plastics, Shore D test for harder plastics.

**SIA**

Swiss format for invitations to tender.

**Signal cable**

Signal cables are used to control the accuracy and precision of electric motors. (For example, ÖLFLEX® connecting and control cables, ÖLFLEX® SERVO, UNITRONIC® data cables at Lapp).

**Single conductor**

Conductor which, unlike a strand, consists of just a single wire. A rigid wire is suitable for fixed installation.

**Single wire**

See → Cable, single-wire.

**Single-mode fibre**

Waveguide in which only a single mode can be propagated at the operating wavelength.

**Single-wired conductor**

A single-wire conductor consists of just one wire.

**Skin effect**

The higher the frequency of the effective or interference signal, the more the high frequency current is pushed towards the surface. The skin effect is the property of an alternating or high frequency current in a conductor to move towards the surface due to field line induction processes. This limits the penetration depth of an external electromagnetic field into the object and thus its effectiveness inside.

**Slave**

Subscriber in a network that can only communicate in data exchange when addressed by the master (see → ASI).

**SNA**

Abbreviation for System Network Architecture. Network architecture concept that enables data to be transmitted between different types of computer.

**Specific volume resistance**

The specific volume resistance [Ohm m] results from the measured volume resistance [Ohm] multiplied by the measuring area [m<sup>2</sup>] divided by the sample length [m]. VDE 0207, Part 4 and VDE 0303, Part 30.

**Speed of signal propagation**

Signals propagate in all cables at a speed that is always lower than the speed of light. The NVP value specifies the ratio of this speed to the propagation speed of light.

**Spiral cable**

Flexible cables that are formed into a "spiral spring". The cable is wound onto a mandrel. The addition of heat (tempering) reduces the tensions in the plastic caused by the winding process, which means that the cable retains the spiral shape in a stress free condition after cooling. When expanded, the spiral extends and, when the force is no longer acting upon it, returns to its original condition.

**Splice**

Connection of two light waveguides created by melting their ends. Fixed connection between two light waveguides. A distinction is made between bonded and welded splices (→ Welded light waveguide connection).

**Stabiliser**

- a) A component used in some plastics to obtain certain physical and chemical properties during processing and the usage time.
- b) Additives (e. g. lead, tin or cadmium salts) for plastics. They delay or counteract the decomposition and aging process that occurs when exposed to thermal loads.

**Step index fibre**

Light waveguide with a stepped profile, i. e. with a refraction index profile that is characterised by a constant refraction index within the core and a sharp decline in the refraction index at the boundary of the core and the sheath.

**STP**

In twisted pair cables with foil screening of the individual pairs and an overall braided screening (STP = Individually Screened Foil and Braid Twisted Pair), the cores are twisted in pairs and individually screened with a metallic foil, to achieve exceptionally low near end crosstalk. An additional overall screen is then added.

**Strain relief of cable glands**

The ability of a cable gland to limit the movement of a secured cable under a dynamic and torsional load.

**Strand**

The individual wires in a conductor combined into a bundle; the number and individual wire thickness varies according to the desired cross-section. The individual wires are either bundled by stranding or by twisting. Individual cores, e. g. LiY, H05V-K, H07V-K

**Stranding**

The individual elements of cables are wound parallel around a central element. The elements can be the individual wires in a conductor or the cores or groups of cores themselves. Depending on requirements, the elements are twisted or stranded with different twist lengths. This is done in concentric layers, one on top of another, according to the number of elements. If the subsequent layer of the element is stranded in the same direction as the preceding layer, this is known as parallel

lay stranding, as opposed to cross lay (reversed lay) stranding, where each subsequent layer is stranded in the opposite direction to the previous one. The stranding has an "S" lay if the stranding direction runs to the left as an observer looks at it, or a "Z" lay if the stranding runs to the right: A distinction is also made between stranding techniques with and without back twist.

**Stranding machine, twister**

Stranding machines are used to strand the components of a cable. Different types of stranding machines include single twist, double twist, multiple twist, high-speed, basket, SZ and universal stranding machines.

**Strip line**

Strip lines are used as fixed signal transmission cables in control and steering technology, measurement and data processing technology. They can contain up to 40 cores which lie parallel to each as a result of the welded insulating cover. Single cores can be separated from the strip line, without causing any damage to the insulating cover. Their flat arrangement means they can be guided through narrow slots or openings. They are fixed in place using brackets or adhesive.

**Styrol**

Is used as an insulating material for telecommunication cables (→ Dielectric). It has a good strength value, however is not resistant to solvents.

**Super conduction**

The property of metals and oxides to lose their electrical resistance due to cooling when a so-called transition temperature is reached.

**Supporting cable**

Because of their small dimensions, they are used for installation in small and miniature equipment.

**Supporting core**

Strands of hemp, steel or plastic are incorporated into the construction as supporting elements or to absorb tensile forces. In most cases, the carrier organ is positioned next to the core, i. e. in the middle of cables. However, there are also constructions in which one or two steel strands are positioned outside the bunch of cores but below a shared outer sheath.

**Surface mount base**

Lower housing sections with an enclosed base are referred to as surface-mounted. Surface mounted bases are available with a cable outlet on the right-hand side or on both sides of the housing.

**Synthetic india rubber**

Butyl synthetic rubber has a high resistance to ageing and lower gas permeability. It is highly resistant to chemicals.

**T****T-Coupler**

Optical component for combining the light from two light waveguides (see also → Coupler). Conversely, it can also be used to split the light output in one light waveguide into two outgoing light waveguides.

**Take-up system**

Sheathed cables are generally wrapped around wooden or process drums. The most common types of winding devices are bottom roller

winders, axial winders and barrel winders. Depending on their flexural loading, tensile strain, torsional strain, design, storage, mechanical load and transport, cables are individually wrapped and delivered on drums, bobbins, in coils or barrels.

**Talcum**

Talcum is a mineral, slightly fatty natural product. It is used in powder form as a separating agent or lubricant. It is also used when mixed with mica. When sheathing a strand of cores, to prevent the sheathing material that is applied when hot from sticking to the core insulation, the strand is dusted with talcum first. As well as the separating effect, this greatly reduces the friction between the individual elements of the cable and thus promotes flexibility and stripping.

**Tape**

The stranded assembly, comprising several cores, is surrounded by the tape. Generally, the tape is made from one or several synthetic or paper band layers.

