

THE WORLD OF LAPP

Products for photovoltaic 2015



LAPP GROUP



Welcome

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▶ THIS CATALOGUE
 IS VALID FROM
 JUNE 2015.

Legend for icons

Industries



Automation



e-Mobility



Food & Beverage



Mechanical and
Plant Engineering



Oil & Gas



Rail



Solar Energy



Wind Energy

Product characteristics



Good chemical
resistance



ETIM



Wide clamping range



Heat-resistant



Assembly time



Oil-resistant



Space requirement



Power chain



Acid-resistant



Reliability



Integrated
SKINTOP®
cable gland



Voltage



Connector
with standard
housing unit



Interference signals



Variety of approval
certifications



Suitable
for outdoor use



Flame-retardant



Halogen-free



Cold-resistant



Corrosion-resistant



Maximum vibration
protection



Mechanical
resistance



Low weight



Optimum
strain relief



Robust



Temperature-
resistant



Torsion-resistant



UV-resistant



Waterproof



Torsion load

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

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Brand quality from Stuttgart



ÖLFLEX® Power and control cables

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



EPIC® Industrial connectors

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



UNITRONIC® Data communication systems

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



SKINTOP® Cable glands

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



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

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



SILVYN® Protective cable conduit systems and cable carrier systems

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



HITRONIC® Optical transmission systems

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



FLEXIMARK® Marking systems

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

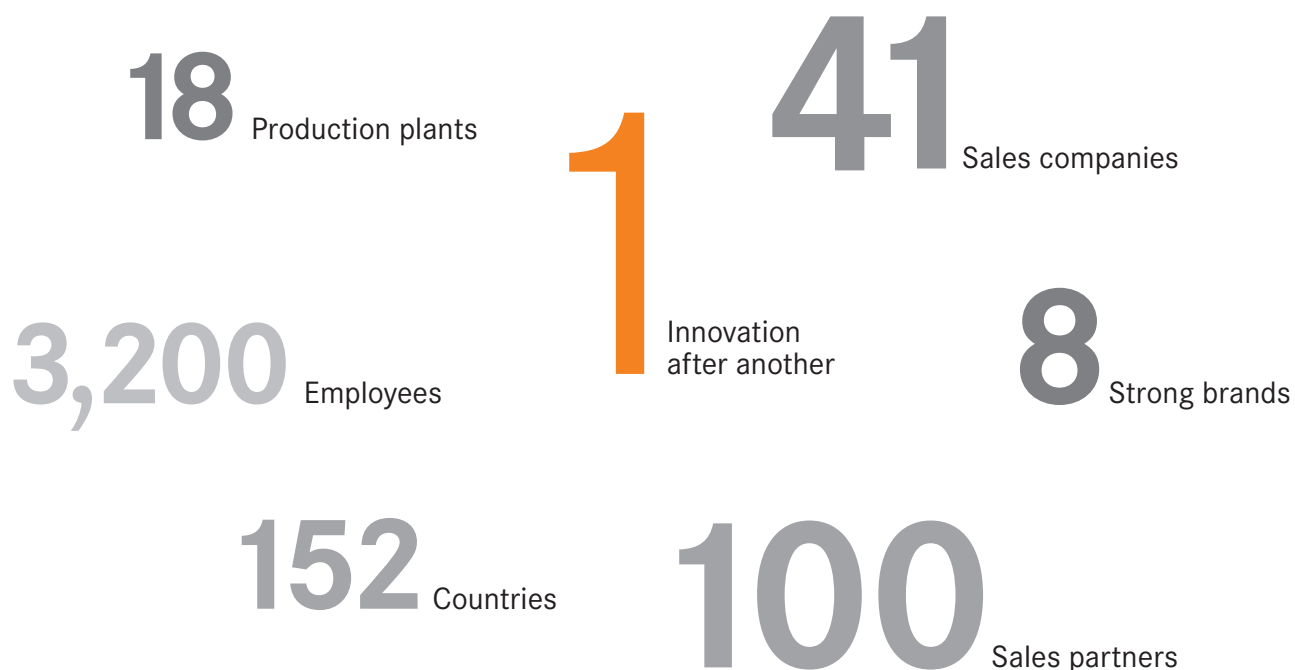
Reliably connecting the world

We want to help you become even more productive and successful. This is why we work tirelessly on optimising our processes. We do everything to make sure we always find the best solution for you and also provide you with quick, efficient and effective support.

No matter where you are – we are always by your side. Our plants, sales companies, partners and, above all, our competent teams of advisers ensure we offer you a comprehensive service on every continent. We do not simply distribute cable technology, we also

manufacture our products ourselves – which represents another advantage for you. As a manufacturer with 18 of our own production facilities, you will benefit from our expertise in the development, design and manufacture of cables, system products and cable accessories. Thanks to this expertise, we can guarantee that Lapp will provide you with the quality that you require and that you demand.

You can always rely on quality from Lapp – wherever you are in the world. This is also embodied by our strong brands.



As of 01.04.2014



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Complete range for photovoltaics

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

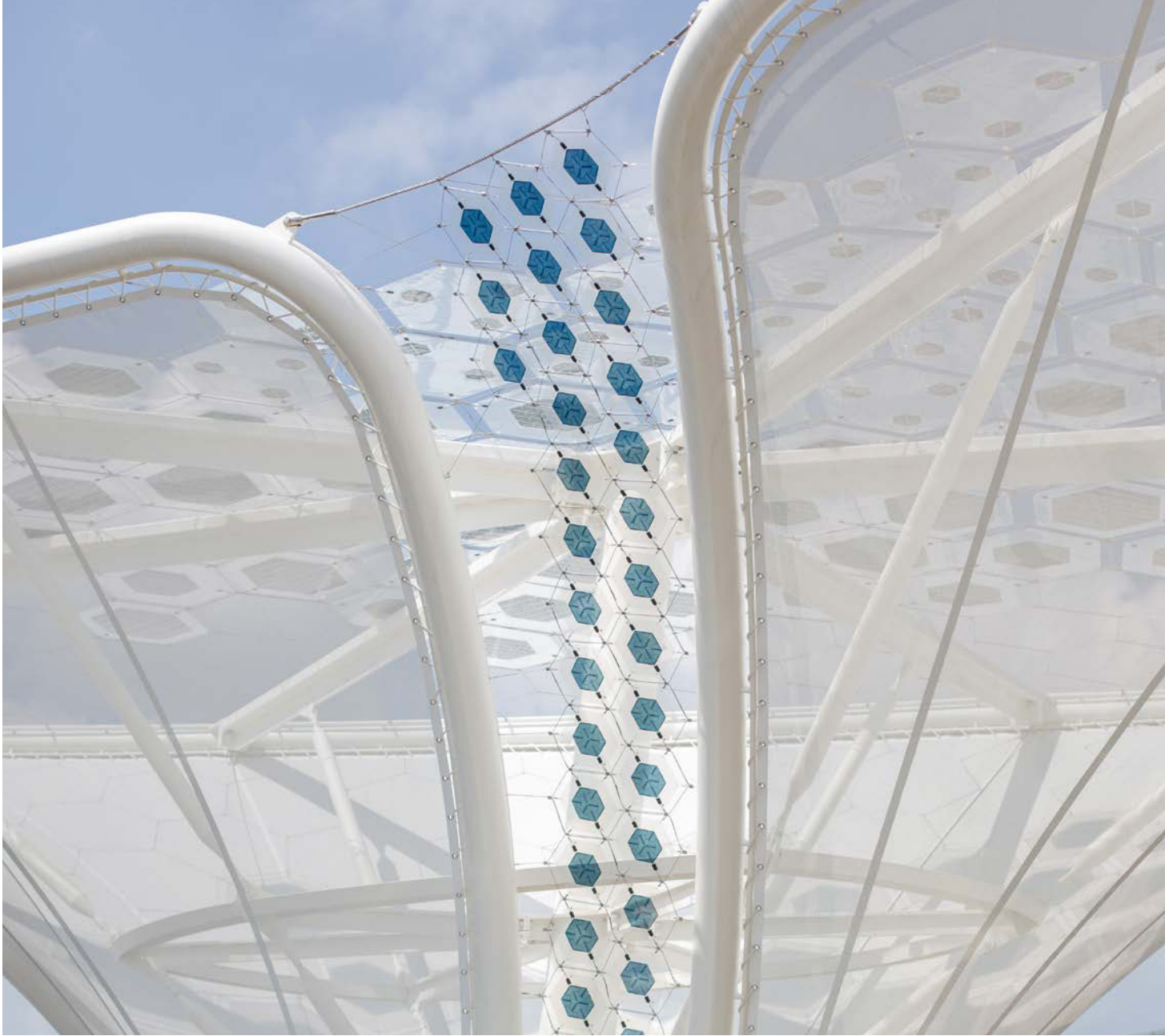
The fact that we recognised the potential of this market very early on and have built up specialist expertise in this area demonstrates once again the innovative tradition

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, connectors 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 highest quality standards. Our products can be used throughout the world and naturally also comply with the RoHS directive.





Organic photovoltaic objects on German pavilion at the world exhibition in Milan

Connection technology for solar trees from Lapp

At the world exhibition in Milan, Expo Milano 2015, the German pavilion will grab the visitors' attention with its energy-generating solar trees. These solar trees integrate organic photovoltaics (OPV) technology and, unlike conventional solar modules, are made from flexible, film-integrated OPV modules. The revolutionary connection technology needed to produce these comes from the Stuttgart-based Lapp Group.

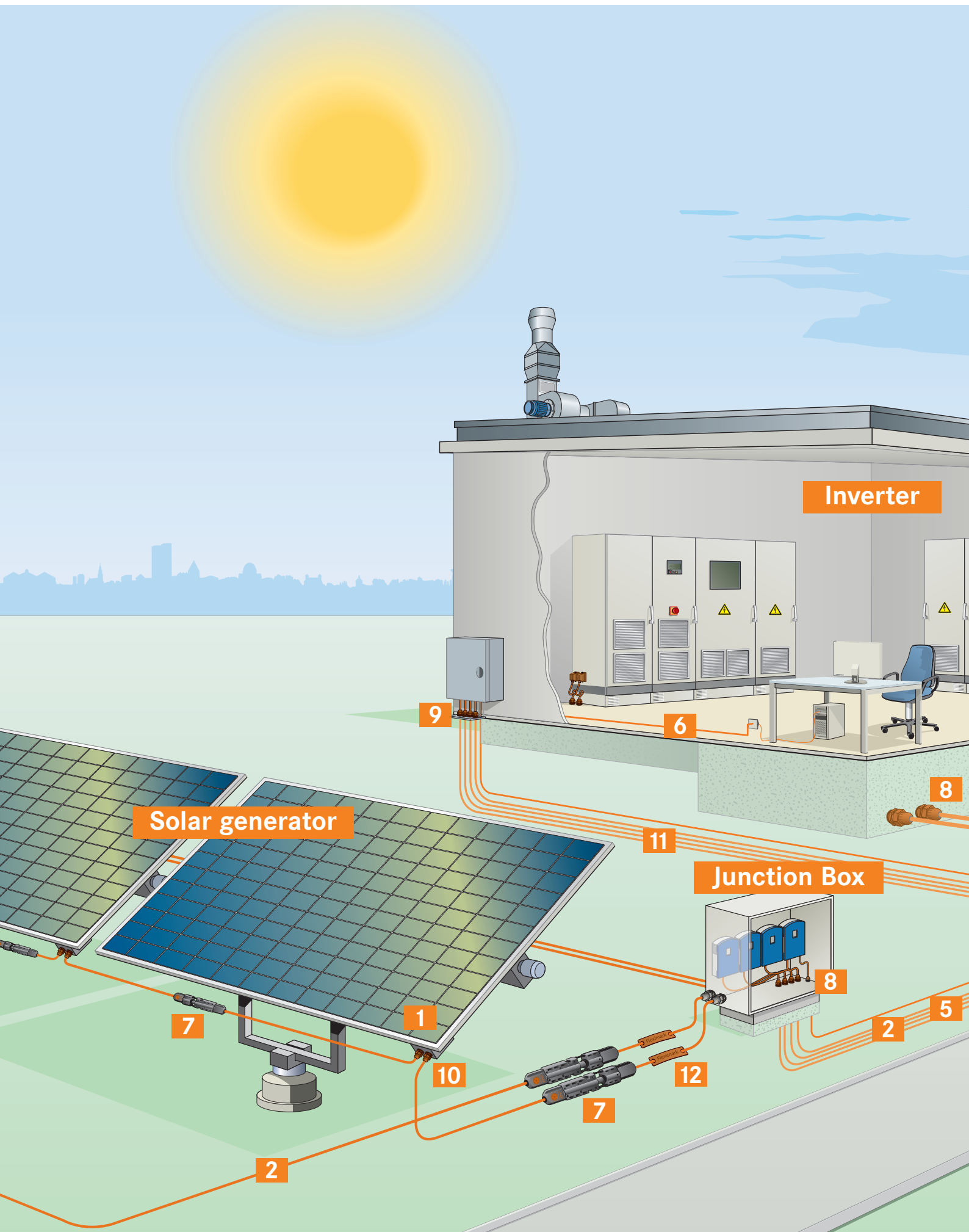
For over ten years, Lapp has been successfully developing connection systems for photovoltaic modules and has regularly

