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.

<table>
<thead>
<tr>
<th>INDUSTRIES</th>
<th>PRODUCT CHARACTERISTICS</th>
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<tbody>
<tr>
<td>Automation</td>
<td>Suitable for outdoor use</td>
<td>Power chain</td>
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<tr>
<td>e-Mobility</td>
<td>Good chemical resistance</td>
<td>Clean room</td>
</tr>
<tr>
<td>Food &amp; Beverage</td>
<td>Flame-retardant</td>
<td>Robust</td>
</tr>
<tr>
<td>Mechanical and Plant Engineering</td>
<td>Wide clamping range</td>
<td>Acid-resistant</td>
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<tr>
<td>Oil &amp; Gas</td>
<td>Halogen-free</td>
<td>Reliability</td>
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<tr>
<td>Rail</td>
<td>Heat-resistant</td>
<td>Integrated SKINTOP® cable gland</td>
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<td>Solar Energy</td>
<td>Cold-resistant</td>
<td>Voltage</td>
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<tr>
<td>Wind Energy</td>
<td>Corrosion-resistant</td>
<td>Connector with standard housing unit</td>
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<td>Maximum vibration protection</td>
<td>Interference signals</td>
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<td></td>
<td>Mechanical resistance</td>
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<td></td>
<td>Assembly time</td>
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<td>Low weight</td>
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<td>Oil-resistant</td>
<td>UV-resistant</td>
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<td>Optimum strain relief</td>
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<tr>
<td></td>
<td>Space requirement</td>
<td>Variety of approval certifications</td>
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On course for success

**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 4,245 skilled and dedicated staff around the world, as well as the reliable partnership with our customers.

With 17 production facilities, over 44 own 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](http://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.
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 numbered cores

**ÖLFLEX® CLASSIC 115 CY BK**

Screened PVC cable with small outer diameter and black outer sheath

---

**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 0293-334
- **Conductor stranding**: Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- **Torsion movement in WTG**: TW-0 & TW-1, refer to Appendix T1
- **Minimum bending radius**: Occasional flexing: 20 x outer diameter
- **Nominal voltage**: U0/U: 300/500 V
- **Test voltage**: Core/core: 4000 V Core/screen: 2000 V
- **Protective conductor**: G = with GN-YE protective conductor
- **Protective conductor**: X = without protective conductor
- **Core/screen**: 2000 V
- **Core/core**: 4000 V
- **U0/U**: 300/500 V
- **Core identification code**: Black with white numbers acc. to VDE 0293-334
- **Conductor stranding**: Fine wire according to VDE 0295, class 5/IEC 60228 class 5
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- **Test voltage**: Core/core: 4000 V Core/screen: 2000 V
- **Protective conductor**: G = with GN-YE protective conductor
- **Protective conductor**: X = without protective conductor
- **Core/screen**: 2000 V
- **Core/core**: 4000 V

---

**Benefits**

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

**Application range**

- Measurement and control technology
- Plant engineering
- Industrial machinery
- Heating and air-conditioning systems
- Conveyor and transport systems
- Suitable for torsional applications which are typical for the loop in wind turbine generators (WTG)
- Suitable for outdoor applications

**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

---

**ÖLFLEX® ROBUST 215 C** refer to main catalogue 2020/21

**ÖLFLEX® CLASSIC 110 CY BLACK 0.6/1 kV** refer to main catalogue 2020/21

---

**Similar products**

- **ÖLFLEX® CLASSIC 115 CY BK**
- **3M Scotch™ 1183 screening tape** refer to main catalogue 2020/21
- **SKINTOP® BRUSH ADD-ON** refer to main catalogue 2020/21
- **SKINTOP® MS-M BRUSH** refer to main catalogue 2020/21

---

**For current information see: www.lappgroup.com**
ÖLFLEX® CLASSIC 128 H BK 0,6/1 kV

Cost-effective halogen-free control cable with improved fire characteristics, 0,6/1kV

For current information see: www.lappgroup.com

<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>
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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.