**Tape wrapping**

Cables can be wrapped in a variety of different insulating materials. The tape is always helically wrapped around the cable as the taping machine operates in a rotary motion and the pull-off movement is always in a longitudinal direction. Several layers of paper or plastic tape are wrapped around the cable stranding or the cable core.

**TDR**

The Time Domain Reflectometry measuring method is used to locate faults in copper cables. The running time and shape of a reflected pulse enables the possible location of the fault to be determined relatively accurately. For PVC insulated cores, this value is approx. 0.541.

**Telephone cord**

Cables to or in telecommunication devices which have a high flexural loading or flexibility.

**Temperature range**

If the specified minimum temperature range is not reached, no mechanical forces may act on the cable as otherwise the insulation will break (rigidity of polymer chains). If the maximum temperature is exceeded, the insulation begins to melt (decomposition of polymer chains). Important! With every change of temperature, the resistance of the conductor also changes.

**Tensile load**

The maximum force with which a cable can be loaded under defined conditions.

**Test voltage**

The voltage applied to a test specimen to demonstrate a particular electrical strength.

**Tex**

The fineness of fibres is determined using the “fineness in Tex” system. This is a physical variable. 1 Tex = a fibre that has a mass of 1g at a length of 1000 m. Example: Polyester silk has a rating of 7 Tex = 1000 m of silk weighs 7 g.

**Thermal splice**

A thermal splice is a connection between light waveguides created by fusing the ends of the conductors.

**Thermoplastics, thermoplastic materials**

Thermoplastics are non-cross linked macromolecular compounds. By heating, it is possible to transfer them repeatedly to a plastic condition. They are primarily used for sheathing and insulation of cables.

**Thomson measuring bridge for resistance measurement**

Primarily used to measure very low resistances. The measuring range is between 10<sup>-6</sup> and one Ohm. It is independent of voltage changes. The measured result is not falsified by the resistance of the measuring lead and other transition resistances (see also → Electrical resistance).

**Tight buffer tube**

Fibre type used in light waveguides, with a solid plastic layer attached directly to the outer glass.

**Tin**

Tin is used for tin plating copper wires.

**Torsion**

Twisting of the cable about the longitudinal axis. VDE0298, Part 300, Section 5.4.4: Flexible cables are not generally intended for torsional loads. In cases where this kind of torsional load cannot be avoided, the construction of the cable and the type of installation must be agreed between the user and the cable manufacturer.

**Tracer thread**

A thread whose structure, colour or colour combination is registered and protected as a trademark by a cable manufacturer. It provides information about the manufacturer of the relevant cables (at Lapp, the colour is ochre yellow).

**Train signal cable**

Designed for voltages up to 600 V. Depending on their purpose, the cores are twisted in fours or layers. They are PE insulated. Because of the strong electromagnetic fields on railways, an effective copper screen and steel tape armouring must be fitted under the outer sheath.

**Transceiver**

This is the active component of an Ethernet LAN for connection of terminals to the electrical bus cable with collision detection and signal adaptation functions. Transceiver is a combination of the words transmitter and receiver. The transceiver performs transmitting, monitoring, reception and interference functions.

**Transfer impedance**

Measure for the quality of the screening, defined as the ratio of the voltage along the screening in the system subject to interference to the current of the system causing the interference. The transfer impedance (coupling resistance) is the key variable for the quality of the screen and depends on the frequency. It is the ratio of the voltage drop along a screen on the side with interference (outside) to the interference current on the other side (inside) of the screen. The coupling resistance is determined by the construction of the screen, the skin effect and the capacitive coupling.

**Transfer rate**

The frequency at which the level of the transmission function of a light waveguide has reduced to half of its value at a frequency of zero, i. e. at which the signal attenuation has increased by 3 dB. As the transmission bandwidth of a light waveguide is approximately the reciprocal of its length (mode mixing), the bandwidth/length product is often specified as a quality feature.



**Transmission function**

A light waveguide acts as a low-pass filter for the signals to be transmitted. While only continuous wave attenuation is important for low signal frequencies (see also → Attenuation), higher signal frequencies are also attenuated as a result of the dispersion in the light waveguide. The transmission function of a light waveguide makes this a complex issue; however the phase distortion is normally so low that it is sufficient to specify the figure for the function.

**Transmitter, optical**

Assembly for converting electrical signals into optical signals. It consists of a transmission diode with connecting fibre, plug and driver amplifier and other electronic circuits. Particularly in laser diodes, a photodiode with control amplifier is required for monitoring and stabilising the radiated power. In many cases, a temperature sensor and a Peltier cooler are also required to stabilise the operating temperature. Where possible, the main components of the transmitter are normally combined into a compact sub-unit known as the transmission module.

**Triaxial cable**

Three-conductor cable that is made up of three connected axes. It consists of one conductor in the centre, the second conductor concentric around the first and the third conductor is isolated from the first two, normally by insulation, a braid and an outer sheath.

**Trimming**

Cables are reeled at standard lengths of, for example, 50 m, 100 m and 500 m on cable drums or coils (single cores) and placed in storage. Should a customer require a length shorter than the standard length, the cable is cut to size. The customer is then charged for this adjustment.

**TTP**

Time Triggered Protocol systems in data technology communicate continuously at predefined time intervals. The bandwidth is 5 Mbit/s asynchronous and 25 Mbit/s synchronous (see also CAN bus system).

**Tube cable**

Coaxial carrier frequency cable with copper inner conductor, PE discs as spacers, a tube-shaped bend copper tape as the outer conductor and a lead or aluminium sheath. They are used as long-distance cables for transmission of TV signals and communications.

**Twist protection**

Protection of light waveguide connectors against twisting. Without this protection, the end faces of the light waveguide would be next to one another and become scratched, significantly increasing attenuation.

**Type test**

Test to be performed periodically that includes all parameters that can influence the result. This test must be performed again if advancements or new developments have been made or the material, technology or design has been changed. The frequency of type tests is set out in legislation, contracts or operationally.

**U****UL**

Abbreviation for Underwriters Laboratories. American testing body, similar to the VDE in Germany.

**UL Approbation for cable glands**

Approval is particularly required if the machinery or system in which the cable gland has been used is to be exported to the USA. Approval

is granted after a test complying with UL 514B and is confirmed by a certificate. The number of this certificate is known as the “file number” (e.g. E 79903).

