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.

Legend for icons

<table>
<thead>
<tr>
<th>INDUSTRIES</th>
<th>PRODUCT CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Automation</td>
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<tr>
<td>e-Mobility</td>
<td>Good chemical resistance</td>
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<tr>
<td>Food &amp; Beverage</td>
<td>Flame-retardant</td>
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<tr>
<td>Mechanical and Plant Engineering</td>
<td>Wide clamping range</td>
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<td>Oil &amp; Gas</td>
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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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Family business and global player
LAPP is both. The history of our company has been one of success and expansion ever since it was founded in 1959 by Ursula Ida and Oskar Lapp. It remains resolutely family owned to this day. We safeguard our success by staying close to our customers and markets, maintaining our innovative strength and brand quality, and being a reliable partner. We provide continuity, always guided in our thoughts and actions by our values.

Success built on family values
At LAPP, we maintain values that promote cooperation and enable relationships with employees, suppliers and customers based on partnership and trust. Good relations and mutual respect are key elements of our company culture and a central plank of company policy. We know that our successful business development of the last decades is down in particular to our 3,770 skilled and dedicated staff around the world, as well as the reliable partnership with our customers.

With 17 production facilities, over 40 sales companies and hundreds of dedicated consultants, we are always close to the individual needs and challenges of our customers all over the globe. We are constantly developing our products and system solutions, setting standards in safety, quality and functionality. This is why we are one of the world’s leading manufacturers of integrated solutions and branded products in cable and connection technology. As our success story enters its third generation, we are aware of our duty to the future.

www.lappkabel.com/company
innovations

As happens so often with new innovations, it all started with a problem. It was the 1950s, a time when individual cores had to be painstakingly inserted into sleeving. Oskar Lapp took a close look at the conventional wires and cables of the day and was convinced that he could find a better solution. He thought, he tinkered, and eventually developed the world’s first industrially produced control cable. This product became the bedrock on which LAPP built its reputation, not only as a manufacturer of cable and system solutions in Germany, but also as a global leader in innovation and quality.

Given the name ÖLFLEX®, Oskar Lapp’s invention was groundbreaking in several ways. The oil-resistant and flexible control cable was delivered as a finished product, with multiple conductor cores stranded and surrounded by a protective sheath. Alongside this, the new cable simplified the allocation of the individual cores with a revolutionary idea that went on to become standard. Oskar Lapp introduced the system of colour coding for single cores, saving his customers an enormous amount of work.

Innovations like these make life easier and generate value. Through his ingenuity, Oskar Lapp set the course for his business.

Connecting the future
History has shown that LAPP has always seen itself as a problem solver and a partner to which customers come for solutions. It has constantly strived to shape the world of tomorrow. As Oskar Lapp liked to say: “Cables connect the present and the future”.

Innovations have been part of the LAPP DNA since the very beginning. The data transmission systems UNITRONIC®, ETHERLINE® and HITRONIC®, for example, not only deliver value, but ensure peace of mind for the long term with cutting-edge technology developed by LAPP itself. From sensor/actuator connections, complex network structures with bus systems using UNITRONIC® cables, and robust cable components for Profinet, EtherCAT or EtherNet/IP systems with ETHERLINE® to secure and reliable data transmission at the speed of light with HITRONIC®, LAPP is the perfect partner for premium, tailor-made connections from A to B.

This is the result of decades of development work and constant innovation in the core business of cable and connection solutions. One example of this is the modular, easily configurable industrial connector EPIC®, which offers excellent robustness and safety during connection and disconnection. Another product, the SKINTOP® cable gland, perfectly sums up what makes LAPP solutions stand apart: a simple system that delivers perfect results effortlessly. In this case, the cable is automatically secured, centred and sealed with optimum strain relief.

Making solutions possible

SILVYN® is another example of a product designed with durability in mind. Being future ready is not just a matter of technology. Equally important is the longevity of the individual components. The protective cable conduit systems in the SILVYN® range maintain LAPP’s guaranteed quality against even extreme external chemical and mechanical loads. The SILVYN® CHAIN cable chains are designed to fulfil this function in dynamic applications.

The FLEXIMARK® range of customised marking solutions are also made to last.

For LAPP, the challenge is not simply a matter of providing the right components. Instead, it is about developing products that help customers overcome challenges and that meet their needs. The LAPP Group’s search for innovations that solve problems is a global one. It maintains local partnerships on the ground and delivers a service that keeps its promises wherever the customer is. It is this combination of product and service that helps LAPP stand apart.

The quality of the goals determines the quality of the future. Oskar Lapp kept his eye on both, and became one of history’s great innovators.
Power and control cables
Various applications • PVC outer sheath and coloured cores

ÖLFLEX® ACCESSORIES
SILVYN® SKINTOP® EPIC® ETHERLINE®

ÖLFLEX® DC 100
Colour-coded cable for the power supply of plants with DC grids

Benefits
• Specially constructed for the long term operation with DC voltage up to 0.9 / 1.8 kV
• Suitable for the construction of energy efficient DC grids in industrial plants

Application range
• Plant engineering
  Industrial machinery
  Heating and air-conditioning systems
  Power stations
  Stage applications
• For plants where power is supplied by a direct current network
• For fixed installation as well as occasional flexing at free, non-continuously recurring movement without tensile load

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

Product Make-up
• Fine-wire strand made of bare copper wires
• Core insulation: special PVC
• Core colors: red (L+), white (L-), green-yellow
• PVC outer sheath, black (similar RAL 9005)

Technical data

<table>
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<tr>
<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
<th>Outer diameter [mm]</th>
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Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g., tolerances) are 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 and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
• KNIPEX Cable shear refer to main catalogue 2018/19
• EASY STRIP stripping and cutting tool refer to main catalogue 2018/19
• STAR STRIP stripping tool refer to main catalogue 2018/19

For current information see: www.lappgroup.com
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).

Packaging size: coil
30 kg

Application range

- Suitable for outdoor applications
- Space-saving installation due to small cable diameters

Benefits

- Measurement and control technology
- Plant engineering
- Industrial machinery
- Heating and air-conditioning systems
- Conveyors and transport systems
- Suitable for outdoor applications
- In EMC-sensitive environments (electromagnetic compatibility)

Product features

- UV and weather-resistant according to ISO 4892-2
- Flame-retardant according IEC 60332-1-2
- Good chemical resistance, see catalogue appendix T1
- High degree of screening, low transfer impedance (max. 250 Ω/km at 30 MHz)

Norm references / Approvals

- Based on EN 50525-2-51

Product Make-up

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

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000104
ETIM 5.0/6.0 Class-Description: Control cable

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

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

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

Nominal voltage
UG/U: 300/500 V

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

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

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

For current information see: www.lappgroup.com

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

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix 1 for the definition and calculation of copper-related surcharges.