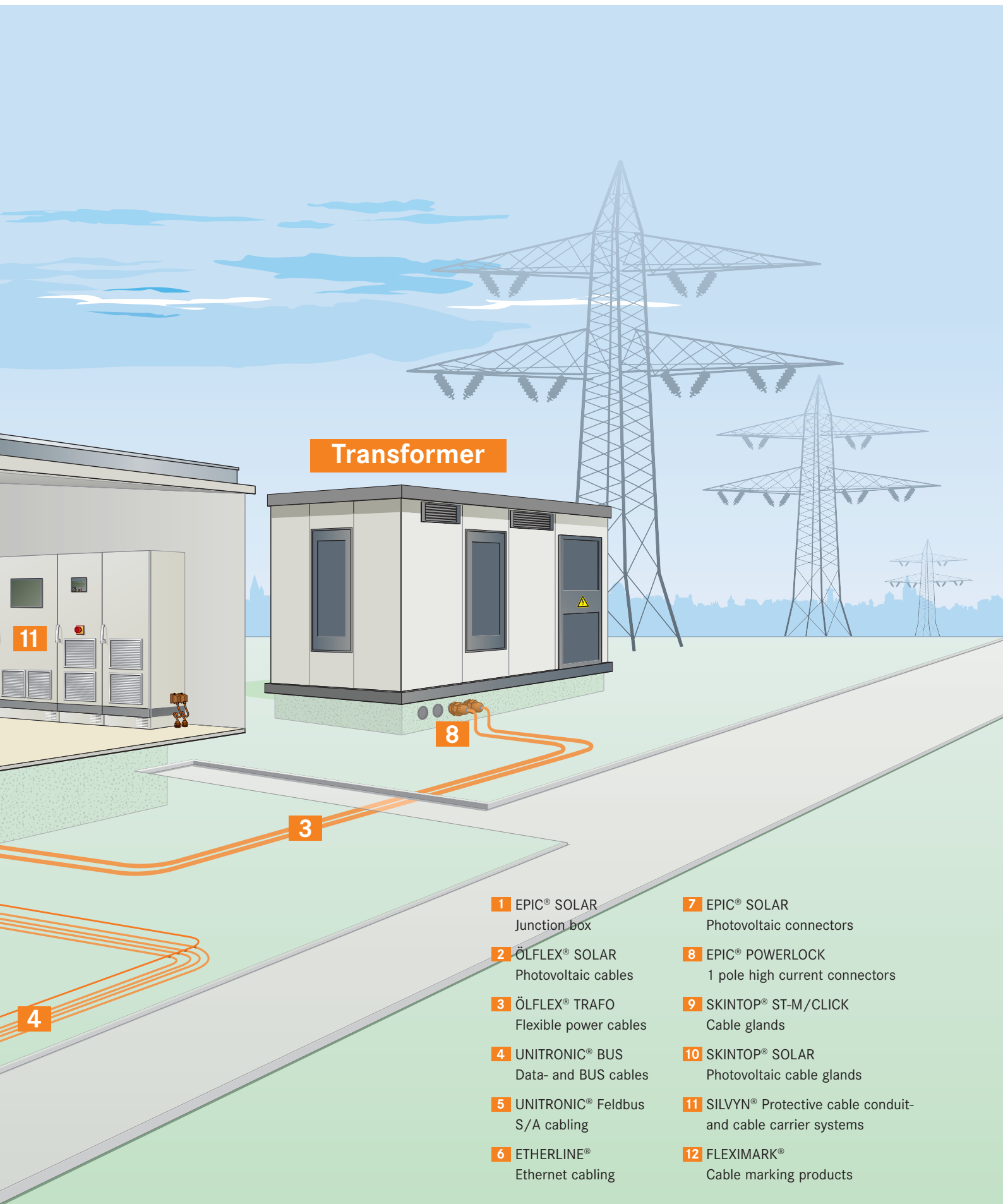
pushed the market forward with its intelligent innovations, for example the well-known connector system EPIC® Solar and the cable series ÖLFLEX® Solar.

The OPV modules and the innovative connections are made from one cast – unlike with conventional photovoltaic modules, there is no longer a junction box attached; instead, there is a so-called access point that is cast directly onto the flexible OPV film and merges with the film. This method prevents capillary action and therefore also damage due to corrosion. Additionally, the

connection components are, at only 30 mm x 20 mm, considerably smaller than those in conventional systems. The cables to be used by the modules were also selected according to customer-specific requirements and are only 2 mm wide. They have been produced in grey for use on the German pavilion so that they can be integrated virtually unnoticeably into the grey wire braiding of the design components.

The Solar system by Lapp





Transformer

- | | |
|---|--|
| 1 EPIC® SOLAR
Junction box | 7 EPIC® SOLAR
Photovoltaic connectors |
| 2 ÖLFLEX® SOLAR
Photovoltaic cables | 8 EPIC® POWERLOCK
1 pole high current connectors |
| 3 ÖLFLEX® TRAFO
Flexible power cables | 9 SKINTOP® ST-M/CLICK
Cable glands |
| 4 UNITRONIC® BUS
Data- and BUS cables | 10 SKINTOP® SOLAR
Photovoltaic cable glands |
| 5 UNITRONIC® Feldbus
S/A cabling | 11 SILVYN® Protective cable conduit-
and cable carrier systems |
| 6 ETHERLINE®
Ethernet cabling | 12 FLEXIMARK®
Cable marking products |



ÖLFLEX® SOLAR XLR-R

Electron beam cross-linked solar cables with reduced diameters - TÜV type approved



Info

- Optimised cable design - thin, light and robust
- TÜV Type approved (2PFG 1169/08.07) According to DKE specification PV1-F
- New version with coloured stripe

Benefits

- Reduced outer diameters enable space and weight saving installation
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

Application range

- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Flexible or building-integrated PV systems

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR-R = X-Linked Radiated-Reduced Proven electron beam cross-linked quality

Norm references / Approvals

- PV1-F (TÜV type approved according to 2 PFG 1169/08.2007)

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

Technical data



Classification

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



Conductor stranding

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



Minimum bending radius

Fixed installation: 4 x outer diameter



Nominal voltage

AC U_0/U : 600/1000 V
DC U_0/U : 900/1500 V
Max. permissible operating voltage:
DC 1,8 kV (Conductor-conductor, non earthed system)



Test voltage

AC 6500 V



Current rating

Im compliance with TÜV requirements spec. 2 PFG 1169/08.2007 table 1



Temperature range

-40°C to +120°C max. conductor temperature based on EN 60216-1
Ambient temperature range according to TÜV 2 PFG 1169/08.07: -40°C to +90°C

Article number	Conductor cross-section (mm ²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLR-R				
Core insulation: white / Outer sheath: black				
0023175	1.5	4.4	14.4	34
0023176	2.5	4.8	24	46
0023177	4.0	5.2	38.4	63
0023178	6.0	5.8	57.6	86
0023179	10.0	7	96	132
0023180	16.0	8.3	153.6	197
Core insulation: white / Outer sheath: black with red stripe				
0023360	2.5	4.8	24	46
0023361	4.0	5.2	38.4	63
0023362	6.0	5.8	57.6	86
0023363	10.0	7	96	132
0023364	16.0	8.3	153.6	197
Core insulation: white / Outer sheath: black with blue stripe				
0023370	2.5	4.8	24	46
0023371	4.0	5.2	38.4	63
0023372	6.0	5.8	57.6	86
0023373	10.0	7	96	132
0023374	16.0	8.3	153.6	197

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Accessories

- EPIC® SOLAR 4 M
- EPIC® SOLAR 4 F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



ÖLFLEX® SOLAR XLS-R

Electron beam cross-linked solar cables with reduced outer diameters



Info

- Optimised cable design - thin, light and robust
- New version with coloured stripe

Benefits

- Reduced outer diameters enable space and weight saving installation
- Robust against mechanical impacts
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

Application range

- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Flexible or building-integrated PV systems

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLS-R = X-Linked Standard - Reduced Proven electron beam cross-linked quality

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

Technical data

- Classification**
ETIM 5.0 Class-ID: EC001578
ETIM 5.0 Class-Description: Flexible cable
- Conductor stranding**
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**
Fixed installation: 4 x outer diameter
- Nominal voltage**
AC U_0/U : 600/1000 V
DC U_0/U : 900/1500 V
Max. permissible operating voltage: DC 1,8 kV (Conductor-conductor, non earthed system)
- Test voltage**
AC 6500 V
- Temperature range**
Fixed installation: -40°C to +100°C
max. conductor temperature

Article number	Conductor cross-section (mm²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLS-R				
Core insulation: white / Outer sheath: black				
0023100	1.5	4.4	14.4	34
0023136	2.5	4.8	24	46
0023137	4.0	5.2	38.4	63
0023138	6.0	5.8	57.6	86
0023104	10.0	7	96	132
0023105	16.0	8.3	153.6	197
Core insulation: white / Outer sheath: black with red stripe				
0023390	2.5	4.8	24	46
0023391	4.0	5.2	38.4	63
0023392	6.0	5.8	57.6	86
0023393	10.0	7	96	132
0023394	16.0	8.3	153.6	197
Core insulation: white / Outer sheath: black with blue stripe				
0023395	2.5	4.8	24	46
0023396	4.0	5.2	38.4	63
0023397	6.0	5.8	57.6	86
0023398	10.0	7	96	132
0023399	16.0	8.3	153.6	197

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

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

 Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Similar products

- ÖLFLEX® SOLAR XLR-R

Accessories

- EPIC® SOLAR 4 M
- EPIC® SOLAR 4 F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