Similar products
• ÖLFLEX® CLASSIC 130 H BK, 0,6/1 kV refer to main catalogue 2020/21

Accessories
• SKINTOP® ST-HF-M refer to main catalogue 2020/21
**Power and control cables**

Various applications • Halogen-free

---

**ÖLFLEX® CLASSIC 128 CH BK 0,6/1 kV**

Cost-effective halogen-free control cable with improved fire characteristics, 0,6/1kV, with screen

---

**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 50525-3-1
- 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 19
  - From 6 cores: black with white numbers
- Conductor stranding
  - Fine wire according to VDE 0295, class 5/IEC 60228 class 5
- 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

---

**Technical data**
- Classification ETIM 5/6
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  - X = without protective conductor
- Temperature range
  - Occasional flexing: -5°C to +70°C
  - Fixed installation: -40°C to +80°C

---

**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

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**Technical data**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
<th>Outer diameter [mm]</th>
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**Article number**

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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 17 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 135 CH BK 0,6/1 kV refer to main catalogue 2020/21

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**Accessories**
- SKINTOP® BRUSH ADD-ON refer to main catalogue 2020/21
- SKINTOP® MS-HF BRUSH refer to main catalogue 2020/21
- SKINTOP® MS-M BRUSH refer to main catalogue 2020/21

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For current information see: www.lappgroup.com
Please specify the preferred type of packaging (e.g. 1 x 610 m drum or 8 x 76 m coils).

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

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

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

**Benefits**
- Suitability for different operation types and locations in the USA as per NFPA/ NEC under one LAPP part number, thanks to UL listings (UL) STOOW and (UL) TC, resp. TC-ER, as well as thanks to design and characteristics associated with these listings
- Apart from unprotected laying on tray in the USA thanks to TCi-ER listing: …/further, normatively specified, unprotected wiring methods in the USA per application related NEC Articles, thanks to (UL) listing STOOW/ Extra-hard usage Flexible Cord

**Application range**
- Industrial machinery, plant engineering in the USA
- Unprotected 600V operation on cable tray in the USA, incl. 6 ft. Exposed Run laying sections for version with at least 3 conductors
- As per Article 400 of NEC/ NFPA 70: General Uses Permitted in the USA and General Uses Not Permitted to the overall group of Flexible Cords and Flexible Cables acc. to UL 62.
- Operating data and limitations for Flexible Cords in special applications acc. to further NEC Articles, such as 501 (Class 1 Locations), 422 (Appliances), or 520 (specific locations for play and production of entertainment), etc.
- Further, typical locations in the USA, as specified by respective US installation standardization (e.g., NEC/ NFPA 70): Power cord for equipment, paint booths, appliances, factory installations (branch circuit), any power hook-up in the plant, for harnessed power connecting or extension cord set assemblies
- In hazardous locations in the USA, as per Chapter 5 of NEC/ NFPA 70: Classes 1 thru III, Divisions 1 and 2 each, plus intrinsically safe circuits, taking account of:
  - Provisions on cable design, cable type, installation, application in NEC Chapter 5 (esp.: Articles 500 thru 504);
  - This cable's design, approvals, component identification

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**Technical data**

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**Core identification code**
- Coloured conductors with numbers, plus ground in green/yellow (30 % stripe width);
- For 2-conductor cable only: No green/yellow ground
- Example 3 conductors:
  - BLACK conductor: \( \_ \, \_ \, \_ \) ONE* WHITE conductor: \( \_ \, \_ \, \_ \) GREEN/YELLOW conductor: No Numbers

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**Product features**
- Highly flame retardant FT4
- Highly oil resistant OIL RES I/II
- Tested sunlight resistant per UL 1277, UL 62, UL 2556 in terms of UV resistance
- Tested for unprotected, direct burial in the USA per UL 1277

**Norm references / Approvals**
- Certified by UL per UL 1277 for TC 600V use in the USA, subject to individual third-party inspection: Generally UL Type TC (Tray Cable), and for at least 3 or more conductors TC-ER (Tray Cable for Exposed Run) in addition [UL CCN: GPR; UL File No.: E171371]
- Certified by UL per UL 62 for STOOW use in the USA, subject to individual third-party inspection: UL Type STOOW (Extra-hard usage Flexible Cord) [UL CCN: ZJCZ; UL File No.: E146118]
- Certified by UL per CSA C22.2 No. 239, and CSA C22.2 No. 230 for possible CIC/ TC use in Canada, subject to individual third-party inspection: c(UL) CIC/TC FT4 [UL CCN: GPR; UL File No.: E171371]
- Certified by UL per UL CSA C22.2 No. 49 for STOOW use in Canada, subject to individual third-party inspection: c(UL) STOOW [UL CCN: ZJCZ; UL File No.: E146118]
- Certified by CSA per CSA C22.2 No. 210 for AWM use in Canada, subject to individual third-party inspection: CSA AWM II A/B FT4