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

Packaging size: coil ≤ 50 m 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 and graphics are not to scale and do not represent detailed images of the respective products.

Similar products

- ÖLFLEX® ROBUST 215 C refer to main catalogue 2018/19
- ÖLFLEX® CLASSIC 110 CY BLACK 0,6/1 kV refer to main catalogue 2018/19

Accessories

- SKINTOP® BRUSH ADD-ON refer to main catalogue 2018/19
- 3M Scotch™ 1183 screening tape refer to main catalogue 2018/19
- SKINTOP® MS-M BRUSH refer to main catalogue 2018/19

For current information see: www.lappgroup.com
Power and control cables
Various applications • Halogen-free

ÖLFLEX® CLASSIC 128 H BK 0,6/1 kV
Cost-effective halogen-free control cable with improved fire characteristics, 0,6/1kV

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

Application range
• Public buildings
• Plant engineering
• Industrial machinery
• Heating and air-conditioning systems
• Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
• Suitable for outdoor applications

Product features
• Flame-retardant according to IEC 60332-1-2
• No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25
• Halogen-free according to IEC 60754-1 (amount of halogen acid gas)
• Corrosiveness of combustion gases according to IEC 60754-2 (degree of acidity)
• Low smoke density according to IEC 61034-2
• UV and weather-resistant according to EN 50396
• Ozone-resistant according to EN 50396

Norm references / Approvals
• Based on EN 50525-3-11

Product Make-up
• Fine-wire strand made of bare copper wires
• Core insulation: Halogen-free
• Outer sheath: Halogen-free

Technical data

<table>
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<th>Classification ETIM 5/6</th>
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<td>ETIM 5.0/6.0 Class-ID: EC000057</td>
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<td>ETIM 5.0/6.0 Class-Description: Low voltage power cable</td>
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</tbody>
</table>

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

Conductor stranding
Fine wire according to VDE 0295 Class 5/ IEC 60228 Class 5

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

Nominal voltage
U0/U: 600/1000 V

Test voltage
4000 V

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

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

Table: Article number, Number of cores and mm² per conductor, Outer diameter [mm], Copper index [kg/km], Weight [kg/km]

<table>
<thead>
<tr>
<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
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Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix T7 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 and graphics are not to scale and do not represent detailed images of the respective products.

Similar products
• ÖLFLEX® CLASSIC 130 H BK 0,6/1 kV refer to main catalogue 2018/19

Accessories
• SKINTOP® ST-HF-M refer to page 23

For current information see: www.lappgroup.com
**Info**
- For space-saving and cost-effective installation
- For use within public buildings and industrial plants
- EMC/Screened

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

**Application range**
- Public buildings
- Plant engineering
- Industrial machinery
- Heating and air-conditioning systems
- Particularly where human and animal life as well as valuable property are exposed to high risk of fire hazards
- Suitable for outdoor applications
- In EMC-sensitive environments (electromagnetic compatibility)

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

**Norm references / Approvals**
- Based on EN 50525-3-11

**Product Make-up**
- Fine-wire strand made of bare copper wires
- Core insulation: Halogen-free
- Halogen-free plastic foil wrapping
- Tinned-copper braiding
- Outer sheath made of special halogen-free compound, black

**Technical data**
- Classification ETIM 5/6
  - ETIM 5.0/6.0 Class-ID: EC000057
  - ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code
  - Up to 5 cores: colour-coded according to VDE 0293-308, refer to Appendix T9 From 6 cores: black with white numbers
- Conductor stranding
  - Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- Minimum bending radius
  - Occasional flexing: 20 x outer diameter
  - Fixed installation: 6 x outer diameter
- Nominal voltage
  - U0/U: 600/1000 V
- Test voltage
  - Core/core: 4000 V
  - Core/screen: 2000 V
- Protective conductor
  - G = with GN-YE protective conductor
  - X = without protective conductor
- Temperature range
  - Occasional flexing: -5°C to +70°C
  - Fixed installation: -40°C to +80°C

**Accessories**
- SKINTOP® BRUSH ADD-ON refer to main catalogue 2018/19
- SKINTOP® MS-HF-M BRUSH refer to main catalogue 2018/19
- SKINTOP® MS-M BRUSH refer to main catalogue 2018/19

**For current information see:** www.lappgroup.com
Power and control cables
Servo applications

ÖLFLEX® SERVO 2XSLCH-JB
EMC-optimised motor cable, low-capacitance, double screened and halogen-free with improved fire behaviour

Benefits
- EMC-compliant installation of power drive systems conforming to EN 61800-3
- High power transmission for large drives
- Low capacitance design enables longer cable connection between frequency converter and motor
- Symmetrical 3+3 Version supports the reduction of damaging bearing currents
- Reduction of flame propagation, density and toxicity of smoke gases in event of fire

Application range
- Connecting cable between frequency converter and motor
- In dry, damp or wet interiors
- Paper industry, automotive industry
- Food production and packaging machinery
- Machine tools

Product features
- Low-capacitance design
- Fire behaviour:
  - Flame-retardant (IEC 60332-1-2)
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - Low smoke density (IEC 61034-2)
  - Low toxicity (EN 50305)
  - No flame-propagation according to IEC 60332-3-24 respectively IEC 60332-3-25 ( Flame spread on vertical cable or wire bundle)

Norm references / Approvals
- Based on VDE 0276, 0250, 0207

Product Make-up
- Fine-wire, bare copper conductor
- Core insulation: XLPE
- Cores twisted concentrically (symmetrically splitted protective conductor of 3+3 version is gusset-filling divided between the power cores)
- Screening: wrapping of laminated aluminium foil in combination with tinned copper braiding
- Outer sheath: Halogen-free special compound, colour black (RAL 9005)

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000057
  ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Core identification code
  Colours according to HD 308 S2
- Conductor stranding
  Fine wire according to VDE 0295
- Nominal voltage
  U0/U: 600/1000 V
- Test voltage
  Core/Core: 4 kV
  Core/Screen: 4 kV
- Protective conductor
  G = with GN-YE protective conductor
  X = without protective conductor
- Protective conductor of 3+3 version is gusset-filling divided between power cores
- Temperature range
  Flexing: -15°C to +90°C
  Fixed installation: -40°C to +90°C

Table

<table>
<thead>
<tr>
<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
<th>Outer diameter [mm]</th>
<th>Copper index [kg/km]</th>
<th>Weight [kg/km]</th>
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Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150/100 kg. Refer to catalogue appendix T77 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 and graphics are not to scale and do not represent detailed images of the respective products.