New

ÖLFLEX® SOLAR XLR WP

Electron beam cross-linked solar cables with optimized performance in water - TÜV type



Info

- Optimised cable design - constant high volume resistance even after long-term period in water
- TÜV Type PV1-F (2PFG 1169/08.07)

Benefits

- The alternative for long-term storage in water, e.g. as it can occur in case after flooding or in buried conduits
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

Application range

- For underground installation in conduits, in which water, heat and moisture can accumulate
- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Suitable for direct burial: see data sheet

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR WP = X-Linked Radiated Water-Proof Proven electron beam cross-linked quality

Norm references / Approvals

- PV1-F (TÜV type approved according to 2 PFG 1169/08.2007)

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

Technical data



Classification

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



Conductor stranding

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



Minimum bending radius

Fixed installation: 4 x outer diameter



Nominal voltage

AC U_0/U : 600/1000 V
DC U_0/U : 900/1500 V
Max. permissible operating voltage:
DC 1,8 kV (Conductor-conductor, non earthed system)



Test voltage

AC 6500 V



Current rating

Im compliance with TÜV requirements spec. 2 PFG 1169/08.2007 table 1



Temperature range

-40°C to +120°C max. conductor temperature based on EN 60216-1
Ambient temperature range according to TÜV 2 PFG 1169/08.07: -40°C to +90°C

Article number	Conductor cross-section (mm²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLR WP				
Core insulation: white / Outer sheath: black				
1023501	2.5	5.2	24	48
1023502	4.0	5.6	38.4	65
1023503	6.0	6.2	57.6	88
1023504	10.0	7.4	96	135
1023505	16.0	8.7	153.6	207
Core insulation: white / Outer sheath: black with red stripe				
1023521	2.5	5.2	24	48
1023522	4.0	5.6	38.4	65
1023523	6.0	6.2	57.6	88
1023524	10.0	7.4	96	135
1023525	16.0	8.7	153.6	207
Core insulation: white / Outer sheath: black with blue stripe				
1023526	2.5	5.2	24	48
1023527	4.0	5.6	38.4	65
1023528	6.0	6.2	57.6	88
1023529	10.0	7.4	96	135
1023530	16.0	8.7	153.6	207

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Accessories

- EPIC® SOLAR 4 M
- EPIC® SOLAR 4 F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears


New

ÖLFLEX® SOLAR XLR 1,5kV

Electron beam cross-linked solar cables for rated voltage 1500 V DC - TÜV type


Info

- TÜV Type PV1500DC-F (2PFG 1990/05.12)


Benefits

- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Extruded colour stripe serves as reverse polarity protection during installation.
- Exact quantity control during installation by meter marking on the cable sheath

Application range

- For use in photovoltaic-systems with rated voltage 1500 V DC
- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks
- Flexible or building-integrated PV systems

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR 1,5kV = X-Linked Radiated 1,5kV
- Proven electron beam cross-linked quality
- Version without colour stripe for size up to 300mm² on request

Norm references / Approvals

- TÜV Type PV1500DC-F (2PFG 1990/05.12)
- Based on EN 50618

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black respectively black with red or blue stripe

Technical data

Classification

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


Conductor stranding

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


Minimum bending radius

Fixed installation: 4 x outer diameter


Nominal voltage

DC U₀: 1.5 kV
maximum permitted voltage:
DC 1.8 kV (conductor-earth)


Test voltage

AC 11 kV


Current rating

Im compliance with TÜV requirements spec. 2 PFG 1990/05.12 table 2.1


Temperature range

-40°C to +120°C max. conductor temperature based on EN 60216-1
Ambient temperature range according to TÜV 2 PFG 1990/05.12: -40°C to +90°C

Article number	Conductor cross-section (mm ²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLR 1,5kV				
Core insulation: white / Outer sheath: black				
1023410	2.5	5.6	24	52
1023411	4.0	6.1	38.4	70
1023412	6.0	6.7	57.6	93
1023413	10.0	7.7	96	145
1023414	16.0	9.1	153.6	215
Core insulation: white / Outer sheath: black with red stripe				
1023425	2.5	5.6	24	52
1023426	4.0	6.1	38.4	70
1023427	6.0	6.7	57.6	93
1023428	10.0	7.7	96	145
1023429	16.0	9.1	153.6	215
Core insulation: white / Outer sheath: black with blue stripe				
1023435	2.5	5.6	24	52
1023436	4.0	6.1	38.4	70
1023437	6.0	6.7	57.6	93
1023438	10.0	7.7	96	145
1023439	16.0	9.1	153.6	215

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Accessories

- EPIC® SOLAR 4Plus M
- EPIC® SOLAR 4Plus F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



New

ÖLFLEX® SOLAR XLR 1,5kV WP

Electron beam cross-linked solar cables for rated voltage 1500 V DC - TÜV type

LAPP KABEL STUTTGART ÖLFLEX® SOLAR XLR 1,5kV WP CE



Info

- Optimised cable design - constant high volume resistance even after long-term period in water
- TÜV Type PV 1500DC-F (2PFG 1990/05.12)

Benefits

- The alternative for long-term storage in water, e.g. as it can occur in case after flooding or in buried conduits
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts
- Exact quantity control during installation by meter marking on the cable sheath

Application range

- For use in photovoltaic-systems with rated voltage 1500 V DC
- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- For underground installation in conduits, in which water, heat and moisture can accumulate
- Suitable for direct burial: see data sheet

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLR 1,5kV WP = X-Linked Radiated 1,5kV Water-Proof
- Proven electron beam cross-linked quality
- Version for size up to 300mm² on request

Norm references / Approvals

- TÜV Type PV 1500DC-F (2PFG 1990/05.12)
- Based on EN 50618

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black

Technical data



Classification

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



Conductor stranding

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



Minimum bending radius

Fixed installation: 4 x outer diameter



Nominal voltage

DC U₀: 1.5 kV
maximum permitted voltage:
DC 1.8 kV (conductor-earth)



Test voltage

AC 11 kV



Current rating

Im compliance with TÜV requirements spec. 2 PFG 1990/05.12 table 2.1



Temperature range

-40°C to +120°C max. conductor temperature based on EN 60216-1
Ambient temperature range according to TÜV 2 PFG 1990/05.12: -40°C to +90°C

Article number	Conductor cross-section (mm ²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLR 1,5kV WP				
1023500	2.5	6	24	56
1023556	4.0	6.5	38.4	75
1023557	6.0	7.1	57.6	99
1023558	10.0	8.1	96	155
1023559	16.0	9.5	153.6	228

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Accessories

- EPIC® SOLAR 4Plus M
- EPIC® SOLAR 4Plus F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



ÖLFLEX® TRAFO XLv 1.8/3 kV

Flexible and mechanically robust single-core connection cables



Info

- Voltage rating 1.8/3 kV
- Suitable for direct burial
- Halogen-free and flame-retardant



Benefits

- Reinforced outer sheath gives enhanced protection against mechanical stress
- Wide temperature range for applications in harsh climatic environments
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- For outdoor use, and if the general installation guidelines are followed, this is also suitable for direct burial
- Flexible and fine-wired conductor design enables easy on-site installation

Application range

- Required rated voltage 1.8/3 kV
- In the field of renewable energy and conventional power generation
- Photovoltaic plants and solar parks
- Drip-loop installation in wind turbines
- As connection between the converter and the transformer substation

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Suitable for direct burial according to UL 1277
- Torsion-tested for wind turbines

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of cross-linked polyolefin
- Outer sheath made of cross-linked copolymer
- Core insulation and outer sheath are extruded together
- Outer sheath colour: black

Technical data

- Classification**
ETIM 5.0 Class-ID: EC000057
ETIM 5.0 Class-Description: Low voltage power cable
- Core identification code**
Colour: black (RAL 9005)
- Fire test**
Flame-retardant according IEC 60332-1-2
- Conductor stranding**
Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius**
Occasional flexing: 15 x outer diameter
Fixed installation: 5 x outer diameter
- Nominal voltage**
U₀/U: 1.8/3 kV
- Test voltage**
AC 6500 V
- Temperature range**
Flexing: -40°C to +90°C
Fixed installation: -40°C to +90°C

Article number	Conductor cross-section (mm²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® TRAFO XLv 1.8/3 kV				
1151010	95.0	22.1	912	1218
1151011	120.0	24.4	1152	1496
1151012	150.0	25.9	1440	1810
1151013	185.0	28.2	1776	2184
1151014	240.0	30.3	2304	2757
1151015	300.0	34	2880	3407

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Drum

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

Similar products

- ÖLFLEX® SOLAR XLSv

Accessories

- Tube cable lugs KR/ KRT/ KRF
- WT 3195 G pressing pliers, hydraulic
- V 1311 pressing pliers, hydraulic
- KT cable shears



ÖLFLEX® SOLAR XLS-R T

Electron beam cross-linked solar twin-cables - separable



Info

- Optimised cable design - thin, light and robust
- Time-saving installation
- Ideal for stand-alone PV power systems

Benefits

- Easy to split into two separate cables
- Reduced outer diameters enable space and weight saving installation
- Robust against mechanical impacts
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- 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 plants and solar parks
- Flexible or building-integrated PV systems

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance
- XLS-R T= X-Linked Standard-Reduced Twin
Proven electron beam cross-linked quality

Norm references / Approvals

- Also available as TÜV PV1-F certified version upon request

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black
- Cores connected in parallel with a separating strip

Technical data



Classification

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



Core identification code

black / red
blue / red



Conductor stranding

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



Minimum bending radius

Fixed installation: 4 x outer diameter



Nominal voltage

AC U_0/U : 600/1000 V
DC U_0/U : 900/1500 V
Max. permissible operating voltage:
DC 1,8 kV (Conductor-conductor, non earthed system)



Test voltage

AC 6500 V



Temperature range

Fixed installation: -40°C to +100°C
max. conductor temperature

Article number	Number of cores and mm ² per conductor	Outer dimensions, width x height (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLS-R T				
Core insulation: red / black				
0023982	2 X 2.5	9.9 x 4.8	48	94
0023984	2 X 4.0	10.7 x 5.2	76.8	128
0023986	2 X 6.0	11.9 x 5.8	115.2	174
0023988	2 X 10.0	14.3 x 7.0	192	267
Core insulation: red / blue				
0023983	2 X 2.5	9.9 x 4.8	48	94
0023985	2 X 4.0	10.7 x 5.2	76.8	128
0023987	2 X 6.0	11.9 x 5.8	115.2	174
0023989	2 X 10.0	14.3 x 7.0	192	267

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Similar products

- ÖLFLEX® SOLAR XLS-R

Accessories

- EPIC® SOLAR 4 M
- EPIC® SOLAR 4 F
- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



ÖLFLEX® SOLAR V4A

Extra robust solar cables with high-grade steel protection braiding



Info

- Protected against martens, rodents and termites

Benefits

- High-grade stainless steel wire braiding (class V4A) provides highly effective protection against martens, rodents and even termites
- Robust against mechanical impacts
- Reduction of flame propagation and of toxic combustion gases in the event of fire

Application range

- For use in PV systems that are installed on the roofs of stables or barns situated in farmsteads or densely-forested areas
- Gable and flat roof photovoltaic systems
- Photovoltaic plants and solar parks

Product features

- Weather/UV-resistant acc. to HD 605/A1
- Halogen-free and flame-retardant
- Good mechanical strength