**UL listing mark for listed cables & wires**

Cables intended for use as fixed wiring in buildings used for residential, commercial or industrial purposes. Listed cables not only have to meet individual UL product standards, but must also comply with the relevant articles of the National Electrical Code (NEC). Listed cables and wires can be used both for factory wiring of electrical equipment, devices, appliances and machines as well as for field wiring of industrial machinery and systems in accordance with NFPA 79. Approval marking on the product: (UL) = UL Listing mark.

**UL recognition mark for AWM cables and wires**

Appliance wiring material or “AWM” comprises cables intended solely for use in factory-wired electrical equipment, devices, appliances, control cabinets and industrial machinery as part of a “listed assembly”. AWM is not intended for field wiring purposes. Cables with UL AWM style labelling must be used for the applications stipulated by the individual style designation.

**Ultraviolet radiation**

This invisible radiation is the section of the electromagnetic spectrum that is next to the visible range (UV radiation).

**Underground cable**

Cables are often designated according to their usage conditions. Underground telecommunication cables include outdoor cables designed to be routed underground.

**Unit conductor of power cables**

Unit conductors are solely used as large conductors, from approx. 400 square millimetres. In order to reduce the large amount of heat required during welding, the bundles are separated into subconductors during assembly and rejoined again in a new stranding procedure.

**Unit cores of fiberoptic cables**

Several coated fibre optic cables lightly undulating and loose in small plastic pipes which are filled with Vaseline or swelling powder.

**Unit of wires**

Bare wire bundles are the initial product for copper strands. They are also used as copper strands in wire screens (non-insulated product).

**UTE**

Abbreviation for Union Technique de l'Electricité (France).

**V****Vagrancy currents**

Currents that do not flow through the electrical mains (L1, L2, L3, N) are referred to as vagrancy currents.

**VDE**

Abbreviation for Verband Deutscher Elektrotechniker e.V., [German Electrical Engineering Federation], VDE testing and certification institute – VDE testing body.

**VDE Approbation for cable glands**

Approval is granted after a test complying with DIN/EN 50262 and is confirmed by an approval certificate,

**VDEW**

Abbreviation for Vereinigung Deutscher Elektrizitätswerke [Association of German Electricity Plants].

**Velocity of propagation**

Transmission speed of the electrical energy in a length of the cable compared to the light speed in free space. Usually expressed as a percentage.

**Volt**

Electrical unit of measure for voltage. 1 Volt is the voltage produced by a current of 1 A with a resistance of 1 Ohm. Voltage = Resistance x Current

**Volt meter**

Instrument for measuring voltage.

**Voltage-level classes**

We refer to four voltage levels. Everything that is < 1000 Volt (< 1 kV) belongs to the low voltage class. Voltages > 1 kV are classed as high voltage. In practice (no statutory specification), the high voltage class is divided into: Medium voltage 1 kV – 30 kV, high voltage 50 kV – 150 kV, extremely high voltage 150 kV – 400 kV. There are several different voltage levels within these classes.

**Voltage, tension**

Electrical unit of measure, measured in Volts, i. e. Voltage = Resistance x Current.

**VSWR (Voltage Standing Wave Ratio)**

Ratio of the transmitted signal voltage to the reflecting signal voltage measured along the transmission path.

**Vulcanising**

Technological process in which temperature, pressure and the use of sulphur compounds, for example, cause the molecules in rubber to form cross linkages. It is this process that gives rubber its permanent elasticity and makes it suitable for industrial use (see → Cross linking).

**W****Wall thickness**

The thickness of the insulation or sheath.

**WAN**

WAN is the abbreviation for Wide Area Network. This is a large network, which can extend worldwide. WANs normally connect LANs (Local Area Networks) via telephone cables. Routers and gateways connect the LANs using different technologies. WAN is a wide area transmission network for connecting distance users to a central network using public cables.

**Watt**

Electrical unit of measure for power  $V \times A = \text{Watts (VA)}$ .

**Wave lengths**

Length of a full wave oscillation (period). In optical signal technology, three wavelength ranges are normally used – 850 nm, 1300 nm and 1550 nm.

**Waveguide dispersion**

The dispersion that occurs with non-monochromatic light sources because the  $a/l$  relationship and, as a result, field distribution and group speeds of the modes in a light waveguide are wave dependent

( $a$  is the core radius,  $l$  is the light wavelength). In practice, waveguide dispersion always acts in conjunction with material dispersion; its overall effect is referred to as chromatic dispersion.

**Wear resistance**

The characteristic of a cable, wire or material to withstand surface wear.

**WEEE directive**

Under electrical and electronic equipment legislation (ElektroG in Germany), the WEEE directive governs the withdrawal of electrical and electronic products.

**Wire drawing**

Cold forming process, in which a sequence of increasingly small drawing dies (carbide cores or diamonds) gradually reduce the cross-section of pressed wire or wire rod.

**Wire termination technique**

Depending on the application, different wire termination methods can be chosen. Where ease of service and maintenance is required, a screw fitting is used. If large numbers of plug connectors with a reliable connection method are required, crimping is the best choice. A cage clamp combines ease of service with reliable wire termination, although the space required per contact for the wire termination is the highest of all the methods described here.

**Wire-wrap connection**

This is an electrical connection made without soldering. The contact is made by wrapping a bare copper wire around a square rod made of bronze, brass or silver under high tension (also known as cold welding).

**Wiring cable**

Cable for wiring equipment, control cabinets etc.

**Wiring system**

Wiring systems are made up of a variety of individual elements, such as cable sheathing, contact plugs, connector shells, seals, fixing elements, etc. In a car, the wiring system connects the electromechanical and electrical components and guarantees the transmission of information from and between the control units, as well as for the supply of energy to the consumers (engine, relay, lighting, etc.).

**Working current, service current**

The maximum permissible current that may be transmitted.

**Woven cable**

Several conductors running parallel which are held together using a thin sheath. See also → Flat cable.

**Z****Zinc**

In the cable industry, galvanised steel tape or steel wire are used as the armouring material (→ Armouring) to protect against corrosion.

**ZVEH**

Abbreviation for Zentralverband der Deutschen Elektrohandwerke e.V. [Central Association of German Electrical Trades] (Germany).

**ZVEI**

Abbreviation for Zentralverband der Elektrotechnik- und Elektronik Industrie e.V. [Central Electrical Engineering and Electronics Industry Association] (Germany).