Similar products
- ÖLFLEX® SERVO 9SYSCLV-JB refer to main catalogue 2018/19
- ÖLFLEX® SERVO 2SYSCLV-JB refer to main catalogue 2018/19

Accessories
- SKINTOP® BRUSH ADD-ON refer to main catalogue 2018/19
- SKINTOP® MS-SC-M refer to main catalogue 2018/19
- SKINTOP® MS-BRUSH refer to main catalogue 2018/19

For current information see: www.lappgroup.com
**ÖLFLEX® SERVO FD 7TCE**

Highly flexible, low capacitive servo motor cable with TC-ER (UL) or c(UL)-Listing for North America

- **Benefits**
  - Multi-standard certification offers universal application range, reduces part varieties and saves costs
  - TC-ER and Flexible Motor Supply Cable listings enable open wiring on cable trays as well as the static or highly flexible usage for industrial machines with the same cable
  - Cost-saving, easy installation due to omission of closed raceways (suitable for open wiring)
  - Low capacitance design enables longer cable connection between frequency converter and motor
  - Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
  - Ideal for export-oriented machinery and equipment manufacturers thanks to high normative acceptance by the North American NEC (National Electrical Code)

- **Application range**
  - Connecting cable between servo controller and motor
  - In power chains or moving machine parts
  - Static open wiring on and between cable tray an industrial machine acc. NEC
  - Industrial machinery and machine tools
  - Linear robots, automated handling equipment
  - Assembly lines, production lines, in all kinds of machines

- **Product features**
  - Oil-resistant according to UL OIL RES I & II
  - Flame-retardant according to CSA FT4
  - UL Vertical-Tray Flame Test
  - -40°C Cold Bend; -25°C Cold Impact; 90°C Wet or Dry
  - Sunlight Resistant
  - Direct Burial (according US standard)
  - Low capacitance

- **Norm references / Approvals**
  - UL TC-ER (exposed run) per UL 1277
  - Flexible Motor Supply Cable per UL 2277
  - Class 1 Division 2 per NEC Article 501
  - (UL) CIC FT4 (18AWG - 14AWG);
  - cRU AWM 1/II A/B FT4
  - For use in power chains: Please comply with assembly guideline Appendix T3

- **Product Make-up**
  - Extra-fine wire strand made of bare copper
  - Core insulation: EPR compound
  - Individual design depending on the item: power cores without or with one or two individually screened control core pairs twisted together in short lay lengths
  - Non-woven wrapping
  - Tinned-copper braiding
  - Outer sheath: Specially formulated thermoplastic elastomer (TPE), orange

- **Technical data**
  - **Classification**
    - ETIM 5/6
    - ETIM 5.0 Class-ID: EC000057
    - ETIM 5.0 Class-Description: Low voltage power cable
  - **Core identification code**
    - Power cores: black with marking U/L1/C/L+; V/L2; W/L3/D /L-; GN/YE protective conductor
    - Optional designs with one pair of control cores: black; white Two pairs of control cores: black with white numbers: 5, 6, 7, 8
  - **Certifications**
    - USA: UL TC-ER, Flexible Motor SupplyCanada: c(UL) CIC/TC FT4, cRU AWM I/II A/B FT4
  - **Conductor stranding**
    - Extra-fine wire according to VDE 0295, class 6 /IEC 60228 class 6
  - **Minimum bending radius**
    - Flexing: up from 7.5 x outer diameter
    - Fixed installation: 5 x outer diameter
  - **Nominal voltage**
    - UL TC: 600V
    - UL Flexible Motor Supply: 1000V
    - c(UL) CIC/TC: 600V
    - cRU AWM: 1000V
    - IEC U0/U: 600/1000 V
  - **Test voltage**
    - Core/Core: 4 kV
    - Core/Screen: 2 kV
  - **Protective conductor**
    - G = with GN/YE protective conductor
  - **Bending cycles & operation parameters**
    - See Selection Table A2-1 in the appendix of our online catalogue
  - **Temperature range**
    - Occasional flexing: -25°C to +90°C
    - Fixed installation: -40°C to +90°C

- **Power chain applications**

- **Accessories**
  - Circular connectors refer to main catalogue 2018/19
  - EMC refer to main catalogue 2018/19

For current information see: www.lappgroup.com
**Power and control cables**

**Building Installation • Medium voltage cables**

**NA2XS(F)2Y**

Longitudinally water-tight PE medium voltage cable with aluminium conductor

---

### Application range

- Power and control cable for fixed installation in the following applications:
- In water, in ground, outdoors and indoors
- In cable trays for power stations, industry, and distribution networks
- Also suitable for applications where longitudinal water propagation inside the cable should be avoided.
- Burial without additional, suitable underground protection according to HD 620/VDE 0276-620 - Part 10-C point 4: normal minimum installation depth 0.6 m, but at least 0.8 m under roads.

### Norm references / Approvals

- HD 620 / VDE 0276-620

### Product features

- Suitable for installation or operation under high mechanical stress due to the PE-sheath.
- Current rating according to HD 620 / VDE 0276-620, Part 10-C, Table 7 (buried at +20 °C ground temperature according to HD 620/VDE 0276-620, Part 10-C, point 5) for routing underground and Table 8 (in the air at an air temperature of +30 °C according to HD 620 / VDE 0276-620, Part 10-C, 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.

### Technical data

- **Classification ETIM 5/6**
  - ETIM 5.0/6.0 Class-ID: EC000057
  - ETIM 5.0/6.0 Class-Description: Low voltage power cable
- **Conductor stranding**
  - Multi-wire
- **Minimum bending radius**
  - Fixed installation: 15 x outer diameter
- **Nominal voltage**
  - U_/U: 6/10 kV, 12/20 kV, 18/30 kV
- **Test voltage**
  - Depending on nominal voltage: 6/10 kV: 15 kV
  - 12/20 kV: 30 kV
  - 18/30 kV: 45 kV
- **Temperature range**
  - During installation: -5 °C to +50°C
  - Fixed installation: -40 °C to +90°C

### Product Make-up

- Aluminium conductor
- Abbreviation “rm”: r = round conductor form; m = multi-wire conductor
- Core insulation: Cross-linked Polyethylene (XLPE)
- Screen made of copper wires with one or two copper bond counter spiral
- Longitudinally water-tight wrapping
- Outer sheath: PE, black

### Norm references / Approvals

- HD 620 / VDE 0276-620

---

### Table: Copper index (kg/km)

<table>
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<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
<th>Copper index (kg/km)</th>
<th>Alu index (kg/km)</th>
<th>Outer diameter [mm]</th>
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### Power and control cables

