

ÖLFLEX®

AVS Stuttgart

UNITRONIC®

ETHERLINE®

HITRONIC®

EPIC®

SKINTOP®

SILVYN®

FLEXIMARK®

# THE WORLD OF LAPP

Products for photovoltaic 2011



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 **LAPP GROUP**



## Welcome

Please come in and look around. Irrespective of which cable, line, plug and accessory you require for your particular application, you will find exactly what you need here. We have more than 40,000 different standard articles in stock. We also deliver within 24 or 48 hours. Special tasks demand special solutions. In this case too, you need look no further than our company. In addition to the comprehensive range of standard Lapp products, we can also offer you individual cable assemblies and the engineering involved.

You should also be aware of the following: Lapp is one of the leading international system providers. Our brands are used in the most varied of applications, branches and global markets. One of our principles states: when striving for perfection we should rely on no-one but ourselves. This is why we manufacture everything in our own production sites. We also have numerous sales companies and logistics centres around the world, which enable us to be close to our customers. We're somewhere near you too!

To contact your local Lapp Group representative please visit [www.lappgroup.com/worldwide](http://www.lappgroup.com/worldwide)

### For the use of our products is valid

The conformity of our products with 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 authorized 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 laid down 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, consi-

derable 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 001 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 our Main Catalogue 2010/11. 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 specialized 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.

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## Brand quality from Stuttgart



### ÖLFLEX® Power- and control cables

The world's first brand cable is available in the most varied of versions to match maximum requirements.

**Key features:** Oil-resistant, flexible and available to match almost any requirement or environmental condition – also free of halogens.

**Fields of application:** Multipurpose. Special variants are more and more in demand in the area of renewable energies.

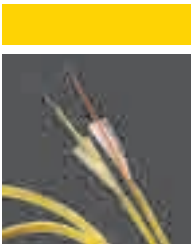


### UNITRONIC® Data communication systems

The ideal brand for fast, trend-setting and reliable data transfer.

**Key features:** UNITRONIC® are not only data lines, but also bus lines, which together with active sensor/actuator modules or gateways provide a perfect system for automation.

**Fields of application:** Measurement, control, regulation, bus or LAN networks.



### HITRONIC® Optical transmission systems

The brand for split-second, fault-free, intercept-free data transport.

**Key features:** The HITRONIC® product range includes fibre optic cables in the most varied of versions, along with suitable accessories such as splice boxes, wall distributors or couplings.

**Fields of application:** Office and industrial sector.



### SKINTOP® Cable glands

The brand for multipurpose cable entries in line with the following: quickly fastened, centred and hermetically sealed.

**Key features:** Large clamping areas, optimum strain reliefs, the most diverse of versions such as SKINTOP® CLICK, COLD or CUBE.

**Fields of application:** Everywhere, where cables must be fastened reliably and quickly.



### SILVYN® Protective cable conduit- and cable carrier systems

The brand for all-round cable protection.

**Key features:** The product range includes SILVYN® cable protection hoses for perfect protection against mechanical and chemical loads, along with SILVYN® CHAIN energy supply chains for highly-dynamic applications.

**Fields of application:** Everywhere that cables have to be additionally protected or routed.



### EPIC® Industrial connectors

The brand for strong and reliable connections.

**Key features:** Robust square and circular connectors. Flexible system consisting of housings, inserts, contacts and accessories – for every requirement, the tailor-made solution. Similarly, EPIC® SOLAR plugs for photovoltaics are also part of the extensive product range.

**Fields of application:** Mechanical and systems engineering, and drive technology.



### ETHERLINE® Data communication systems for ETHERNET-Technology

The brands for network solutions, safety systems and firewalls in the industrial networking sector.

**Key features:** Integral system consisting of hardware (switches, routers, cables, plugs etc.), software, consulting, network design and support.

**Fields of application:** Factory automation.



### FLEXIMARK® Cable marking products

The brand for permanent, clearly-arranged cable markings.

**Key features:** Comprehensive range – from manual labelling solutions onto digital identification. Withstands high chemical, thermal and mechanical loads.

**Fields of application:** All cable, single cores, control cabinets.



## At home in Stuttgart, but known all over the world

**The World of Lapp is based in Stuttgart. This is where it all started for our company, which was founded in 1959 as U.I. LAPP KG (now U.I. LAPP GmbH). From its headquarters in Stuttgart we have determinedly evolved to become a global player – with currently 16 production plants in Europe, Asia and America, 40 sales companies and more than 100 sales partners. The larger Lapp companies such as Russia, India, China, Canada and Mexico have their own warehouses. The others are promptly supplied through our high-performance logistics centres. At our Lapp Centres we are also strongly committed to enhancing the knowledge of our employees and customers. After all, knowledge is the ink with which the future is written down.**

One of our most successful “products” is that of proximity to our customers. On the one hand, we practice intensive dialogue with designers and planners, manufacturers and users. This enables us to identify new requirements and trends at a much earlier stage, to quickly provide you with suitable solutions. Innovation leadership put into active practice.

On the other hand, proximity to our customers really means something to us: our presence extends all round the globe. As a reliable partner on a local basis we support our customers in exploiting markets by providing them with short delivery times and low logistics costs.

Our current addresses see  
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## A place in the sun

**It is a massive area, a thin layer of modules stretching out as far as the eye can see. With a total of 540,000 modules, it will be one of the largest photovoltaic power plants in the world, located in the province of Lop Buri in Thailand.**

Neutral Energy Development Co. Ltd. (NEC) ordered 1,200 kilometres of cross-linked ÖLFLEX® SOLAR XLR cables for this installation from JJ-Lapp Cable in Singapore, a joint venture company of the Lapp Group.

The ÖLFLEX® SOLAR XLR is one of the highlights from the extensive Lapp Group photovoltaic programme. It has been approved according to the TÜV design standard (Technical Inspection Association) and boasts a particularly high thermal resistance (-40 to +120 °C).

This guarantees a long life, even under the most extreme of climate conditions. The

cables are used in the Lop Buri installation for the cabling of the thin-layer modules, as well as for connecting the individual rows of modules and linking up to the inverter.

When it is finished, the installation is set to generate 55 megawatts of power, enough to supply 70,000 households with electricity.

One of the world's largest photovoltaic power plants is being installed in the Lop Buri province, Thailand. - The connections are made using ÖLFLEX® SOLAR by Lapp





## Complete range for photovoltaic

**The use of solar energy has been increasing for many years and this trend is continuing. Photovoltaics has a wide range of uses, from major energy plants to small domestic applications.**

The fact that we recognised the potential of this market very early on and have built up specialist expertise in this area demonstrates once again the innovative tradition of our company. Our offering ranges from developing tailored products to advising you on planning and conversion matters.

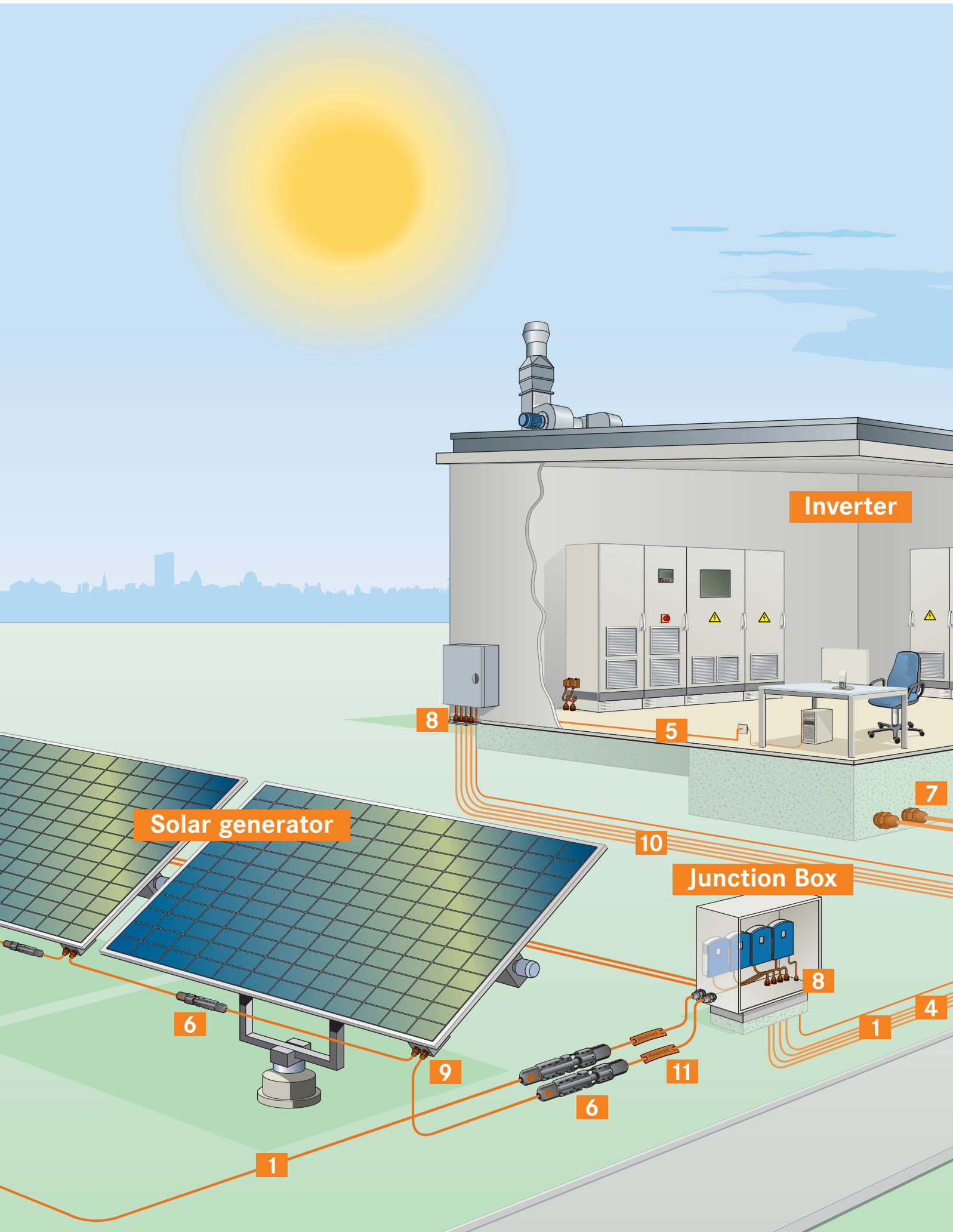
After taking into account the full range of operational requirements, Lapp offers a specifically tailored comprehensive range of cables, plugs and photovoltaic accessories for cabling photovoltaic plants – we are the system of choice!

In collaboration with users, the TÜV (German Association for Technical Inspection) and the North American UL approval organisation, a variety of tests have been carried out on our ÖLFLEX® cables, SOLAR cables, SKINTOP® cable glands and EPIC® SOLAR connectors to guarantee the highest quality standards. Our products can be used throughout the world and naturally also comply with the RoHS directive.

ÖLFLEX® SOLAR cables are used at a huge photovoltaic field in Bovera (Spain).  
Photo: Wirsol AG



# The Solar system by Lapp





## Transformer

- 1** ÖLFLEX® SOLAR  
Photovoltaic cables
- 2** ÖLFLEX® TRAFU  
Flexible power cables
- 3** UNITRONIC® BUS  
Data- and BUS cables
- 4** UNITRONIC® Feldbus  
S/A Cabling
- 5** ETHERLINE®  
Ethernet Cabling
- 6** EPIC® SOLAR  
Photovoltaic connectors
- 7** EPIC® POWERLOCK  
1 pole high current connectors
- 8** SKINTOP® ST-M/CLICK  
Cable glands
- 9** SKINTOP® SOLAR  
Photovoltaic Cable glands
- 10** SILVYN®  
Protective cable conduit- and cable  
carrier systems
- 11** FLEXIMARK®  
Cable marking products

## Our confession to solar technology

Says Siegbert Lapp, member of the board of Lapp Holding AG, “nothing is more environment-friendly than receiving energy directly from the sun. This is our confession to the solar technology.”

As an environmental-orientated company and one of the leading suppliers for the wind and solar industry, Lapp Group also wants to take part in this trend.

### Clear solutions around the solar panel!

On the following pages we want to introduce products which were especially developed in co-operation with users from the photovoltaic branch. Let it be weather resistant cable installations, safe cable entries or the

interconnection of single solar modules – the brands ÖLFLEX® – SKINTOP® – EPIC® – SILVYN® and FLEXIMARK® from Lapp Group offer solutions for all applications.



# ÖLFLEX® SOLAR XLR TF

The latest solar cable generation according to PV1-F design



**Info**

- According to DKE requirements specification PV1-F
- TÜV Type Approved (2PFG 1169/08.07)



**Benefits**

- Reduced outer diameter enables space saving installation
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Variously coloured core insulations simplify on demand the differentiation of the polarity during installation
- High thermal capacity for long lasting operation of the PV system at all seasons
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- For cabling of solar modules among themselves and as extension cable between the individual module strings or DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields
- For the cabling of flexible or building-integrated photovoltaic systems

**Product features**

- Good weather- and temperature resistance
- Good notch and abrasion resistance
- Good heat pressure resistance
- Halogen-free and flame retardant
- Resistant against oxalic acid and sodium hydroxide

**Approvals (Norm references)**

- CE
- TÜV Type Approved (2PFG 1169/08.07)
  - Halogen-free according to EN 50267-2-1/-2
  - Ozone resistant according EN 50396
  - Weather-/UV resistant according HD 605/A1
  - Acid-/Brine resistant according EN 60811-2-1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Electron beam cross-linked copolymer
- Core insulation colour: Black, red or blue
- Outer sheath: Electron beam cross-linked Copolymer
- Outer sheath colour: Black

**Technical data**

**Approvals**  
PV1-F (TÜV Type approved according 2 PFG 1169/08.2007)

**Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
Fixed installation: 4 x cable diameter

**Rated voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage: DC 1800 V

**Test voltage**  
AC 6500 V

**Range of temperature**  
-40°C up to +120°C max. conductor temperature  
Ambient temperature range acc. to TÜV 2 PFG 1169/08.2007: -40°C up to +90°C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR XLR TF</b>				
<b>Core insulation: black / Outer sheath: black</b>				
0025905	1.5	5.4	14.4	43
0025923	2.5	5.4	24.0	51
0025943	4.0	6.0	38.4	70
<b>Core insulation: red / Outer sheath: black</b>				
0025911	1.5	5.4	14.4	43
0025926	2.5	5.4	24.0	51
0025946	4.0	6.0	38.4	70
<b>Core insulation: blue / Outer sheath: black</b>				
0025917	1.5	5.4	14.4	43
0025927	2.5	5.4	24.0	51
0025947	4.0	6.0	38.4	70

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
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.

**Comparable products**

- ÖLFLEX® SOLAR XLR see page 12
- ÖLFLEX® SOLAR XLS see page 13
- ÖLFLEX® SOLAR XL multi see page 16

**Accessories**

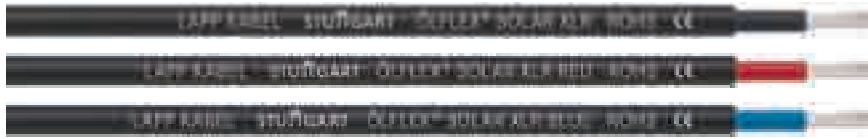
- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

**Special applications**

Photovoltaic

**ÖLFLEX® SOLAR XLR**

The latest solar cable generation according to PV1-F design



**Info**

- According to DKE requirements specification PV1-F
- TÜV Type Approved (2PFG 1169/08.07)

**Benefits**

- High thermal capacity for long lasting operation of the PV system at all seasons
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Variously coloured core insulations simplify on demand the differentiation of the polarity during installation
- Robust against mechanical impact
- Exact quantity control during installation by meter marking on the cable sheath

- Good heat pressure resistance
- Halogen-free and flame retardant
- Resistant against oxalic acid and sodium hydroxide

**Approvals (Norm references)**



- TÜV Type Approved (2PFG 1169/08.07)
- Halogen-free according to EN 50267-2-1/-2
- Ozone resistant according EN 50396
- Weather-/UV resistant according HD 605/A1
- Acid-/Brine resistant according EN 60811-2-1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Electron beam cross-linked copolymer
- Core insulation colour: Black, red or blue
- Outer sheath: Electron beam cross-linked Copolymer
- Outer sheath colour: Black

**Application range**

- For cabling of solar modules among themselves and as extension cable between the individual module strings or DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields

**Product features**

- Good weather- and temperature resistance
- Good notch and abrasion resistance

**Technical data**



**Approvals**  
PV1-F (TÜV Type approved according 2 PFG 1169/08.2007)



**Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5



**Minimum bending radius**  
Fixed installation: 4 x cable diameter



**Rated voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage:  
DC 1800 V



**Test voltage**  
AC 6500 V



**Range of temperature**  
-40°C up to +120°C max. conductor temperature  
Ambient temperature range acc. to TÜV 2 PFG 1169/08.2007: -40°C up to +90°C

Part number	Conductor cross section in mm²	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR XLR</b>				
<b>Core insulation: black / Outer sheath: black</b>				
0025906	2.5	6.0	24.0	58
0025907	4.0	6.5	38.4	77
0025908	6.0	7.1	57.6	102
0025909	10.0	8.9	96.0	163
0025910	16.0	9.8	153.6	225
<b>Core insulation: red / Outer sheath: black</b>				
0025912	2.5	6.0	24.0	58
0025913	4.0	6.5	38.4	77
0025914	6.0	7.1	57.6	102
0025915	10.0	8.9	96.0	163
0025916	16.0	9.8	153.6	225
<b>Core insulation: blue / Outer sheath: black</b>				
0025918	2.5	6.0	24.0	58
0025919	4.0	6.5	38.4	77
0025920	6.0	7.1	57.6	102
0025921	10.0	8.9	96.0	163
0025922	16.0	9.8	153.6	225

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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.