**Product Make-up**
- Fine-wire stranded made of bare copper wires
- Specially formulated PVC insulation
- Durable, black sheath made of specially formulated thermoplastic polymer for improved service life

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**ÖLFLEX® POWER MULTI**
Flexible, oil resistant Power Cord: (UL) listed for Tray + Extra-hard usage per NEC; NFPA 79
Power and control cables

Harsh conditions • High mechanical and chemical resistance

ÖLFLEX® 409 CP
Screened, abrasion- and oil-resistant PUR control cable for increased application requirements - certified

Benefits
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media
- Certified for the USA and Canada for export-oriented machine, appliance and apparatus manufacturers
- Copper braiding screens the cable against electromagnetic interference

Application range
- Appliance and apparatus construction
- Industrial machinery and machine tools
- Measurement, control and electrical applications
- Very suitable for oily wet areas within machinery and production lines that are subject to normal mechanical stress
- Under consideration of the temperature range also suitable for outdoor use

Product features
- High oil-resistance
- Flame-retardant
- Abrasion and notch-resistant
- UV-resistant according to ISO 4892-2
- Resistant to hydroylisation and microbes

Norm references / Approvals
- UL AWM Style 20234
- CUL AWM I/II A/B
- UL File No. E63634

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

Conductor stranding
Black with white numbers acc. to VDE 0293-334

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

Nominal voltage
U0/U: 300/500 V
UL/CSA: 1000 V

Test voltage
4000 V

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

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

Product Make-up
- Fine-wire, bare copper conductor
- Core insulation: special PVC
- Cores twisted in layers
- Plastic foil wrapping
- Tinned-copper braiding
- Special polyurethane outer sheath (PUR)
- Sheath colour: black (similar RAL 9005)

Article number | Number of cores and mm² per conductor | Outer diameter [mm] | Copper index [kg/km] | Weight [kg/km]
--- | --- | --- | --- | ---
ÖLFLEX® 409 CP
1321852 | 2 X 0.75 | 7.0 | 29 | 75
1321103 | 3 G 0.75 | 7.3 | 37 | 89
1321104 | 4 G 0.75 | 7.8 | 44 | 104
1321105 | 5 G 0.75 | 8.4 | 53 | 120
1321107 | 7 G 0.75 | 9.0 | 67 | 146
1321110 | 10 G 0.75 | 10.9 | 94 | 196
1321112 | 12 G 0.75 | 11.2 | 107 | 219
1321118 | 18 G 0.75 | 12.9 | 152 | 298
1321225 | 25 G 0.75 | 14.8 | 200 | 387
1321902 | 2 X 1.0 | 7.3 | 34 | 84
1321203 | 3 G 1.0 | 7.6 | 43 | 99
1321204 | 4 G 1.0 | 8.1 | 53 | 116
1321205 | 5 G 1.0 | 8.8 | 64 | 137
1321207 | 7 G 1.0 | 9.4 | 83 | 167
1321210 | 10 G 1.0 | 11.5 | 116 | 228
1321212 | 12 G 1.0 | 11.8 | 133 | 255
1321218 | 18 G 1.0 | 13.8 | 191 | 355
1321225 | 25 G 1.0 | 15.7 | 272 | 474
1321952 | 2 X 1.5 | 7.9 | 43 | 99
1321303 | 3 G 1.5 | 8.3 | 57 | 119
1321304 | 4 G 1.5 | 8.9 | 71 | 143
1321305 | 5 G 1.5 | 9.6 | 85 | 167
1321307 | 7 G 1.5 | 10.3 | 112 | 207
1321312 | 12 G 1.5 | 13.3 | 182 | 326
1321318 | 18 G 1.5 | 15.3 | 277 | 464
1321325 | 25 G 1.5 | 17.5 | 376 | 609
1321403 | 3 G 2.5 | 9.6 | 86 | 166
1321404 | 4 G 2.5 | 10.3 | 110 | 203
1321405 | 5 G 2.5 | 11.2 | 134 | 243
1321407 | 7 G 2.5 | 12.1 | 178 | 305
1321412 | 12 G 2.5 | 15.8 | 311 | 503
1321504 | 4 G 4.0 | 11.9 | 163 | 276
1321505 | 5 G 4.0 | 13.2 | 199 | 340
1321604 | 4 G 6.0 | 13.4 | 232 | 368
1321605 | 5 G 6.0 | 14.7 | 284 | 450
1321704 | 4 G 10.0 | 16.8 | 397 | 644
1321705 | 5 G 10.0 | 18.7 | 486 | 785
1321804 | 4 G 16.0 | 19.6 | 639 | 931
1321805 | 5 G 16.0 | 22.4 | 786 | 1142