## The Lapp Group worldwide

**Algeria**

**Cablemat Sarl**  
16 Cité Mimouni Lotissement 18  
Villa N° 14  
Bordj El Kiffan, ALGER  
Tel.: +213 550024331, -661, -404, -331  
Fax: +213 20388220, -212, -010, -39  
sales@lappcanada.com  
www.cablemat.net

**Argentina**

**NAKASE SRL**  
Calle 49 No. 5764  
B1653A0X  
Villa Ballester  
1870 BUENOS AIRES  
Tel.: +54 11 4768 4242  
Fax: +54 11 4768 4242  
ventas@nakase.com.ar  
www.nakase.com.ar

**Armenia**

**Integral design & engineering LLC**  
8 Tumanyan str.  
International Business Center  
0001 YEREVAN  
Tel.: +374 10 520188  
Fax: +374 10 519188  
info@integral.am  
www.integral.am

**Australia**

**DKSH Australia Pty Ltd.**  
14-17 Dansu Court Hallam  
3803 VICTORIA  
Tel.: +61 3 95546666  
Fax: +61 3 95546677  
info@dksh.com.au

**Austria**

**Lapp Austria GmbH**  
Bremenstraße 8  
4030 LINZ  
Tel.: +43 732 781272-444  
Fax: +43 732 781272-34  
sales@lappaustria.at  
www.lappaustria.at

**Belarus**

**PNS – Professional Network Systems**  
Temirjazeera str. 64b, office 308  
220035 MINSK  
Tel.: +375 17 2908372  
Fax: +375 17 2547828  
info@pns.by  
www.pns.by

**Belgium – Luxembourg**

**Lapp Benelux B.V.**  
Van Dijklaan 16, 5581 WG WAALRE  
Postbus 74, 5580 AB WAALRE  
The Netherlands  
Tel.: +32 78 353060  
Fax: +32 78 353065  
sales.lappbenelux@lappgroup.com  
www.lappbenelux.com

**Brazil**

**Cabos Lapp Brasil Ltda.**  
Av. Dr. Mauro Lindemberg  
Monteiro, 628  
Galpao 18, Osasco  
CEP 06278-010 SAO PAULO  
Tel.: +55 11 21664166  
Fax: +55 11 21664165  
ventas@lappgroup.com.br  
www.lappgroup.com.br

**Cabos Lapp Brasil Ltda.**

Rodovia BA535 (via Parafuso)  
km 13 e 14 – Sentido Salvador  
Polo Industrial e Logístico Via  
Parafuso – Lote 06  
CEP 42810-200 CAMAÇARI-BA  
Tel.: +55 71 35002400

**Bulgaria**

**V&V Isomatic Ltd.**  
40a, Pirin Str.  
1680 SOFIA  
Tel.: +359 29 583111  
Fax: +359 29 582270  
office@viv-isomatic.com  
www.viv-isomatic.com

**Canada**

**Lapp Canada Inc.**  
3505 Laird Road, Unit 10  
L5L 5Y7 MISSISSAUGA, Ontario  
Tel.: +905 8 205492  
Fax: +905 8 206516  
sales@lappcanada.com  
www.lappcanada.com

**Chile**

**Desimat Chile**  
Av. Puerto Vespuccio 9670  
Parque Industrial Puerto Santiago  
Pudahuel, SANTIAGO  
Tel.: +56 2 25851200  
Fax: +56 2 27470153  
ventaschile@desimat.cl  
www.desimat.cl

**China**

**Lapp Kabel Shanghai Co., Ltd.**  
23A Zhaofeng Universe Building  
1800 Zhongshan Road West  
SHANGHAI 200235  
Tel.: +86 21 64400833  
Fax: +86 21 64400834  
info@lappgroup.com.cn  
www.lappgroup.com.cn

**Lapp Cable Works Shanghai Co., Ltd.**

No. 6 Standard Workshop Lingang  
Industrial Area  
1555 Cenglin Road, Pudong District  
SHANGHAI 201306  
Tel.: +86 21 20955833  
Fax: +86 21 20955834

**Colombia**

**TRANSMISIONES LTDA**  
Cra 69B No. 21A – 24 Bodega UE 28 – 1  
Parque Industrial Montevideo  
BOGOTA, D.C  
Tel.: +57 1 4126898  
Fax: +57 1 2929736  
info@transmisiones.de  
www.transmisiones.de

**Congo**

**Dezatech sarl**  
Av. Kasai no 12  
KINSHASA/Gombe  
Tel.: +243 8211 45963  
dg@dezatech.com

**Costa Rica**

**Elvatron, SA**  
De Repifreno en la Uruca  
400 metros Nte.  
SAN JOSÉ, Costa Rica  
P.O. Box 8-3770 (1000)  
Tel.: +506 2242-9955  
Fax: +506 2250-0697  
elvatron@elvatron.com  
www.elvatron.com

**Croatia**

**TIM KABEL**  
Savska cesta 103  
10360 ZAGREB – Sessvete  
Tel.: +385 1 5555900  
Fax: +385 1 5555901  
zagreb@tim-kabel.hr  
www.tim-kabel.hr

**Cyprus**

**3 BRO Ltd.**  
3 Limnou Str.  
Office 301  
3820 LIMASSOL  
Tel.: +357 25255353  
info@3bro.gr

**Czech Republic**

**LAPP KABEL s.r.o.**  
Bartosova 315, Kvitkovice  
765 02 OTRKOVICE  
Tel.: +420 573 501011  
Fax: +420 573 394650  
info@lappgroup.cz  
www.lappgroup.cz

**Denmark**

**Lapp Danmark**  
Korskildevej 6  
2670 GREVE  
Tel.: +45 43 950000  
Fax: +45 43 950009  
ordre@lappgroup.dk  
www.lappgroup.dk

**Dominican Republic**

**ING. Rudy Moreno & Asociados, S.R.L.**  
Prolongación 27 de Febrero Esq.  
Cuidad Agraria, Edif. Yarudith  
SANTO DOMINGO OESTE  
Tel.: +809 334 4394  
Fax: +809 334 4454  
www.ingrudymorenoyassoc.com

**Ecuador**

**Elsystec S.A.**  
Electricidad Sistemas y Tecnología  
Vasco de Contreras N35-251 y  
Mañosa  
CÓDIGO POSTAL 170521  
Tel.: +593 2 2456510  
Fax: +593 2 2455698  
elsystec@elsystec.com.ec  
elsystec@uiio.satnet.net  
www.elsystec.com.ec