**Comparable products**

- ÖLFLEX® SOLAR XLR TF see page 11
- ÖLFLEX® SOLAR XLS see page 13
- ÖLFLEX® SOLAR XL multi see page 16

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

**ÖLFLEX® SOLAR XLS**  
Electron beam cross-linked solar cable



**Info**

- Temperature range -40°C up to +100°C



**Benefits**

- Robust against mechanical impact
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Variously coloured core insulations simplify on demand the differentiation of the polarity during installation
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- For cabling of solar modules among themselves and as extension cable between the individual module strings or DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields
- For the cabling of flexible or building-integrated photovoltaic systems

**Product features**

- Weathering-, abrasion and UV resistant
- Good heat pressure resistance
- Halogen-free and flame retardant

- Resistant against oxalic acid and sodium hydroxide
- On request and considering economic minimum lengths also available with red and blue outer sheath

**Approvals (Norm references)**



- Flame retardant according to IEC 60332-1-2
- Halogen-free according to EN 50267-2-1/-2
- Ozone resistant according EN 50396
- Weather-/UV resistant according HD 605/A1
- Acid-/Brine resistant according EN 60811-2-1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Electron beam cross-linked copolymer
- Core insulation colour: Black, red or blue
- Outer sheath: Electron beam cross-linked Copolymer
- Outer sheath colour: Black

**Technical data**

- Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Fixed installation: 4 x cable diameter
- Rated voltage**  
AC U<sub>0</sub>/U : 600/1000 V  
DC U<sub>0</sub>/U : 900/1500 V  
Max. permissible operating voltage: DC 1800 V
- Test voltage**  
AC 6500 V
- Range of temperature**  
Fixed installation: -40° C up to +100 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR XLS - Core insulation: black / Outer sheath: black</b>				
0025800	1.5	5.4	14.4	29
0025805	2.5	5.4	24.0	45
0025810	4.0	6.0	38.4	72
0025815	6.0	7.1	57.6	102
0025820	10.0	8.9	96.0	159
0025825	16.0	9.8	153.6	247
<b>ÖLFLEX® SOLAR XLS - Core insulation: red / Outer sheath: black</b>				
0025801	1.5	5.4	14.4	29
0025806	2.5	5.4	24.0	45
0025811	4.0	6.0	38.4	72
0025816	6.0	7.1	57.6	102
0025821	10.0	8.9	96.0	159
0025826	16.0	9.8	153.6	247
<b>ÖLFLEX® SOLAR XLS - Core insulation: blue / Outer sheath: black</b>				
0025802	1.5	5.4	14.4	29
0025807	2.5	5.4	24.0	45
0025812	4.0	6.0	38.4	72
0025817	6.0	7.1	57.6	102
0025822	10.0	8.9	96.0	159
0025827	16.0	9.8	153.6	247

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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.

**Comparable products**

- ÖLFLEX® SOLAR XLS-T see page 14

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

**Special applications**

Photovoltaic

**New**

**ÖLFLEX® SOLAR XLS-T**

Electron beam cross-linked solar twin cable



**Info**

- Time saving installation
- Temperature range -40°C up to +100°C
- Ideal for Stand-alone PV power systems

**Benefits**

- Time saving installation
- Robust against mechanical impact
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- Ideal for Stand-alone PV power systems
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields

**Product features**

- Weathering-, abrasion and UV resistant
- Good heat pressure resistance
- Halogen-free and flame retardant
- Resistant against oxalic acid and sodium hydroxide
- Easy to split into single cables

**Approvals (Norm references)**



- Flame retardant according to IEC 60332-1-2
- Halogen-free according to EN 50267-2-1/-2
- Ozone resistant according EN 50396
- Weather-/UV resistant according HD 605/A1
- Acid-/Brine resistant according EN 60811-2-1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Electron beam cross-linked copolymer
- Outer sheath: Electron beam cross-linked Copolymer
- Outer sheath colour: Black

**Technical data**



**Core identification code**  
black / red  
blue / red



**Conductor stranding**  
Fine wire in accordance to VDE 0295  
Class 5 / IEC 60228 Class 5



**Minimum bending radius**  
Fixed installation: 4 x cable diameter



**Rated voltage**  
AC U<sub>0</sub>/U : 600/1000 V  
DC U<sub>0</sub>/U : 900/1500 V  
Max. permissible operating voltage:  
DC 1800 V



**Test voltage**  
AC 6500 V



**Range of temperature**  
Fixed installation:  
-40° C up to +100 °C

Part 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® SOLAR XLS-T - Core insulation: black / red</b>				
0027150	2 X 2.5	10.8 x 5.4	48.0	90
0027152	2 X 4.0	12.0 x 6.0	76.8	144
0027154	2 X 6.0	14.2 x 7.1	115.2	204
<b>ÖLFLEX® SOLAR XLS-T - Core insulation: blue / red</b>				
0027151	2 X 2.5	10.8 x 5.4	48.0	90
0027153	2 X 4.0	12.0 x 6.0	76.8	144
0027155	2 X 6.0	14.2 x 7.1	115.2	204

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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.

**Comparable products**

- ÖLFLEX® SOLAR XLS see page 13

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51



**New**

# ÖLFLEX® SOLAR XLR multi 600V

UL listed solar cable according NEC for application in North America



**Info**

- Acc. to UL Subject 4703 Type PV Wire

**Benefits**

- Standard-compliant application for exposed wiring of PV systems in North America in compliance with US NFPA 70 NEC article 690.31 (National Electrical Code)
- High thermal capacity for long lasting operation of the PV system at all seasons
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Robust against mechanical impact
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- For cabling of solar modules among themselves and as extension cable between the individual module strings or DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields

**Product features**

- Good weather- and temperature resistance
- Good notch and abrasion resistance
- Good heat pressure resistance
- Halogen-free and flame retardant
- Cold bend and cold impact resistant (-40°C)

**Approvals (Norm references)**



- Acc. to UL Subject 4703 Type PV Wire
- Halogen-free according to EN 50267-2-1/-2
- Flame retardant according IEC 60332-1-2, UL VW-1, Vertical Flame Test FV-1, CSA FT 2
- Ozone resistant according EN 50396

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Electron beam cross-linked copolymer
- Core insulation colour: Red
- Outer sheath: Electron beam cross-linked Copolymer
- Outer sheath colour: Black

**Technical data**

**Approvals**  
UL 4703 (PV Wire)

**Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5

**Minimum bending radius**  
Fixed installation: 4 x cable diameter

**Rated voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage: DC 1800 V  
Operating voltage according UL: 600 V

**Test voltage**  
AC 6500 V

**Range of temperature**  
Fixed installation: -40 °C bis +120 °C  
according UL PV Wire: -40 °C up to +90 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>Core insulation: red / Outer sheath: black</b>				
0027130	2.5	5.9	24.0	55
0027133	4.0	6.4	38.4	69
0027136	6.0	6.9	57.6	92
0027139	10.0	8.9	96.0	158
0027142	16.0	10.2	153.6	228

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
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.

**Comparable products**

- ÖLFLEX® SOLAR XLR TF see page 11
- ÖLFLEX® SOLAR XLR see page 12
- ÖLFLEX® SOLAR XL multi see page 16

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

**Special applications**

Photovoltaic

**ÖLFLEX® SOLAR XL multi**

UL listed solar cable according NEC for application in North America



**Info**

- c(UL)us listed according USE-2 resp. RWU90
- For the North American market

**Benefits**

- The c(UL)us listings enable the use for wiring of PV systems in whole North America. According the NEC (National Electrical Code) only especially for outdoor purposes listed cables are permitted in the USA for PV installations
- High thermal capacity for long lasting operation of the PV system at all seasons
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- For cabling of solar modules among themselves and as extension cable between the individual module strings or DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields

**Product features**

- Good weather-, abrasion-, temperature- and UV resistance
- Weatherproof according to ISO 4892-2 respectively UL 1581 Section 1200
- Halogen-free and flame retardant (IEC 60332-1-2)

**Approvals (Norm references)**



- According UL USE-2/CSA c(UL) RWU90

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Special polyolefin, cross-linked
- Outer sheath: Cross-linked copolymer
- Outer sheath colour: Black

**Technical data**



**Approvals**

c(UL)us listed according UL USE-2 "SUNLIGHT RESISTANT" cUL RWU90 "SUNLIGHT RESISTANT"



**Conductor stranding**

Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5



**Minimum bending radius**

Fixed installation: 4 x cable diameter



**Rated voltage**

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

DC U<sub>0</sub>/U : 900/1500 V

Max. permissible operating voltage: DC 1800 V

according to UL (USA): 600 V

according to cUL (Canada): 1000V



**Test voltage**

4000 V



**Range of temperature**

Fixed installation: -40 °C bis +120 °C according UL USE-2: +90 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR XL multi - UL / cUL approved</b>				
<b>Outer sheath colour: Black</b>				
0026585	2.5	5.6	24.0	45
0026586	4.0	6.0	38.4	72
0026587	6.0	7.1	57.6	102
0026588	10.0	8.5	96.0	159
0026589	16.0	9.9	153.6	247
<b>Outer sheath colour black - coded</b>				
0026590	2.5	5.6	24.0	45
0026591	4.0	6.0	38.4	72
0026592	6.0	7.1	57.6	102
0026593	10.0	8.5	96.0	159
0026594	16.0	9.9	153.6	247

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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.

Packaging size : 100mtr = coil / 500mtr u. 1000mtr = drum

**Comparable products**

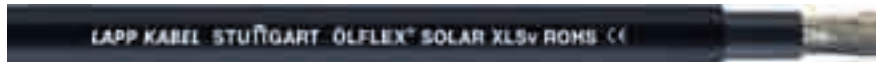
- ÖLFLEX® SOLAR XLR multi 600V see page 15

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

# ÖLFLEX® SOLAR XLSv

Robust solar cable with big conductor cross sections



**Info**

- For high electrical power loads
- Suitable for direct burial

**Benefits**

- Reinforced outer sheath offers enhanced protection against mechanical stress
- High thermal capacity for long lasting operation of the PV system at all seasons
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- For outdoor use and considering general installation guidelines also suitable for direct burial
- Exact quantity control during installation by meter marking on the cable sheath

**Application range**

- For cabling of individual module strings as well as for fixed solar generators and moved tracking systems
- Photovoltaic resp. solar fields
- Big conductor cross-sections are used as collecting main to transmit high power loads between the individual panel-strings and as connection to the DC/AC inverter of huge PV plants respectively solar fields

**Product features**

- Good weather-, abrasion-, temperature- and UV resistance
- Good heat pressure resistance
- Halogen-free and flame retardant

**Approvals (Norm references)**



- Weather-/UV resistant according HD 605/A1
- Flame retardant according to IEC 60332-1-2
- Halogen free in accordance with IEC 60754-1
- Ozone resistant according EN 50396
- Acid-/Brine resistant according EN 60811-2-1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Special polyolefin, cross-linked
- Outer sheath: Cross-linked copolymer
- Outer sheath colour: Black

**Technical data**

- Core identification code**  
Black
- Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Fixed installation: 4 x cable diameter
- Rated voltage**  
AC U<sub>0</sub>/U : 600/1000 V  
DC U<sub>0</sub>/U : 900/1500 V  
Max. permissible operating voltage:  
DC 1800 V
- Test voltage**  
AC 6500 V
- Range of temperature**  
Fixed installation:  
-40° C up to +100 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR XLSv</b>				
0027110	4.0	8.0	38.4	104
0027111	6.0	9.1	57.6	141
0027112	10.0	10.5	96.0	201
0027113	16.0	11.9	153.6	280
0027114	25.0	13.2	240.0	386
0027115	35.0	14.5	336.0	502
0027116	50.0	17.7	480.0	698
0027117	70.0	19.7	672.0	921
0027118	95.0	22.0	912.0	1210
0027119	120.0	23.8	1,152.0	1475

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
 Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
 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.  
 Considering economic minimum lengths we produce on request versions with red respectively blue core insulation colour or an imprinted code stripe on the black outer sheath as distinctive feature

**Comparable products**

- ÖLFLEX® TRAF0 XLv 1,8/3 kV see page 18

**Accessories**

- Tube cable lugs KR/ KRT/ KRF
- WT 3195 G pressing pliers, hydraulic
- V 1311 pressing pliers, hydraulic
- Cable shears KT 4 and KT 5
- Model 4 and 6 cable shears

**New**

# ÖLFLEX® TRAF0 XLv 1,8/3 kV

Flexible and mechanically robust single-conductor power cable



Info

- Voltage rating 1,8/3 kV
- Halogen-free and flame retardant
- Suitable for direct burial

### Benefits

- Reinforced outer sheath offers enhanced protection against mechanical stress
- Extended temperature range for application in harsh climatic environmental conditions
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire
- For outdoor use and considering general installation guidelines also suitable for direct burial
- Flexible and fine-wired conductor design enables easily on-site installation

### Application range

- Applications with voltage rating 1,8/3 kV
- In the field of renewable energy as well as conventional power generation
- Photovoltaic resp. solar fields
- Drip loop installation in wind turbines
- As connection between the converter and the transformer substation

### Product features

- Good weather-, abrasion-, temperature- and UV resistance
- Good heat pressure resistance
- Halogen-free and flame retardant
- Torsion-resistant up to ±150 °/mtr

### Approvals (Norm references)



- Weather-/UV resistant according HD 605/A1
- Flame retardant according to IEC 60332-1-2
- Halogen free in accordance with IEC 60754-1
- Ozone resistant according EN 50396
- Acid-/Brine resistant according EN 60811-2-1

### Design

- Conductor: Fine wired tinned copper strands
- Core insulation: Special polyolefin, cross-linked
- Outer sheath: Cross-linked copolymer
- Core insulation and outer jacket inseparably extruded together
- Outer sheath colour: Black

### Technical data

- Core identification code**  
Black
- Fire test**  
Flame retardant acc. to IEC 60332-1-2
- Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x cable diameter  
Fixed installation: 5 x outer diameter
- Rated voltage**  
U<sub>0</sub>/U: 1.8/3 kV
- Test voltage**  
AC 6500 V
- Range of temperature**  
Flexing: -40 °C up to +90 °C  
Fixed installation: -40 °C up to +90 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® TRAF0 XLv 1,8/3 kV</b>				
1151010	95.0	22.1	912.0	1218
1151011	120.0	24.4	1,152.0	1496
1151012	150.0	25.9	1,440.0	1810
1151013	185.0	28.2	1,776.0	2184
1151014	240.0	30.3	2,304.0	2757
1151015	300.0	34.0	2,880.0	3407
1151016	400.0	37.6	3,840.0	4444

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Drum

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

### Comparable products

- ÖLFLEX® SOLAR XLSv see page 17

### Accessories

- Tube cable lugs KR/ KRT/ KRF
- WT 3195 G pressing pliers, hydraulic
- V 1311 pressing pliers, hydraulic
- Cable shears KT 4 and KT 5
- Model 4 and 6 cable shears

**ÖLFLEX® SOLAR V4A**  
High-grade steel armoured solar cable



**Info**

- Protected against martens, rodents and termites

**Benefits**

- Stainless high-grade (class V4A) steel wire braiding protects very effective against martens, rodents and even termites
- Robust against mechanical impact
- Reduction of flame propagation as well as of toxic combustion gases in the event of fire

**Application range**

- For the use in PV systems for instance on stable and barn roofs in densely forested areas and farmsteads
- Gable and flat roof photovoltaic systems
- Photovoltaic resp. solar fields

**Product features**

- Weathering-, abrasion and UV resistant
- Halogen-free and flame retardant
- Good heat pressure resistance

**Approvals (Norm references)**



- Flame retardant according to IEC 60332-1-2
- Halogen-free according to EN 50267-2-1/-2
- Weather-/UV resistant according HD 605/A1

**Design**

- Conductor: Fine wired tinned copper strands
- Core insulation: Cross-linked polymer
- Outer sheath: special polymer
- Outer sheath colour: Black
- Armouring: high-grade stainless steel wire braiding (V4A)

**Technical data**

- Core identification code**  
Black
- Conductor stranding**  
Fine wire in accordance to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Fixed installation: 5 x cable diameter
- Rated voltage**  
AC  $U_0/U$  : 600/1000 V  
DC  $U_0/U$  : 900/1500 V  
Max. permissible operating voltage:  
DC 1800 V
- Test voltage**  
AC 6500 V
- Range of temperature**  
Fixed installation:  
-40° C up to +100 °C

Part number	Conductor cross section in mm <sup>2</sup>	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® SOLAR V4A stainless steel</b>				
0025960	4.0	7.0	38.4	98
0025961	6.0	8.0	57.6	158

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
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.

**Comparable products**

- ÖLFLEX® SOLAR XLS see page 13

**Accessories**

- EPIC® SOLAR 4 Thin M pre-assembled see page 51
- EPIC® SOLAR Module Box see page 52
- Universal strip stripping and cutting tool see page 63
- KS 20 cable shears see page 63
- EPIC® SOLAR 4 THIN F pre-assembled see page 51

**Wide range use**

PVC sheath and coloured cores

# ÖLFLEX® CLASSIC 100 BK POWER 0,6/1kV



**Info**

- Down to -30°C also outdoor use

**Benefits**

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

**Application range**

- Plant engineering and construction  
Industrial machinery  
Air conditioning installations  
Paint-spray lines
- Stage technology
- Fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Outdoor use suitable considering the temperature range
- Suitable for direct burial

**Product features**

- Flame retardant according to IEC 60332-1-2
- UV resistant and weather proof
- Flexible down to -30° C

**Approvals (Norm references)**



**Design**

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

**Technical data**

- Core identification code**  
Up to 5 cores: according to VDE 0293-308 (appendix T9)  
Starting at 6 cores: ÖLFLEX® colour code (appendix T7)
- Specific insulation resistance**  
> 20 GOhm x cm
- Conductor stranding**  
Fine wire in accordance to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x cable diameter  
Fixed installation: 4 x cable diameter
- Rated voltage**  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with protective conductor GN/YE  
X = without protective conductor
- Range of temperature**  
Occasional flexing: -30°C up to +70°C  
Fixed installation: -40°C up to +80°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® CLASSIC 100 BK POWER 0,6/1 kV</b>				
1120456	2 X 1.0	8.6	19.2	98
1120457	3 G 1.0	9.0	29.0	112
1120458	4 G 1.0	9.6	38.0	131
1120459	5 G 1.0	10.4	48.0	152
1120462	2 X 1.5	9.6	29.0	123
1120463	3 G 1.5	10.1	43.0	144
1120464	4 G 1.5	10.8	58.0	170
1120465	5 G 1.5	11.7	72.0	199
1120468	2 X 2.5	10.8	48.0	147
1120469	3 G 2.5	11.3	72.0	182
1120470	4 G 2.5	12.2	96.0	225
1120471	5 G 2.5	13.3	120.0	266
1120474	4 G 4	13.8	154.0	324
1120475	4 G 6	15.1	230.0	442
1120476	4 G 10	18.7	384.0	707
1120477	4 G 16	21.3	614.0	1100
1120478	4 G 25	26.2	960.0	1600
1120479	4 G 35	29.1	1,344.0	2400
1120480	4 G 50	35.6	1,920.0	3400
1120481	4 G 70	40.7	2,688.0	5050
1120482	4 G 95	46.8	3,648.0	6010
1120483	4 G 120	53.5	4,608.0	7500

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum  
Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)  
Further sizes as well as screened types on request  
Photographs are not to scale and do not represent detailed images of the respective products.