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black
- Armouring made of stainless V4A high-grade steel wire braiding

Technical data

	Classification ETIM 5.0 Class-ID: EC001578 ETIM 5.0 Class-Description: Flexible cable
	Core identification code Black
	Conductor stranding Fine wire according to VDE 0295, class 5/IEC 60228 class 5
	Minimum bending radius Fixed installation: 5 x outer diameter
	Nominal voltage AC U_0/U : 600/1000 V DC U_0/U : 900/1500 V Max. permissible operating voltage: DC 1,8 kV (Conductor-conductor, non earthed system)
	Test voltage AC 6500 V
	Temperature range Fixed installation: -40°C to +100°C max. conductor temperature

Article number	Conductor cross-section (mm²)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR V4A stainless steel				
0025960	4.0	7	38.4	98
0025961	6.0	8	57.6	158

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

Packaging size: Coil 100 m; Drum (500; 1000) m

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



New

ÖLFLEX® SOLAR XLR-CR11-1

Electron beam cross-linked solar cable with a copper screening for the requirements of OVE directive R11-1



Info

- Meets the requirements of OVE directive R11-1, edition 2013-03-01

Benefits

- Meets the requirements of OVE directive R11-1, edition 2013-03-01
- Reduction of flame propagation and of toxic combustion gases in the event of fire
- Robust against mechanical impacts

Application range

- Screened DC cable for solar applications
- For the cabling between the solar modules and as extension cable between the module strings and the DC/AC inverter
- Gable and flat roof photovoltaic systems
- Flexible or building-integrated PV systems

Product features

- Minimum cross section of the screening corresponds to the conductor cross section taking into account the conductivity
- Conductivity screen $\geq$ conductivity conductor
- Weather/UV-resistant acc. to HD 605/A1
- Ozone-resistant according to EN 50396
- Halogen-free and flame-retardant
- Good notch and abrasion resistance

Norm references / Approvals

- Based on TÜV specification 2 PfG 1169/08.2007

Product Make-up

- Fine-wire, tinned-copper conductor
- Core insulation made of electron beam cross-linked copolymer
- Colour of core insulation: white
- Tinned-copper braiding
- Outer sheath made of electron beam cross-linked copolymer
- Outer sheath colour: black

Technical data



Classification

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



Conductor stranding

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



Minimum bending radius

Fixed installation: 4 x outer diameter



Nominal voltage

AC U_0/U : 600/1000 V
DC U_0/U : 900/1500 V
Max. permissible operating voltage:
DC 1,8 kV (Conductor-conductor, non earthed system)



Test voltage

AC 6500 V



Current rating

In compliance with TÜV requirements spec. 2 PfG 1169/08.2007 table 1



Temperature range

-40°C to +120°C max. conductor temperature based on EN 60216-1
Ambient temperature: -40°C to +90°C

Article number	Article designation	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
ÖLFLEX® SOLAR XLR-CR11-1				
1023539	ÖLFLEX® SOLAR XLR-CR11-1 1x6/6 BK/BK	10.2	122.77	194

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

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

Packaging size: Coil 100 m; Drum (500; 1000) m

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

Accessories

- UNIVERSAL STRIP stripping and cutting tool
- KS 20 cable shears



NYY-J, NYY-O

Fixed installation, direct burial; PVC cable with different application areas



Info

- 1. re = round conductor, single-wire;
- 2. rm = round conductor, multi-wire;
- 3. sm = sector-shaped conductor

Application range

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

Product features

- Flame-retardant according IEC 60332-1-2
- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

Norm references / Approvals

- HD 603/VDE 0276-603 (for 1 to 5 cores)
- HD 627/VDE 0276-627 (as from 7 cores)

Product Make-up

- Bare copper wire conductor
- Abbreviations "re", "rm", "se", "sm": r = round conductor form; s = sectorial conductor form; e = single-wire conductor (wire = conductor)/braided conductor class 1 according to IEC 60228/VDE 0295 for fixed, static applications; m = multi-wire conductor/braided conductor class 2 according to IEC 60228/VDE 0295 for fixed, static applications, but with a slightly lower minimum bending factor
- Core insulation: Based on PVC
- Filling compound over the core assembly
- PVC-based outer sheath

Technical data

	Classification ETIM 5.0 Class-ID: EC000057 ETIM 5.0 Class-Description: Low voltage power cable
	Core identification code Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
	Conductor stranding Single or multi-wire
	Minimum bending radius Single-core: 15 x outer diameter Multi-core: 12 x outer diameter
	Nominal voltage U ₀ /U: 0.6/1.0 kV
	Test voltage 4000 V
	Temperature range During installation: -5°C to +50°C Fixed installation: -40°C to +70°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
NYY-J				
1550030	1 x 25rm	13.0	240	380
1550038	1 x 35rm	14.0	336	447
1550032	1 x 50rm	15.0	480	650
1550033	1 x 70rm	17.0	672	864
1550037	1 x 185rm	25.0	1776	2080
15500013	3 x 1,5re	12.0	43	223
15500023	4 x 1,5re	13.0	58	256
15500033	5 x 1,5re	14.0	72	293
1550004	7 x 1,5re	15.0	101	360
1550005	10 x 1,5re	18.0	144	520
1550006	12 x 1,5re	19.0	173	560
1550084	14 x 1,5re	20.0	202	620
1550007	16 x 1,5re	21.0	230	680
1550008	19 x 1,5re	22.0	274	760
1550009	24 x 1,5re	24.0	346	900
1550086	30 x 1,5re	26.0	432	1100
15500103	3 x 2,5re	13.0	72	272

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
15500113	4 x 2,5re	14.0	96	316
15500123	5 x 2,5re	15.0	120	323
1550013	7 x 2,5re	16.0	168	450
1550090	10 x 2,5re	20.0	240	630
1550091	12 x 2,5re	20.0	288	680
1550092	14 x 2,5re	21.0	336	790
1550094	19 x 2,5re	23.0	456	990
1550096	24 x 2,5re	26.0	576	1300
1550097	30 x 2,5re	28.0	720	1400
15500583	3 x 4re	15.0	115	373
15500203	4 x 4re	16.0	154	439
15500263	5 x 4re	17.0	192	510
15500593	3 x 6re	16.0	173	466
15500213	4 x 6re	17.0	230	547
15500273	5 x 6re	19.0	288	640
15500603	3 x 10re	18.0	288	629
15500223	4 x 10re	19.0	384	743
15500823	5 x 10re	21.0	480	899
15500613	3 x 16re	20.0	461	850
15500233	4 x 16re	22.0	614	1039
15500833	5 x 16re	23.0	768	1240
15500713	3 x 25rm/16re	25.0	874	1595
15500243	4 x 25rm	27.0	960	1620
15500153	3 x 35sm/16re	27.0	1162	1718
15500753	4 x 35sm	27.0	1344	1916
15500163	3 x 50sm/25rm	31.0	1680	2383
15500253	4 x 50sm	31.0	1920	2639
15500173	3 x 70sm/35sm	33.0	2352	3196
15500763	4 x 70sm	35.0	2688	3576
15500183	3 x 95sm/50sm	38.0	3216	4271
15500773	4 x 95sm	40.0	3648	4746
15500723	3 x 120sm/70sm	41.0	4128	5281
15500783	4 x 120sm	43.0	4608	5813
15500733	3 x 150sm/70sm	46.0	4992	6408
15500793	4 x 150sm	48.0	5760	7263
15500743	3 x 185sm/95sm	50.0	6240	7909
15500803	4 x 185sm	53.0	7104	8905
15500193	3 x 240sm/120sm	57.0	8064	10162
15500813	4 x 240sm	60.0	9216	11430
NY-Y-O				
1550205	1 x 10re	10.0	96	176
1550206	1 x 16re	11.0	154	239
1550207	1 x 25rm	13.0	240	380
1550208	1 x 35rm	14.0	336	447
1550209	1 x 50rm	15.0	480	650
1550210	1 x 70rm	17.0	672	864
1550211	1 x 95rm	19.0	912	1132
1550212	1 x 120rm	21.0	1152	1405
1550213	1 x 150rm	22.0	1440	1710
1550214	1 x 185rm	25.0	1776	2080
1550215	1 x 240rm	27.0	2304	2669
1550216	1 x 300rm	30.0	2880	3305
1550218	1 x 500rm	39.0	4800	5400
15502003	2 x 1,5re	11.0	29	210
15502193	2 x 2,5re	12.0	48	250
15502203	2 x 4re	14.0	77	360
15502213	2 x 6re	15.0	115	400
15502223	2 x 10re	17.0	192	500
15502533	4 x 16re	22.0	614	1039
15502543	4 x 25rm	27.0	960	1620
15502563	4 x 50sm	31.0	1920	2639
15502573	4 x 70sm	35.0	2688	3576
15502583	4 x 95sm	40.0	3648	4746

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

Copper price basis: excluding copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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

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

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

■ Similar products

- NYCY
- NYCWY
- NAYY-J

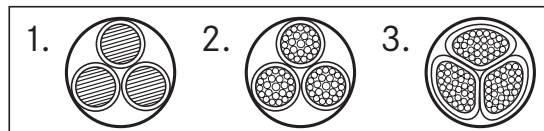
■ Accessories

- V 1311 pressing pliers, hydraulic
- STAR STRIP stripping tool
- KT cable shears



NAYY-J

Fixed installation, direct burial; PVC cable with solid aluminium conductors



Info

- 1. re = round conductor, single-wire;
- 2. rm = round conductor, multi-wire;
- 3. sm = sector-shaped conductor

Application range

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

Product features

- Flame-retardant according IEC 60332-1-2
- Maximum tensile strain for aluminium conductors during installation is 30 N/mm² according to HD 603/VDE 0276-603: Part 1 Appendix A.4.12 and Part 3-G point 4
- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T 12) for installation in and on buildings

Norm references / Approvals

- HD 603/VDE 0276-603

Product Make-up

- Aluminium conductor
- Abbreviations "re", "rm", "se", "sm": r = round conductor form; s = sectorial conductor form; e = single-wire conductor (wire = conductor)/braided conductor class 1 according to IEC 60228/VDE 0295 for fixed, static applications; m = multi-wire conductor/braided conductor class 2 according to IEC 60228/VDE 0295 for fixed, static applications, but with a slightly lower minimum bending factor
- Core insulation: Based on PVC
- Filling compound over the core assembly
- PVC-based outer sheath

Technical data

	Classification ETIM 5.0 Class-ID: EC000057 ETIM 5.0 Class-Description: Low voltage power cable
	Core identification code According to VDE 0293-308 (table T9)
	Conductor stranding Single-wire
	Minimum bending radius Fixed installation: 12 x outer diameter
	Nominal voltage U ₀ /U: 0.6/1.0 kV
	Test voltage 4000 V
	Temperature range During installation: -5°C to +50°C Fixed installation: -30°C to +70°C

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Alu index (kg/km)	Weight (kg/km)
NAYY-J				
1552010	4 x 35re	29.0	406	1170
1552011	4 x 50se	30.0	580	1305
1552012	4 x 70se	35.0	812	1730
1552013	4 x 95se	39.0	1102	2205
1552014	4 x 120se	42.0	1392	2655
1552015	4 x 150se	46.0	1740	3150
1552016	4 x 185se	51.0	2146	3925
1552017	4 x 240se	60.0	2784	4880

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

Aluminium price basis: excludes aluminium. Refer to catalogue appendix T17 for the application and definition of "Metal price basis" and "Metal index".