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

For current information see: www.lappgroup.com
**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
  - VDE 0293-308
- Conductor stranding
  - Fine wire according to VDE 0295 Class 5 / IEC 60228 Class 5
- Minimum bending radius
  - Occasional flexing: 15 x outer diameter
  - Fixed installation: 4 x outer diameter
- Nominal voltage
  - 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

**Similar products**
- ÖLFLEX® SERVO SYSLCY-JB refer to main catalogue 2020/21
- ÖLFLEX® SERVO 2YSLYC-JB refer to main catalogue 2020/21

**ACCESSORIES**
- SKINTOP® BRUSH ADD-ON refer to main catalogue 2020/21
- SKINTOP® MS-SC-M BRUSH refer to main catalogue 2020/21
- SKINTOP® MS-M BRUSH refer to main catalogue 2020/21

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**Info**
- EMC-optimised design
- Halogen-free and highly flame-retardant
- 3+3 symmetry reduces common-mode interference effects and bearing currents

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**Technical specifications**

<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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<th>Article number</th>
<th>Number of cores and mm² per conductor</th>
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<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 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.

For current information see: www.lappgroup.com
Power and control cables
Power chain applications • Servo applications - power drive systems, certified

ÖLFLEX® SERVO 3D 7DSL
Low capacitive hybrid servo cable with PUR outer sheath for three-dimensional robotic application - certified

Benefits
- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable a specific integrated data pair takes over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

Application range
- Connecting cable between servo controller and motor
- In industrial robots, moving machine parts or drag chains
- Automated handling equipment
- Particularly in wet areas of machine tools and transfer lines
- Inside of dresspacks of buckling arm robots and for use for gantry robots
- For indoor and outdoor use

Product features
- High oil-resistance
- Abrasion and notch-resistant
- Flammability: UL/CSA: VW-1, FT1
- Flexible at low temperatures
- Low-capacitance design

Norm references / Approvals
- UL AWM Style 21223
cRU AWM I/II A/B FT1
- UL File No. E63634
- Designed for up to 5 million torsion cycles
- For use in power chains: Please comply with assembly guideline Appendix T3

Product Make-up
- Extra-fine-wire, bare copper conductor (power cores and control pair) and 19-wire, tinned copper conductor (data pair)
- Core insulation: Polypropylene (PP) respectively fluorinated ethylene propylene (FEP)
- Power cores with screened control pair and data pair twisted together
- Special tape wrapping
- Spiral shield made of tinned copper wires
- Wrapping of PTFE tape
- PUR 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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<td>G 0,5 + (2 x 0,25) + (2 x 26AWG)</td>
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Unless specified otherwise, the shown product values are nominal values at room temperature. Detailed values (e.g. tolerances) are 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

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

Similar products
- ÖLFLEX® SERVO 7DSL refer to main catalogue 2020/21
- ÖLFLEX® SERVO FD 7DSL refer to main catalogue 2020/21
- ÖLFLEX® SERVO FD 7OCS refer to page 13

Accessories
- Protective cable conduit systems and cable carrier systems refer to main catalogue 2020/21
- Circular connectors refer to main catalogue 2020/21

For current information see: www.lappgroup.com
## Benefits
- Allows much faster speed and accelerations which increases the economic efficiency of the machines
- Only one connection line between drive and motor-feedback system. Instead of the encoder cable integrated data pairs, quads or signal cores take over the signalling.
- Less cables and reduced connection costs
- Space and weight savings thanks to hybrid cable design
- Increased durability under harsh conditions thanks to robust PUR outer sheath
- Resistant to contact with many mineral oil-based lubricants, diluted acids, aqueous alkaline solutions and other chemical media