**Comparable products**

- ÖLFLEX® CLASSIC 130 H BK 0,6/1kV
- ÖLFLEX® CLASSIC 110 BLACK 0,6/1kV see page 21

**Accessories**

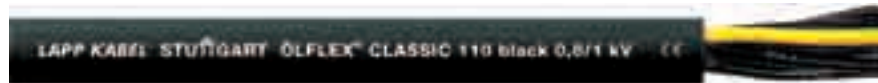
- Stainless steel - Box Starter - Set
- SKINTOP® MS-M

# ÖLFLEX® CLASSIC 110 BLACK 0,6/1kV



**Info**

- Suitable for outdoor applications



**Benefits**

- High electrical performance due to 4kV test voltage

**Application range**

- Plant engineering and construction  
Industrial machinery  
Air conditioning installations  
Power station  
Stage technique
- Fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Outdoor use suitable considering the temperature range

- Suitable for direct burial

**Product features**

- Flame retardant according to IEC 60332-1-2
- UV resistant and weather proof

**Approvals (Norm references)**



**Design**

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

**Technical data**

- Core identification code**  
Black with white numbers acc. to VDE 0293
- Based on**  
VDE 0250-1 and HD 627 S1
- Specific insulation resistance**  
> 20 GOhm x cm
- Conductor stranding**  
Fine wire in accordance to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 15 x cable diameter  
Fixed installation: 4 x cable diameter
- Rated voltage**  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with protective conductor GN/YE  
X = without protective conductor
- Range of temperature**  
Occasional flexing: -5°C up to +70°C  
Fixed installation: -40°C up to +80°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® CLASSIC 110 BLACK</b>				
1120232	2 X 0.75	8.3	14.4	81
1120233	3 G 0.75	8.7	21.6	93
1120234	3 X 0.75	8.7	21.6	93
1120235	4 G 0.75	9.2	29.0	108
1120237	5 G 0.75	9.9	36.0	126
1120241	7 G 0.75	10.7	51.0	162
1120248	12 G 0.75	13.4	86.0	236
1120251	18 G 0.75	15.4	130.0	334
1120259	41 G 0.75	21.6	296.0	713
1120266	2 X 1.0	8.6	19.2	98
1120267	3 G 1.0	9.0	29.0	112
1120268	3 X 1.0	9.0	29.0	112
1120269	4 G 1.0	9.6	38.4	131
1120270	4 X 1.0	9.6	38.4	131
1120271	5 G 1.0	10.4	48.0	152
1120274	7 G 1.0	11.1	67.0	196
1120280	12 G 1.0	14.0	116.0	286
1120284	18 G 1.0	16.1	173.0	419
1120290	25 G 1.0	18.6	240.0	572
1120294	34 G 1.0	21.3	326.0	764
1120298	41 G 1.0	23.2	394.0	891
1120306	2 X 1.5	9.6	29.0	123
1120307	3 G 1.5	10.1	43.0	144
1120308	3 X 1.5	10.1	43.0	144
1120309	4 G 1.5	10.8	58.0	170
1120311	5 G 1.5	11.7	72.0	199
1120314	7 G 1.5	12.6	101.0	261
1120320	12 G 1.5	16.1	173.0	399
1120322	14 G 1.5	17.0	202.0	448
1120324	18 G 1.5	18.8	259.0	547

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
1120328	25 G 1.5	21.7	360.0	770
1120330	34 G 1.5	24.9	490.0	996
1120333	50 G 1.5	29.8	720.0	1427
1120339	2 X 2.5	10.8	48.0	147
1120340	3 G 2.5	11.3	72.0	182
1120342	4 G 2.5	12.2	96.0	225
1120343	4 X 2.5	12.2	96.0	225
1120344	5 G 2.5	13.3	120.0	266
1120346	7 G 2.5	14.4	168.0	354
1120349	12 G 2.5	18.7	288.0	540
1120350	14 G 2.5	19.8	336.0	542
1120351	18 G 2.5	22.0	432.0	788
1120353	25 G 2.5	25.8	600.0	1094
1120360	4 G 4	13.8	154.0	324
1120361	5 G 4	15.1	192.0	385
1120362	7 G 4	16.4	269.0	513
1120366	4 G 6	15.1	230.0	442
1120367	5 G 6	16.8	288.0	526
1120368	7 G 6	18.2	403.0	705
1120370	4 G 10	18.7	384.0	707
1120371	5 G 10	20.7	480.0	881
1120374	4 G 16	21.3	614.0	1100
1120375	5 G 16	23.6	768.0	1600
1120376	7 G 16	26.2	1,075.0	1890
1120378	4 G 25	26.2	960.0	1600
1120379	5 G 25	29.0	1,200.0	2050
1120382	4 G 35	29.1	1,344.0	2400
1120383	5 G 35	32.5	1,680.0	2900
1120385	4 G 50	35.6	1,920.0	3400
1120387	4 G 70	40.7	2,688.0	5050
1120389	4 G 95	46.8	3,648.0	6010
1120390	4 G 120	53.5	4,608.0	7500

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

**Comparable products**

- ÖLFLEX® CLASSIC 100 BK POWER 0,6/1kV see page 20
- ÖLFLEX® CLASSIC 130 H BK 0,6/1kV

**Accessories**

- SKINTOP® MS-M
- Cable shears KT 4 and KT 5

**Wide range use**

PVC sheath and numbered cores

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



**Info**

- Suitable for outdoor applications
- EMC compliant

**Benefits**

- High electrical performance due to 4kV test voltage

**Application range**

- Plant engineering and construction  
Industrial machinery  
Air conditioning installations  
Power station
- In EMI critical environment (electromagnetic interference)
- Fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load
- Outdoor use suitable considering the temperature range
- Suitable for direct burial

**Product features**

- Flame retardant according to IEC 60332-1-2
- UV resistant and weather proof
- High coverage degree of the screen low transfer impedance (max. 250 Ω/km at 30 MHz)

**Approvals (Norm references)**



**Design**

- Fine strands of bare copper wires
- PVC insulation LAPP P8/1
- PVC inner sheath, black
- Tinned copper braid
- PVC outer sheath, black (RAL 9005)

**Technical data**

- Core identification code**  
Black with white numbers acc. to VDE 0293
- Based on**  
VDE 0250-1 and HD 627 S1
- Specific insulation resistance**  
> 20 GΩhm x cm
- Conductor stranding**  
Fine wire in accordance to VDE 0295  
Class 5 / IEC 60228 Class 5
- Minimum bending radius**  
Occasional flexing: 20 x cable diameter  
Fixed installed: 6 x outer diameter
- Rated voltage**  
U<sub>0</sub>/U: 600/1000 V
- Test voltage**  
4000 V
- Protective conductor**  
G = with protective conductor GN/YE  
X = without protective conductor
- Range of temperature**  
Occasional flexing: -5°C up to +70°C  
Fixed installation: -40°C up to +80°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>ÖLFLEX® CLASSIC 110 CY BLACK</b>				
1121232	2 X 0.75	10.5	46.0	183
1121233	3 G 0.75	10.9	56.0	210
1121235	4 G 0.75	11.4	67.0	238
1121236	4 X 0.75	11.4	67.0	238
1121237	5 G 0.75	12.1	78.0	272
1121241	7 G 0.75	12.9	97.0	315
1121247	12 G 0.75	15.8	168.0	464
1121251	18 G 0.75	18.0	229.0	616
1121254	25 G 0.75	20.7	296.0	762
1121266	2 X 1.0	10.8	52.0	198
1121267	3 G 1.0	11.2	66.0	228
1121268	3 X 1.0	11.2	66.0	228
1121269	4 G 1.0	11.8	79.0	261
1121270	4 X 1.0	11.8	79.0	261
1121271	5 G 1.0	12.6	93.0	300
1121274	7 G 1.0	13.3	117.0	335
1121280	12 G 1.0	16.4	204.0	522
1121284	18 G 1.0	18.7	280.0	687
1121290	25 G 1.0	21.6	369.0	884
1121306	2 X 1.5	11.8	69.0	243
1121307	3 G 1.5	12.3	87.0	273
1121308	3 X 1.5	12.3	87.0	273
1121309	4 G 1.5	13.0	102.0	290
1121310	4 X 1.5	13.0	102.0	290
1121311	5 G 1.5	13.9	125.0	352

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
1121314	7 G 1.5	15.0	180.0	448
1121320	12 G 1.5	18.7	281.0	690
1121324	18 G 1.5	21.8	391.0	938
1121328	25 G 1.5	25.1	518.0	1180
1121340	3 G 2.5	13.5	123.0	354
1121342	4 G 2.5	14.6	168.0	413
1121344	5 G 2.5	15.7	204.0	515
1121346	7 G 2.5	17.0	265.0	619
1121349	12 G 2.5	21.7	421.0	936
1121360	4 G 4	16.2	238.0	587
1121361	5 G 4	17.7	302.0	689
1121362	7 G 4	19.0	396.0	828
1121367	4 G 6	17.7	318.0	715
1121368	5 G 6	19.2	419.0	862
1121369	7 G 6	21.2	559.0	1105
1121372	4 G 10	21.7	574.0	1188
1121373	5 G 10	23.0	612.0	1020
1121377	4 G 16	24.3	809.0	1656
1121378	5 G 16	26.7	935.0	1440
1121381	4 G 25	29.8	1,165.0	2179
1121382	5 G 25	31.6	1,400.0	2090
1121385	4 G 35	32.7	1,683.0	2893
1121388	4 G 50	39.6	2,368.0	4094
1121391	4 G 70	44.5	3,261.0	5467
1121394	4 G 95	51.0	4,055.0	5849
1121397	4 G 120	58.1	5,225.0	7509

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

**Comparable products**

- ÖLFLEX® CLASSIC 135 CH BK 0,6/1kV

**Accessories**

- SKINTOP® MS-M BRUSH



**NYY-J, NYY-O**

Fixed, buried PVC cable with different application areas



**Application range**

- As a fixed installation power and control cable for the following applications:
- For indoor- and outdoor use
- Direct burial
- In concrete
- In water

**Product features**

- Flame retardant according to IEC 60332-1-2
- Power rating acc. to HD 603 part 3G for outdoor laying and as per VDE 0298 part 4 (see also appendix T12) for laying in and on buildings

**Approvals (Norm references)**



**Design**

- Conductor of bare copper wires
- Core insulation: Based on PVC
- Filling compound over the core assembly
- PVC based outer sheath

**Technical data**

- Core identification code**  
Up to 5 cores: according to VDE 0293-308 (appendix T9)  
Starting at 6 cores: Black with white numbers
- Approvals**  
VDE 0276 Part 603 (for 1-5 cores)  
VDE 0276 Part 627 (from 7 cores)
- Conductor stranding**  
Single or multi-wire
- Minimum bending radius**  
Single core: 15 x outer diameter  
multi-core: 12 x outer diameter
- Rated voltage**  
U<sub>0</sub>/U: 0,6/1,0 kV
- Test voltage**  
4000 V
- Range of temperature**  
For installation: +5°C up to +50°C  
Fixed installation: -40°C up to +70°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>NYY-J</b>				
1550030	1 x 25rm	13.0	240.0	380
1550038	1 x 35rm	14.0	336.0	447
1550032	1 x 50rm	15.0	480.0	650
1550033	1 x 70rm	17.0	672.0	864
1550037	1 x 185rm	26.0	1,776.0	2000
15500013	3 x 1,5re	12.0	43.0	223
15500023	4 x 1,5re	13.0	58.0	256
15500033	5 x 1,5re	14.0	72.0	293
1550004	7 x 1,5re	15.0	101.0	360
1550005	10 x 1,5re	18.0	144.0	520
1550006	12 x 1,5re	19.0	173.0	560
1550084	14 x 1,5re	20.0	202.0	620
1550007	16 x 1,5re	21.0	230.0	680
1550008	19 x 1,5re	22.0	274.0	760
1550009	24 x 1,5re	24.0	346.0	900
1550086	30 x 1,5re	26.0	432.0	1100
15500103	3 x 2,5re	13.0	72.0	272
15500113	4 x 2,5re	14.0	96.0	316
15500123	5 x 2,5re	15.0	120.0	323
1550013	7 x 2,5re	16.0	168.0	450
1550090	10 x 2,5re	20.0	240.0	630
1550091	12 x 2,5re	20.0	288.0	680
1550092	14 x 2,5re	21.0	336.0	790
1550094	19 x 2,5re	23.0	456.0	990
1550096	24 x 2,5re	26.0	576.0	1300
1550097	30 x 2,5re	28.0	720.0	1400
15500583	3 x 4re	15.0	115.0	373
15500203	4 x 4re	16.0	154.0	439
15500263	5 x 4re	17.0	192.0	510
15500593	3 x 6re	16.0	173.0	466
15500213	4 x 6re	17.0	230.0	547
15500273	5 x 6re	19.0	288.0	640
15500603	3 x 10re	18.0	288.0	629
15500223	4 x 10re	19.0	384.0	743
15500823	5 x 10re	21.0	480.0	899
15500613	3 x 16re	20.0	461.0	850
15500233	4 x 16re	22.0	614.0	1039
15500833	5 x 16re	23.0	768.0	1240
15500713	3 x 25rm/16re	25.0	874.0	1595
15500243	4 x 25rm	27.0	960.0	1620
15500153	3 x 35sm/16re	27.0	1,162.0	1718
15500753	4 x 35sm	27.0	1,344.0	1916
15500163	3 x 50sm/25rm	31.0	1,680.0	2383
15500253	4 x 50sm	31.0	1,920.0	2639
15500173	3 x 70sm/35sm	33.0	2,352.0	3196
15500763	4 x 70sm	35.0	2,688.0	3576
15500183	3 x 95sm/50sm	38.0	3,216.0	4271
15500773	4 x 95sm	40.0	3,648.0	4746
15500723	3 x 120sm/70sm	41.0	4,128.0	5281
15500783	4 x 120sm	43.0	4,608.0	5813
15500733	3 x 150sm/70sm	46.0	4,992.0	6408
15500793	4 x 150sm	48.0	5,760.0	7263
15500743	3 x 185sm/95sm	50.0	6,240.0	7909
15500803	4 x 185sm	53.0	7,104.0	8905

## Building Installation

## Cables for direct burial

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
15500193	3 x 240sm/120sm	57.0	8,064.0	10162
15500813	4 x 240sm	60.0	9,216.0	11430
<b>NYY-O</b>				
1550205	1 x 10re	10.0	96.0	176
1550206	1 x 16re	11.0	154.0	239
1550207	1 x 25rm	13.0	240.0	380
1550208	1 x 35rm	14.0	336.0	447
1550209	1 x 50rm	15.0	480.0	650
1550210	1 x 70rm	17.0	672.0	864
1550211	1 x 95rm	19.0	912.0	1132
1550212	1 x 120rm	21.0	1,152.0	1405
1550213	1 x 150rm	22.0	1,440.0	1710
1550214	1 x 185rm	24.0	1,776.0	2086
1550215	1 x 240rm	27.0	2,304.0	2669
1550216	1 x 300rm	30.0	2,880.0	3305
1550218	1 x 500rm	39.0	4,800.0	5400
15502003	2 x 1,5re	11.0	29.0	210
15502193	2 x 2,5re	12.0	48.0	250
15502203	2 x 4re	14.0	77.0	360
15502213	2 x 6re	15.0	115.0	400
15502223	2 x 10re	17.0	192.0	500
15502533	4 x 16re	22.0	614.0	1039
15502543	4 x 25rm	27.0	960.0	1620
15502563	4 x 50sm	31.0	1,920.0	2639
15502573	4 x 70sm	35.0	2,688.0	3576
15502583	4 x 95sm	40.0	3,648.0	4746

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: Excluding Copper; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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 and  $\leq$  250 m, otherwise drum

Please specify the desired packaging size (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.

#### ■ Comparable products

- NYCY see page 25
- NYCWY see page 26
- NAYY-J see page 27

#### ■ Accessories

- V 1311 pressing pliers, hydraulic
- STAR STRIP stripping tool
- Cable shears KT 4 and KT 5

**Fixedly installed, buried PVC cable with concentric, helical copper conductor and cross-conductive spiral**



**Benefits**

- Concentric conductor above all as PE

**Application range**

- As a fixed installation power and control cable for the following applications:
- For indoor- and outdoor use
- Direct burial
- In concrete
- In water

**Product features**

- Power rating acc. to HD 603 part 3G for outdoor laying and as per VDE 0298 part 4 (see also appendix T12) for laying in and on buildings

**Approvals (Norm references)**



**Design**

- Conductor of bare copper wires
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Concentric, helical, outside conductor of bare copper strands with inductance-reducing, cross-conductive copper bond counter spiral
- PVC based outer sheath

**Technical data**

	<b>Core identification code</b> Up to 5 cores: according to VDE 0293-308 (appendix T9) Starting at 6 cores: Black with white numbers
	<b>Approvals</b> VDE 0276 Part 603 (for 1-5 cores) VDE 0276 Part 627 (from 7 cores)
	<b>Conductor stranding</b> Single or multi-wire
	<b>Minimum bending radius</b> Fixed installation: 12 x outer diameter
	<b>Rated voltage</b> U <sub>0</sub> /U: 0,6/1,0 kV
	<b>Test voltage</b> 4000 V
	<b>Range of temperature</b> For installation: +5°C up to +50°C Fixed installation: -40°C up to +70°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
15503003	2 x 1,5re/1,5	14.0	52.0	245
15503103	3 x 1,5re/1,5	14.0	66.0	280
15503203	4 x 1,5re/1,5	15.0	81.0	302
1550330	7 x 1,5re/2,5	17.0	133.0	450
1550332	12 x 1,5re/2,5	20.0	205.0	580
1550337	24 x 1,5re/6	26.0	413.0	1100
15503113	3 x 2,5re/2,5	15.0	104.0	316
15503213	4 x 2,5re/2,5	16.0	128.0	360
1550350	7 x 2,5re/2,5	18.0	200.0	530
1550355	16 x 2,5re/6	23.0	451.0	950
15503223	4 x 4re/4	18.0	200.0	485
15503233	4 x 6re/6	19.0	297.0	616

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
 Copper price basis: Excluding Copper; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum  
 Please specify the desired packaging size (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.