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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

Similar products

- NY-Y, NY-O

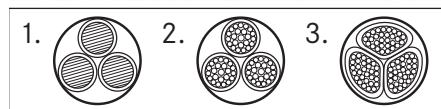
Accessories

- V 1311 pressing pliers, hydraulic
- STAR STRIP stripping tool
- Cable lugs and other connectors made of aluminium or bi-metal Al-Cu are available upon request



NYCWY

Fixed installation, direct burial; PVC cable with concentric, wave-like copper conductor and cross-conductive spiral



Benefits

- Concentric conductor above all as PE
- Easier connection due to the waveform of the concentric copper conductor

Application range

- Power and control cable for fixed installation in the following applications:
- For indoor and outdoor use
- Burial without additional, suitable underground protection according to VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial: normal minimum installation depth 0.6 m, but at least 0.8 m under roads
- In concrete with a temperature below the maximum cable operating temperature of +70 °C according to the VDE standard HD 603/VDE 0276-603 - Part 3-G (point 4) governing PVC cables for direct burial
- In water: no longer than 2 weeks at a time, maximum submersion depth 10 metres, only in static water/bodies of water without shipping traffic

Product features

- Flame-retardant according IEC 60332-1-2

- Current rating according to HD 603/VDE 0276-603, Part 3-G, Table 14 (buried at +20 °C ground temperature according to HD 603/VDE 0276-603, Part 3-G, point 5) for routing underground and Table 15 (in the air at an air temperature of +30 °C according to HD 603/VDE 0276-603, Part 3-G, point 5) when used outdoors; but always taking into consideration corrections/reductions to the current rating that may be necessary according to VDE 0298-4, and VDE 0298-4 (also refer to the catalogue appendix T12) for installation in and on buildings

Norm references / Approvals

- HD 603/VDE 0276-603 for NYCWY with 3 or 4 cores and the relevant concentric protective conductor

Product Make-up

- Bare copper wire conductor
- Abbreviations "re", "rm", "se", "sm": r = round conductor form; s = sectorial conductor form; e = single-wire conductor (wire = conductor)/braided conductor class 1 according to IEC 60228/VDE 0295 for fixed, static applications; m = multi-wire conductor/braided conductor class 2 according to IEC 60228/VDE 0295 for fixed, static applications, but with a slightly lower minimum bending factor



Info

- 1. re = round conductor, single-wire;
- 2. rm = round conductor, multi-wire;
- 3. sm = sector-shaped conductor

Technical data



Classification

ETIM 5.0 Class-ID: EC000057

ETIM 5.0 Class-Description:

Low voltage power cable



Core identification code

Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9



Conductor stranding

Single or multi-wire



Minimum bending radius

Fixed installation: 12 x outer diameter



Nominal voltage

U₀/U: 0.6/1.0 kV



Test voltage

4000 V



Temperature range

During installation: -5°C to +50°C

Fixed installation: -40°C to +70°C

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

Article number	Number of cores and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
NYCWY				
15505003	2 x 10re/10	19.0	312	610
15505263	3 x 10re/10	20.0	408	775
15505403	4 x 10re/10	21.0	504	897
15505273	3 x 16re/16	22.0	643	1066
15505413	4 x 16re/16	24.0	796	1250
15505283	3 x 25rm/25	26.0	1003	1584
15505423	4 x 25rm/16	28.0	1142	1822
15505303	3 x 35sm/35	26.0	1402	1710
15505433	4 x 35sm/16	29.0	1526	2146
15505163	3 x 50sm/50	30.0	2000	2368
15505443	4 x 50sm/25	33.0	2203	3031
15505453	4 x 70sm/35	38.0	3082	4056
15505143	3 x 95sm/50	38.0	3296	4256
15505323	3 x 95sm/95	39.0	3791	4600
15505463	4 x 95sm/50	43.0	4208	5364
15505153	3 x 120sm/70	41.0	4236	5314
15505473	4 x 120sm/70	46.0	5388	6748
15505353	3 x 150sm/70	45.0	5100	6344
15505483	4 x 150sm/70	51.0	6540	8159
15505173	3 x 185sm/95	50.0	6383	8054

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

Copper price basis: excluding copper. Refer to catalogue appendix T17 for the definition and calculation of copper-related surcharges.

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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

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

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

Similar products

- NYJ-J, NYJ-O

Accessories

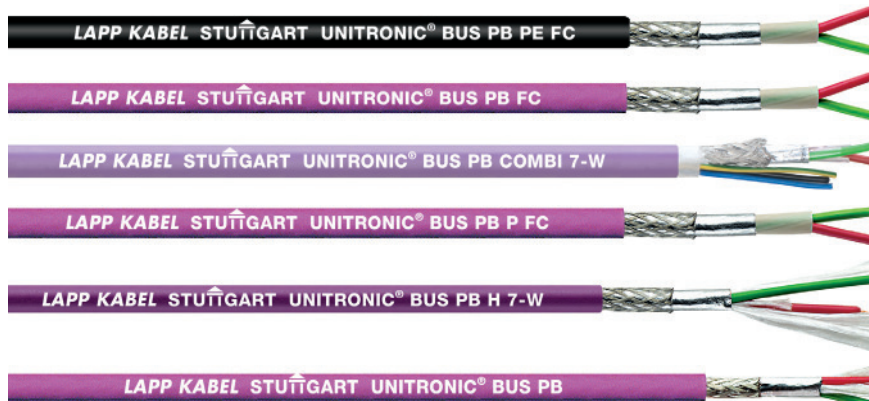
- V 1311 pressing pliers, hydraulic
- KT cable shears


Info

- Lapp Kabel is a member of the PROFIBUS User Organisation (PNO)
- A for Advanced here: UL and CSA certifications

UNITRONIC® BUS PB

Fixed installation



■ Application range

- For fixed installation
- Maximum electromagnetic screening
- Dry or damp rooms
- Item nos. 2170233, 2170333, 2170820, 2170824, 2170826 are all UV-resistant

■ Product features

- These bus cables can be used for PROFIBUS-DP as well as for PROFIBUS-FMS and FIP
- Based on the bit rates listed, in accordance with PNO specifications the following maximum cable lengths for a bus segment apply (cable type A, PROFIBUS-DP):
93.75 kbit/s = 1200 m
187.5 kbit/s = 1000 m
500 kbit/s = 400 m
1.5 Mbit/s = 200 m
12.0 Mbit/s = 100 m

■ Norm references / Approvals

- In accordance with DIN 19245 and EN 50170, e.g. for SIEMENS SIMATIC NET, also suitable for FIP (Factory Instrumentation Protocol)
- See below for UL certification type

■ Product Make-up

- FC: "Fast Connect" cable design
- P: Polyurethane
- H: Halogen-free
- PE: polyethylene, black Outer sheath, e.g. for the food and beverage industry
- 7-W: 7-wire, e.g. for applications where vibrations occur
- COMBI: Data transmission and power supply in one cable

■ Technical data

- Mutual capacitance**
(800 Hz): max. 30 nF/km
- Peak operating voltage**
(not for power applications) 250 V
- Conductor resistance**
(loop): max. 186 Ohm/km.
see also datasheet
- Minimum bending radius**
Fixed installation: see data sheet
- Test voltage**
Core/core: 1500 V rms
- Characteristic impedance**
150 ± 15 Ohm

Article number	Article designation	Number of pairs and conductor diameter (mm)	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
For fixed installation - conventional cable assembly					
2170220	UNITRONIC® BUS PB	1 x 2 x 0.64	8	30.1	74
2170233	UNITRONIC® PB PE	1 x 2 x 0.64	8	30.1	57
2170226	UNITRONIC® BUS PB H 7-W	1 x 2 x 0.64	8	30.1	55
2170225	UNITRONIC® BUS PB COMBI 7-W	1 x 2 x 0.64 Ø + 3 x 1.0 mm²	9.8	59	92
For fixed installation - UL/CSA CMX certification					
2170219	UNITRONIC® BUS PB A	1 x 2 x 0.64	8	30.1	57
For fixed installation - UL/CSA CMG certification					
2170824	UNITRONIC® BUS PB 7-W A	1 x 2 x 0.64	8	30.1	55
For fixed installation - "Fast Connect" cable assembly					
2170333	UNITRONIC® BUS PB PE FC	1 x 2 x 0.64	8	26	67
For fixed installation - UL/CSA CMX certification					
2170330	UNITRONIC® BUS PB P FC	1 x 2 x 0.64	8	26	71
For fixed installation - "Fast Connect" cable assembly - UL/CSA CMG certification					
2170820	UNITRONIC® BUS PB FC	1 x 2 x 0.64	8	26	84
2170826	UNITRONIC® BUS PB 7-W FC	1 x 2 x 0.64	8	26	67
2170326	UNITRONIC® BUS PB-H FC	1 x 2 x 0.64	8	26	72

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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

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

SIMATIC NET® is a registered trademark of Siemens AG

Lapp Kabel is a member of the PROFIBUS user organisation (PNO)

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

■ Similar products

- UNITRONIC® BUS PB ROBUST
- UNITRONIC® BUS PB 105

■ Accessories

- EPIC® Data Connectors
- FC STRIP stripping tool
- SENSOR STRIP stripping tool



UNITRONIC® Li2YCYv (TP)

Screened data transmission cable mit PE core insulation, reinforced outer sheath and twisted pairs

LAPP KABEL STUTTGART UNITRONIC® Li2YCYv (TP)



Info

• Cables for RS485/RS422

Benefits

- 7-wire stranded conductor (UNITRONIC® Li2YCY (TP) and UNITRONIC® Li2YCYv (TP) can be used for Maxi TERMI-POINT® wiring)
- Overall braid minimises electrical interference
- Decoupling of circuits by means of twisted-pair (TP) design (crosstalk effects)

Application range

- Particularly suitable for wiring data systems with transmission rates up to 10 Megabits per second, and is qualified for the RS422 and RS485 interfaces.
- For fixed and limited flexible installation
- Can be used in dry or damp rooms
- Signal-, control- and measuring cable, for transmission of low, sensitive signals and high bit rates
- UNITRONIC® Li2YCYv (TP)** with reinforced black outer sheath (Yv) is suitable for indoors and outdoors and provides enhanced appropriateness for direct burial in the ground

Product features

- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- Based on VDE 0812

Product Make-up

- 7-wire bare stranded copper conductor
- Core insulation made of polyethylene (PE)
- TP structure
- Tinned-copper braiding
- Outer sheath made of PVC
- Outer sheath colour: black (RAL 9005)

Technical data



Classification

ETIM 5.0 Class-ID: EC000830
ETIM 5.0 Class-Description: Data cable



Core identification code

DIN 47100, refer to Appendix T9



Mutual capacitance

At 800 Hz: max. 60 nF/km



Peak operating voltage

(not for power applications) 250 V



Inductivity

approx. 0.65 mH/km



Conductor stranding

Stranded conductor, based on VDE 0881, 7-wire



Minimum bending radius

Occasional flexing: 15 x outer diameter
Fixed installation: 6 x outer diameter

Short-range crosstalk attenuation

Up to 1 MHz min. 50 dB
Up to 10 MHz min. 40 dB



Test voltage

Core/core: 2000 V
Core/screen: 1000 V



Characteristic impedance

100 ± 15 Ohm (> 1 MHz)