## Application range
- Power drive systems in automation engineering
- Connecting cable between servo controller and motor
- In power chains or moving machine parts
- For use in assembling & pick-and-place machinery
- Particularly in wet areas of machine tools and transfer lines
- For indoor and outdoor use

## Product features
- OCS - One Cable Solution
- High oil-resistant
- Abrasion and notch-resistant
- Flammability: UL/CSA: VW-1, FT1 IEC/EN: 60332-1-2
- Halogen-free materials
- Flexible at low temperatures

## Norm references / Approvals
- UL AWM Style 21223 or 20233 cRU AWM I/II A/B FT1
- UL File No. E63634
- For use in power chains: Please comply with assembly guideline Appendix T3

## Product Make-up
- Extra-fine or fine wired conductor made of bare or tinned copper
- Core insulation: polypropylene (PP)
- Individual design depending on the item: power cores with screened control pair or bundle and specific data pairs, quads or signal cores twisted together
- Non-woven wrapping
- Tinned-copper braiding
- PUR outer sheath, orange (RAL 2003)

## 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
- Details see datasheet

### Conductor stranding
- Power cores and brake pairs or triplets: Extra-fine wire according to VDE 0295, class 6/IEC 60228 class 6
- Signal cores, data pairs or star quads: Fine-wired

### Minimum bending radius
- Flexing: 7.5 x outer diameter
- Fixed installation: 5 x outer diameter

### Nominal voltage
- Power and control cores: Version 1,3 & 4: IEC U0 /U 600/1000 V
- Version 2: IEC 300 V
- UL all versions: see data sheet
- Individual data pairs and quads: see data sheet

### Test voltage
- Details see datasheet

### Protective conductor
- G = with GN-YE protective conductor

### Temperature range
- Flexing: -40°C to +80°C
- Fixed installation: -50°C to +80°C

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

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### Copper index (kg/km)

<table>
<thead>
<tr>
<th>Article number</th>
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<th>Copper index (kg/km)</th>
<th>Weight (kg/km)</th>
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### Similar products
- ÖLFLEX® SERVO 7DSL refer to main catalogue 2020/21
- ÖLFLEX® SERVO FD 7DSL refer to main catalogue 2020/21

### Accessories
- Protective cable conduit systems and cable carrier systems refer to main catalogue 2020/21
- Circular connectors refer to main catalogue 2020/21

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-Trap 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
- C(UL) CIC FT4 (18AWG - 14AWG);
- cRU AWM I/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 thermoplastic elastomer (TPE), orange
- Outer sheath: Specially formulated thermoplastic elastomer (TPE), orange
- Tinned-copper braiding
- 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/ 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 FT4, cRU AWM: 1000V
- IEC UI/UL: 400V/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
- Flexing: -5°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 at room temperature. Detailed values (e.g. tolerances) are available upon request.

Copper price basis: EUR 150 / 100 kg. Refer to catalogue appendix 117 for the definition and calculation of copper-related surcharges.

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

Accessories

- Circular connectors refer to main catalogue 2020/21
- EMC refer to main catalogue 2020/21

For current information see: www.lappgroup.com
**DC application for the industry**

Direct current (DC) serves as a future key technology for the integration of renewable energy sources and helps to avoid energy conversions within the production process. A simplified energy exchange between energy source and production plant/machine parts, as well as a process-optimized storage connection are important advantages of this technology in order to be able to implement an intelligent energy supply in the industry. Lapp is working intensively on solutions and can actively contribute to the implementation and application of direct current in the production process with the following portfolio.

### ÖLFLEX® DC – Product range

<table>
<thead>
<tr>
<th>Product</th>
<th>Application range</th>
<th>Nominal voltage (power cores)</th>
<th>Cross section (mm²) (power cores)</th>
<th>Temperature</th>
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</thead>
<tbody>
<tr>
<td>ÖLFLEX® DC 100</td>
<td>Power cable for fixed installation and occasional flexible use</td>
<td>0,75/1,5 kV DC</td>
<td>1,5 - 185</td>
<td>Flexible: -5°C to +70°C Fixed installation: -40°C to +80°C</td>
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<td>ÖLFLEX® DC SERVO 700</td>
<td>Power cable for DC drives &amp; daisy chain applications</td>
<td>0,75/1,5 kV DC</td>
<td>2,5</td>
<td>Flexible: -5°C to +70°C Fixed installation: -40°C to +80°C</td>
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<tr>
<td>ÖLFLEX® DC CHAIN 800</td>
<td>Power cable for highly flexible use in constant motion within drag chains</td>
<td>0,75/1,5 kV DC</td>
<td>0,5 - 35</td>
<td>Flexible: -40°C to +105°C Fixed installation: -50°C to +105°C</td>
</tr>
<tr>
<td>ÖLFLEX® DC ROBOT 900</td>
<td>Power cable for highly flexible use with continuously alternating bending and torsional motion</td>
<td>0,75/1,5 kV DC</td>
<td>0,5 - 35</td>
<td>Flexible: -35°C to +90°C Fixed installation: -50°C to +90°C</td>
</tr>
</tbody>
</table>