**Comparable products**

- NYY-J, NYY-O see page 23

**Building Installation**

Cables for direct burial

**NYCWY**

Fixedly installed, buried PVC cable with concentric, wavelike copper conductor and cross-conductive spiral



**Benefits**

- Concentric conductor above all as PE
- Easier connection thanks to the wave form of the concentric copper conductor

**Application range**

- As a fixed installation power and control cable for the following applications:
- For indoor- and outdoor use
- Direct burial
- In concrete
- In water

**Product features**

- Power rating acc. to HD 603 part 3G for outdoor laying and as per VDE 0298 part 4 (see also appendix T12) for laying in and on buildings

**Approvals (Norm references)**



**Design**

- Conductor of bare copper wires
- Core insulation: Based on PVC
- Filling compound over the core assembly
- Concentric, wavelike, outside conductor of bare copper strands with inductance-reducing, cross-conductive copper bond counter spiral
- PVC based outer sheath

**Technical data**

	<b>Core identification code</b> Up to 5 cores: according to VDE 0293-308 (appendix T9)
	<b>Approvals</b> VDE 0276 Part 603 (for 1-5 cores)
	<b>Conductor stranding</b> Single or multi-wire
	<b>Minimum bending radius</b> Fixed installation: 12 x outer diameter
	<b>Rated voltage</b> U <sub>0</sub> /U: 0,6/1,0 kV
	<b>Test voltage</b> 4000 V
	<b>Range of temperature</b> For installation: +5°C up to +50°C Fixed installation: -40°C up to +70°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
15505003	2 x 10re/10	19.0	312.0	610
15505263	3 x 10re/10	20.0	408.0	775
15505403	4 x 10re/10	21.0	504.0	897
15505273	3 x 16re/16	22.0	643.0	1066
15505413	4 x 16re/16	24.0	796.0	1250
15505283	3 x 25rm/25	26.0	1,003.0	1584
15505423	4 x 25rm/16	28.0	1,142.0	1822
15505303	3 x 35sm/35	26.0	1,402.0	1710
15505433	4 x 35sm/16	29.0	1,526.0	2146
15505163	3 x 50sm/50	30.0	2,000.0	2368
15505443	4 x 50sm/25	33.0	2,203.0	3031
15505453	4 x 70sm/35	38.0	3,082.0	4056
15505143	3 x 95sm/50	38.0	3,296.0	4256
15505323	3 x 95sm/95	39.0	3,791.0	4600
15505463	4 x 95sm/50	43.0	4,208.0	5364
15505153	3 x 120sm/70	41.0	4,236.0	5314
15505473	4 x 120sm/70	46.0	5,388.0	6748
15505353	3 x 150sm/70	45.0	5,100.0	6344
15505483	4 x 150sm/70	51.0	6,540.0	8159
15505173	3 x 185sm/95	50.0	6,383.0	8054

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: Excluding Copper; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

**Comparable products**

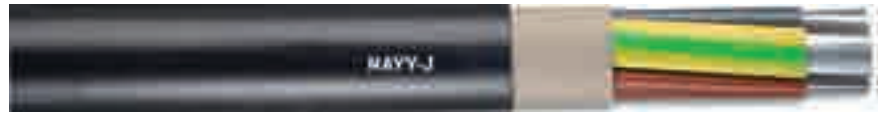
- NYY-J, NYY-O see page 23

**Accessories**

- V 1311 pressing pliers, hydraulic
- Cable shears KT 4 and KT 5

**NAYY-J**

Fixedly installed, buried PVC cable with solid aluminium conductors



**Application range**

- As a fixed installation power and control cable for the following applications:
- For indoor- and outdoor use
- Direct burial
- In concrete
- In water

**Product features**

- Flame retardant according to IEC 60332-1-2
- Maximum tensile load for aluminium conductors is 30 N/mm<sup>2</sup>

- Power rating acc. to HD 603 part 3G for outdoor laying and as per VDE 0298 part 4 (see also appendix T12) for laying in and on buildings

**Approvals (Norm references)**



**Design**

- Conductor of aluminium
- Core insulation: Based on PVC
- Filling compound over the core assembly
- PVC based outer sheath

**Technical data**

- Core identification code**  
According to VDE 0293-308 (table T9)
- Approvals**  
VDE 0276 Part 603
- Conductor stranding**  
Single wire
- Minimum bending radius**  
Fixed installation: 12 x outer diameter
- Rated voltage**  
U<sub>0</sub>/U: 0,6/1,0 kV
- Test voltage**  
4000 V
- Range of temperature**  
For installation: +5°C up to +50°C  
Fixed installation: -30°C to +70°C

Part number	Number of cores and mm <sup>2</sup> per conductor	Outer diameter in mm	Alu index kg/km	Weight kg/km
1552010	4 x 35re	28.2	406.0	1170
1552011	4 x 50se	29.8	580.0	1305
1552012	4 x 70se	34.2	812.0	1730
1552013	4 x 95se	38.6	1,102.0	2205
1552014	4 x 120se	41.9	1,392.0	2655
1552015	4 x 150se	45.6	1,740.0	3150
1552016	4 x 185se	50.8	2,146.0	3925
1552017	4 x 240se	59.6	2,784.0	4880

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Aluminium price basis: Excluding Aluminium; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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.

**Comparable products**

- NYY-J, NYY-O see page 23

**Accessories**

- V 1311 pressing pliers, hydraulic
- STAR STRIP stripping tool
- Tube Cable lugs and other connectors made of aluminium or bimetal AICu are available on request

## RE-2Y(ST)Yv



### Application range

- RE-2Y(ST)Yv is intended for use wherever modern process computers have to process large volumes of data, e.g. high capacity computer systems in waste incineration plants or sewage treatment plants.
- Cables are suitable for use in dry and damp rooms, and the black version can also be used outdoors or for direct burial.

### Product features

- Computer cable with reinforced outer sheath
- Colour: black (based on RAL 9005) or blue for intrinsically safe systems (based on RAL 5015)
- Flame retardant according to IEC 60332-1-2

### Approvals (Norm references)



### Design

- Bare stranded copper conductor, PE core insulation, cores twisted into pairs, pairs in layers plus 1 core for communication, core colour orange
- Foil wrapping, aluminium laminated plastic foil static screen with tin plated drain wire
- Reinforced PVC outer sheath
- In case of single-pair or 3-core versions the communication core is not applicable

### Technical data



**Core identification code**  
a-core: black  
b-core: white  
with consecutive numbers:  
1-1, 2-2, 3-3, 4-4 etc.  
Three-way version:  
black, white, red



**Mutual capacitance**  
(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



**Peak working voltage**  
(not for power applications)  
Max. 300 V



**Insulation resistance**  
> 5 GOhm x km



**Conductor resistance**  
0.5 mm<sup>2</sup>: max. 39.2 Ohm/km  
1.3 mm<sup>2</sup>: max. 14.3 Ohm/km



**Minimum bending radius**  
Fixed installation: 7.5 x cable diameter



**Short-range crosstalk attenuation**  
At 60 kHz min. 0.88 dB/km



**Test voltage**  
C/C: 2000 V  
C/S: 1000 V



**Range of temperature**  
Flexible application:  
-5°C up to +50°C  
Fixed installation: -40°C up to +70°C



**Characteristic impedance**  
Approx. 100 Ohm

Part number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>0.5 mm<sup>2</sup> black</b>				
0032411	1 x 2 x 0.5	8.2	15.0	74
0032412	2 x 2 x 0.5	10.2	30.0	117
0032413	4 x 2 x 0.5	11.0	50.0	140
0032414	8 x 2 x 0.5	13.8	90.0	215
0032415	10 x 2 x 0.5	14.6	110.0	220
0032417	16 x 2 x 0.5	17.5	170.0	352
0032418	20 x 2 x 0.5	18.5	210.0	385
0032420	36 x 2 x 0.5	24.0	370.0	656
0032421	48 x 2 x 0.5	27.4	490.0	854
<b>1.3 mm<sup>2</sup> black</b>				
0032430	1 x 2 x 1.3	9.4	31.0	102
0032431	2 x 2 x 1.3	11.7	62.0	161
0032432	4 x 2 x 1.3	13.5	114.0	230
0032433	8 x 2 x 1.3	17.1	218.0	377
0032434	12 x 2 x 1.3	19.3	322.0	515
0032435	16 x 2 x 1.3	22.0	426.0	656
0032436	24 x 2 x 1.3	26.5	684.0	995

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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® Li2YCYv (TP)



### Application range

- UNITRONIC® Li2YCY (TP) is particularly suitable for wiring from data systems at transmission rates up to 10 Megabit per second and is qualified for the serial interfaces RS422 and RS485.
- Cables of this kind are designed for fixed installation in dry and damp interiors and for conditional flexible use.
- UNITRONIC® Li2YCYv (TP) model with reinforced black outer sheath (Yv) is suitable for inside and outside use as well as burial in the ground.







### Product features

- Flame retardant according to IEC 60332-1-2

### Design

- As UNITRONIC® Li2YCY (TP), however with reinforced Yv PVC outer sheath
- Colour: black (RAL 9005)

### Technical data

-  **Core identification code**  
DIN 47100, see Appendix T9
-  **Peak working voltage**  
(not for power applications)  
at 0.14 mm<sup>2</sup>: 350 V  
at >= 0.25 mm<sup>2</sup>: 500 V
-  **Insulation resistance**  
> 5 GOhm x km
-  **Minimum bending radius**  
Fixed installation: 7.5 x cable diameter
- Short-range crosstalk attenuation**  
Up to 1 MHz min. 50 dB  
Up to 10 MHz min. 40 dB
-  **Range of temperature**  
Static:  
-30°C up to +80°C  
Flexing: -5°C up to +70°C
-  **Characteristic impedance**  
100 Ohm +/- 15

Part number	Number of pairs and mm <sup>2</sup> per conductor	Outer diameter in mm	Copper index kg/km	Weight kg/km
<b>UNITRONIC® Li2YCYv (TP) black for outdoor installation and direct burial</b>				
0031350	2 x 2 x 0,22	7,9	24,2	79
0031351	3 x 2 x 0,22	8,2	28,6	93
0031352	4 x 2 x 0,22	8,8	34,2	100
0031353	8 x 2 x 0,22	10,5	70,0	156
0031354	10 x 2 x 0,22	12,0	76,0	185
0031365	1 x 2 x 0,34	7,4	20,0	69
0031355	2 x 2 x 0,34	9,1	34,1	102
0031356	3 x 2 x 0,34	9,5	43,0	117
0031357	4 x 2 x 0,34	10,1	52,8	130
0031358	8 x 2 x 0,34	12,6	85,8	206
0031366	1 x 2 x 0,5	7,9	29,0	79
0031360	2 x 2 x 0,5	9,9	37,0	120
0031361	3 x 2 x 0,5	10,3	55,0	142
0031362	4 x 2 x 0,5	11,1	60,0	160
0031363	8 x 2 x 0,5	13,9	113,3	251
0031364	10 x 2 x 0,5	15,8	148,0	303

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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
- Multipurpose shears A and B
- STAR STRIP stripping tool
- STEEL GUN HT-338 cable tie pliers
- LS steel cable ties

# UNITRONIC® BUS PB Y 7-W FC BK

Outdoor installation / UV-resistant



### Benefits

- UV and weather resistant in black
- 7-W: 7-wire, eg. 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® (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. VDE 0281-1 or HD 21.1

- At room temperature mostly resistant against influence of acids, soaps, and determined oils

### Approvals (Norm references)



### Design

- Stranded conductor, 7-wire, bare
- Foam Skin - core isolation (O2YS)
- Alulaminated foil
- Braided shielding made of tin-plated copper wires
- Outer sheath PVC, black

### Suitable tools

- FC Strip stripping tool

### Technical data



**Mutual capacitance**  
(800 Hz): max. 30 nF/km



**Peak working voltage**  
(not for power purposes) 250 V



**Minimum bending radius**  
Fixed installation: 8 x outer diameter  
Flexing: 15 x outer diameter



**Test voltage**  
Core/core: 1500 V  
Core/screen: 1500 V



**Range of temperature**  
Flexing: -10°C up to +70°C  
Fixed installation: -40°C up to +80°C



**Characteristic impedance**  
150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170310	UNITRONIC® BUS PB Y 7-W FC BK	1 x 2 x 0.64	7.8	30.1	80

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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**UNITRONIC® BUS PB Yv**

Outdoor installation / 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® (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

**Product features**

- Reinforced PVC outer sheath

**Approvals (Norm references)**



**Design**

- Copper conductor, solid, bare
- Foam Skin - core isolation (O2YS)
- Aluminated foil
- Braided shielding made of tin-plated copper wires
- Outer sheath: reinforced PVC (black)

**Technical data**

- Mutual capacitance**  
(800 Hz): max. 30 nF/km
- Peak working voltage**  
(not for power purposes) 250 V
- Minimum bending radius**  
fixed installation: single 75 mm  
Fixed installation: 150 mm
- Test voltage**  
Core/core: 1500 V  
Core/screen: 1500 V
- Range of temperature**  
Flexible application:  
-5°C up to +50°C  
Fixed installation: -40°C up to +80°C
- Characteristic impedance**  
150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170223	UNITRONIC® BUS PB Yv	1 x 2 x 0.64	10.0	30.1	106

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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## UNITRONIC® BUS PB YY

Outdoor use / 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® (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

### Product features

- Doubled PVC outer sheath

### Approvals (Norm references)



### Design

- Copper conductor, solid, bare
- PE core insulation
- Aluminated foil
- Braided shielding made of tin-plated copper wires
- Sheath, PVC violet, OD 7,5mm sheath, PVC black, OD 9,5mm

### Technical data

	<b>Mutual capacitance</b> (800 Hz): max. 30 nF/km
	<b>Peak working voltage</b> (not for power purposes) 250 V
	<b>Minimum bending radius</b> fixed installation: single 75 mm Fixed installation: 150 mm
	<b>Test voltage</b> Core/core: 1500 V Core/screen: 1500 V
	<b>Range of temperature</b> Flexible application: -5°C up to +50°C Fixed installation: -40°C up to +80°C
	<b>Characteristic impedance</b> 150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170236	UNITRONIC® BUS PB YY	1 x 2 x 0.64	9.5	30.1	87

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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**UNITRONIC® BUS PB BURIAL FC**

Outdoor use / direct burial + UV-resistant



**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® (in accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC® NET, also suitable for FIP - Factory Instrumentation Protocol).

**Product features**

- PE as second outer sheath

**Approvals (Norm references)**



**Design**

- Copper conductor, solid, bare
- Foam Skin - core isolation (O2YS)
- Aluminated foil
- Braided shielding made of tin-plated copper wires
- Sheath, PVC violet, OD 8mm
- sheath, PE black, OD 10,8mm

**Technical data**

- Mutual capacitance**  
(800 Hz): max. 30 nF/km
- Peak working voltage**  
(not for power purposes) 100 V
- Minimum bending radius**  
Fixed installation: single 3,5 x cable diameter  
Fixed installation: 7.5 x cable diameter
- Test voltage**  
3600 V DC (3 sec.)
- Range of temperature**  
-40 °C up to +60 °C
- Characteristic impedance**  
150 +/- 15 Ohm

Part number	Article designation	Number of pairs and conductor diameter in mm	Outer diameter in mm	Copper index kg/km	Weight kg/km
2170323	UNITRONIC® BUS PB BURIAL FC	1 x 2 x 0.64	10.8	26.0	115

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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

**Accessories**

- FC Strip stripping tool

## EPIC® Data PROFIBUS Connectors 90° LED Screw Terminals



EPIC® Data PROFIBUS Connectors 90° LED Screw Terminals



**Info**

- Interoperable to market standard

**Benefits**

- 3 status LEDs indicate: bus operation, station transmitting, terminating resistor
- Simplify status investigation
- Standardized interfaces
- Cost saving because of quick installation
- Easy to connect

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Control engineering

**Product features**

- Screwing connection
- Switchable terminating resistor integrated
- Switch can also be operated when the connector is plugged and setting is clearly visible
- When being used as a through connector (two cable connections, node) the switch must be in the "OFF" position, if being as a terminal resistor (one cable connection) the switch must be in the "ON" position

- If the switch is in the "ON" position the outgoing bus cable is disconnected

**Approvals (Norm references)**



- Sub-D connection / pin assignment in accordance with PROFIBUS

**Design**

- Sub-D plug, 9-pole
- Metalized housing
- Cable outlet 90°
- For cable diameter: 5.0 ... 8.0 mm
- (-PG) Additionally with programming/diagnostic interface: Sub-D socket, 9-pole

**Suitable cables**

- Cables for BUS-Systems PROFIBUS-DP/ FMS/FIP page 30
- Cables for BUS-System PROFIBUS-PA

**Technical data**



**Dimensions**  
64 mm x 40 mm x 17 mm (LxWxH)

**Connection type**  
Screwing

**Pollution degree**  
2



**Weight**  
Approx. 40 g



**Degree of protection**  
IP20

**Outgoing cable**  
90°

**Termination resistor**  
Resistor combination integrated, connectable with slide switch

**Transmission rate**  
max. 12 MBit/s

**Interfaces**  
PROFIBUS-station:  
SUB-D socket, 9-pole

PROFIBUS-cable:  
4 terminals for wires up to 1,0 mm<sup>2</sup>

**Current consumption**  
max. 35 mA

**Permissible ambient conditions**  
Surrounding air temperature:  
0°C...+60°C

Transport and storage temperature:  
-25°C...+80°C

Relative humidity:  
max. 75% at +25°C

**Voltage consumption**  
4.75 .. 5.25 V DC  
(device is energized)

Part number	Article designation	Outgoing cable	PG	Pieces / PU
<b>EPIC® Data PROFIBUS Connectors</b>				
21700530	ED-PB-90-LED	90°	no	1
21700529	ED-PB-90-PG-LED	90°	yes	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication. Photographs are not to scale and do not represent detailed images of the respective products. For detailed information please see [www.lappautomation.com](http://www.lappautomation.com)