**Building Installation • Medium voltage cables**

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

### Accessories
- Cable lugs and other connectors made of aluminium or bi-metal Al-Cu are available upon request.

### Application range
- Power and control cable for fixed installation in the following applications:
  - In water, in ground, outdoors and indoors
  - In cable trays for power stations, industry, and distribution networks
  - Also suitable for applications where longitudinal and transversal water propagation inside the cable should be avoided.
  - Burial without additional, suitable underground protection according to HD 620/VDE 0276-620 - Part 10-C (point 4): normal minimum installation depth 0.6 m, but at least 0.8 m under roads

### Product features
- Suitable for installation or operation under high mechanical stress due to the PE-sheath
- Current rating according to HD 620/VDE 0276-620, Part 10-C, Table 7 (buried at +20 °C ground temperature according to HD 620/VDE 0276-620, Part 10-C, point 5) for routing underground and Table 8 (in the air at an air temperature of +30 °C according to HD 620/VDE 0276-620, Part 10-C, 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 620/ VDE 0276-620

### Technical data
- Classification ETIM 5/6
  - ETIM 5.0/6.0 Class-ID: EC000057
  - ETIM 5.0/6.0 Class-Description: Low voltage power cable
- Conductor stranding
  - Multi-wire
- Minimum bending radius
  - Fixed installation: 15 x outer diameter
- Nominal voltage
  - U0/U: 6/10 kV, 12/20 kV, 18/30 kV
- Test voltage
  - Depending on nominal voltage: 6/10 kV: 15 kV
  - 12/20 kV: 30 kV
  - 18/30 kV: 45 kV
- Temperature range
  - During installation: -5°C to +50°C
  - Fixed installation: -40°C to +90°C

### Info
- 3 voltage classes: 6/10 kV, 12/20 kV, 18/30 kV
- With solid aluminium conductor

---

_For current information see: www.lappgroup.com_
## Power and control cables
### Building Installation • Medium voltage cables

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

### Accessories
- Cable lugs and other connectors made of aluminium or bi-metal Al-Cu are available upon request

For current information see: www.lappgroup.com
**Data communication systems for ETHERNET technology**

**Industrial Ethernet • Industrial Ethernet for special applications**

**ETHERLINE® T1 FLEX**

Flexible use

---

**Info**

- Single Pair Ethernet
- Industrial Ethernet to the edge
- High mechanical and chemical resistance

**Benefits**

- Up to 100 Mbit/s with only one twisted pair
- Industrial Ethernet up to the sensor/actuator in the field level of Automation
- Lean and flexible cable construction

**Application range**

- 10/100 Mbit/s for Industrial Ethernet
- One Pair Ethernet
- For flexible applications (7-wire stranded conductor)
- Industrial use

**Product features**

- Halogen-free according to VDE 0472-815
- Oil-resistant according to EN 60811-404
- Flammability:
  - IEC/EN: 60332-1-2
  - UL/CSA: Horizontal Flame, FT2

**Norm references / Approvals**

- IEEE 802.3bw: 100BASE-T1
- IEEE 802.3cg: 10BASE-T1 (Standard in development)
- UL-AWM-Style 21198 (80 °C / 300 V)

**Product Make-up**

- 7-wire bare stranded copper conductor
- Core insulation: Based on Polyolefin
- Screening: wrapped with braided tinned-copper wires
- Outer sheath: PUR, violet (RAL 4001)

**Technical data**

- **Classification ETIM 5/6**
  - ETIM 5.0/6.0 Class-ID: EC000830
  - ETIM 5.0/6.0 Class-Description: Data cable

- **Peak operating voltage**
  - (not for power applications) 125 V

- **Minimum bending radius**
  - Occasional flexible use: 15 x outer diameter
  - Fixed installation: 8 x outer diameter

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

- **Characteristic impedance**
  - nom. 100 Ω

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

---

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<th>Article number</th>
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Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are 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

Detailed data sheets are available upon request. Please specify the type/dimensions of the required cable.

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

For current information see: www.lappgroup.com
EPIC® MH 1 250A
The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

EPIC® MH 1 PE 250A
The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

Suitable housing
- EPIC® MH 6 multi frame
- EPIC® MH 10 multi frame
- EPIC® MH 16 multi frame
- EPIC® MH 24 multi frame

Suitable contacts:
EPIC® MH 1 250A
- EPIC® MH 10.0mm Contacts Page 17
EPIC® MH 1 PE 250A
- EPIC® MH PE 10.0mm Contacts Page 17

Benefits
EPIC® MH 1 250A
- High power module 1pole for high power transmission
- Touch protection for maximum safety of the user (protected)
- Crimp connection up to 95mm² for maximum contact safety with the cable
- Protective earth conductor (PE) for a safe PE connection with connection to the frame and housing
- Railway applications
  - Fire protection on railway vehicles: Test according EN 45545-2. Requirement sets R22 and R23. Hazard level HL1, HL2 and HL3

EPIC® MH 1 PE 250A
- Modular connector system, plugable with the market standard
- Protective earth conductor module (PE) for a safe PE connection with connection to the frame and housing
- Crimp connection up to 95mm² for maximum contact safety with the cable
- Railway applications
  - Fire protection on railway vehicles: Test according EN 45545-2. Requirement sets R22 and R23. Hazard level HL1, HL2 and HL3

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC002641
  ETIM 5.0/6.0 Class-Description: Modular connector (industrial connector)
- Rated voltage (V) 1000 V AC/DC
- Rated impulse voltage 8 kV
- Rated current (A) 250
- Pollution degree 3
- Flammability UL94 V-0

Number of contacts
1

Termination methods
EPIC® MH 1 250A
Crimp termination: 25mm² ... 95mm²
EPIC® MH 1 PE 250A
Crimp termination: 25mm² ... 95mm²
Stranded wire for PE connection to the module frame

Material
PA Polyamid

Cycle of mechanical operation 500

Temperature range
-40°C to +120°C

Application range
- Mechanical engineering
- Renewable energy
- Test equipment building
- Plant engineering
- Railway applications / vehicle construction

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article description</th>
<th>Contact type</th>
<th>Slots</th>
<th>Pieces / PU</th>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.
**EPIC® MH 10.0mm Contacts**

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**Info**

- Crimping contacts for maximum cross sections and currents
- Modular connector system, mateable with the market standard

**Benefits**

**EPIC® MH 10.0mm Contacts**

- Male and female contacts with silver plating
- Crimping with Klauke D 22 and HD 13 series
- Cross section: 25, 35, 50, 70 and 95 mm²