### Direct current improves energy and resource efficiency

**Increase of availability**
- Stability of energy networks due to reduced harmonics

**Energy efficiency**
- Cross-machine recuperation
- Reduction of conversion losses from AC to DC
- Easier integration of renewable, decentralized energy sources

**Resource efficiency**
- Less components and less space required
- Less wiring efforts

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Knowledge Center

You can get further information online:

www.lappkabel.com/service/knowledge-center/innovation-idea-direct-current-part-1

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

Control Cabinet Single Cores • Various applications

**H07V-U**

European <HAR> cable type certification

---

**Benefits**
- Cables <HAR>marking also stands for the international endorsement of national certification institutes' testing marks and certificates, e.g. <VDE><HAR>. The <HAR>marking is of special importance in case of goods traffic between European countries.

**Application range**
- Laying in tubes, exposed or buried in plaster, and in closed installation ducts
- For direct laying on racks, troughs and tubes only as potential equalisation conductor

**Product features**
- Flame-retardant according IEC 60332-1-2

**Norm references / Approvals**
- <HAR> cable type certification acc. EN 50525-2-31
- No cable type certified core insulation colours according to EN 50525-1/ VDE 0285-525-1: transparent, green (single colour), yellow (single colour), all double colours (except of green-yellow and yellow-green)

**Product Make-up**
- Solid bare copper conductor
- Core insulation: Based on PVC

---

<table>
<thead>
<tr>
<th>Conductor cross-section (mm²)</th>
<th>Outer diameter [mm]</th>
<th>m/ring</th>
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<th>Weight (kg/km)</th>
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<th>white</th>
<th>red</th>
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<td>4527051X</td>
<td>4527041X</td>
<td>4527071X</td>
<td>4527021X</td>
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<table>
<thead>
<tr>
<th>Conductor cross-section (mm²)</th>
<th>Outer diameter [mm]</th>
<th>m/ring</th>
<th>Copper index (kg/km)</th>
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</table>

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**Technical data**
- Classification ETIM 5/6
  - ETIM 5.0/6.0 Class-ID: EC000993
  - ETIM 5.0/6.0 Class- Description: Single core cable

**Minimum bending radius**
- According to EN 50565-1
- Fixed installation: 4 x outer diameter

**Nominal voltage**
- U0/U: 450/750 V

**Test voltage**
- 2500 V

**Current rating**
- VDE 0298 Part 4
- EN 50565-1/ VDE 0298-565-1

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

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

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

**Packaging size:** Coil ≤ 30 kg, otherwise drum

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

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**Similar products**
- MULTI-STANDARD SC 2.1 refer to main catalogue 2020/21
- MULTI-STANDARD SC 2.2 refer to main catalogue 2020/21

**Accessories**
- DIN assorted boxes conductor end sleeves refer to main catalogue 2020/21
- PEW 8.87 crimping pliers refer to main catalogue 2020/21
- FLEXIMARK® Collar Snap-on refer to main catalogue 2020/21
- Mobile crimp tool crimping pliers refer to main catalogue 2020/21

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For current information see: www.lappgroup.com
N2XSy
PVC medium voltage cable with copper 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
- Buried 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
- Flame-retardant according IEC 60332-1-2
- Current rating according to HD 620/VDE 0276-620, Part 10-C, Table 7 (in the air at an air temperature of +30°C according to HD 620/ VDE 0276-620)

Norm references / Approvals
- HD 620/VDE 0276-620
- 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: EC001 140
  ETIM 5.0/6.0 Class-Description: Medium 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

<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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</table>

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.