## EPIC® Data PROFIBUS Connectors 90° Fast Connect



**Info**

- Interoperable to market standard
- Expanded temperature range



EPIC® Data PROFIBUS Connectors 90° Fast Connect

**Benefits**

- Qualified for FC cables
- Standardized interfaces
- Cost saving because of quick installation
- Easy to connect

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Control engineering

**Product features**

- Visual connection control
- Switchable terminating resistor integrated
- Switch can also be operated when the connector is plugged and setting is clearly visible
- When being used as a through connector (two cable connections, node) the switch must be in the "OFF" position, if being as a terminal resistor (one cable connection) the switch must be in the "ON" position
- If the switch is in the "ON" position the outgoing bus cable is disconnected

**Approvals (Norm references)**



- Sub-D connection / pin assignment in accordance with PROFIBUS

**Design**

- Sub-D plug, 9-pole
- Metalized housing
- Cable outlet 90°
- For cable diameter: 5.0 ... 8.0 mm
- (-PG) Additionally with programming/diagnostic interface: Sub-D socket, 9-pole

**Suitable cables**

- Cables for BUS-Systems PROFIBUS-DP / FMS / FIP page 30
- Cables for BUS-System PROFIBUS-PA page

**Suitable tools**

- FC Strip stripping tool

**Technical data**

**Dimensions**  
72 mm x 40 mm x 17 mm (LxWxH)

**Connection type**  
Fast Connect

**Pollution degree**  
2

**Weight**  
Approx. 40 g

**Degree of protection**  
IP20

**Outgoing cable**  
90°

**Termination resistor**  
Resistor combination integrated, connectable with slide switch

**Transmission rate**  
max. 12 MBit/s

**Interfaces**  
PROFIBUS-station:  
SUB-D socket, 9-pole

PROFIBUS-cable:  
FC standard cable,  
Ø 0.64 mm

**Current consumption**  
max. 12.5 mA

**Permissible ambient conditions**  
Surrounding air temperature:  
-25°C...+70°C

Transport and storage temperature:  
-25°C...+80°C

Relative humidity:  
max. 75% at +25°C

**Voltage consumption**  
4.75 .. 5.25 V DC  
(device is energized)

Part number	Article designation	Outgoing cable	Cable types	PG	Pieces / PU
<b>EPIC® Data PROFIBUS Connectors</b>					
<b>For solid cores</b>					
21700502	ED-PB-90-FC	90°	Solid	no	1
21700501	ED-PB-90-PG-FC	90°	Solid	yes	1
<b>For stranded cores</b>					
21700528	ED-PB-90-FC-FLEX	90°	Flexible	no	1
21700527	ED-PB-90-PG-FC-FLEX	90°	Flexible	yes	1

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**UNITRONIC® Fieldbus**

Wall and field attachable connectors

**UNITRONIC® SENSOR**



**Application range**

- Cables for UNITRONIC® Fieldbus sensor-/actuator wiring requirements
- Data transmission cables to connect to M8, M12 connectors
- Automation technology
- Mechanical engineering
- Plant engineering

- 25x 0.25mm<sup>2</sup> or 0.34mm<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

**Approvals (Norm references)**



**Design**

- UNITRONIC® SENSOR LiFY  
Conductor: Superfine bare copper strand in accordance with DIN VDE 0295 Class 6; Core insulation PCV, Outer sheath PVC vinyl

- UNITRONIC® SENSOR DESINA® LiFY 11Y  
Stranded bare copper conductor, superfine. In accordance with VDE 0295 Class 6, special PVC insulation, cores twisted in layers, core ident code in accordance with DESINA® (brwon, white, blue, black). Outer sheath of special polyurethane based compound; colour yellow 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 LiFY 11Y Approved AWM UL-style 20549, 80°C / 300 V. Conductor: Cu wire, bare, super-fine strands in accordance with 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 especially suited for power chain use

**Product features**

- Core colour in accordance with DIN EN 50044
- 3x 0.34mm<sup>2</sup>  
1= brown, 2= blue, 3= black
- 4x 0.34 mm<sup>2</sup>  
1= brown, 2= white, 3= blue, 4= black

Part number	Article designation	Dimension in mm <sup>2</sup>	Outer diameter in mm	Core / sheath material	Colour	Copper index kg/km
<b>UNITRONIC® SENSOR</b>						
7038859	S-LiFY	3x0,34	4.8	PVC/PVC	black	9.8
7038860	S-LiFY	4x0,34	4.8	PVC/PVC	black	13.1
0040434	DESINA	4x0,34	5.2	PVC/PVC	yellow RAL 1021	13.5
7038861	S-LiFY 11Y	4x0,34	4.8	PVC/PUR	black	13.1
7038862	S-LiFY 11Y	5x0,25	4.9	PVC/PUR	black	12.0
<b>UNITRONIC® SENSOR FD</b>						
7038864	Li9Y11Y	3x0,34	4.6	PP/PUR	black	9.8
7038865	Li9Y11Y	4x0,34	4.7	PP/PUR	black	13.0
7038866	Li9Y11Y	5x0,34	5.1	PP/PUR	black	16.0
7038867	Li9Y11Y	5x0,25	4.7	PP/PUR	black	12.0
7038868	Li9Y11Y	8x0,25	5.9	PP/PUR	black	19.0

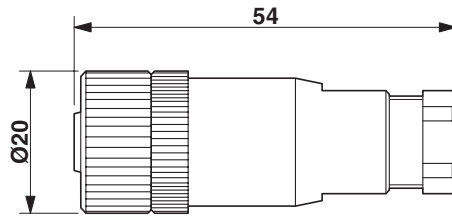
All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
 Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
 Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
 Cables are printed  
 Further types on request  
 Photographs are not to scale and do not represent detailed images of the respective products.

**Accessories**

- S/A M12 connectors that can be assembled see page 37
- S/A M8 connectors that can be assembled see page 38
- STAR STRIP stripping tool
- SMARTSTRIP stripping tool

ÖLFLEX®  
 UNITRONIC®  
 ETHERLINE®  
 EPIC®  
 SKINTOP®  
 SILVYN®  
 ACCESSORIES

## S/A M12 connectors that can be assembled



S/A M12 connectors that can be assembled

**Benefits**

- Quick and easy on-site assembly
- Creating individual cable lengths
- Standardized interfaces
- No special tools required for connecting the cables (quick connection designs)

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- 4, 5 and 8-position version
- Shielded and unshielded version
- Fast connection and screw connection design
- Free of substances which would hinder coating with paint or varnish

**Approvals (Norm references)**



**Suitable cables**

- Cable for sensor / actuator components page

**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP 67
<b>0</b>	<b>Ambient temperature (operation)</b> Plug / socket -40°C to +85°C
	<b>Contact material</b> CuZn
	<b>Contact surface material</b> CuSnZn
	<b>Coding</b> A - Standard

Part number	Article designation	Number of poles	Conductor cross section stranded min. in mm <sup>2</sup>	Conductor cross section stranded max. in mm <sup>2</sup>	Cable Diameter min in mm	Cable Diameter max in mm	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector, fast connection (Insulation-displacement)</b>									
22260132	AB-C4-M12MS-F0,34	4	0.14	0.34	3.5	6	125	4	1
22260134	AB-C4-M12MS-F0,75	4	0.34	0.75	4	8	250	4	1
<b>Straight connector, screw connection</b>									
22260129	AB-C5-M12MS-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Straight socket, fast connection (Insulation-displacement)</b>									
22260131	AB-C4-M12FS-F0,34	4	0.14	0.34	3.5	6	125	4	1
22260133	AB-C4-M12FS-F0,75	4	0.34	0.75	4	8	250	4	1
<b>Straight socket, screw connection</b>									
22260127	AB-C5-M12FS-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Angled connector, screw connection</b>									
22260130	AB-C5-M12MA-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Angled socket, screw connection</b>									
22260128	AB-C5-M12FA-PG 7	5	0.25	0.75	4	6	60	4	1
<b>Straight connector, shielded, screw connection</b>									
22260135	AB-C5-M12MS-PG9-SH	5	0.25	0.75	6	8	60	4	1
22260825	AB-C8-M12MS-PG9-SH	8	0.25	0.75	6	8	30	2	1
<b>Straight socket, shielded, screw connection</b>									
22260136	AB-C5-M12FS-PG9-SH	5	0.25	0.75	6	8	60	4	1
22260826	AB-C8-M12FS-PG9-SH	8	0.25	0.75	6	8	30	2	1

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## S/A M8 connectors that can be assembled



S/A M8 connectors that can be assembled

### Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 3 and 4-position version
- Fast connection and screw connection design
- Free of substances which would hinder coating with paint or varnish

### Approvals (Norm references)



### Suitable cables

- Cable for sensor / actuator components page

### Technical data

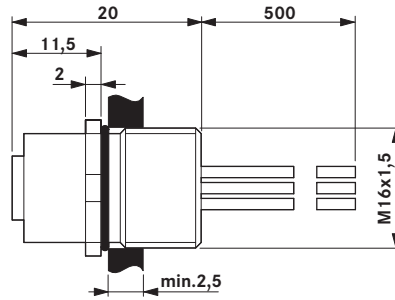
<b>IP</b>	<b>Degree of protection</b> IP 68
<b>0-1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C
	<b>Contact material</b> CuZn
	<b>Contact surface material</b> Au
	<b>Coding</b> A - Standard

Part number	Article designation	Number of poles	Conductor cross section stranded min. in mm <sup>2</sup>	Conductor cross section stranded max. in mm <sup>2</sup>	Cable Diameter min in mm	Cable Diameter max in mm	Nominal voltage U <sub>n</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>Straight connector, screw connection</b>									
22260120	AB-C3-M8MS	3	0.14	0.5	3.5	5	60	4	1
22260121	AB-C4-M8MS	4	0.14	0.5	3.5	5	30	4	1
<b>Straight connector, fast connection (Piercing)</b>									
22260122	AB-C3-M8MS-P	3	0.14	0.38	3	5	60	4	1
22260123	AB-C4-M8MS-P	4	0.14	0.38	3	5	30	4	1
<b>Straight socket, screw connection</b>									
22260125	AB-C3-M8FS	3	0.14	0.5	3.5	5	60	4	1
22260126	AB-C4-M8FS	4	0.14	0.5	3.5	5	30	4	1
<b>Straight socket, fast connection (Piercing)</b>									
22260124	AB-C3-M8FS-P	3	0.14	0.38	3	5	60	4	1
22260119	AB-C4-M8FS-P	4	0.14	0.38	3	5	30	4	1

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## S/A M12 flush-type connectors with M16 fastening thread



S/A M12 flush-type connectors with M16 fastening thread

**Benefits**

- Flexible connection solutions for individual device concepts
- Simple installation in devices
- Standardized interfaces

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- M12 panel feed-through with punched on single litz wires
- Panel feed-through with M16 fastening thread
- Front mounting
- M12 A-coded with quick locking system
- Free of substances which would hinder coating with paint or varnish

**Approvals (Norm references)**



**Design**

- PUR halogen-free single litz wires, l = 0.5 m
- 0,34 mm<sup>2</sup>

**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP 67
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25°C to +85°C
	<b>Contact material</b> CuZn
	<b>Contact surface material</b> Au
	<b>Coding</b> A - Standard

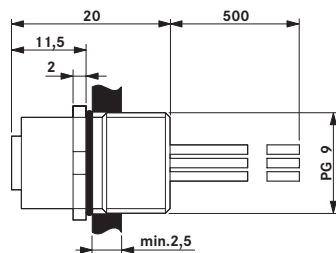
Part number	Article designation	Number of poles	Conductor cross section in mm <sup>2</sup>	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>M12 flush-type connector pin for front mounting</b>						
22260108	AB-C4-M12MS-M16-0,5	4	0.34	250	4	1
22260106	AB-C5-M12MS-M16-0,5	5	0.34	60	4	1
<b>M12 flush-type connector socket for front mounting</b>						
22260107	AB-C4-M12FS-M16-0,5	4	0.34	250	4	1
22260105	AB-C5-M12FS-M16-0,5	5	0.34	60	4	1

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**Accessories**

- Fitting nut for flush-type connectors

## S/A M 12 flush-type connectors with PG9 fastening thread



### S/A M 12 flush-type connectors with PG9 fastening thread

**Benefits**

- Flexible connection solutions for individual device concepts
- Simple installation in devices
- Standardized interfaces

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- M 12 panel feed-through with punched on single litz wires
- Panel feed-through with PG9 fastening thread
- Models for front and rear mounting
- Free of substances which would hinder coating with paint or varnish

**Approvals (Norm references)**



**Design**

- PUR halogen-free single litz wires, l = 0.5 m
- 0,34 mm<sup>2</sup>

**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP 67
<b>0-1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +85 °C
	<b>Contact material</b> CuZn
	<b>Contact surface material</b> Au
	<b>Coding</b> A - Standard

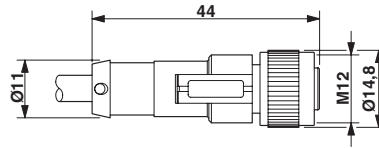
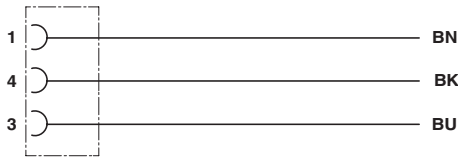
Part number	Article designation	Number of poles	Conductor cross section in mm <sup>2</sup>	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	PU
<b>M 12 flush-type connector pin for rear mounting (fitting nut inclusive)</b>						
22260117	AB-C4-DSI-M 12MS-PG9-0,5	4	0.34	250	4	1
22260115	AB-C5-DSI-M 12MS-PG9-0,5	5	0.34	60	4	1
<b>M 12 flush-type connector socket for rear mounting (fitting nut inclusive)</b>						
22260118	AB-C4-DSI-M 12FS-PG9-0,5	4	0.34	250	4	1
22260116	AB-C5-DSI-M 12FS-PG9-0,5	5	0.34	60	4	1
<b>M 12 flush-type connector pin for front mounting</b>						
22260113	AB-C4-M 12MS-PG9-0,5	4	0.34	250	4	1
22260112	AB-C5-M 12MS-PG9-0,5	5	0.34	60	4	1
<b>M 12 flush-type connector socket for front mounting</b>						
22260114	AB-C4-M 12FS-PG9-0,5	4	0.34	250	4	1
22260111	AB-C5-M 12FS-PG9-0,5	5	0.34	60	4	1

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**Accessories**

- Fitting nut for flush-type connectors

## S/A cable: M12 socket on free conductor end



S/A cable: M12 socket on free conductor end

**Benefits**

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- 3-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

**Approvals (Norm references)**



**Design**

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath colour black

**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260257	AB-C3-2,0PUR-M12FS	2	250	4	no	1
22260250	AB-C3-5,0PUR-M12FS	5	250	4	no	1
22260251	AB-C3-10,0PUR-M12FS	10	250	4	no	1
<b>Angled socket</b>						
22260258	AB-C3-2,0PUR-M12FA	2	250	4	no	1
22260259	AB-C3-5,0PUR-M12FA	5	250	4	no	1
22260260	AB-C3-10,0PUR-M12FA	10	250	4	no	1
<b>Straight socket with LEDs</b>						
22260252	AB-C3-2,0PUR-M12FS-2L	2	24	4	2 LEDs	1
22260265	AB-C3-5,0PUR-M12FS-2L	5	24	4	2 LEDs	1
22260266	AB-C3-10,0PUR-M12FS-2L	10	24	4	2 LEDs	1
<b>Angled socket with LEDs</b>						
22260253	AB-C3-2,0PUR-M12FA-2L	2	24	4	2 LEDs	1
22260254	AB-C3-5,0PUR-M12FA-2L	5	24	4	2 LEDs	1
22260255	AB-C3-10,0PUR-M12FA-2L	10	24	4	2 LEDs	1

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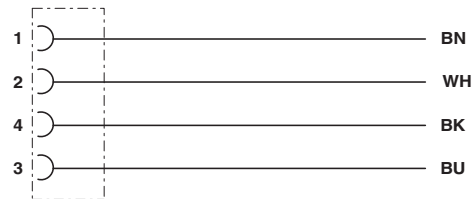
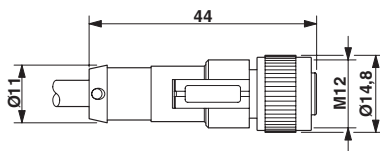
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed technical information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M12 socket on free conductor end



### S/A cable: M12 socket on free conductor end

#### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

#### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

#### Product features

- 4-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

#### Approvals (Norm references)



#### Design

- Permanently flexible control cable
- Design: 4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath colour black

#### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly flammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260322	AB-C4- 2,0PUR-M12FS	2	250	4	no	1
22260323	AB-C4- 5,0PUR-M12FS	5	250	4	no	1
22260343	AB-C4-10,0PUR-M12FS	10	250	4	no	1
<b>Angled socket</b>						
22260324	AB-C4- 2,0PUR-M12FA	2	250	4	no	1
22260325	AB-C4- 5,0PUR-M12FA	5	250	4	no	1
22260341	AB-C4-10,0PUR-M12FA	10	250	4	no	1
<b>Straight socket with LEDs</b>						
22260344	AB-C4- 2,0PUR-M12FS-2L	2	24	4	2 LEDs	1
22260345	AB-C4- 5,0PUR-M12FS-2L	5	24	4	2 LEDs	1
22260346	AB-C4-10,0PUR-M12FS-2L	10	24	4	2 LEDs	1
<b>Angled socket with LEDs</b>						
22260326	AB-C4- 2,0PUR-M12FA-3L	2	24	4	3 LEDs	1
22260327	AB-C4- 5,0PUR-M12FA-3L	5	24	4	3 LEDs	1
22260340	AB-C4-10,0PUR-M12FA-3L	10	24	4	3 LEDs	1