**Application range**

- Mechanical engineering
- Renewable energy
- Test equipment building
- Plant engineering
- Railway applications / vehicle construction

**Suitable tools**

**EPIC® MH PE 10.0mm Contacts**

- For use in battery powered hydraulic crimping tool Klauke type EK 60 with D13 series crimping dies or EK 120 battery powered tool with HD13 series crimping dies

---

**Technical data**

**Classification ETIM 5/6**

ETIM 5.0/6.0 Class-ID: EC000796

ETIM 5.0/6.0 Class-Description: Contact for industrial connectors

**Termination methods**

**EPIC® MH 10.0mm Contacts**

- Crimp termination: 25mm² ... 95mm²

**EPIC® MH PE 10.0mm Contacts**

- Crimp termination: 25mm² ... 95mm²

**Stripping length (mm)**

- EPIC® MH 10.0mm Contacts: 23
- EPIC® MH PE 10.0mm Contacts: 20

**Material**

- Brass silver plated

**Cycle of mechanical operation**

- 500

**Article number**

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**EPIC® MH 10.0mm protection earth contacts**

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Photographs and graphics are not to scale and do not represent detailed images of the respective products.
**EPIC® MH LWL Modul LC**

The mixed assembly guarantees high flexibility. For applications in mechanical and plant engineering, for printing machines and slide-in technology.

**Suitable housing**
- EPIC® MH 6 multi frame
- EPIC® MH 10 multi frame
- EPIC® MH 16 multi frame
- EPIC® MH 24 multi frame

**Benefits**
- Fire Optic module for fitting 6 fiber optics LC connector in one module
- No EMC influences on the fiber optic data transmission
- EPIC® MH LWL Module is mateable with the market standard
- Integrated coupling element (sleeve) in one module for direct connection and exact positioning of the connection
- Railway applications
  - Fire protection on railway vehicles: Test according EN 45545-2. Requirement sets R22 and R23. Hazard level HL1, HL2 and HL3

**Application range**
- Mechanical engineering
- Renewable energy
- Test equipment building
- Plant engineering
- Railway applications / vehicle construction

**Suitable cables**
- For fibre optics 50 - 62,5 / 125 µm and singlemode suitable

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EPIC® Industrial connectors
Rectangular connectors • EPIC® H-A Inserts

EPIC® H-A 10
H-A connector insert up to 400V with service friendly screw connection

EPIC® H-A 16
H-A connector insert up to 400V with service friendly screw connection

**info**

- New higher voltage resistance, 400V in a small space
- Universal for current and voltage transmission

**Suitable housing**

**EPIC® H-A 10**
- EPIC® H-A 10 TG
- EPIC® H-A 10 TGH
- EPIC® H-A 10 TS
- EPIC® H-A 10 TSH
- EPIC® H-A 10 AG-LB
- EPIC® H-A 10 AD-LB
- EPIC® H-A 10 SGR-LB
- EPIC® H-A 10 SDR-LB
- EPIC® H-A 10 SDR-LB
- EPIC® H-A 10 TG
- EPIC® H-A 10 TGH
- EPIC® H-A 10 TS
- EPIC® H-A 10 TSH
- EPIC® H-A 10 AG-LB
- EPIC® H-A 10 AD-LB
- EPIC® H-A 10 SGR-LB
- EPIC® H-A 10 SDR-LB
- EPIC® H-A 10 SDR-LB

**EPIC® H-A 16**
- EPIC® H-A 16 TG
- EPIC® H-A 16 TGH
- EPIC® H-A 16 TS
- EPIC® H-A 16 TSH
- EPIC® H-A 16 AG-LB
- EPIC® H-A 16 AD-LB
- EPIC® H-A 16 SGR-LB
- EPIC® H-A 16 SDR-LB
- EPIC® H-A 16 SDR-LB
- EPIC® H-A 16 TG
- EPIC® H-A 16 TGH
- EPIC® H-A 16 TS
- EPIC® H-A 16 TSH
- EPIC® H-A 16 AG-LB
- EPIC® H-A 16 AD-LB
- EPIC® H-A 16 SGR-LB
- EPIC® H-A 16 SDR-LB
- EPIC® H-A 16 SDR-LB

**Similar products**

- Further products with higher numbering in the internet. (H-A 32, H-A 48)

**Technical data**

- **Classification ETIM 5/6**
  - ETIM 5.0/6.0 Class-ID: EC000438
  - ETIM 5.0/6.0 Class-Description: Contact insert for industrial connectors

- **Rated voltage (V)**
  - IEC: 400 V
  - UL: mlo V
  - CSA: 600 V

- **Rated impulse voltage**
  - 4 kV

- **Rated current (A)**
  - IEC: 16 A
  - UL: 14 A
  - CSA: 16 A

- **Pollution degree**
  - 3

- **Flammability**
  - UL94 V-0

- **Contact resistance**
  - 1.5 - 4 mohm

- **Contacts**
  - Copper alloy, hard silver-plated

- **Number of contacts**
  - EPIC® H-A 10
  - 10 + PE
  - EPIC® H-A 16
  - 16 + PE

- **Termination methods**
  - Screw termination: 0.5 - 2.5 mm²
  - Stripping length (mm) 8

- **Material**
  - PC Polycarbonat

- **Cycle of mechanical operation**
  - 500

- **VDE-tested**
  - Certified production control: VDE-REG. no.: B437
  - UL-tested: UL File Number: E75770

- **Temperature range**
  - -40°C to +120°C

**Benefits**

- New higher voltage resistance, 400V in a small space
- Slim connector insert for standard application
- Service friendly screw connection for different cross section, PH1 screw heat suitable for electric screwdrivers
- Universal for current and voltage transmission

**Application range**

- Machine and equipment manufacturing
- Control engineering
- Plastics industry

**Suitable tools**

- Kraftform® adjustable torque screwdriver/
  Kraftform Kompakt® Set refer to main catalogue 2018/19

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For current information see: www.lappgroup.com
EPIC® SOLAR 4Plus M
Connector system for weatherproof cabling of photovoltaic systems

Benefits
• Low contact-resistance for efficient power transmission
• Crimp connection for reliable field mounting
• Suitable for various ÖLFLEX® SOLAR cables
• Reliable connection, only possible to unlock with a tool, according NEC standard
• Tested according IEC 62852: Connectors for DC-application in photovoltaic systems

Application range
• Photovoltaic plants
• Crystalline and thin-film constructions
• Solartracker

Product features
• 4 mm connector system with double hook
• 10mm² maximum crimp connection for high currents and long cables
• 1,500 V system voltage for modern photovoltaic plants with huge power