**Egypt**

**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

**El Salvador**

**Intek El Salvador S.A. de C.V.**  
Calle Gabriela Mistral No. 373  
Entre Blvd. Los Héroes y 33 Av. Nte.  
SAN SALVADOR, El Salvador CA.  
Tel.: +503 2260-8888  
Fax: +503 2260-8855  
inteksv@intek-ca.com  
www.intek-ca.com

**Estonia**

**Lapp Miltronic SIA Eesti Filiaal**  
Kastani pst 10  
44307 RAKVERE  
Tel.: +372 6 518970  
Fax: +372 6 518971  
orders@lappmiltronic.lv  
www.lappmiltronic.ee

**Finland**

**SKS Automaatio Oy**  
Martinkyläntie 50  
P.O. Box 122  
01721 VANTAA  
Tel.: +358 2 076461  
Fax: +358 2 07646820  
automaatio@sksf.fi  
www.sks.fi

**France**

**Lapp France s.a.r.l.**  
Technopôle Forbach-Sud BP 50084  
57602 FORBACH CEDEX  
Tel.: +33 387 841929  
Fax: +33 387 841794  
lappfrance@lappgroup.com  
www.lappfrance.fr

**LAPP MULLER SAS**

Z.A. du Grand Pont  
83310 GRIMAUD  
Tel.: +33 494 566500  
Fax: +33 494 43487  
info@mullercables.com  
www.mullercables.com

**Câbleries Lapp Sarl**

Technopôle Forbach Sud  
Rue Avogadro  
57600 Oeting  
Tel.: +33 387 844343  
Fax: +33 387 871641  
accueil@lappgroup.com

**Georgia**

**Insta LLC**  
Sergo Zakariadze str. 8  
0177 TBILISI  
Tel.: +995 32 2202020  
Fax: +995 32 2202022  
sales@insta.ge  
www.insta.ge

**Germany**

**U.I. Lapp GmbH**  
Schulze-Delitzsch-Straße 25  
70565 STUTTGART  
Tel.: +49 711 783801  
Fax: +49 711 78382640  
info@lappkabel.de  
www.lappkabel.de

**Lapp Systems GmbH**

Oskar-Lapp-Str. 5  
70565 STUTTGART  
Tel.: +49 711 783804  
Fax: +49 711 78383520  
info@lappkabel.de  
www.lappkabel.de

**Ghana**

**PROCESS AND PLANT  
AUTOMATION Ltd.**  
No. 3 Becca Villa, behind Cal Bank  
Baatsona, Spintex Road.  
P.O. Box Sr 95  
ACCRA  
Tel.: +233 3 02812680  
ekua@automationghana.com  
www.automationghana.com

**Great Britain**

**Lapp Limited**  
Unit 3 Perivale Park  
Horsenden Lane South  
UB6 7RL GREENFORD MIDDLESEX  
Tel.: +44 20 87587800  
Fax: +44 20 87587880  
sales@lapplimited.com  
www.lappgroup.co.uk

**Greece**

**Dimoulas Special Cables S.A.**  
100-102 Lenorman Str.  
10444 ATHENS  
Tel.: +30 21 05157610  
Fax: +30 21 05157611  
info@dimoulas.gr  
www.dimoulas.gr

**Guatemala**

**Intek Guatemala S.A.**  
4a. Ave. 10 – 31 Zona 9  
GUATEMALA  
Tel.: +502 2507-0500  
Fax: +502 2507-0501  
intekgt@intek-ca.com  
www.intek-ca.com

**Honduras**

**intek Honduras**  
Ofi-Bodegas Premier  
100 mts. antes del Peaje a La Lima  
Edificio PWC-14B  
SAN PEDRO SULA  
Tel.: +504 2559-4748, -50  
Fax: +504 2559-4740  
intekhn@intek-ca.com  
www.intek-ca.com

**Hong Kong**

**Worldtex & Co.**  
Unit 11, 11/F, Tins Enterprises  
Centre  
777 Lai Chi Kok Rd.  
CHEUNG SHA WAN  
KOWLOON  
Tel.: +85 22 7811860  
Fax: +85 22 7814733  
info@worldtex-co.com.hk

**Hungary**

**Lapp Hungária Kft.**  
Neumann János u.1  
2040 BUDAÖRS  
Tel.: +36 23 501-250  
Fax: +36 23 501-259  
sales@lapphungaria.hu  
www.lapphungaria.hu

**India**

**Lapp India Pvt. Ltd.**  
Plot No.98, J & K  
Jigani Industrial Area, II Phase  
BANGALORE SOUTH – 560 105  
Tel.: +91 8110 304800  
Fax: +91 80 27825479  
info@lappindia.com  
www.lappindia.com

**Indonesia**

**PT. JJ-Lapp Cable SMI**  
Graha INTI FAUZI, 7th Floor  
Jl. Buncit Raya No. 22  
JAKARTA 12510  
Tel.: +62 21 27537051  
Fax: +62 21 27537052  
sales\_jjli@jjsea.com  
www.jj-lappcable.com

**Iran**

**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

**Island**

**Johan Rönning Ltd.**  
Klettgardar 25  
104 REYKJAVIK  
Tel.: +354 5 200800  
Fax: +354 5 200888  
ronning@ronning.is  
www.ronning.is

**Israel**

**Arrow Control Cables Ltd.**  
7, Zavitan street  
49950 NEHALIM  
Tel.: +972 3 9074887  
Fax: +972 3 9074889  
info@arrowcables.com  
www.arrowcables.com

**Italy**

**LAPP ITALIA S.R.L.**  
Via Lavoratori Autobianchi 1  
Building 20  
20832 DESIO (MB)  
Tel.: +39 0362 4871  
Fax: +39 0362 487330-340  
lappitalia@lappitalia.it  
www.lappitalia.it

**Camuna Cavi s.r.l.**

Via Generale Treboldi, 128  
25048 EDOLO (BS)  
Tel.: +39 0364 773411  
Fax: +39 0364 770120  
info@camunacavi.it  
www.camunacavi.it  
**Sales Office**  
Via Lavoratori Autobianchi 1  
Building 20  
20832 DESIO (MB)

**Japan**

**K.Mecs Co., Ltd.**  
Headquarters Yusen Iwamotocho  
Bldg. 3F  
2-3-3 Iwamotocho, Chiyodaku  
101-0032 TOKYO  
Tel.: +81 3 58255333  
Fax: +81 3 58258550  
info@kmecs.co.jp  
www.kmecs.com