Temperature range

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

Article number	Number of pairs and mm ² per conductor	Outer diameter (mm)	Copper index (kg/km)	Weight (kg/km)
UNITRONIC® Li2YCYv (TP) black for outdoor installation and direct burial, 7-wire				
0031350	2 x 2 x 0,22	8.1	24.2	79
0031351	3 x 2 x 0,22	8.7	28.6	93
0031352	4 x 2 x 0,22	8.9	34.2	100
0031353	8 x 2 x 0,22	10.7	70	156
0031354	10 x 2 x 0,22	12	76	185
0031365	1 x 2 x 0,34	7.4	20	69
0031355	2 x 2 x 0,34	9.3	34.1	102
0031356	3 x 2 x 0,34	10	43	117
0031357	4 x 2 x 0,34	10.3	52.8	130
0031358	8 x 2 x 0,34	12.6	85.8	206
0031366	1 x 2 x 0,5	7.9	29	79
0031360	2 x 2 x 0,5	10.1	37	120
0031361	3 x 2 x 0,5	10.9	55	142
0031362	4 x 2 x 0,5	11.2	60	160
0031363	8 x 2 x 0,5	13.9	113.3	251
0031364	10 x 2 x 0,5	16	148	303

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

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

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths

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

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

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

Similar products

- UNITRONIC® BUS LD

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® ST

Static screened data transmission cable similar to UL AWM 2092



Benefits

- Aluminium-laminated plastic foil static screen with tin-plated drain wire minimises the interference of high frequency, electro-magnetic fields

Application range

- Especially designed for the transmission of the smallest measurement and control signals at minimal space requirements
- Internal wiring of electronic equipment
- For fixed and limited flexible installation
- For use in dry, damp and wet rooms

Product features

- Protection against interferences at medium and high frequencies by aluminium-laminated plastic foil, combination of flexibility and good screening (normal requirements)
- Flame-retardant according IEC 60332-1-2

Norm references / Approvals

- Based on UL AWM Style 2092 / 2093

Product Make-up

- 7-wire tinned stranded copper conductor
- Core insulation made of polyethylene (PE)
- Plastic-laminated aluminium foil with tinned copper drain wire
- Outer sheath made of PVC, Colour of the outer sheath: Similar to Silver-grey/ RAL 7001

Technical data

	Classification ETIM 5.0 Class-ID: EC000830 ETIM 5.0 Class-Description: Data cable
	Core identification code 2 cores: black, transparent 3 cores: black, red, transparent
	Mutual capacitance C/C approx. 90 nF/km C/S approx. 160 nF/km
	Peak operating voltage (not for power applications) 500 V
	Inductivity approx. 0.65 mH/km
	Minimum bending radius Occasional flexing: 10 x outer diameter Fixed installation: 6 x outer diameter
	Test voltage 1500 V
	Characteristic impedance Approx. 95 Ohm
	Temperature range Occasional flexing: -5°C to +70°C Fixed installation: -40°C to +80°C

Article number	Number of conductors and AWG size	Conductor cross-section (mm²)	Core insulation material	Outer sheath material	Outer diameter (mm)	Copper index (kg/km)
UNITRONIC® ST						
0033000	2 x AWG 20/7	0.52	PE	PVC	5.2	17.2
0033001	3 x AWG 20/7	0.52	PE	PVC	5.3	23

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

Accessories

- UNIVERSAL STRIP stripping and cutting tool
- DATA STRIP stripping tool



New

EPIC® SOLAR 4 Splitter



Info

- 4 mm connector system with double hook
- Splitter for parallel connection of photovoltaic modules

Benefits

- Splitter for parallel connection of PV-modules and strings
- Easy plug and play
- Fixing option for a clear installation with a Ø 5mm mounting hole

Application range

- Photovoltaic plants
- Crystalline and thin-film constructions
- Solartracker

Product features

- Mateable with EPIC® SOLAR 4
- Splitter MFF 1x connection male, 2x connection female
- Splitter MFF 1x connection female, 2x connection male

Suitable connectors

- EPIC® SOLAR 4
- EPIC® SOLAR 4 Built in socket

Technical data

Rated voltage (V)

1000 V AC/DC

Rated impulse voltage

8 kV

Rated current (A)

30 A

Degree of soiling

3



Protection rating

IP65/IP67

Cycle of mechanical operation

100

Protection class

II



Temperature range

-40 °C ... +85 °C

Article number	Article designation	PU
EPIC® SOLAR 4 Splitter		
44428226	EPIC® SOLAR 4 Splitter MFF	25
44428227	EPIC® SOLAR 4 Splitter FMM	25

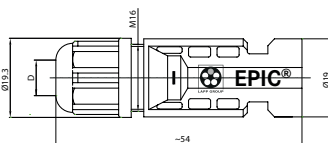
Photographs are not to scale and do not represent detailed images of the respective products.


New

EPIC® SOLAR 4 M


Info

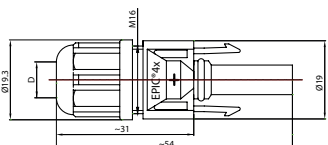
- 4 mm connector system with double hook
- Field-mountable solar connector


New

EPIC® SOLAR 4 F


Info

- 4 mm connector system with double hook
- Field-mountable solar connector



Benefits

- Low contact-resistance for efficient power transmission
- Crimp connection for field mounting
- Suitable for various ÖLFLEX® SOLAR cables

Application range

- Photovoltaic plants
- Crystalline and thin-film constructions
- Solartracker

Product features

- 4 mm connector system with double hook
- TÜV Rheinland certified
- UL pending
- Inclusive contacts

Suitable cables

- ÖLFLEX® SOLAR XLR-R
- ÖLFLEX® SOLAR XLR WP
- ÖLFLEX® SOLAR XLS-R

Suitable tools

- EPIC® SOLAR TOOL
- For easier assembly of the plastic parts, use EPIC® SOLAR 4 Assembly Tool Set (2 pieces). Holder for insulation body, spanner for cap nut and pins for unlocking

Suitable connectors

- EPIC® SOLAR 4 F
- EPIC® SOLAR 4 M

Technical data

Rated voltage (V)
1000 V AC/DC

Rated impulse voltage
8 kV

Degree of soiling
3

Contact resistance
< 0.5 mOhm

Protection rating
IP 67

Protection class
II

Temperature range
-40°C ... +105°C

Article number	Article designation	Cross-section (mm²)	Clamping range in mm	Rated current (A)	PU
EPIC® SOLAR 4 male field-mountable, inclusive contacts					
44428200	EPIC® SOLAR 4 M 2.5 mm²	2.5	4.8 - 6.0	22	100
44428201	EPIC® SOLAR 4 M 4mm² ... 6mm²	4 - 6	5.2 - 7.1	30	100
EPIC® SOLAR 4 male contacts as spare part					
44428219	EPIC® SOLAR 4 PIN M 4mm² ... 6mm²	4 - 6			100
EPIC® SOLAR 4 female field-mountable, inclusive contacts					
44428203	EPIC® SOLAR 4 F 2.5 mm²	2.5	5.2 - 6.5	22	100
44428204	EPIC® SOLAR 4 F 4mm² ... 6mm²	4 - 6	5.0 - 7.2	30	100
EPIC® SOLAR 4 female contacts without as spare part					
44428218	EPIC® SOLAR 4 PIN F 2.5mm²	2.5			100
44428220	EPIC® SOLAR 4 PIN F 4mm² ... 6mm²	4 - 6			100
EPIC® SOLAR 4 assembly tool					
44428224	EPIC® SOLAR 4 Assembly Tool Set				1

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

New

EPIC® SOLAR TOOL CSC



Info

- Cutting, stripping and crimping with just one tool

EPIC® CRIMPTOOL



New

EPIC® SOLAR TOOL



Info

- 3 cross section in one tool

Application range

EPIC® SOLAR TOOL CSC

- For crimping of the photovoltaic connector EPIC® SOLAR 4 in the field
- For EPIC® SOLAR 4 and MC4 suitable

EPIC® SOLAR TOOL

- For crimping of the photovoltaic connector EPIC® SOLAR 4 in the field
- For EPIC® SOLAR 4 and MC4 suitable

Product features

EPIC® SOLAR TOOL CSC

- Multifunctional die for cutting, stripping and crimping with just one tool
- Locator for the safe and accurate positioning of the crimping contacts

EPIC® SOLAR TOOL

- Crimping die for the cable cross sections of 2.5mm², 4mm² and 6mm²
- Locator for the safe and accurate positioning of the crimping contacts

Suitable cables

EPIC® SOLAR TOOL CSC

- ÖLFLEX® SOLAR XLR-R
- ÖLFLEX® SOLAR XLR WP
- ÖLFLEX® SOLAR XLS-R

EPIC® SOLAR TOOL

- ÖLFLEX® SOLAR XLR-R
- ÖLFLEX® SOLAR XLR WP
- ÖLFLEX® SOLAR XLS-R

Suitable connectors

EPIC® SOLAR TOOL CSC

- EPIC® SOLAR 4

EPIC® SOLAR TOOL

- EPIC® SOLAR 4

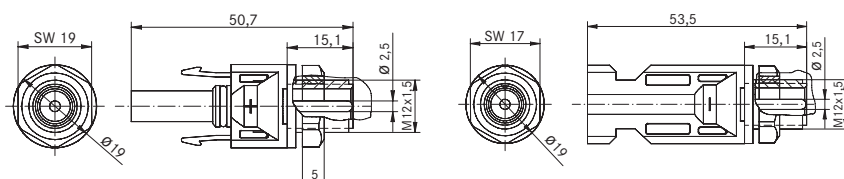
Article number	Article	Cross-section (min) in mm²	Cross-section (max) in mm²	PU
Multi-functional die CSC				
44428992	EPIC® SOLAR TOOL CSC DIE 4mm²		4	1
44428993	EPIC® SOLAR Tool CSC DIE 6mm²		6	1
44428994	EPIC® SOLAR TOOL LOC 4, 6mm²	4	6	1
Crimping die				
44428995	EPIC® SOLAR Tool DIE 2.5, 4, 6mm²	2.5	6	1
44428996	EPIC® SOLAR Tool LOC 2.5, 4, 6mm²	2.5	6	1
Crimping die				
11147000	Crimping tool			1

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



New

EPIC® SOLAR 4 Built in socket



Info

- 4 mm connector system with double hook
- Built in socket for use in inverters

Benefits

- Built in fitting for inverters, PV string circuit breakers and fuse boxes

Application range

- Photovoltaic plants
- Inverters
- PV string circuit breakers

Product features

- PV panel connector to be screwed directly or with the supplied plastic locknut
- Internal plug connector diameter 2.5mm, flush connector pin
- Installation hole: drilling diameter 12mm
- Other types of connection on request

Suitable connectors

- EPIC® SOLAR 4
- EPIC® SOLAR 4 Splitter

Technical data

Rated voltage (V)

1000 V AC/DC

Rated impulse voltage

8 kV

Rated current (A)

30 A

Degree of soiling

3

Contact resistance

< 0.5 mOhm



Protection rating

IP 67

Cycle of mechanical operation

100

Protection class

II



Temperature range

-40°C ... +105°C

Article number	Article designation	PU
EPIC® SOLAR 4 built in socket with counter nut		
44428222	EPIC® SOLAR 4 AD M Pin 2.5	100
44428223	EPIC® SOLAR 4 AD F Pin 2.5	100

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



New

EPIC® SOLAR PL008



Info

- Plastic junction box for ambient resistant cabling and connecting of photovoltaic systems

Benefits

EPIC® SOLAR PL008

- Cost-efficient plastic junction box
- Factory assembled and tested
- Traceability of every junction box ensured by barcode

Application range

- Photovoltaic plants

Product features

- Robust junction box for cabling of photovoltaic modules
- Version with 3 diodes for three-string modules
- PTFE membrane equalize the pressure balance and enables humidity to stay out of the junction box
- Assembled with EPIC® SOLAR 4 and ÖLFLEX® SOLAR cable 4mm²

Technical data

Rated voltage (V)
1000 V

Rated current (A)
11 A



Protection rating
IP 67

Protection class
II



Temperature range
-40°C ... +105°C

Article number	Article	PU
EPIC® SOLAR PL008		
44428214	EPIC® SOLAR PL008/3/11	1

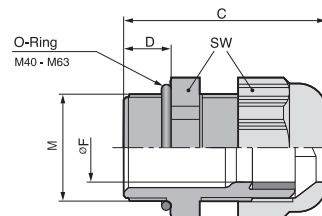
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New

SKINTOP® STR-M / SKINTOP® ST-M


Info

- Now with IP 69 K approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!