For current information see: www.lappgroup.com
Power and control cables
Building Installation • Medium voltage cables

N2XS2Y
PE medium voltage cable with copper 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
- 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/}

Technical data
Classification ETIM 5/6
ETIM 5.0/6.0 Class-ID: EC001
ETIM 5.0/6.0 Class-Description: Medium 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: -20°C to +50°C Fixed installation: -40°C to +90°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>
<th>Outer diameter [mm]</th>
<th>Copper index (kg/km)</th>
<th>Weight (kg/km)</th>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

For current information see: www.lappgroup.com

N2XS2Y
Power and control cables

Building Installation • Medium voltage cables

NEW

N2XS(F)2Y
Longitudinally water-tight PE medium voltage cable with copper 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

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/...
N2XS(FL)2Y
Longitudinally and transversely water-tight PE medium voltage cable with copper 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 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/
**NA2XY**

**PVC 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
- 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
- Flame-retardant according IEC 60332-1-2
- With aluminium conductor

### Technical data

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### 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
NA2XS2Y
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
- 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/)

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**Conductor stranding**
- Multi-wire

**Minimum bending radius**
- Depending on nominal voltage: 6/10 kV: 15 x outer diameter 12/20 kV: 30 kV 18/30 kV: 45 kV

**Nominal voltage**
- U₀/U: 6/10 kV: 6/10 kV 12/20 kV: 12/20 kV 18/30 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: -20 °C to +50 °C
- Fixed installation: -40 °C to +90 °C

**Article number**

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<th>Number of cores and mm² per conductor</th>
<th>Copper index (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.**

**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.
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

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: EC001 140
  - ETIM 5.0/6.0 Class-Description: Medium 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: -20°C to +50°C
  - Fixed installation: -40°C to +90°C

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.
Longitudinally and transversely water-tight PE medium voltage cable with aluminium conductor

**Technical data**

- **Classification ETIM 5/6**
  - ETIM 5.0/6.0 Class-ID: EC001140
  - ETIM 5.0/6.0 Class-Description: Medium 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: -20°C to +50°C
  - Fixed installation: -40°C to +90°C

---

### 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/...
Data communication systems for ETHERNET technology

Industrial Ethernet • Industrial Ethernet for special applications

ETHERLINE® T1 FLEX
Flexible use

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 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)

Norm references / Approvals
• IEEE 802.3bw: 100BASE-T1
• IEEE 802.3cg: 10BASE-T1
• UL-AWM-Style 2119B (80 °C / 300 V)

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

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
Flexing: 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

Table of specifications

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation</th>
<th>Number of pairs and AWG per conductor</th>
<th>Outer diameter mm</th>
<th>Core diameter in mm</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 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
**Etherline® Fire**

Industrial Ethernet cable with insulation integrity

- **Benefits**
  - Ensures that the cable can still transmit data during and after a fire for 120 min (according to EN50200)
  - High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

- **Application range**
  - In industrial areas that use fire as a tool
  - Highly combustible or fire-prone areas
  - For fixed installation
  - For indoor use

- **Product features**
  - Fire behaviour:
    - Halogen-free (IEC 60754-1 & EN50267-2-1)
    - Flame-retardant (IEC 60332-1)
    - Fire retardant (IEC 60332-3-24)
    - Low smoke density (IEC 61034-2)
    - Circuit integrity (EN50200); 120 min

- **Product Make-up**
  - Solid bare copper conductor
  - Core insulation: Based on Polyolefin
  - Each insulation will be wrapped with a special tape (anti-fire barrier)
  - Twisting: 2 twisted-pair cores, stranding from 4 pairs
  - Halogen-free and flame-retardant FRNC outer sheath, colour: red (similar to RAL3000)

- **Technical data**

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
<th>ETIM 5.0/6.0 Class-ID: EC000830</th>
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<tr>
<td>ETIM 5.0/6.0 Class-Description: Data cable</td>
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<tr>
<td>Peak operating voltage (not for power applications)</td>
<td>125 V</td>
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<tr>
<td>Minimum bending radius</td>
<td>Fixed installation: 15 x outer diameter</td>
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<tr>
<td>Characteristic impedance nom. 100 Ω acc. to IEC 61156-5</td>
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<tr>
<td>Temperature range</td>
<td>Operation: -20 °C to +70 °C</td>
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<table>
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<th>Article number</th>
<th>Article designation</th>
<th>Number of pairs and AWG per conductor</th>
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<th>Core diameter in mm</th>
<th>Copper index (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 T17 for the definition and calculation of copper-related surcharges. 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
Data communication systems for ETHERNET technology