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC002635
  ETIM 5.0/6.0 Class-Description: Circular connector (industrial connector)
- Contact resistance
  < 0.5 mOhm
- Protection rating
  IP68 (10h/1m)
- Cycle of mechanical operation
  100
- Protection class
  II
- Temperature range
  -40°C to +105°C

Suitable cables
• H1Z2Z2-K
• ÖLFLEX® SOLAR XLWP
• ÖLFLEX® SOLAR XLS-R
• ÖLFLEX® SOLAR XLR-E

Suitable connectors
• EPIC® SOLAR 4THIN
• EPIC® SOLAR 4
• EPIC® SOLAR 4 Splitter

Accessories
EPIC® CRIMPTOOL refer to main catalogue 2018/19
EPIC® SOLAR TOOL CSC refer to main catalogue 2018/19
EPIC® SOLAR TOOL refer to main catalogue 2018/19
EPIC® POWER LS1 D6 TWIST
Circular connectors for servomotors and power supply

Info
- TWIST quick-lock technology
- Connector with 1/4 turn safely locked
- Vibration-proof

Suitable contacts:
- EPIC® POWER LS1 Contacts female refer to main catalogue 2018/19
- PU = 5 pieces: the contacts are included.
  2 mm contact crimp range is 0.5 - 2.5 mm².
- PU = 20 pieces: the contacts must be ordered separately

Benefits
- Locking 70% faster
- EMC-optimised design
- Safety use in field environment by high protection class

Application range
- Plant engineering
- Servo drives and servo assemblies
- Not pluggable with standard EPIC POWER LS1 counterparts type A1,A3,F6,F7,G4,G6

Product features
- UL pending

Technical data

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<td>630 V (2 mm contacts)</td>
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<td>250 V (1 mm contacts)</td>
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<td>6 kV (2 mm contacts)</td>
<td>Crimp termination: 0.14 - 1.0 mm²</td>
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<td>4 kV (1 mm contacts)</td>
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<td>7 A (1 mm contacts)</td>
<td>Insert: PA, Seal: FPM</td>
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<th>Pollution degree</th>
<th>Protection rating</th>
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<td>3</td>
<td>IP68 (10h/1m)</td>
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<th>Cycle of mechanical operation</th>
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<td>&lt; 4 mOhm</td>
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<tr>
<td>Gold-plated brass</td>
<td>-25 °C up to +125 °C</td>
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### EPIC® Industrial connectors

#### Circular connectors • EPIC® POWER LS1

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<th>Article number</th>
<th>Article description</th>
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<th>Clamping range in mm</th>
<th>Pin configuration</th>
<th>Pieces / PU</th>
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</tbody>
</table>

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
SKINTOP® ST-HF-M
Halogen-free plastic cable gland

Benefits
• Maximum reliability
• Extremely flame-retardant according to UL 94 V0
• Completely halogen-free (including sealing material)
• Self-extinguishing, no dripping
• Permanent vibration protection

Application range
• Underground railways and trains
• When the protection of people and property is a priority
• Public buildings
• Ventilation systems
• Tunnel construction

Norm references / Approvals
• DIN EN 45545-2 (HL3)
• Filament testing according to EN 60695-2-1/1 +960°C

Product Make-up
• Metric connection thread acc. to DIN EN 60423
• Basis for technical information DIN IEC 62444

Technical data
Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC000441
ETIM 5.0/6.0 Class-Description: Cable screw gland

Caution
Refer to Appendix T21 for the installation dimensions and torques

Colour delivered
RAL 7035 light grey
RAL 9005 black/UV-resistant

Material
Body: polyamide
Sealing ring: special elastomer
O-ring: special elastomer

Protection rating
IP 68 - 5 bar

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

Article number Article designation / size Clamping range ØF mm SW wrench size mm Overall length C mm Thread length D mm Pieces / PU
SKINTOP® ST-HF-M light grey
53111407 M 12 x 1,5 4-5,5 15 30.0 8 100
53111417 M 16 x 1,5 4,5-9 19 34.0 8 100
53111427 M 20 x 1,5 7-13 25 37.0 9 100
53111437 M 25 x 1,5 9-17 30 40.0 10 50
53111447 M 32 x 1,5 11-21 36 47.0 10 25
53111457 M 40 x 1,5 19-28 46 52.0 10 10
53111467 M 50 x 1,5 27-35 55 62.0 12 5
53111477 M 63 x 1,5 34-45 66 71.0 12 5

SKINTOP® ST-HF-M black
53111408 M 12 x 1,5 4-5,5 15 30.0 8 100
53111418 M 16 x 1,5 4,5-9 19 34.0 8 100
53111422 M 20 x 1,5 7-13 25 37.0 9 100
53111438 M 25 x 1,5 9-17 30 40.0 10 50
53111448 M 32 x 1,5 11-21 36 47.0 10 25
53111458 M 40 x 1,5 19-28 46 52.0 10 10
53111468 M 50 x 1,5 27-35 55 62.0 12 5
53111478 M 63 x 1,5 34-45 66 70.0 12 5

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

Accessories
• SKINTOP® GMP-HF-M refer to main catalogue 2018/19

For current information see: www.lappgroup.com
SKINTOP® FLAT
Cable gland with sealing insert for flat cables

Benefits
- Specially designed sealing insert enables very high IP protection
- Wide, variable clamping ranges
- Suitable for both angular and round cable contours
- Even pressure distribution on the flat cable
- Halogen-free

Application range
- For inserting flat cables
- Conveyor and transport systems
- Indoor cranes and high-rack facilities
- Lifts
- Cable trolley systems
- Submersible pumps

Product Make-up
- Metric connection thread acc. to DIN EN 60423
- Technical information referring to DIN IEC 62444

Note
- Size M 63 x 1.5 and M 63 x 1.5 plus in preparation

Suitable cables
- ÖLFLEX® CRANE F
- ÖLFLEX® LIFT F

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000441
  ETIM 5.0/6.0 Class-Description: Cable screw gland
- Caution
  Tightening torques see installation instructions
- Material
  Body: Nickel-plated brass
  Insert: Polyamid
  Sealing: NBR
  O-Ring: NBR
- Protection rating
  IP 68 - 5 bar
- Temperature range
  -20°C to +100°C