**Jordan**

**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

**Kazakhstan**

**Lapp Kazakhstan LLP**  
Abaya ave. 13, office 703  
010000 ASTANA c.  
Tel.: +7 7172 273590  
sales@lappgroup.kz  
www.lappgroup.kz

**Korea**

**Lapp Korea LLC.**  
42, Jangangongdan 8-gil  
Jangan-myeon, HWASEONG-SI  
Gyeonggi-do, 445-941 Korea  
Tel.: +82 31 1688 1099  
Fax: +82 31 697 4099  
www.lappkorea.com

**Kuwait**

**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

**Kyrgyzstan**

**MEG Solutions LLC**  
 Chuj avenue 265A, office 204  
 720071 BISHKEK  
 Tel.: +996 312 641946  
 Fax: +996 312 641983  
 office@meg.kg  
 www.meg.kg

**Latvia**

**LAPP MILTRONIC SIA**  
 Ulbrokas 44a  
 RIGA, 1021  
 Tel.: +371 67 501900  
 Fax: +371 67 501909  
 pasutijumi@lappmiltronics.lv  
 www.lappmiltronics.lv

**Lebanon**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Libya**

**Al Jouada Co.**  
 Al Fath - Street  
 Al Buraq - Building 3rd floor  
 BENGHAZI  
 Tel.: +218 91 7433363  
 ilsharee@yahoo.co.uk

**Lithuania**

**LAPP MILTRONIC filialas**  
 Aukštaičių g. 6  
 11341 VILNIUS  
 Tel.: +370 5 2780390  
 info@lappmiltronics.lt  
 www.lappmiltronics.lt

**Macedonia**

**Siskon Doel**  
 Taskenska 4A  
 1000 SKOPIJE  
 Tel.: +389 2 3062423  
 Fax: +389 2 3061250  
 siskon@mt.net.mk  
 www.siskon.com.mk

**Malaysia**

**JJ-LAPP Cable (M) sdn. Bhd.**  
 16, Jalan 51A/225,  
 46100 PETALING JAYA SELANGOR  
 Tel.: +603 78 616288  
 Fax: +603 78 616299  
 sales\_jjlm@jjsea.com  
 www.jj-lappcable.com

**Malta**

**G & E Electronics Ltd.**  
 Genics Bldgs.  
 Giov. Papafly Str.  
 B'KARA BKR 4021  
 Tel.: +356 21 486816  
 Fax: +356 21 497103  
 info@gemalta.com  
 www.gemalta.com

**Mexico**

**Lapp Mexico S de RL de CV**  
 Avenida del bosque 1190 Int. 1  
 Parque Industrial del Bosque II  
 45619, TLAQUEPAQUE, Jalisco  
 Tel.: +52 33 36660250  
 Fax: +52 33 36660075  
 ventas@lappmexico.com  
 www.lappmexico.com

**Republic of Moldova**

**Lapp Kabel Romania SRL**  
 Autostrada Bucuresti - Pitesti, Km 13.5  
 A1 Business Park - Hala M  
 Comuna Dragomiresti Vale  
 Sat Dragomiresti Deal  
 Judet ILFOV, 077096  
 Tel.: +40 213 1009-61  
 Fax: +40 213 1009-59  
 office@lappkabel.ro  
 www.lappkabel.ro

**Mongolia**

**EUROCABLE G Co., Ltd.**  
 Baruun Selbe 5/26  
 1st Khoroo, Chingeltei District  
 15160 ULAANBAATAR  
 Tel.: +976 70 117171  
 info@cable.mn  
 www.cable.mn

**Morocco**

**Fiabel**  
 16 Rue des Dahlias (Beausite)  
 Boulevard La Grande Ceinture  
 Ain Sebâa, CASABLANCA  
 Tel.: +212 522 403301, 522 404616  
 Fax: +212 522 403303  
 www.fiabel.ma

**Netherlands**

**Lapp Benelux B.V.**  
 Van Dijklaan 16,  
 5581 WG WAALRE  
 Postbus 74, 5580 AB WAALRE  
 Tel.: +31 40 2285000  
 Fax: +31 40 2285010  
 sales.lappbenelux@lappgroup.com  
 www.lappbenelux.com

**New Zealand**

**Engineering Computer Services Ltd.**  
 Cnr Te-Rapa & Ruffell Rd  
 P.O. Box 20204  
 HAMILTON, 3288  
 Tel.: +64 7 8492211  
 Fax: +64 7 8492220  
 garry@lappgroup.co.nz  
 www.lappgroup.co.nz

**Nicaragua**

**Electronica Tecnica SA.**  
 De la Óptica Nicaraguense  
 3C al este, 1/2C al Sur  
 Casa #38 Residencial Bolonia  
 MANAGUA  
 Tel.: +505 2254-4913  
 info@ni.elvatron.com  
 nicaragua.elvatron.com

**Norway**

**Miltronik AS**  
 Eikveien 11  
 3036 DRAMMEN  
 Tel.: +47 32 261300  
 Fax: +47 32 261398  
 info@miltronik.no  
 www.miltronik.no

**Oman**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Pakistan**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Panama**

**Lapp Latinamerica Support Corporation**  
 Edif. Global Bank Calle 50, piso 38  
 Int. 3801-A, PANAMA  
 Tel.: +507 3938-565  
 soporte.latam@lappgroup.com

**Peru**

**DIPROSOL PERU SAC**  
 Av. Velasco Astete 2371  
 Surco LIMA 33  
 Tel.: +51 1 2752765  
 Fax: +51 1 2752776  
 ventas@diprosol.com.pe  
 www.diprosol.com.pe

**Philippines**

**JJ-LAPP Cable (P) Inc**  
 Unit 704, Philplans Corporate Center  
 1012 Triangle Drive  
 Bonifacio Global City  
 1634 TAGUIG CITY, MANILA  
 Tel.: +632 786 7566  
 Fax: +632 786 7544  
 sales\_jjlp@jjsea.com  
 www.jj-lappcable.com

**Poland**

**Lapp Kabel Sp. z o.o.**  
 Ulica: Profesjonalna 1  
 Biskupice Podgórze  
 55-040 KOBIERZYCE  
 Tel.: +48 71 3306300  
 Fax: +48 71 3306306  
 info@lapppolska.pl  
 www.lapppolska.pl