Benefits
SKINTOP® ST-M

- High oil-resistance for maximum reliability
- Permanent vibration protection
- Wide, variable clamping ranges
- Optimum strain relief
- Various accessories (e.g. multiple sealing inserts)

SKINTOP® STR-M

- For the benefits, refer to SKINTOP® ST-M

Application range
SKINTOP® ST-M

- Used in areas where cables and wires need to be safely inserted into housings
- Machine and equipment manufacturing
- Photovoltaic
- Automation technology
- Offshore platforms, equipment and shipyards

SKINTOP® STR-M

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

Norm references / Approvals

- UL File Nr. E79903
- GGVS: TÜ.EGG.020-95

Product Make-up

- Metric connection thread acc. to DIN EN 60423

Note
SKINTOP® ST-M

- Refer to SKINTOP® metric accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M
- SKINTOP® ST M ISO types have an extra-long connection thread
- SKINTOP® ST M ISO versions with extra-long connection thread, see table, no DNV approval

SKINTOP® STR-M

- Refer to SKINTOP® metric accessories for suitable accessories
- Counter nut to be used: SKINTOP® GMP-GL-M
- SKINTOP® STR M ISO types have an extra-long connection thread
- SKINTOP® STR M ISO versions with extra-long connection thread, see table, no DNV approval

Suitable cables

- The following cables are recommended for IP 69 applications:
ÖLFLEX® ROBUST 200
H07RN8-F
H07RN-F

Suitable tools
SKINTOP® ST-M

- SKINMATIC® QUICK Set 1
- SKINMATIC® RZ
- SKINMATIC® MH Set

Technical data

Classification

ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
cable screw gland


Caution

Refer to Appendix T21 for the installation dimensions and torques


Colour delivered

Silver grey (RAL 7001)
Light grey (RAL 7035)
Black (RAL 9005), UV-resistant


Material

Body: Polyamide
Seal: CR

Tests

GGVS: TÜ.EGG.020-95


Protection rating

IP 68 - 5 bar
IP 69


Temperature range

Fixed: -40 °C to +100 °C
Dynamic: -20 °C to +100 °C

Article number	Article designation / size	Clamping range ØF (mm)	SW (mm)	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
SKINTOP® ST-M silver grey						
53111000	ST-M 12 x 1,5	3,5-7	15	30,0	8	100
53111010	ST-M 16 x 1,5	4,5-10	19	34,0	8	100
53111020	ST-M 20 x 1,5	7-13	25	37,0	9	100
53111030	ST-M 25 x 1,5	10-17	30	40,0	10	50
53111040	ST-M 32 x 1,5	11-21	36	47,0	10	25
53111050	ST-M 40 x 1,5	19-28	46	52,0	10	10
53111060	ST-M 50 x 1,5	27-35	55	62,0	12	5
53111070	ST-M 63 x 1,5	34-45	66	71,0	12	5
SKINTOP® ST-M black						
53111200	ST-M 12 x 1,5	3,5-7	15	30,0	8	100
53111210	ST-M 16 x 1,5	4,5-10	19	34,0	8	100
53111220	ST-M 20 x 1,5	7-13	25	37,0	9	100
53111230	ST-M 25 x 1,5	10-17	30	40,0	10	50
53111240	ST-M 32 x 1,5	11-21	36	47,0	10	25
53111250	ST-M 40 x 1,5	19-28	46	52,0	10	10
53111260	ST-M 50 x 1,5	27-35	55	62,0	12	5
53111270	ST-M 63 x 1,5	34-45	66	71,0	12	5

SKINTOP® metric plastic cable glands

SKINTOP® Standard

Article number	Article designation / size	Clamping range ØF (mm)	SW (mm)	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
SKINTOP® ST-M light grey						
53111400	ST-M 12 x 1,5	3,5-7	15	30.0	8	100
53111410	ST-M 16 x 1,5	4,5-10	19	34.0	8	100
53111420	ST-M 20 x 1,5	7-13	25	37.0	9	100
53111430	ST-M 25 x 1,5	10-17	30	40.0	10	50
53111440	ST-M 32 x 1,5	11-21	36	47.0	10	25
53111450	ST-M 40 x 1,5	19-28	46	52.0	10	10
53111460	ST-M 50 x 1,5	27-35	55	62.0	12	5
53111470	ST-M 63 x 1,5	34-45	66	71.0	12	5
SKINTOP® ST M ISO silver-grey (with long metric connecting thread)						
53017010	ST M 16 x 1,5	3,5-8	19	40.0	12	100
53017030	ST M 20 x 1,5	5-12	24	45.0	13	100
53017040	ST M 25 x 1,5	9-14	27	47.0	13	50
SKINTOP® ST M ISO black (with long metric connecting thread)						
53010000	ST-M 12 x 1,5	3,5-7	15	36.7	15	100
53017210	ST M 16 x 1,5	3,5-8	19	40.0	12	100
53017230	ST M 20 x 1,5	5-12	24	45.0	13	100
53017240	ST M 25 x 1,5	9-14	27	47.0	13	50
SKINTOP® STR-M silver grey						
53111100	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111110	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111120	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111130	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111140	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111150	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111160	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111170	STR-M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR-M black						
53111300	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111310	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111320	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111330	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111340	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111350	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111360	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111370	STR-M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR-M light grey						
53111500	STR-M 12 x 1,5	1-5	15	30.0	8	100
53111510	STR-M 16 x 1,5	2-7	19	34.0	8	100
53111520	STR-M 20 x 1,5	5-10	25	37.0	9	100
53111530	STR-M 25 x 1,5	6-13	30	40.0	10	50
53111540	STR-M 32 x 1,5	7-15	36	47.0	10	25
53111550	STR-M 40 x 1,5	15-23	46	52.0	10	10
53111560	STR-M 50 x 1,5	22-29	55	62.0	12	5
53111570	STR-M 63 x 1,5	28-39	66	71.0	12	5
SKINTOP® STR M ISO silver-grey (with long metric connecting thread)						
53017110	STR M 16 x 1,5	2-6	19	40.0	12	100
53017130	STR M 20 x 1,5	4-9	24	45.0	13	100
53017140	STR M 25 x 1,5	6-12	27	47.0	13	50
SKINTOP® STR M ISO black (with long metric connecting thread)						
53017310	STR M 16 x 1,5	2-6	19	40.0	12	100
53017330	STR M 20 x 1,5	4-9	24	45.0	13	100
53017340	STR M 25 x 1,5	6-12	27	47.0	13	50

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

■ Accessories

SKINTOP® ST-M

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

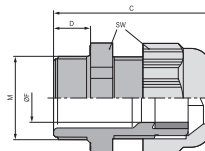
SKINTOP® STR-M

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


New

SKINTOP® SOLAR plus / SKINTOP® SOLAR

SKINTOP® for photovoltaics


Info

- Cable gland for photovoltaic applications, based on EN 50262, EN 50548 and UL 1703.
- Extended temperature range

Benefits

- UV and ozone-resistant
- UL 746 C - UL F1 outdoor use
- High strain relief
- Permanent vibration protection
- Extremely flame-retardant according to UL 94V-0 / 94-5VA

Application range

- Photovoltaic plants and solar parks

Norm references / Approvals

- UL File Nr. E79903

Product Make-up

- Metric connection thread acc. to DIN EN 60423

Note

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

Suitable cables

- ÖLFLEX® SOLAR

Suitable tools

- SKINMATIC® RZ
- SKINMATIC® QUICK SET 1

Technical data

Classification

ETIM 5.0 Class-ID: EC000441
ETIM 5.0 Class-Description:
Cable screw gland


Caution

Refer to Appendix T21 for the installation dimensions and torques


Colour delivered

RAL 9005 black/UV-resistant


Material
SKINTOP® SOLAR

Body: Polycarbonate

Seal: CR

SKINTOP® SOLAR plus

Body: Polycarbonate

Seal: Silicone

O-Ring: Silicone

Tests

Cold impact test according to UL 1703/UL 746 C


Protection rating

IP 68 - 5 bar


Temperature range
SKINTOP® SOLAR

-40°C to +100°C

SKINTOP® SOLAR plus

-40°C to +125°C

Article number	Article designation / size	Clamping range ØF (mm)	SW (mm)	Overall length, C (mm)	Thread length, D (mm)	Pieces / PU
SKINTOP® SOLAR						
53113300	SOLAR M12x1,5	3,5-7	15	36,0	15	100
53113310	SOLAR M16x1,5	7-9	19	34,0	8	100
SKINTOP® SOLAR plus						
53113321	SOLAR plus M12x1,5	3,5-7	15	36,0	15	100
53113331	SOLAR plus M16x1,5	7-9	19	34,0	8	100

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SILVYN® SPLIT



Benefits

- Dimensionally stable
- Flexible
- Crush-resistant
- Subsequent cable protection after cable installation
- Fast and easy assembly

Application range

- Vehicle construction
- Shipbuilding
- Mechanical engineering
- Electrical industry
- Used in areas where cables and wires need to be protected after assembly

Product features

- Halogen and cadmium-free
- Abrasion-resistant
- High resistance to oil, petrol, acids and other chemicals
- Very good UV- and Weathering performance (SILVYN® SPLIT PP UV)

Product Make-up

- Divisible corrugated conduit



Info

- New sizes are available

Technical data

RAL Colour delivered
Black (RAL 9005), UV-resistant

Material
Polyamide 6 (PA6)
Polypropylene (PP)

IP Protection rating
IP 43 with SILVYN® SPLIT COV

Temperature range
PA6 : -40°C to +120°C
PP : -40°C to +135°C
PP UV: -40°C to +105°C