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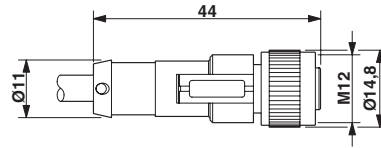
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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## S/A cable: M12 socket on free conductor end



S/A cable: M12 socket on free conductor end

**Benefits**

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- 5-pos. connector

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

**Approvals (Norm references)**



**Design**

- Permanently flexible control cable
- Design: 5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Conductor colors brown, white, blue, black, green / yellow
- Outer sheath: PUR, halogen-free
- Sheath colour black

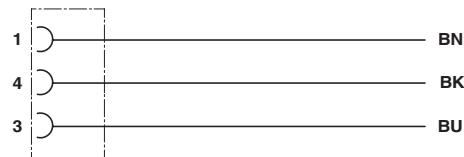
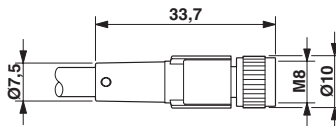
**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260404	AB-C5- 2,0PUR-M12FS	2	60	4	no	1
22260405	AB-C5- 5,0PUR-M12FS	5	60	4	no	1
22260415	AB-C5-10,0PUR-M12FS	10	60	4	no	1
<b>Angled socket</b>						
22260406	AB-C5- 2,0PUR-M12FA	2	60	4	no	1
22260407	AB-C5- 5,0PUR-M12FA	5	60	4	no	1
22260418	AB-C5-10,0PUR-M12FA	10	60	4	no	1
<b>Angled socket with LEDs</b>						
22260408	AB-C5- 2,0PUR-M12FA-3L	2	24	4	3 LEDs	1
22260409	AB-C5- 5,0PUR-M12FA-3L	5	24	4	3 LEDs	1
22260416	AB-C5-10,0PUR-M12FA-3L	10	24	4	3 LEDs	1
22260760	AB-C5-25,0PUR-M12FA-3L	25	24	4	3 LEDs	1

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 Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
 Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request  
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 UL approvals are to be taken from data sheet (www.lappautomation.com)

## S/A cable: M8 socket on free conductor end



### S/A cable: M8 socket on free conductor end

#### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

#### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

#### Product features

- 3-pos. connector

- Socket design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

#### Approvals (Norm references)



#### Design

- Permanently flexible control cable
- Design: 3 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, blue, black
- Outer sheath: PUR, halogen-free
- Sheath colour black

#### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0+T</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260202	AB-C3-2,0PUR-M8FS	2	60	3	no	1
22260200	AB-C3-5,0PUR-M8FS	5	60	3	no	1
22260219	AB-C3-10,0PUR-M8FS	10	60	3	no	1
<b>Angled socket</b>						
22260203	AB-C3-2,0PUR-M8FA	2	60	3	no	1
22260201	AB-C3-5,0PUR-M8FA	5	60	3	no	1
22260220	AB-C3-10,0PUR-M8FA	10	60	3	no	1
<b>Angled socket with LEDs</b>						
22260275	AB-C3-2,0PUR-M8FA-2L	2	24	3	2 LEDs	1
22260276	AB-C3-5,0PUR-M8FA-2L	5	24	3	2 LEDs	1
22260277	AB-C3-10,0PUR-M8FA-2L	10	24	3	2 LEDs	1

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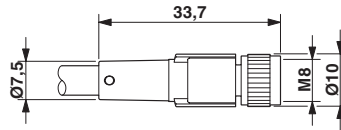
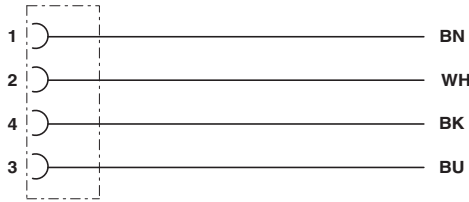
Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed technical information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: M8 socket on free conductor end



S/A cable: M8 socket on free conductor end

**Benefits**

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

**Application range**

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

**Product features**

- 4-pos. connector

- Socket design with M8 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

**Approvals (Norm references)**



**Design**

- Permanently flexible control cable
- Design: 4 x 0.25 mm<sup>2</sup> (32 x 0.1 mm)
- Conductor colors brown, white, blue, black
- Outer sheath: PUR, halogen-free
- Sheath colour black

**Technical data**

<b>IP</b>	<b>Degree of protection</b> IP65/IP68/IP69K
<b>0-1</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -40 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>Straight socket</b>						
22260309	AB-C4- 2,0PUR-M8FS	2	30	3	no	1
22260310	AB-C4- 5,0PUR-M8FS	5	30	3	no	1
22260317	AB-C4-10,0PUR-M8FS	10	30	3	no	1
<b>Angled socket</b>						
22260311	AB-C4- 2,0PUR-M8FA	2	30	3	no	1
22260312	AB-C4- 5,0PUR-M8FA	5	30	3	no	1
22260319	AB-C4-10,0PUR-M8FA	10	30	3	no	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.  
 Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
 Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request  
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 For detailed technical information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

## S/A cable: shielded, M12 socket on free conductor end



Info

- Drag chain suitable

### S/A cable: shielded, M12 socket on free conductor end

#### Benefits

- Cost saving because of quick and easy installation
- Space saving because of compact dimensions
- Fast and easy error tracking
- Standardized interfaces

- Socket design with M12 thread on free conductor end
- The cables have marker carriers
- Free of substances which would hinder coating with paint or varnish
- Drag chain suitable

#### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

#### Approvals (Norm references)



#### Design

- Permanently flexible control cable
- Design: 3 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)  
4 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)  
5 x 0.34 mm<sup>2</sup> (42 x 0.1 mm)
- Outer sheath: PUR, halogen-free, shielded
- Sheath colour black

#### Product features

- 3, 4 and 5-position version

#### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67/IP69K
<b>0+</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -25 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing

Part number	Article designation	Length in m	Nominal voltage U <sub>N</sub> in V	Nominal current I <sub>N</sub> in A	Status display	PU
<b>3 pole straight socket</b>						
22260450	AB-C3- 2,0PUR-M12FS-SH	2	250	4	no	1
22260451	AB-C3- 5,0PUR-M12FS-SH	5	250	4	no	1
22260452	AB-C3-10,0PUR-M12FS-SH	10	250	4	no	1
<b>4 pole straight socket</b>						
22260456	AB-C4- 2,0PUR-M12FS-SH	2	250	4	no	1
22260457	AB-C4- 5,0PUR-M12FS-SH	5	250	4	no	1
22260458	AB-C4-10,0PUR-M12FS-SH	10	250	4	no	1
22260823	AB-C4-20,0PUR-M12FS-SH	20	250	4	no	1
<b>5 pole straight socket</b>						
22260462	AB-C5- 2,0PUR-M12FS-SH	2	60	4	no	1
22260463	AB-C5- 5,0PUR-M12FS-SH	5	60	4	no	1
22260464	AB-C5-10,0PUR-M12FS-SH	10	60	4	no	1

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: including; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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

For detailed technical information please see the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

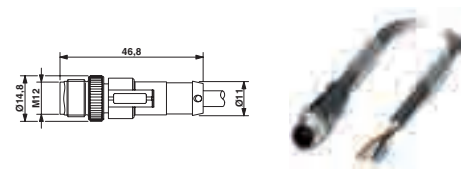
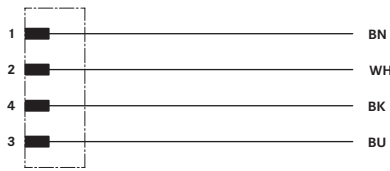
UL approvals are to be taken from data sheet ([www.lappautomation.com](http://www.lappautomation.com))



## Power cable: M12 connector on free conductor

**Info**

- Power cable, universally useable



Power cable: M12 connector on free conductor

### Benefits

- Power connecting cable for aktive fieldbus modules
- Inexpensive and efficient wiring of sensors and actuators
- Space saving because of compact dimensions
- Customised construction of free conductor end
- Standardized interfaces

### Application range

- Automation technology
- Mechanical engineering
- Plant engineering
- Tool shop
- Automotive industry

### Product features

- 4-pos. Power cable
- M12 A-coded with quick locking system
- Design with straight connector or straight socket on free conductor end
- The cables have marker carries
- Drag chain suitable

### Approvals (Norm references)



### Design

- PUR/PVC cable
- Permanently flexible control cable
- Design: 4 x 0.75 mm<sup>2</sup> (42 x 0.15 mm)
- Conductor colours brown, white, blue, black

### Technical data

<b>IP</b>	<b>Degree of protection</b> IP65/IP67/IP69K
<b>0+</b>	<b>Ambient temperature (operation)</b> Plug/socket -25 °C to +90 °C Cable, fixed installation -25 °C up to +80 °C Cable, flexible installation -5 °C up to +80 °C
	<b>Contact material</b> CuSn
	<b>Contact surface material</b> Ni/Au
	<b>Coding</b> A - Standard
	<b>Material, knurls</b> Zinc die-cast, (nickel-plated)
	<b>Material of grip body</b> TPU, hardly inflammable, self-extinguishing
	<b>Wire colour</b> brown, white, blue, black
	<b>External cable diameter</b> 5,9 mm
	<b>Conductor cross section</b> 0,75 mm <sup>2</sup>
	<b>External sheath, color</b> black RAL 9005
	<b>Outer sheath, material</b> PUR

Part number	Article designation	Length in m	Nominal current I <sub>N</sub> in A	Nominal voltage U <sub>N</sub> in V	Number of poles	PU
<b>4 pole straight connector</b>						
22260778	AB-PC4-M12MS-2,0PUR	2	4	250	4	1
22260779	AB-PC4-M12MS-5,0PUR	5	4	250	4	1
22260783	AB-PC4-10,0PUR-M12FS	10	4	250	4	1
<b>4 pole straight socket</b>						
22260781	AB-PC4-2,0PUR-M12FS	2	4	250	4	1
22260782	AB-PC4-5,0PUR-M12FS	5	4	250	4	1
22260780	AB-PC4-M12MS-10,0PUR	10	4	250	4	1

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Special cable lengths, other outer sheath materials (e.g. PVC) and individual connector types on request

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For detailed information please see [www.lappautomation.com](http://www.lappautomation.com)

## ETHERLINE® Y CAT.5e BK 2x2AWG22/7



### Benefits

- UV and weather resistant in black
- For flexible application (7 wire stranded conductor) = Type B
- FAST ETHERNET = 100 Mbit/s

### Application range

- Many applications with Industrial Ethernet, e.g. PROFINET type B, e.g. fixed installation and flexible use.
- At room temperature mostly resistant against influence of acids, soaps, and determined oils

### Product features

- PVC compound TM2 acc. VDE 0281-1 or HD 21.1

### Approvals (Norm references)



### Design

- Stranded conductor, 7-wire, bare
- Core insulation: Based on Polyolefin
- Star quad
- Aluminum coated foil
- Screening braid of tinned copper wires
- PVC outer sheath

### Technical data



**Peak working voltage**  
(not for power purposes) 125 V



**Minimum bending radius**  
Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter



**Test voltage**  
Core/core: 1000 V  
Core/shield: 500 V



**Range of temperature**  
Flexing: -10°C up to +70°C  
Fixed installation: -40°C up to +80°C



**Characteristic impedance**  
At 1 - 100 MHz: 100 +/- 15 Ohm

Part number	Article designation	Number of pairs and AWG per conductor	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
2170901	ETHERLINE® Y CAT.5e BK 2x2xAWG22/7	2 x 2 x AWG22/7	6.2	30.4	59

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T 17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (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.

## ETHERLINE® 2-pairs CAT.5/5e



**Info**

- Industrial Ethernet Cable
- CAT.5/5e



**Benefits**

- ETHERNET with the globally accepted TCP/IP protocol will most probably either provide a connection to the established “Fieldbus World” or the Sensor-Actuator level. Either via a gateway to the “Fieldbus World” or straight through downwards to the lowest communication level. The transmission rates are presently either 10 Mbit/s (ETHERNET) or at least 100 Mbit/s = LAN CAT.5 requirements (Fast Ethernet = Industrial Ethernet) respectively CAT.6a or CAT.7 requirements.
- With regard to transmission rates, the “ETHERNET world” is cut into:
- ETHERNET = 10 Mbit/s
- FAST ETHERNET = 100 Mbit/s
- GIGABIT ETHERNET = 1000 Mbit/s

**Product features**

- In order to reach 100 m link length (like in the office area acc. to ISO 11801) for flexible and highly flexible cable types a cross section of AWG22 is necessary.
- All ETHERLINE® cables with a cross section of AWG22 are PROFINET® compliant.
- Further technical data: see Data Sheet

**Technical data**

**Z<sub>∞</sub>** Characteristic impedance  
100 Ohm at 1 - 100 MHz

**Approvals (Norm references)**



**Design**

- AWG22:  
colour: yellow green (RAL 6018)

Part number	Article designation	Number of pairs and AWG per conductor	Outer diameter in mm max.	Copper index kg/km	Weight kg/km
<b>For fixed installation, outdoor installation/direct burial = type A</b>					
2170494	ETHERLINE® YY UL/CSA (CMG) CAT.5e	2 x 2 x AWG22/1	7.8	30.4	62
2170496	ETHERLINE® Y2Y ARM Type A CAT.5	2 x 2 x AWG22/1	9.3	30.4	124

All product related values as shown are nominal values unless specified differently. Further values, e.g. tolerances we submit on request - if available and released for publication.

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17

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

Packaging size: Coil ≤ 30 kg and ≤ 250 m, otherwise drum

Please specify the desired packaging size (e.g. 1 x 500 m drum or 5 x 100 m coils)

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

**Accessories**

- Field-Terminable Connector RJ45 CAT.5e FM45 see page 50
- Multipurpose shears A and B
- DATA STRIP stripping tool

## Field-Terminable Connector RJ45 CAT.5e FM45



### Product features

- Shielded version
- FM45 is a tool-free switchable, field-terminable RJ45 Connector with IDC contacting and CAT.5e performance. The eight pin connection can be re-switched, tension-resistant, and vibration-resistant. The connecting block can accommodate both screened as well as unscreened cable up to 8 mm diameter.
- Suitable for AWG23 - 26, AWG22 possible with restrictions

- IDC/piercing terminal in acc. with 60352-4
- Suitable for solid and stranded/flexible conductors
- Suitable for use in industrial applications
- Protection type: IP20

### Approvals (Norm references)



Part number	Article designation	PU
21700540	Field-Terminable Connector RJ45 CAT.5e FM45	1 piece

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

New

## EPIC® SOLAR 4 Thin M pre-assembled



**Info**

- 4mm connector system with double hook
- Unresistant cable connection

New

## EPIC® SOLAR 4 THIN F pre-assembled



**Info**

- 4mm connector system with double hook
- Unresistant cable connection

### Benefits

- Unresistant cable connection for efficient power transmission
- Innovative, patented pending contact system, current leaves the connection cool
- High reliability and longevity by welded bonding
- Extra Thin 12mm for high density packing

### Application range

- Pre-assembled connector cables for weather proof cabling of Photovoltaic systems

### Product features

- 4mm connector system with double hook
- Pre-assembled with 100% automatic control
- Wide range of wire sizes from 1.5mm<sup>2</sup> up to 6mm<sup>2</sup>
- EPIC® SOLAR 4 Thin isn't compatible with EPIC® SOLAR
- UL pending

### Technical data

<b>Rated voltage in V</b>	1000 V AC/DC
<b>Rated impulse Voltage</b>	8 kV
<b>Pollution degree</b>	3
<b>Contact resistance</b>	< 0.2 mOhm
<b>IP</b> Degree of protection	IP68 (10h / 1m)
<b>Protection class</b>	II
<b>Cycle of mechanical operation</b>	100
<b>Range of temperature</b>	-40 °C up to +105 °C

Part number	Article designation	Cross-section in mm <sup>2</sup>	Rated current in A	Length in m	Copper index kg/km	Pieces / PU
<b>EPIC® SOLAR 4 THIN male with cable ÖLFLEX® SOLAR XLR</b>						
44428100	EPIC® SOLAR 4 THIN M XLR TF 1,5mm <sup>2</sup> 1m	1.5	17.0	1.0	14.4	100
44428101	EPIC® SOLAR 4 THIN M XLR TF 2.5mm <sup>2</sup> 1m	2.5	21.0	1.0	24.0	100
44428102	EPIC® SOLAR 4 THIN M XLR TF 4mm <sup>2</sup> 1m	4	25.0	1.0	38.4	100
44428103	EPIC® SOLAR 4 THIN M XLR 6mm <sup>2</sup> 1m	6	30.0	1.0	57.6	100
<b>EPIC® SOLAR 4 THIN male with cable ÖLFLEX® SOLAR XL multi</b>						
44428108	EPIC® SOLAR 4 THIN M XL multi 2.5mm <sup>2</sup> 1m	2.5	21.0	1.0	24.0	100
44428109	EPIC® SOLAR 4 THIN M XL multi 4mm <sup>2</sup> 1m	4	25.0	1.0	38.4	100
44428110	EPIC® SOLAR 4 THIN M XL multi 6mm <sup>2</sup> 1m	6	30.0	1.0	57.6	100
<b>EPIC® SOLAR 4 THIN female with cable ÖLFLEX® SOLAR XLR</b>						
44428104	EPIC® SOLAR 4 THIN F XLR TF 1,5mm <sup>2</sup> 1m	1.5	17.0	1.0	14.4	100
44428105	EPIC® SOLAR 4 THIN F XLR TF 2.5mm <sup>2</sup> 1m	2.5	21.0	1.0	24.0	100
44428106	EPIC® SOLAR 4 THIN F XLR TF 4mm <sup>2</sup> 1m	4	25.0	1.0	38.4	100
44428107	EPIC® SOLAR 4 THIN F XLR 6mm <sup>2</sup> 1m	6	30.0	1.0	57.6	100
<b>EPIC® SOLAR 4 THIN female with cable ÖLFLEX® SOLAR XL multi</b>						
44428111	EPIC® SOLAR 4 THIN F XL multi 2.5mm <sup>2</sup> 1m	2.5	21.0	1.0	24.0	100
44428112	EPIC® SOLAR 4 THIN F XL multi 4mm <sup>2</sup> 1m	4	25.0	1.0	38.4	100
44428113	EPIC® SOLAR 4 THIN F XL multi 6mm <sup>2</sup> 1m	6	30.0	1.0	57.6	100

Copper price basis: EUR 150 / 100 kg; For utilization and definition of 'Metal price basis' and 'Metal index' see Appendix T17  
Other lengths and cable end versions on request.  
Photographs are not to scale and do not represent detailed images of the respective products.