**Portugal**

**Policabos S.A.**  
 Av. Pedro Álvares Cabral  
 Lugar da Capa Rota  
 2710-144 SINTRA  
 Tel.: +351 21 9178640  
 Fax: +351 21 9178649  
 policabos@policabos.pt  
 www.policabos.pt

**Qatar**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Romania**

**Lapp Kabel Romania SRL**  
 A1 Business Park  
 (Autostrada Bucuresti - Pitesti, Km 13.5)  
 Aleea Camilla nr. 11, Unitatea G2  
 Comuna Dragomiresti Vale  
 Sat Dragomiresti Deal  
 Judet ILFOV, 077096  
 Tel.: +40 213 1009-61  
 Fax: +40 213 1009-59  
 office@lappkabel.ro  
 www.lappkabel.ro

**Russia**

**Lapp Russia OOO**  
 Mira st., 7, Krutye Kluchi  
 443028 SAMARA  
 Tel.: +7 846 2310333  
 Fax: +7 846 2310028  
 info@lappgroup.ru  
 www.lappgroup.ru

**Saudi Arabia**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Serbia**

**VESIMPEX d.o.o.**  
 Patrijarha Dimitrija 24 (DMB)  
 11090 BEOGRAD-RAKOVIKA  
 Tel.: +381 11 4049-070, -071, -072, -073  
 Magacin/warehouse: +381 11 4049-075  
 Fax: +381 11 4049-077  
 Mob: +381 63 693-373  
 info@vesimpex.rs  
 www.vesimpex.rs

**Singapore**

**Lapp Logistics Pte. Ltd.**  
 No.9 Tuas South St. 3  
 SINGAPORE 638017  
 Tel.: +65 6558-7176  
 Fax: +65 6558-7081  
 lappsea.lappgroup.com

**JJ-LAPP Cable (S) Pte. Ltd.**

No.9 Tuas South St 3  
 SINGAPORE 638017  
 Tel.: +65 6508-6200  
 Fax: +65 6863-1271  
 sales\_jjls@jjsea.com  
 www.jj-lappcable.com

**Slovakia**

**LAPP SLOVENSKO, s.r.o.**  
 Piaristicka 2  
 949 24 NITRA  
 Tel.: +421 376 578095  
 Fax: +421 376 578095  
 info@lappgroup.sk  
 www.lappgroup.sk

**Slovenia**

**Lapp, d. o. o.**  
 Limbuška cesta 2  
 2341 LIMBUŠ  
 Tel.: +386 2 4213550  
 Fax: +386 2 4213571  
 info@lappslovenia.com  
 www.lappslovenia.com

**South Africa**

**Lapp Group Southern Africa**  
 51 Brunton Circle  
 Founders View South  
 Modderfontein  
 1645 GAUTENG  
 Tel.: +27 11 2013200  
 Fax: +27 11 6095850  
 info@lappkabel.co.za  
 www.lappkabel.co.za

**Spain**

**Lapp Group España**  
 Avda. de les Garrigues, 34 - 36  
 Parque Empresarial Mas Blau II  
 08820 EL PRAT DE LLOBREGAT  
 (Barcelona)  
 Tel.: +34 902 108 669  
 Fax: +34 934 796 272  
 info@lappgroup.es  
 www.lappgroup.es

**Sweden**

**Miltronik AB**  
 Kungshagsvägen 7  
 Box 1022  
 611 29 NYKÖPING  
 Tel.: +46 155 77780  
 Fax: +46 155 77701  
 info@miltronik.se  
 www.miltronik.se

**Sales office Denmark**

Korskildeeng 6  
 2670 GREVE  
 Tel.: +45 43 950000  
 Fax: +45 43 950009  
 info@miltronik.dk  
 www.miltronik.dk

**Switzerland**

**Volland AG**  
 Ifangstrasse 103  
 8153 RÜMLANG  
 Tel.: +41 44 8179797  
 Fax: +41 44 8179700  
 info@volland.ch  
 www.volland.ch

**EPIC®**

**Bachofen AG**  
 Ackerstraße 42  
 8610 USTER  
 Tel.: +41 44 9441111  
 Fax: +41 44 9441233  
 info@bachofen.ch  
 www.bachofen.ch

**Syria**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

**Taiwan**

**DKSH Taiwan Ltd.**  
 10th Floor, No. 22, Lane 407  
 Tiding Blvd., Sec. 2  
 Neihu Technology Park  
 TAIPEI CITY 114-93  
 Tel.: +886 2 87527597  
 Fax: +886 2 87518688  
 edmund.foo@dksh.com

**Thailand**

**JJ-LAPP Cable (T) Ltd.**  
 23/110-117 Sorachai Building  
 25-29th FL  
 Soi Sukhumvit 63 (Ekamai),  
 Sukhumvit Road, Klongton Nua,  
 Wattana, BANGKOK 10110  
 Tel.: +66 27 878288  
 Fax: +66 27 878299  
 sales\_jjlt@jjsea.com  
 www.jj-lappcable.com

**Tunisia**

**ELECSA TN, Groupe TTI**  
 Zone industrielle  
 8030 GROMBALIA  
 Tel.: +216 72 255954  
 Fax: +216 72 255980  
 commercial@elecsa-tn.com  
 www.elecsa-tn.com

**Turkey**

**LAPP KABLO San. ve Tic.Ltd.Şti.**  
 Atatürk Mah. Şeref Sok. No: 55/1  
 34758 ATAŞEHİR-İSTANBUL  
 Tel.: +90 216 4565699  
 Fax: +90 216 4565687-89  
 info@lapp.com.tr  
 www.lapp.com.tr

**Ukraine**

**Lapp Ukraine LLC**  
 201 - 203, Kharkivske shose  
 02121 KIEV  
 Tel.: +38 044 495-6000  
 Fax: +38 044 490-7630  
 sales@lappukraine.com  
 www.lappukraine.com

**United Arab Emirates**

**LAPP CABLES MIDDLE EAST FZE**  
 Wing A-502, P.O. Box 341223  
 Dubai Silicon Oasis  
 DUBAI  
 Tel.: +971 4 3712905  
 Fax: +971 4 3712918  
 lappme@lappgroup.com  
 www.lappgroup.com

**Uruguay**

**Reprinter LTDA.**  
 Avda. Italia 6481  
 MONTEVIDEO  
 Tel.: +598 2600-7343  
 Fax: +598 2600-8658  
 lapp@reprinter.com.uy  
 www.reprinter.com.uy