Article number | Article designation / size | Cable width min. / max. mm | Cable thickness min. / max. mm | SW wrench size mm | Overall length C mm | Thread length D mm | Pieces / PU
--- | --- | --- | --- | --- | --- | --- | ---
53119375 | M 25 x 1.5 | 11 - 16 | 3 - 6 | 29 | 37.5 | 8 | 25
53119376 | M 32 x 1.5 | 15 - 20 | 3 - 7 | 36 | 42.2 | 9 | 25
53119377 | M 40 x 1.5 | 18 - 28 | 3 - 9 | 45 | 49.5 | 9 | 10
53119378 | M 50 x 1.5 | 26 - 33 | 5 - 11 | 54 | 52.0 | 10 | 5

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

Accessories
- SKINDICHT® SM-M refer to main catalogue 2018/19

For current information see: www.lappgroup.com
Info

- Compact, round multi cable bushing system with innovative gel technology

Benefits
- Large clamping range of 4 mm per bushing due to elastic gel technology with innovative membrane technology
- Easy installation of the cables even for high packing density
- Optimum strain relief at the entire cable bundle
- Not used bushings remain securely sealed

Application range
- Used in areas where a lot of cables and wires need to be inserted into housings with minimum space requirements
- For not harnessed cables and media hoses
- Apparatus and switch cabinet construction
- Automation technology

Product features
- Cables can be inserted directly without using a pricking awl
- Secure sealing at the cable & housing
- High packing density
- Halogen-free and silicone-free
- UV-, Ozon and oil resistant

Norm references / Approvals
- UL pending

Included
- SKINTOP® MULTI-M including locknut and O-ring

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000240
  ETIM 5.0/6.0 Class-Description: Cable entry
- Certifications
  UL pending
  Fire behaviour according to UL94 V-2
- Note
  On request:
  - individual bushing configuration
  - other metric thread sizes
- Material
  Frame: Polycarbonat
  Sealing: Gel
  O-Ring: NBR
- Protection rating
  IP 68
- Temperature range
  With O-ring: -30°C to +100°C
  Without O-ring: -30°C to +110°C

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation / size</th>
<th>Max. number of executions</th>
<th>Number of cables x clamping range</th>
<th>SW wrench size mm</th>
<th>Pieces / PU</th>
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<tbody>
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<td>SKINTOP® MULTI-M</td>
<td>M50x1,5</td>
<td>18</td>
<td>18 x 2-6 mm</td>
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<td>SKINTOP® MULTI-M</td>
<td>M63x1,5</td>
<td>30</td>
<td>30 x 2-6 mm</td>
<td>67</td>
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</tbody>
</table>

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

Similar products
- SKINTOP® DIX-M refer to main catalogue 2018/19
- SKINTOP® CUBE MULTI refer to main catalogue 2018/19
- SKINTOP® MULTI refer to main catalogue 2018/19
- SKINTOP® MULTI VENT refer to main catalogue 2018/19

Accessories
- SKINTOP® DIX-DV refer to main catalogue 2018/19
Cable glands
SKINDICHT® cable gland accessories metric • Coupler

SKINDICHT® TWIST-M
Swivelling coupler with hexagonal collar

Benefits
- Exact positioning of e.g. elbowed fittings
- Swivelling coupler with increased sealing
- Prevents cables and conduits to get damaged due to (unintentionally) encountered torsional stress

Product features
- Swivelling upper part
- High sealing performance

Application range
- Control cabinet manufacturing
- Control systems
- Mechanical engineering
- For mobile equipment and machines
- In combination with metric threaded (conduit) fittings

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000441
  ETIM 5.0/6.0 Class-Description: Cable screw gland
- Material
  Body: nickel-plated brass
  Spring ring: spring steel
  Sealing: FKM
- Protection rating
  IP 68
- Temperature range
  -20°C up to +200°C

<table>
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<th>Thread, male M1</th>
<th>Thread, female M2</th>
<th>SW wrench size mm</th>
<th>Pieces / PU</th>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- SKINDICHT® SM-M refer to main catalogue 2018/19

For current information see: www.lappgroup.com
Protective cable conduit systems and cable carrier systems

Metal protective cable conduit systems • Galvanized steel versions

SILVYN® MSK-U-M

Universal metric threaded coupler with integrated cable strain relief, for use with conduit fittings

Info

• Integrated SKINTOP® cable strain relief

Benefits

• Optimum cable and conduit strain relief
• Maximum cable sealing
• Fast and easy assembly
• Wide clamping range
• Anti-turn protection

Application range

• In combination with metric threaded conduit fittings
• Used in areas where cables and wires need to be provided with strain relief and additional sealing

Product features

• Combination of SILVYN® and SKINTOP®

Note

• For suitable accessories, refer to SKINTOP® metric accessories

Technical data

Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001180
ETIM 5.0/6.0 Class-Description: Screw connection for protective metallic hose

Material
Body: nickel-plated brass
Insert: Polyamide
Sealing ring: CR/NBR
O-ring: NBR

Protection rating
Cable: IP 68
Conduit: depending on the used conduit system

Temperature range
static -40°C up to +100°C
dynamic -25°C up to + 100°C

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

Article number | Metric size | Clamping range in mm | Suitable gland size | Pieces / PU
---|---|---|---|---
SILVYN® MSK-U-M
55506129 | 12 x 1.5 | 3.5 - 7.0 | M 12 x 1,5 | 5
55506130 | 16 x 1.5 | 4.5 - 10.0 | M 16 x 1,5 | 5
55506131 | 20 x 1.5 | 7.0 - 13.0 | M 20 x 1,5 | 5
55506132 | 25 x 1.5 | 9.0 - 17.0 | M 25 x 1,5 | 5
55506133 | 32 x 1.5 | 11.0 - 21.0 | M 32 x 1,5 | 5
55506134 | 40 x 1.5 | 19.0 - 28.0 | M 40 x 1,5 | 1
55506153 | 50 x 1.5 | 27.0 - 35.0 | M 50 x 1,5 | 1
55506154 | 63 x 1.5 | 34.0 - 45.0 | M 63 x 1,5 | 1

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

Accessories

• SKINDICHT® SM-M refer to main catalogue 2018/19
• SKINTOP® DIX-M refer to main catalogue 2018/19

• SKINTOP® DIX-M AUTOMATION refer to main catalogue 2018/19
• SKINTOP® DIX-DV refer to main catalogue 2018/19

For current information see: www.lappgroup.com
PVX 1300 pressing pliers battery-operated

Benefits
- Pressure strength control using pressure monitoring
- Buzzing signal and flashing light if right pressure is not achieved
- Display with information on the tool and service interval
- Single-handed operation for easy handling
- Rapid feed for more efficient crimping

Product features
- Crimps/charge: 60-120 depending on size and temperature
- Battery type: Makita 5 Ah
- Charging time: 40 min