## EPIC® SOLAR Module Box



## EPIC® SOLAR Module Box with cables



### Benefits

- Junction boxes for weather proof cabling of Photovoltaic systems

### Application range

- The Module Box is used to glue on the back-side of the solar modules. The ribbon bands are terminated in the Module Box
- For further cabling the pre-assembled solar cables, like EPIC® SOLAR 4 THIN are terminated at the Module Box

### Product features

#### EPIC® SOLAR Module Box

- Rugged junction boxes for cabling of the solar modules with solar cables, like ÖLFLEX® SOLAR

- Dimensions (WxHxD): 118 x 28,5 x 109 mm
- Housing material: PPO/PPS
- UL: in preparation

#### EPIC® SOLAR Module Box with cables

- These junction boxes are available with pre-assembled cables EPIC® SOLAR 4 THIN in different cross sections
- Dimensions (WxHxD): 118 x 28,5 x 109 mm
- Cable length: 1m
- UL: in preparation

### Suitable cables

#### EPIC® SOLAR Module Box

- ÖLFLEX® SOLAR XLR TF page 11
- ÖLFLEX® SOLAR XLR page 12
- ÖLFLEX® SOLAR XLS page 13

### Technical data

#### Rated voltage in V

1000 V AC/DC

#### Rated current in A

8 A

#### Contact resistance

< 5 mΩ

#### Contacts

Copper alloy, tin plated

#### Number of contacts

2

#### Termination methods

Terminal clamp for ribbon bands: up to 7mm wide (folded 10mm)

Plug-in connection for solar cables with multi-lam plug Ø 3mm



#### Degree of protection

IP 65

#### Protection class

II



#### Range of temperature

-40 °C ... +85 °C

#### Cable clamping range

EPIC® SOLAR Module Box  
Ø 3,7 mm - 7,1 mm

Part number	Article designation	Connection type	Cross-section in mm <sup>2</sup>	Cable clamping range mm	Length in m	Pieces / PU
44428043	EPIC® SOLAR ST200 3D	assembled with 3 Bypass-diodes	max. 6	3,7 - 7,1		100
44428044	EPIC® SOLAR ST200 6D	assembled with 6 Bypass-diodes	max. 6	3,7 - 7,1		100
<b>EPIC® SOLAR Modul Box with cable and plug EPIC® SOLAR 4 THIN</b>						
44428062	EPIC® SOLAR ST200 4 THIN XLR TF 4mm <sup>2</sup> 1m	pre-assembled with solar cables	4		1.0	100
44428063	EPIC® SOLAR ST200 4 THIN XLR 6mm <sup>2</sup> 1m	pre-assembled with solar cables	6		1.0	100

Other construction designs/lengths on request

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

**New**

**EPIC® POWERLOCK A1 C**



**New**

**EPIC® POWERLOCK A6 C**



**Info**

- Connector for unshielded single core energy cables

- Suitable contacts:**
  - EPIC® POWERLOCK Crimp contacts page 55
  - Housing without contact, order contact separately
- Benefits**
  - Resistant to mechanical influences in harsh environmental conditions
  - Connectors in harmonized colours according to European standards
  - Every colour different coded to prevent incorrect plugging
  - USA Colour Code on request

- 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
  - Contact fixing by contact retention pin, each pin can only be used once
  - Housing without contact, order contact separately

**Technical data**

- Rated voltage in V**  
1000 V
- Rated impulse Voltage**  
8 kV
- Rated current in A**  
Crimp max. 660 A
- Pollution degree**  
3
- Contacts**  
Crimp termination: Copper, silver plated
- Number of contacts**  
1
- Termination methods**  
Crimp termination: 35 - 240 mm²
- Material**  
Housing: PBT  
Contact retention pin: PA
- Degree of protection**  
IP 67 (maximal achievable, dependant on used cable gland)  
IP 20 (unmated)
- Cycle of mechanical operation**  
500
- Range of temperature**  
-25 °C - +125 °C

Part number	Part	Fastening type	Pin design	Pieces / PU
<b>Type POWERLOCK A1, panel mount base Drain for contact with M12 threaded post</b>				
44420221	POWERLOCK A1 PE/GN	Ø5,5mm (4x)	PE, Green	1
44420222	POWERLOCK A1 N/BL	Ø5,5mm (4x)	N, Blue	1
44420223	POWERLOCK A1 L1/BN	Ø5,5mm (4x)	L1, Brown	1
44420224	POWERLOCK A1 L2/BK	Ø5,5mm (4x)	L2, Black	1
44420225	POWERLOCK A1 L3/GY	Ø5,5mm (4x)	L3, Grey	1
<b>Type POWERLOCK A6, panel mount base Source for contact with M12 threaded post</b>				
44420226	POWERLOCK A6 PE/GN	Ø5,5mm (4x)	PE, Green	1
44420227	POWERLOCK A6 N/BL	Ø5,5mm (4x)	N, Blue	1
44420228	POWERLOCK A6 L1/BN	Ø5,5mm (4x)	L1, Brown	1
44420229	POWERLOCK A6 L2/BK	Ø5,5mm (4x)	L2, Black	1
44420230	POWERLOCK A6 L3/GY	Ø5,5mm (4x)	L3, Grey	1

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

Circular connectors

EPIC® POWERLOCK CRIMP 660A

New

EPIC® POWERLOCK D6 C



New

EPIC® POWERLOCK F6 C



Info

- Connector for unscreened single core energy cables

Suitable contacts:

- EPIC® POWERLOCK Crimp contacts page 55
- Housing without contact, order contact separately

Benefits

- Resistant to mechanical influences in harsh environmental conditions
- Connectors in harmonized colours according to European standards
- Every colour different coded to prevent incorrect plugging
- USA Colour Code on request

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

- Connector straight 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

- Rated voltage in V**  
1000 V
- Rated impulse Voltage**  
8 kV
- Rated current in A**  
Crimp max. 660 A
- Pollution degree**  
3
- Contacts**  
Crimp termination: Copper, silver plated
- Number of contacts**  
1
- Termination methods**  
Crimp termination: 35 - 240 mm<sup>2</sup>
- Material**  
Housing: PBT  
Contact retention pin: PA
- Degree of protection**  
IP 67 (maximal achievable, dependant on used cable gland)  
IP 20 (unmated)
- Cycle of mechanical operation**  
500
- Range of temperature**  
-25 °C - +125 °C

Part number	Part	M	Pin design	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>Type POWERLOCK F6, Cable coupler 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

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

Accessories

- SKINTOP® ST-M see page 56



## EPIC® POWERLOCK Crimp contacts



**Info**

- Crimp max. 660 A
- Do not plug with Screw type (400A)

- EPIC® POWERLOCK A1 C page 53
- EPIC® POWERLOCK A6 C page 53
- EPIC® POWERLOCK D6 C page 54
- EPIC® POWERLOCK F6 C page 54

Part number	Article designation	version	PU
<b>Drain - contact with M12 threaded post, for type POWERLOCK A1 C</b>			
44420260	POWERLOCK SP M12	Contact Drain, M12 Thread for cable lugs	1
<b>Source - contact with M12 threaded post for type POWERLOCK A6 C</b>			
44420261	POWERLOCK QP M12	Lamella contact source, M12 thread for cable lug	1
<b>Source - crimp contact for type POWERLOCK D6 C</b>			
44420291	POWERLOCK QCM 50	50mm <sup>2</sup>	1
44420292	POWERLOCK QCM 70	70mm <sup>2</sup>	1
44420236	POWERLOCK QCM 95	95mm <sup>2</sup>	1
44420238	POWERLOCK QCM 120	120mm <sup>2</sup>	1
44420257	POWERLOCK QCM 150	150mm <sup>2</sup>	1
44420239	POWERLOCK QCM 185	185mm <sup>2</sup>	1
44420240	POWERLOCK QCM 240	240mm <sup>2</sup>	1
<b>Drain - crimp contact for type POWERLOCK F6 C</b>			
44420294	POWERLOCK SCM 50	50mm <sup>2</sup>	1
44420295	POWERLOCK SCM 70	70mm <sup>2</sup>	1
44420231	POWERLOCK SCM 95	95mm <sup>2</sup>	1
44420233	POWERLOCK SCM 120	120mm <sup>2</sup>	1
44420256	POWERLOCK SCM 150	150mm <sup>2</sup>	1
44420234	POWERLOCK SCM 185	185mm <sup>2</sup>	1
44420235	POWERLOCK SCM 240	240mm <sup>2</sup>	1

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

## EPIC® POWERLOCK Tools



Part number	Part	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



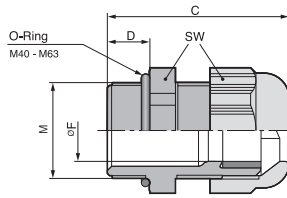
Part number	Part	For style	version	PU
<b>Dust caps</b>				
44420252	POWERLOCK PROTECTION CAP A1	for type A1	IP54	1
44420253	POWERLOCK PROTECTION CAP A6	for type A6	IP54	1
44420251	POWERLOCK PROTECTION CAP D6	for type D6	IP54	1
44420250	POWERLOCK PROTECTION CAP F6	for type F6	IP54	1
<b>Spare contact retention 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.

## Cable glands

### SKINTOP® cable glands plastic metric SKINTOP® Standard

## SKINTOP® ST-M / SKINTOP® STR-M



#### SKINTOP® ST-M

##### ■ Benefits

##### SKINTOP® ST-M

- Increased oil resistant for maximum reliability
- Permanent vibration protection
- Large, variable clamping ranges
- Optimal strain relief
- Various accessories (e. g. multiple sealing inserts)

##### SKINTOP® STR-M

- Benefits see SKINTOP® ST-M

##### ■ Application range

##### SKINTOP® ST-M

- Everywhere where cables must be safely inserted into housings.
- Machine and apparatus construction
- Photovoltaic
- Automation technology
- Mobile off shore units, equipment and ship yards

##### SKINTOP® STR-M

- With reducing seal insert, to seal cables with smaller outer diameters.

##### ■ Approvals (Norm references)



- UL File Nr. E79903

##### ■ Design

- Metric connection thread acc. to EN 50262

##### ■ Note

##### SKINTOP® ST-M

- For suitable accessories see SKINTOP® metric accessories
- Counter nut to be used SKINTOP® GMP-GL-M
- SKINTOP® ST M ISO types have a extralong connection thread
- Versions SKINTOP® ST M ISO with extra long connection thread, see table, have no DNV approval

##### SKINTOP® STR-M

- For suitable accessories see SKINTOP® metric accessories
- Counter nut to be used SKINTOP® GMP-GL-M
- SKINTOP® STR M ISO types have a extralong connection thread
- Versions SKINTOP® STR M ISO with extra long connection thread, see table, have no DNV approval

##### ■ Suitable cables

- For IP 69 K applications we recommend to use the following cables:  
ÖLFLEX® ROBUST 200  
H07RN8-F

##### ■ Suitable tools

##### SKINTOP® ST-M

- SKINMATIC® QUICK Set 1
- SKINMATIC® RZ

#### SKINTOP® STR-M



##### Info

- Now with IP 69 K approval! Proven functionality also during hardest cleaning procedures at industrial machinery with high-pressure cleaners and hot water!

##### ■ Technical data

	<b>Caution</b> Installation dimensions and tightening torques see Appendix T21
	<b>Colour delivered</b> RAL 7001 silver-grey RAL 7035 light grey RAL 9005 black / UV resistant
	<b>Material</b> Body: Polyamide Seal: CR
	<b>Tests</b> GGVS: TÜ.EGG.020-95
	<b>Degree of protection</b> IP 68 - 5 bar IP 69 K
	<b>Range of temperature</b> Static: -40°C up to +100°C Dynamic: -20°C up to +100°C

Part number	Part designation / size	Clamping range ØF mm	SW 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	8,0	100
53111010	ST-M 16 x 1,5	4,5-10	19	34,0	8,0	100
53111020	ST-M 20 x 1,5	7-13	25	37,0	9,0	100
53111030	ST-M 25 x 1,5	9-17	30	40,0	10,0	50
53111040	ST-M 32 x 1,5	11-21	36	47,0	10,0	25
53111050	ST-M 40 x 1,5	19-28	46	52,0	10,0	10
53111060	ST-M 50 x 1,5	27-35	55	62,0	12,0	5
53111070	ST-M 63 x 1,5	34-45	66	71,0	12,0	5
<b>SKINTOP® ST-M black</b>						
53111200	ST-M 12 x 1,5	3,5-7	15	30,0	8,0	100
53111210	ST-M 16 x 1,5	4,5-10	19	34,0	8,0	100
53111220	ST-M 20 x 1,5	7-13	25	37,0	9,0	100
53111230	ST-M 25 x 1,5	9-17	30	40,0	10,0	50
53111240	ST-M 32 x 1,5	11-21	36	47,0	10,0	25
53111250	ST-M 40 x 1,5	19-28	46	52,0	10,0	10
53111260	ST-M 50 x 1,5	27-35	55	62,0	12,0	5
53111270	ST-M 63 x 1,5	34-45	66	71,0	12,0	5
<b>SKINTOP® ST-M light grey</b>						
53111400	ST-M 12 x 1,5	3,5-7	15	30,0	8,0	100
53111410	ST-M 16 x 1,5	4,5-10	19	34,0	8,0	100
53111420	ST-M 20 x 1,5	7-13	25	37,0	9,0	100
53111430	ST-M 25 x 1,5	9-17	30	40,0	10,0	50
53111440	ST-M 32 x 1,5	11-21	36	47,0	10,0	25
53111450	ST-M 40 x 1,5	19-28	46	52,0	10,0	10
53111460	ST-M 50 x 1,5	27-35	55	62,0	12,0	5
53111470	ST-M 63 x 1,5	34-45	66	71,0	12,0	5
<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	12,0	100
53017030	ST M 20 x 1,5	5-12	24	45,0	13,0	100
53017040	ST M 25 x 1,5	9-14	27	47,0	13,0	50
<b>SKINTOP® ST M ISO black (with long metric connecting thread)</b>						
53017210	ST M 16 x 1,5	3,5-8	19	40,0	12,0	100
53017230	ST M 20 x 1,5	5-12	24	45,0	13,0	100
53017240	ST M 25 x 1,5	9-14	27	47,0	13,0	50

Part number	Part designation / size	Clamping range ØF mm	SW mm	Overall length C mm	Thread length D mm	Pieces / PU
<b>SKINTOP® STR-M silver grey</b>						
53111100	STR-M 12 x 1,5	1-5	15	30.0	8.0	100
53111110	STR-M 16 x 1,5	2-7	19	34.0	8.0	100
53111120	STR-M 20 x 1,5	5-10	25	37.0	9.0	100
53111130	STR-M 25 x 1,5	6-13	30	40.0	10.0	50
53111140	STR-M 32 x 1,5	7-15	36	47.0	10.0	25
53111150	STR-M 40 x 1,5	15-23	46	52.0	10.0	10
53111160	STR-M 50 x 1,5	22-29	55	62.0	12.0	5
53111170	STR-M 63 x 1,5	28-39	66	71.0	12.0	5
<b>SKINTOP® STR-M black</b>						
53111300	STR-M 12 x 1,5	1-5	15	30.0	8.0	100
53111310	STR-M 16 x 1,5	2-7	19	34.0	8.0	100
53111320	STR-M 20 x 1,5	5-10	25	37.0	9.0	100
53111330	STR-M 25 x 1,5	6-13	30	40.0	10.0	50
53111340	STR-M 32 x 1,5	7-15	36	47.0	10.0	25
53111350	STR-M 40 x 1,5	15-23	46	52.0	10.0	10
53111360	STR-M 50 x 1,5	22-29	55	62.0	12.0	5
53111370	STR-M 63 x 1,5	28-39	66	71.0	12.0	5
<b>SKINTOP® STR-M light grey</b>						
53111500	STR-M 12 x 1,5	1-5	15	30.0	8.0	100
53111510	STR-M 16 x 1,5	2-7	19	34.0	8.0	100
53111520	STR-M 20 x 1,5	5-10	25	37.0	9.0	100
53111530	STR-M 25 x 1,5	6-13	30	40.0	10.0	50
53111540	STR-M 32 x 1,5	7-15	36	47.0	10.0	25
53111550	STR-M 40 x 1,5	15-23	46	52.0	10.0	10
53111560	STR-M 50 x 1,5	22-29	55	62.0	12.0	5
53111570	STR-M 63 x 1,5	28-39	66	71.0	12.0	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	12.0	100
53017130	STR M 20 x 1,5	4-9	24	45.0	13.0	100
53017140	STR M 25 x 1,5	6-12	27	47.0	13.0	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	12.0	100
53017330	STR M 20 x 1,5	4-9	24	45.0	13.0	100
53017340	STR M 25 x 1,5	6-12	27	47.0	13.0	50

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

**■ Accessories**

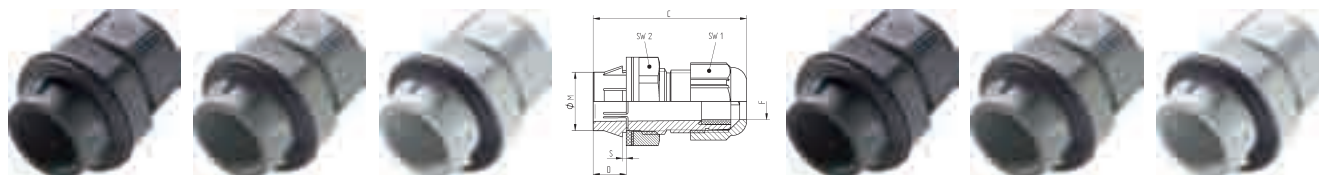
**SKINTOP® ST-M**

- SKINTOP® DIX-M
- SKINTOP® GMP-GL-M
- SKINTOP® DIX-M AUTOMATION
- SKINTOP® SDV-M ATEX
- SKINTOP® SD-M
- SKINTOP® DV-M

**SKINTOP® STR-M**

- SKINTOP® GMP-GL-M
- SKINTOP® SDVR-M ATEX
- SKINTOP® SD-M

**SKINTOP® CLICK / SKINTOP® CLICK-R**



SKINTOP® CLICK

SKINTOP® CLICK-R

**Benefits**

**SKINTOP® CLICK**

- Fewer parts, counter nut no longer needed
- Up to 70% time saving due to innovative CLICK system
- Simple, free assembly in any position
- Vibration protection
- No thread required

**SKINTOP® CLICK-R**

- Benefits see SKINTOP® CLICK

**Application range**

**SKINTOP® CLICK**

- Automation technology
- Solar applications
- Switch cabinet building

- Measurement, control and electrical applications

- Air conditioning technology

**SKINTOP® CLICK-R**

- With reducing seal insert, to seal cables with smaller outer diameters.