Article number	Article designation	Internal Ø x external Ø (mm)	Bending radius (mm)	Suitable for SILVYN® COV	PU (m)
SILVYN® SPLIT PA6					
61806621	6	6.3 x 10.0	15		50
61806620	10	8.4 x 13.4	15	M16/PG9	50
61806631	11	11.0 x 16.1	15		50
61806630	14	12.5 x 18.5	15	M20/PG13,5	50
61806641	16	16.0 x 21.5	20		50
61806640	20	19.2 x 25.3	25	M25/PG21	50
61806650	23	23.4 x 30.8	35	M32/PG29	50
61806651	29	27.3 x 35.5	35		50
61806660	37	31.0 x 41.4	40	M40/PG29	25
61806670	45	42.7 x 54.0	70	M50	25
61806671	70	67.5 x 79.8	95		10
61806672	100	87.5 x 102.5	100		10
SILVYN® SPLIT PP					
61806615	6	6.3 x 10.0	15		50
61806625	10	8.4 x 13.4	15	M16/PG9	50
61806616	11	11.0 x 16.1	15		50
61806635	14	12.5 x 18.5	15	M20/PG13,5	50
61806617	16	16.0 x 21.5	20		50
61806645	20	19.2 x 25.3	20	M25/PG21	50
61806655	23	23.4 x 30.8	45	M32/PG29	50
61806618	29	27.3 x 35.5	50		50
61806665	37	31.0 x 41.4	60	M40/PG29	25
61806675	45	42.7 x 54.0	75	M50	25
61806619	70	67.5 x 79.8	95		10
61806622	100	87.5 x 102.5	100		10
SILVYN® SPLIT PP UV					
61806100	6	6.3 x 10.0	15		50
61806110	10	8.4 x 13.4	15	M16/PG9	50
61806120	11	11.0 x 16.1	15		50
61806130	14	12.5 x 18.5	15	M20/PG13,5	50
61806140	16	16.0 x 21.5	20		50
61806150	20	19.2 x 25.3	20	M25/PG21	50
61806160	23	23.4 x 30.8	45	M32/PG29	50
61806170	29	27.3 x 35.5	50		50
61806180	37	31.0 x 41.4	60	M40/PG29	25
61806190	45	42.7 x 54.0	75	M50	25
61806200	70	67.5 x 79.8	95		10
61806210	100	87.5 x 102.5	100		10

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

Similar products

- SILVYN® RILL PA6 SINUS

Accessories

- SILVYN® SPLIT COV
- SILVYN® SPLIT COS
- Spare tool Cable - Eater



SILVYN® SPLIT COV / SILVYN® SPLIT COS


SILVYN® SPLIT COV

SILVYN® SPLIT COS

■ Benefits

SILVYN® SPLIT COV

- Fast and easy assembly
- Subsequent mountable conduit insertion

SILVYN® SPLIT COS

- Fast assembly
- Easy to disassemble
- High tensile strength
- Conduit retained by rib
- No loose parts

■ Application range

SILVYN® SPLIT COV

- In combination with protective conduit:
- SILVYN® SPLIT
- Mechanical engineering
- Electrical industry
- Used in areas where cables and wires need to be protected after assembly

SILVYN® SPLIT COS

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

■ Product features

SILVYN® SPLIT COV

- Included: divisible counter nut

SILVYN® SPLIT COS

- One-piece conduit holder

■ Note

- UV-resistant and weather-resistant

■ Suitable conduits

- SILVYN® SPLIT

■ Technical data



SILVYN® SPLIT COS

- Size 10 + 14 with M5 bore hole
- Size 20 + 23 with M6 bore hole



Colour delivered

Black (RAL 9005), UV-resistant



Material

Halogen-free PA



Temperature range

-40°C to +120°C

Article number	Article designation	PG size	Hole Ø (mm)	For conduit with outer Ø (mm)	Suitable for SILVYN® SPLIT	Pieces / PU
SILVYN® SPLIT COV (counter nut included)						
61806760	10	9		13.4	10	100
61806770	14	13.5		18.5	14	100
61806780	20	21		25.3	20	50
61806790	23	29		30.8	23	50
61806800	37	29		41.1	37	25
SILVYN® SPLIT COV-M (counter nut not included)						
61806680	10	16		13.4	10	100
61806681	14	20		18.5	14	100
61806682	20	25		25.3	20	50
61806683	23	32		30.8	23	50
61806684	37	40		41.1	37	25
61806685	45	50		54.0	45	25
SILVYN® SPLIT COS						
61806690	10		M3	13.4	10	100
61806700	14		M3	18.5	14	100
61806710	20		M5	25.3	20	50
61806720	23		M5	30.8	23	50
61806730	37		M6	41.1	37	20
61806740	45		M6	54.0	45	20

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



SILVYN® RILL PA6 SINUS



Info

- Sinusoidal slit for subsequent assembly
- Made of special heat-resistant polyamide up to +140°C

Benefits

- Dimensionally stable
- Flexible
- Crush-resistant
- Subsequent cable protection
- Sinusoidal slit remains closed under torsion for the most part

Application range

- Mechanical engineering
- Electrical industry
- Shipbuilding
- Solar applications

Product features

- High resistance to oil, petrol, acids and other chemicals
- Halogen and cadmium-free
- Abrasion-resistant

Norm references / Approvals

- NFR-13-903 from 8.4 x 11.4

Product Make-up

- Fine-profile corrugated polyamide 6 conduit with sinusoidal slit

Note

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

Technical data



Certifications

GGVS, NFR-13-903
from 8.4 x 11.4



Note

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



Colour delivered

Black (RAL 9005), UV-resistant



Material

PA6 heat-modified
Cadmium-free
Halogen-free



Temperature range

-40°C to +140°C

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

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Similar products

- SILVYN® SPLIT

Accessories

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



TY- RAP® weather-proof, UV-stabilised



Benefits

- Weather-resistant for harsh environmental conditions
- Heat-resistant
- Contain 2 % Carbon to meet military specifications

Application range

- Used for outdoor installation and maintenance of power plants

Norm references / Approvals

- File number: E49405, see table
- Fire behaviour according to UL 94V-2

Included

- TY-X: Packed in a recyclable plastic bag

Technical data

RAL Colour delivered
RAL 9005 black/UV-resistant

Material
Polyamide 6.6
Halogen-free and silicone-free

Temperature range
-40°C to +85°C

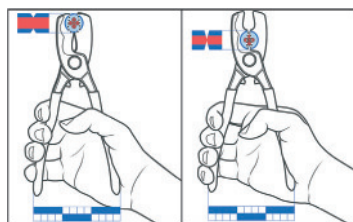
Article number	Article description	UL certification	Length x width (mm)	Bundling Ø (mm)	Tensile strength (N)	Pieces / PU
TY-RAP® weather-resistant						
61723010	TYB* 23 MX	no	92.0 x 2.4	2.0 - 16.0	80	1000
61723110	TY 232 MX	no	200.0 x 2.4	2.0 - 50.0	80	1000
61723120	TY 234 MX	no	356.0 x 2.4	2.0 - 102.0	80	1000
61723020	TYB* 24 MX	no	140.0 x 3.6	2.0 - 29.0	180	1000
61723130	TY 242 MX	yes	208.0 x 3.6	2.0 - 50.0	180	1000
61723040	TY 26 MX	yes	281.0 x 3.6	2.0 - 76.0	180	1000
61723140	TY 244 MX	no	368.0 x 3.6	2.0 - 103.0	180	1000
61723030	TYB* 25 MX	no	186.0 x 4.8	3.5 - 45.0	220	1000
61723150	TY 253 MX	no	293.0 x 4.8	3.5 - 78.0	220	1000
61723060	TY 28 MX	yes	360.0 x 4.8	3.5 - 102.0	220	1000
61723160	TY 272 MX	no	223.0 x 7.6	6.0 - 50.0	540	500
61723050	TY 27 MX	yes	340.0 x 7.0	6.0 - 90.0	540	500
61723070	TY 29 MX	no	762.0 x 7.6	6.0 - 229.0	540	500

TY-RAP® is a registered trademark of Thomas & Betts

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Cutting, Stripping, Skinning

Cutting tools for large diameters / Stripping tools

KS 20 cable shears**■ Benefits**

- Adjustable screw-joint
- Easy and clean cut by using only one hand
- Less force required due to favourable transmission ratio and new blade geometry

■ Application range

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

■ Product features

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

Article number	Article designation	For outer diameter (mm)	Weight (kg)	Length (mm)	Pieces / PU
KS 20 cable shears					
62120045	KS 20	20	0.3	200	1

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

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 multi-wire cables from 0.03 to 16 mm²
- For use with a great variety of insulation with differing hardness and dimension
- Interchangeable blades for different cable cross sections

■ Application range

- Universal stripping pliers with interchangeable stripping blades for cross-sections of 0.03 to 16 mm²
- Suitable for fluoropolymer & PVC cores, AS-I, Solar, POF cables

■ Product features

- Design: chrome-plated with plastic handle cover
- Interchangeable blades for different cable cross sections

■ Product Make-up

- Additional blades are available upon request
- No crushing/deformation of cable ends

■ Included

- Tool and length stop

Article number	Article designation	For mm ²	Stripping of	Length (mm)	Weight (kg)	Pieces / PU
UNIVERSAL STRIP stripping and cutting tool						
21920005	Universal Strip without stripping knife			194	0.41	1
Interchangeable blade						
21920009	DIN single cores	0.14 - 6	PVC			1
21920122	Solar stripping knife	1.5 - 6				1
21920126	POF 1, 2, 4-wire stripping knife		PVC/PUR			1
21920006	Fluoropolymer stripping knife	0.03 - 2	Fluoropolymer			1
21920004	Fluoropolymer stripping knife	2.5 - 10	Fluoropolymer			1
21920008	Fluoropolymer stripping knife	16	Fluoropolymer			1
21920135	AS I stripping knife		rubber/TPE/PVC			1
Complete tool (incl. assembled blade)						
21920141	Universal Strip DIN single wires	0.14 - 6	PVC			1
21920125	Universal Strip POF 1, 2, 4-wire		PVC/PUR			1
21920129	Universal Strip Fluoropolymer 0,03-2,08	0.03 - 2.08	Fluoropolymer			1
21920130	Universal Strip Fluoropolymer 2,5-10 mm ²	2.5 - 10	Fluoropolymer			1
21920131	Universal Strip Fluoropolymer 16	16	Fluoropolymer			1
21920140	Universal Strip AS-I		rubber/TPE/PVC			1
21920120	Universal Strip Solar	1.5 - 6				1

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■ Accessories

- Additional blades are available upon request



Notes

The following applies for the use of our products

The conformity of our products to the relevant European directives and compliance with the provisions contained therein shall be indicated by the CE marking.

The safety of our products is closely associated with how they are used. A knowledge of and adherence to the respective international/national standards of use

(e.g. DIN VDE 0100; 0298) are mandatory. There are particular risks if installed improperly. This applies to all our products/items:

Processing is only to be done by an authorised electrician! Otherwise, there is the risk of an electric shock or a fire ignited by electric current!

Safety

Without exception, our products are tested for application safety in accordance with defined standards and our own regulations, which complement the standards. Relevant legal requirements and safety regulations are also observed. Provided due care and attention is paid, the possibility of product-specific danger to the user may thus reasonably be excluded. Where products are used carelessly or incorrectly, however, considerable danger to persons and the environ-

ment may arise. For this reason, our cables must only be processed and/or used responsibly by trained electricians or specialists. This catalogue contains general information for the application of each product. Independent of such information, the application standards DIN VDE 0298 and DIN VDE 0891 for cables will apply. Excerpts from these standards, as well as complementary selection and application tables, design and installation guidelines, are con-

tained in the tables in the appendix to the current main catalogue. Our machines and installation tools are – where necessary – designed in accordance with the machine guidelines and display the CE identification mark. It must be noted, however, that our machines and installation tools must only be used by trained specialist personnel and for the purpose for which they were designed.

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