Included
- Supplied with robust plastic case, battery charger and instruction manual
- Pressing dies and die holders need to be ordered separately

Application range
- Battery powered crimp tool for crimping of CU terminals KRF/KRT 10-400 mm²
- Same accessories as V1311-A pliers

Technical data
- Classification ETIM 5/6
- ETIM 5.0/6.0 Class-ID: EC000168
- ETIM 5.0/6.0 Class-Description: Crimp tool cable lugs, cable end sleeves, screen connection

Info
- NEW: two-stage DUAL crimping technique (first hexagonal pressing, then additional mandrel pressing)

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

Die holders for system 1311

Application range
- Both the inner die holder V1316 and the outer die holder V1318 is needed

Note
- Only needed for dies which have no „13“ in article designation

Suitable tools
- V 1311-A pressing pliers, hydraulic refer to main catalogue 2018/19
- PVX 1300 pressing pliers battery-operated refer to page 28

Technical data
- Classification ETIM 5/6
- ETIM 5.0/6.0 Class-ID: EC001282
- ETIM 5.0/6.0 Class-Description: Insert for crimp tool cable lugs, cable end sleeves, screen connection

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
## Dies for system 1311 and 1300

**Application range**
- Pressing dies for V 1311 and PVX 1300 for crimping cable lugs (KRT/KRF) and butt connectors (KST/KSF)

**Included**
- Pressing dies are delivered in pairs
- For pressing dies where the article designation begins with „13B” no extra die holders are needed, for all other dies you need to order the die holders separately.

### Suitable tools
- V 1311-A pressing pliers, hydraulic refer to main catalogue 2018/19
- PVX 1300 pressing pliers battery-operated refer to page 28

### Technical data
- **Classification ETIM 5/6**
  - ETIM 5.0/6.0 Class-ID: EC001282
  - ETIM 5.0/6.0 Class-Description: Insert for crimp tool cable lugs, cable end sleeves, screen connection

### Article number and designation

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</table>

Component composition: First specify the pressing dies. Note that die holders are not needed for all pressing dies (depending on the cross section of the tube cable lugs to be pressed).

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
FLEXIMARK® thermal printer SQUIX and EOS5*

Benefits
- High print speed (up to 150 mm/sec)
- High print resolution: 300 dpi
- Simple communication with FLEXIMARK® Software
- Basic maintenance such as cleaning the label sensor, changing the print head or print roller, can be easily done by yourself

Application range
- Printing on a variety of different materials (among others FLEXIMARK® shrink tube, cable(label PUR and TA foam component marking)
- The thermal transfer printing method increases the smudge and scratch resistance of the printed surface, and provides increased resistance to oils and chemicals as well

Note
- For cutting of e.g. shrink tubes use optional cutter for the EOS 5
- For perforating flat shrink tubes use thermal transfer printer SQUIX together with the optional perforation cutter

Included
- FLEXIMARK® Software
- FLEXIMARK® thermal printer SQUIX or EOS5 with operating manual and service manual
- Windows® driver
- FLEXIMARK® Ribbon R71 55/360 resin BK (article number 83259604)
- Power supply USB cable (length 1.8 m)

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6 / ETIM 5.0/6.0 Class-Description: Accessories for fax/printer/MFC</th>
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<tr>
<td>Dimensions SQUIX: 274x242x446 mm (HxWxD) EOS5: 245x264x412mm (HxWxT)</td>
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<td>Label rolls Material thickness: 0.055-1.2 mm (SQUIX) 0.055-0.7 mm (EOS5) Carrier width: 10-120 mm (SQUIX) 10-116 mm (EOS5) Max. core diameter Ø: 38.0-100.0mm (SQUIX) 38-76mm (EOS5)</td>
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<tr>
<td>Ribbons Run length up to 500m (SQUIX) or 360m (EOS5)</td>
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<tr>
<td>Speed Up to 150.00 mm/s</td>
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<tr>
<td>Weight SQUIX: 9.0 kg EOS5: 5 kg</td>
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<td>Material Labels or continuous material on coils</td>
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Article number Article designation

<table>
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<th>Article designation</th>
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<td>83259602</td>
<td>FLEXIMARK® Thermostrip SQUIX 4/300M</td>
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<td>83259536</td>
<td>FLEXIMARK® Cutter EOS5</td>
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<td>83259603</td>
<td>FLEXIMARK® Perforation cutter PCU400 SQUIX 1</td>
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*Trade product, no Lapp product

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

FLEXIMARK® products are sold in packaging units. As example if you like to order 640 labels of LCK 32 you just need to order 1 PU instead of 640 single labels.

Accessories
- FLEXIMARK® ribbons SQUIX, EOS4 and EOS5 refer to main catalogue 2018/19

For current information see: www.lappgroup.com
Tools and cable accessories
Insulating, protecting, shrinking • Heat-shrinking products

Shrink tube PROTECT-HF

Benefits
- Flexible
- Halogen-free products do not develop corrosive or toxic gases in the event of a fire, are flame-retardant, show little fire propagation and develop only little smoke
- PROTECT-HF RW: Can be flattened for marking purposes, suitable for railway applications

Application range
- Insulation, protection and cable bundling
- Green-yellow shrink tube: For identifying and marking earthing connectors and cables
- PROTECT-HF RW: For railway applications and marking systems

Product features
- Halogen-free
- Good chemical resistance
- Flame retardant
- Silicone-free
- UV-resistant (only colour: black)

Norm references / Approvals
- PROTECT-HF / Box: Flammability class FMVSS 302

Included
- PROTECT-HF Box: Stackable boxes for easy storage
- PROTECT-HF: Plastic bag with 1.22 m units
- PROTECT-HF RW: Delivered on spool

Suitable tools
- HG 2320 hot-air pistol refer to main catalogue 2018/19

Technical data
- Classification ETIM 5/6
  - ETIM 5.0/6.0 Class-ID: EC000217
  - ETIM 5.0/6.0 Class-Description: Shrink tubing
- On request
  - Other colours are available upon request
- Note
  - Thin walled
  - Dielectric strength: 20 kV/mm
- Colour delivered
  - Black
  - Green-yellow
- Material
  - Polyolefin
- Temperature range
  - Shrinking temperature: +90°C
  - PROTECT-HF / Box: -30 °C to +105 °C
  - PROTECT-HF RW: -55°C to +105°C

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article description</th>
<th>Colour</th>
<th>Shrinkage range (mm)</th>
<th>Panel thickness, shrunk +0.1 mm</th>
<th>Contents (m)</th>
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For current information see: www.lappgroup.com
# Tools and cable accessories

## Insulating, protecting, shrinking • Heat-shrinking products

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