**USA**

**Lapp USA, Inc.**  
 29 Hanover Road  
 FLORHAM PARK, NJ 07932  
 Tel.: +1 973 6609700  
 Fax: +1 973 6609330  
 sales@lappusa.com  
 www.lappusa.com

**Lapp Tannehill, Inc.**

8675 Eagle Creek Parkway Suite 900  
 SAVAGE, MN 55378  
 Tel.: +1 952 8816700  
 Fax: +1 952 8810743  
 sales@lappannehill.com  
 www.lappannehill.com

**Uzbekistan**

**Elektro Potential LLC**  
 Y. Bodomzor str. 2 B, office 311  
 Yunusabad area  
 100084 TASHKENT  
 Tel.: +998 71 1501220  
 Fax: +998 71 1501220  
 mz1958@yandex.ru

**Venezuela**

**Somerinca, C.A**  
 Ota Corazón de Jesus  
 4ta Transversal de Montecristo c/  
 calle el Carmen, de los Dos Caminos  
 1070 CARACAS  
 Tel.: +212 235 1081/1696/2748,  
 237 3003  
 Fax: +212 239 9341  
 kloccoeller@cantv.net  
 www.somerinca.com

**Vietnam**

**JJ-LAPP Cable Vietnam Co., Ltd**  
 12th floor, Unit 1206, Sailing Tower  
 111A Pasteur Street, District 1  
 HO CHI MINH CITY  
 Tel.: +84 8 62887668  
 Fax: +84 8 38236776  
 sales\_jjlv@jjsea.com  
 www.jj-lappcable.com

**Yemen**

see **United Arab Emirates**  
 LAPP CABLES MIDDLE EAST FZE

### Lapp products in motion

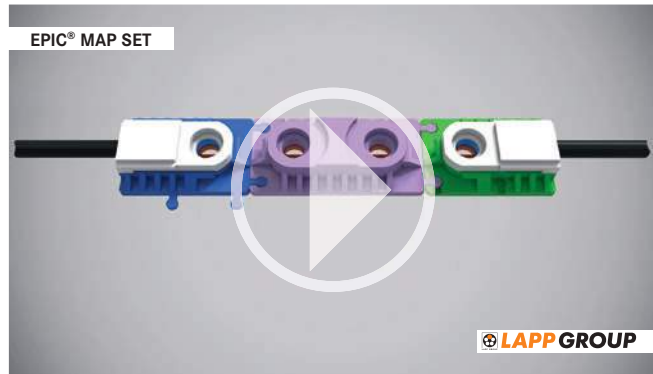
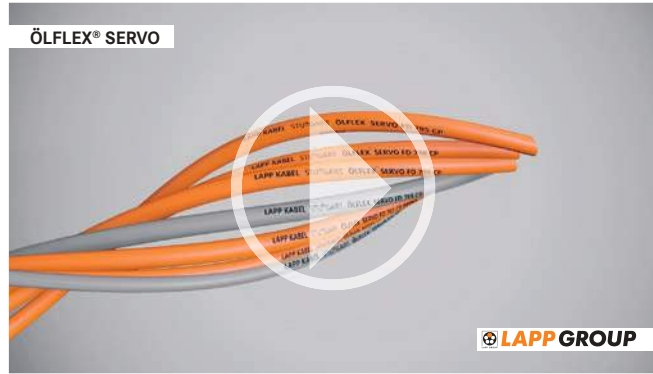
Find product animations for selected Lapp products here:  
[www.lappgroup.com/productanimations](http://www.lappgroup.com/productanimations)



Follow the Lapp Group



Product animations



# REACH US AROUND THE WORLD

...or closer to home. To contact your local Lapp Group representative:

PLEASE VISIT

[www.lappgroup.com/worldwide](http://www.lappgroup.com/worldwide)

Enter the world  
of Lapp:



Our apps are available  
from the following stores:

▶ THIS CATALOGUE IS VALID  
FROM JANUARY 2016

## The following applies for the use of our products

The conformity of our products to the relevant European directives and compliance with the provisions contained therein shall be indicated by the CE marking.

The safety of our products is closely associated with how they are used. A knowledge of and adherence to the respective international/national standards of use (e.g. DIN VDE 0100; 0298)

are mandatory. There are particular risks if installed improperly. This applies to all our products/items:

**Processing is only to be done by an authorised electrician! Otherwise, there is the risk of an electric shock or a fire ignited by electric current!**

## Safety

Without exception, our products are tested for application safety in accordance with defined standards and our own regulations, which complement the standards. Relevant legal requirements and safety regulations are also observed. Provided due care and attention is paid, the possibility of product-specific danger to the user may thus reasonably be excluded. Where products are used carelessly or incorrectly, however, considerable danger to

persons and the environment may arise. For this reason, our cables must only be processed and/or used responsibly by trained electricians or specialists. This catalogue contains general information for the application of each product. Independent of such information, the application standards DIN VDE 0298 and DIN VDE 0891 for cables will apply. Excerpts from these standards, as well as complementary selection and application

tables, design and installation guidelines, are contained in the tables in the appendix to this catalogue. Our machines and installation tools are - where necessary - designed in accordance with the machine guidelines and display the CE identification mark. It must be noted, however, that our machines and installation tools must only be used by trained specialist personnel and for the purpose for which they were designed.

©Copyright by U.I. Lapp GmbH. Reprinting or reproduction of the text or the illustrations may be made only with written approval and with correct indication of source. We reserve the right to make modifications to our products, especially those based on technical improvements or continued development. All illustrations and numerical data etc. are therefore without warranty and are subject to change.



**ÖLFLEX®**  
Power and control cables



**UNITRONIC®**  
Data communication systems



**ETHERLINE®**  
Data communication systems  
for ETHERNET technology



**HITRONIC®**  
Optical transmission systems



**EPIC®**  
Industrial connectors



**SKINTOP®**  
Cable glands



**SILVYN®**  
Protective cable conduit systems  
and cable carrier systems



**FLEXIMARK®**  
Marking systems

Follow the Lapp Group on



**Terms of Trade:**

Our general conditions of sale  
can be downloaded from our website  
[www.lappgroup.com/terms](http://www.lappgroup.com/terms)



**LAPP GROUP**

[www.lappgroup.com](http://www.lappgroup.com)

To contact your local Lapp Group representative,  
please visit [www.lappgroup.com/worldwide](http://www.lappgroup.com/worldwide)