**Approvals (Norm references)**



- UL File Nr. E79903

**Scope of delivery**

- Disassembly tool contained in the delivery scope



**Info**

- The most innovative cable insertion system on the market for very fast, highly flexible assembly. Simply click in - turn to left - turn to right - finished. Result: fixed, centred, strain relieved and maximum protection class in seconds.

**Technical data**

- RAL** Colour delivered  
RAL 7001 silver-grey  
RAL 7035 light grey  
RAL 9005 black / UV resistant
- Material**  
Body: special polyamide  
Seal: special elastomer
- IP** Degree of protection  
**SKINTOP® CLICK**  
IP 68 - 4 bar (M12)  
IP 68 - 5 bar (M16 - M32)
- Range of temperature**  
Dynamic: -20°C up to +100°C  
Static: -40°C up to +100°C

Part number	Part designation / size	Clamping range ØF mm	M (hole mm)	SW1 / SW2 mm	Overall length C mm	Thread length D mm	S (wall thickness mm)	Pieces / PU
<b>SKINTOP® CLICK light grey</b>								
53112692	CLICK 12	3.5 - 7	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112686	CLICK 16	5 - 9	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112687	CLICK 20	7 - 13	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112688	CLICK 25	9 - 17	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112694	CLICK 32	11 - 21	32,3 (-0,2)	36 / 40	55,0	8,0	1,0 - 4,0	25
<b>SKINTOP® CLICK silver grey</b>								
53112921	CLICK 12	3.5 - 7	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112876	CLICK 16	5 - 9	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112877	CLICK 20	7 - 13	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112878	CLICK 25	9 - 17	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112922	CLICK 32	11 - 21	32,3 (-0,2)	36 / 40	55,0	8,0	1,0 - 4,0	25
<b>SKINTOP® CLICK black</b>								
53112923	CLICK 12	3.5 - 7	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112882	CLICK 16	5 - 9	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112883	CLICK 20	7 - 13	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112884	CLICK 25	9 - 17	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112924	CLICK 32	11 - 21	32,3 (-0,2)	36 / 40	55,0	8,0	1,0 - 4,0	25
<b>SKINTOP® CLICK-R light grey</b>								
53112925	CLICK-R 12	1 - 5	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112689	CLICK-R 16	4 - 7	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112690	CLICK-R 20	5 - 10	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112691	CLICK-R 25	6 - 13	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112926	CLICK-R 32	7 - 15	32,3 (-0,2)	36 / 40	55,0	8,0	1,0 - 4,0	25
<b>SKINTOP® CLICK-R silver grey</b>								
53112927	CLICK-R 12	1 - 5	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112879	CLICK-R 16	4 - 7	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112880	CLICK-R 20	5 - 10	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112881	CLICK-R 25	6 - 13	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112928	CLICK-R 32	7 - 15	32,3 (-0,2)	36 / 40	55,0	8,0	1,0 - 4,0	25
<b>SKINTOP® CLICK-R black</b>								
53112929	CLICK-R 12	1 - 5	12,3 (-0,2)	15 / 18	40,0	8,0	1,0 - 4,0	50
53112885	CLICK-R 16	4 - 7	16,3 (-0,2)	19 / 22	42,0	8,0	1,0 - 4,0	50
53112886	CLICK-R 20	5 - 10	20,3 (-0,2)	25 / 27	45,5	8,0	1,0 - 4,0	25
53112887	CLICK-R 25	6 - 13	25,3 (-0,2)	30 / 34	48,5	8,0	1,0 - 4,0	25
53112931	CLICK-R 32	7 - 15	32,3 (-0,2)	36 / 40	55,0	8,0	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
- SKINTOP® DIX-M AUTOMATION
- SKINTOP® SDV-M ATEX
- SKINTOP® SD-M
- SKINTOP® DV-M

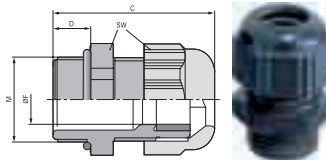
**SKINTOP® CLICK-R**

- SKINTOP® SDVR-M ATEX

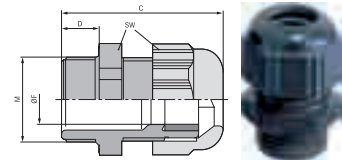
**SKINTOP® SOLAR plus / SKINTOP® SOLAR**  
SKINTOP® for photovoltaic

**Info**

- Cable gland for photovoltaic applications, in acc. to EN 50262, EN 50548 and UL 1703.



SKINTOP® SOLAR plus



SKINTOP® SOLAR

**Benefits**

- UV light and ozone resistant
- Weather resistant
- High strain relief
- Permanent vibration protection
- Extremely flame retardant according to UL 94 V0 / 5VA

**Application range**

- Photovoltaic resp. solar fields

**Approvals (Norm references)**



**Design**

- Metric connection thread acc. to EN 50262

**Note**

- Counter nut to be used SKINDICHT® SM-M
- Counter nut to be used SKINTOP® GMP-GL-M

**Design**

- Version SKINTOP® SOLAR (plus) M16x1,5 pending, availability approx. September 2011.

**Suitable cables**

- ÖLFLEX® SOLAR

**Suitable tools**

- SKINMATIC® RZ
- SKINMATIC® QUICK SET 1

**Technical data**

**Caution**  
Installation dimensions and tightening torques see Appendix T21

**Colour delivered**  
RAL 9005 black

**Material**  
**SKINTOP® SOLAR**  
Body: Polycarbonate  
Seal: CR  
**SKINTOP® SOLAR plus**  
Body: Polycarbonate  
Seal: Silicone  
O-Ring: Silicone

**Tests**  
Cold impact test acc. to UL 1703 / UL 746 C

**Degree of protection**  
IP 68 - 5 bar

**Range of temperature**  
**SKINTOP® SOLAR**  
-40°C up to +100°C  
**SKINTOP® SOLAR plus**  
-40°C up to +125°C

Part number	Part designation / size	Clamping range ØF mm	SW 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	15,0	100
53113310	SOLAR M16x1,5	7-9	19	34,0	8,0	100
<b>SKINTOP® SOLAR plus</b>						
53113321	SOLAR plus M12x1,5	3,5-7	15	36,0	15,0	100
53113331	SOLAR plus M16x1,5	7-9	19	34,0	8,0	100

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

ÖLFLEX®

UNITRONIC®

ETHERLINE®

EPIC®

SKINTOP®

SILVYN®

ACCESSORIES

## SILVYN® SPLIT



### Benefits

- Dimensionally stable
- Flexible
- Compression resistant
- Additional cable protection after cable installation
- Fast and easy assembly

### Application range

- Vehicle construction
- Shipbuilding
- Mechanical engineering
- Electrical industry
- Everywhere where cables and wires need to be protected after assembling

### Product features

- Halogen and cadmium-free
- Abrasion resistant
- Increased resistance against oil, petrol, acids and other chemicals

### Approvals (Norm references)



### Design

- Divisible corrugated polyamide 6 conduit

### Note

- UV resistant and weather proof
- On request
- SILVYN® SPLIT PP (Polypropylen)
- SILVYN® SPLIT NW 54 / 70



### Info

- New sizes available

### Technical data



**On request**  
SILVYN® SPLIT PP  
(Polypropylen)  
SILVYN® SPLIT NW 54 / 70



**Colour delivered**  
Black, RAL 9005, UV-resistant



**Material**  
PA halogen-free



**Degree of protection**  
IP 43 with SILVYN® SPLIT COV



**Range of temperature**  
-40 °C up to +120 °C

Part number	Article designation	Bending radius mm	Conduit size mm	Suitable for SILVYN® COV	PU in m
<b>SILVYN® SPLIT</b>					
61806621	8	70	6.2/11.2		50
61806620	10	55	8.9/13.6	M16/PG9	50
61806630	14	75	12.9/18.7	M20/PG13,5	50
61806631	16	100	10.3/15.8		50
61806640	20	105	19.8/25.9	M25/PG21	50
61806641	21	120	13.9/21.0		50
61806650	23	125	23.7/31.3	M32/PG29	50
61806651	32	180	26.2/34.5		50
61806660	37	170	31.7/41.9	M40/PG29	25
61806670	45	170	43.1/54.2	M50	25

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

### Comparable products

- Cable protective conduit for preassembling see page 62

### Accessories

- SILVYN® SPLIT COV see page 61
- SILVYN® SPLIT COS see page 61

**SILVYN® SPLIT COS / SILVYN® SPLIT COV**



SILVYN® SPLIT COS

SILVYN® SPLIT COV

**Benefits**

**SILVYN® SPLIT COV**

- Fast and easy assembly
- Subsequent mountable conduit insertion

**SILVYN® SPLIT COS**

- Fast mounting
- Easy unassembling
- Strain relief proofed connection
- No sag of the conduit
- No losable parts

**Application range**

**SILVYN® SPLIT COV**

- In combination with protective conduit
- SILVYN® SPLIT
- Mechanical engineering
- Electrical industry
- Everywhere where cables and wires need to be protected after assembling

**SILVYN® SPLIT COS**

- In combination with protective conduit
- SILVYN® SPLIT
- Fixing of conduits on machine walls for all applications

**Product features**

**SILVYN® SPLIT COV**

- Including divisible counter nut

**SILVYN® SPLIT COS**

- One piece conduit holder

**Approvals (Norm references)**



**Design**

**SILVYN® SPLIT COS**

- One piece conduit holder with M4 borehole for fixation

**Note**

- UV resistant and weather proof

**Suitable conduits**

- SILVYN® SPLIT page 60

**Technical data**

<b>RAL</b>	<b>Colour delivered</b> Black, RAL 9005, UV-resistant
	<b>Material</b> PA halogen-free
	<b>Range of temperature</b> -40°C up to +120°C

Part number	Article designation	PG size	Conduit size mm	Suitable for SILVYN® SPLIT	Pieces / PU
<b>SILVYN® SPLIT COV</b>					
61806760	10	9	8.9 / 13.6	10	100
61806770	14	13.5	12.9 / 18.7	14	100
61806780	20	21	19.8 / 25.9	20	50
61806790	23	29	23.7 / 31.3	23	50
61806800	37	29	31.7 / 41.9	37	25
<b>SILVYN® SPLIT COV-M</b>					
61806680	10	16	8.9 / 13.6	10	100
61806681	14	20	12.9 / 18.7	14	100
61806682	20	25	19.8 / 25.9	20	50
61806683	23	32	23.7 / 31.3	23	50
61806684	37	40	31.7 / 41.9	37	25
61806685	45	50	43.1 / 54.2	37	25
<b>SILVYN® SPLIT COS</b>					
61806690	10		8.9 / 13.6	10	100
61806700	14		12.9 / 18.7	14	100
61806710	20		19.8 / 25.9	20	50
61806720	23		23.7 / 31.3	23	50
61806730	37		31.7 / 41.9	37	20
61806740	45		43.1 / 54.2	45	20

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

## SILVYN® RILL PA6 SINUS



**Info**

- Sinusoidal cut for preassembling
- Special heat resistant polyamide up to +140°C

### SILVYN® RILL PA6 SINUS

**Benefits**

- Dimensionally stable
- Flexible
- Compression 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**

- Increased resistance against oil, petrol, acids and other chemicals

- Halogen and cadmium-free
- Abrasion resistant

**Approvals (Norm references)**



- NFR-13-903 from 8,4x11,4

**Design**

- Fine profil corrugated polyamide 6 conduit with SINUSoidal slid

**Note**

- On request
- SILVYN® RILL PA6 SINUS PP (polypropylene)

**Technical data**



**Approvals**

GGVS, NFR-13-903 from 8.4 x 11.4



**Note**

Elongation at tear in accordance to DIN 53 455: 50-200%  
 Impact resistance in accordance to DIN 53 453: without rupture  
 Notched impact resistance in accordance to DIN 53 453: without rupture  
 Flammability rating: UL 94 HB



**Colour delivered**

Black, RAL 9005, UV-resistant



**Material**

PA6 heat modified  
 Cadmium free  
 Halogen-free



**Range of temperature**

-40°C up to +140°C

Part number	Internal Ø x External Ø in mm	Inner Ø in mm	Suitable for holder SILVYN®	PU ring in m
<b>SILVYN® RILL PA6 SINUS</b>				
61806550	6,7 x 10,0	6,7	FCL 10 / 5550 6905	50
61806555	8,4 x 11,4	8,4		50
61806560	9,9 x 13,0	9,9	FCL 13 / 5550 6915	50
61806565	12,2 x 15,7	12,2	FCL 16 / 5550 6925	50
61806570	16,6 x 21,2	16,6	FCL 21 / 5550 6935	50
61806575	21,3 x 25,4	21,3	SPLIT COS 20 / 6180 6710	50
61806580	23,2 x 28,3	23,2	FCL 28 / 5550 6945	50

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

**Comparable products**

- SILVYN® SPLIT see page 60

**Accessories**

- SILVYN® SPLIT COS see page 61
- SILVYN® FCL
- STKP tool of the cable eater serves as an insertion tool

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SKINTOP®

SILVYN®

ACCESSORIES



## KS 20 cable shears



KS 20 cable shears

### Benefits

- Adjustable screw joint
- Easy, clean cut when operating with one hand
- Low force due to favourable transmission ratio and new blade geometry

### Application range

- Cuts copper and aluminium cables up to 20 mm outer diameter
- Cutting with precision grinding

### Product features

- Material: Special tool steel, forged, head burnished
- Pre and after cut (1st and 2nd blade) allows cables with an external outer diameter up to 20 mm to be cut
- Not suitable for steel wire and hard-drawn copper conductors

Part number	Article designation	For outer diameter mm	Weight kg	Length in mm	Pieces / PU
62120045	KS 20	20.0	0.3	200	1

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## Universal strip stripping and cutting tool

### Benefits

- Special pliers for high quality, damage-free stripping of sheath and insulation from all single wires and possibly multiwire cables from 0.03 to 16 mm<sup>2</sup>
- Applicable with a great variety of insulations differing in hardness and dimension
- Exchangeable knives for different cable cross sections

### Application range

- Universal stripping pliers with exchangeable stripping blades for cross sections 0.03 to 16 mm<sup>2</sup>
- Suitable for Fluoropolymer & PVC cores, AS-I, Solar, POF cables

### Product features

- Model: chrome-plated with plastic handle cover
- Exchangeable knives for different cable cross sections

### Design

- Additional stripping knives on request
- No pinching/deformation of cable ends

### Scope of delivery

- Tool and length stop



Part number	Article designation	for mm <sup>2</sup>	Pieces / PU
21920120	Universal Strip Solar	1.5 - 6	1

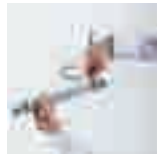
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### Accessories

- Additional stripping knives on request

**New**

## Twist Tail™ cable tie



**Info**

- No special tool needed
- Worked in the twinkling of an eye

### Twist Tail™ cable tie

**Benefits**

- Round, flat, edge-free tie heads allow assembly without catching and protect against injury and damage at adjoining cables and components.
- The cable tie can be gripped securely and therefore tightened more easily.
- In addition, the safety gripping butt prevents the tie from slipping out during assembly and secures it before tightening it by hand.

**Application range**

- Industry cable ties for quick and secure assembly.

- General purpose applications, indoor and outdoor

**Approvals (Norm references)**



**Design**

- Wrap the cable tie around a bundle of cables, bend the excess tail in two directions and twist. The tail breaks right off, leaving no sharp edges to scratch your hands or your cables.
- Available in 3 different lengths and 2 colours (white and UV-resistant black)

**Technical data**

- General**  
Tensile strength: 133N
- Approvals**  
Flammability Class: UL 94 V-2
- Note**  
halogen free  
silicone free
- Colour delivered**  
Black, RAL 9005, UV-resistant  
white
- Material**  
Polyamide 6.6
- Range of temperature**  
-40 °C up to +85 °C

Part number	Part description	Approval UL	Length in mm	Max. bundle Ø approx. in mm	Pieces / PU
<b>white</b>					
61832007	TWIST TAIL TT-7-30-9-L	yes	181	45.0	50
61832009	TWIST TAIL TT-11-30-9-L	yes	282	76.0	50
61832011	TWIST TAIL TT-14-30-9-L	yes	358	102.0	50
<b>Black, RAL 9005, UV-resistant</b>					
61832008	TWIST TAIL TT-7-30-0-L	yes	181	45.0	50
61832010	TWIST TAIL TT-11-30-0-L	yes	282	76.0	50
61832012	TWIST TAIL TT-14-30-0-L	yes	358	102.0	50

TWIST TAIL™ is a registered trademark of Thomas & Betts  
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## MINI- Box Starter-Set



MINI- Box Starter-Set

**Application range**

- Cable and component marking system
- Automotive industry
- Plant engineering

**Approvals (Norm references)**



**Scope of delivery**

- Two character strips (letters, numbers, symbols, blank) with 10 markers for each character
- 40 locking buttons, 20 end pieces, 1 pair of special pliers (two alternatives), one bag of cable ties
- Two 285 mm MINI PGS holders
- Seven (for PTE) or two (for SK) 285-mm pieces of the standard character holder

Part number	Article designation	Pieces / PU
83252001	MINI - Box - with FL52 ERA	1

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