Industrial Ethernet • Active network components

ETHERLINE® ACCESS NF

Benefits
- Compact design with high port density
- Reduced installation effort in existing networks
- Easy Configuration via web-interface
- Space saving and industrial grade DIN rail mounting

Application range
- Industrial networks

Product features
- NAT (Basic NAT, NAPT) and port forwarding
- Integrated Firewall feature
- RJ45 Ports: 10/100BaseT(X)

Norm references / Approvals
- UL 61010

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000734
  ETIM 5.0/6.0 Class-Description: Network switch
- Power supply
  DC 24 V (18-30 V DC)
- Protection rating
  IP20
- Temperature range
  -40°C up to +75°C

Article number   Article designation  Type  number of ports  Product features  MTBF in years
ETHERLINE® ACCESS NF
21700141  ETHERLINE ACCESS NF04T  Managed  4 x RJ45  NAT  >14,01

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

ETHERLINE® ACCESS PNF

Benefits
- Compact design with high port density
- Easy Configuration via web-interface
- Space saving and industrial grade DIN rail mounting

Application range
- Industrial application
- PROFINET® - networks

Product features
- PROFINET® switches with 5, 8 and 16 ports
- PROFINET® Conformance Class B
- Prioritization of PROFINET® telegramms
- Neighbourhood detection LLDP
- RJ45 Ports: 10/100BaseT(X)

Norm references / Approvals
- UL 61010

Technical data
- Classification ETIM 5/6
  ETIM 5.0/6.0 Class-ID: EC000734
  ETIM 5.0/6.0 Class-Description: Network switch
- Power supply
  DC 24 V (18-30 V DC)
- Protection rating
  IP20
- Temperature range
  -40°C up to +75°C

Article number   Article designation  Type  number of ports  Product features  MTBF in years
ETHERLINE® ACCESS PNF
21700140  ETHERLINE ACCESS PNF04T  Managed  4 x RJ45  for Profinet  >15,21
21700142  ETHERLINE ACCESS PNF08T  Managed  8 x RJ45  for Profinet  >13,09
21700143  ETHERLINE ACCESS PNF16T  Managed  16 x RJ45  for Profinet  >9,64

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

For current information see: www.lappgroup.com
Data communication systems for ETHERNET technology
Industrial Ethernet • Active network components

ETHERLINE® ACCESS UF

Info
• Compact design

Benefits
• Compact design with high port density
• PROFINET® enabled device
• Space saving and industrial grade DIN rail mounting

Application range
• Industrial networks

Product features
• Switches with 5, 8 and 16 ports
• RJ45 Ports: 10/100BaseT(X)

Norm references / Approvals
• UL 61010

Technical data

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Photographs and graphics are not to scale and do not represent detailed images of the respective products.
**ETHERLINE® ACCESS U**

Industrial unmanaged Ethernet switches

**Benefits**
- Improve your total cost of ownership with faster installation and lower downtime
- Most flexible and globally present solutions from one hand

**Product features**
- RJ45 Ports: 10/100BaseT(X)
- Packet Buffer Size: 512 kbit
- Broadcast storm protection
- Redundant Power Input: 24 VDC

**Norm references / Approvals**
- UL 61010
- Shock IEC 60068-2-27
- Freefall IEC60068-2-32
- Vibration IEC 60068-2-6

**Technical data**

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<td>ETIM 5.0/6.0 Class-Description: Network switch</td>
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- **power supply**
  - DC 24 V (18-30 V DC)

- **Protection rating**
  - IP 30

- **Temperature range**
  - -10°C to +60°C

**Article number** | **Article designation** | **Type** | **number of ports** | **Product features**
---|---|---|---|---
21700123 | ETHERLINE ACCESS U05T-2GEN | Unmanaged | 5 x RJ45 |
21700124 | ETHERLINE ACCESS U08T-2GEN | Unmanaged | 8 x RJ45 |
21700120 | ETHERLINE ACCESS U16T | Unmanaged | 16 x RJ45 |
21700129 | ETHERLINE ACCESS U08GT | Unmanaged | 8 x RJ45 | Gigabit |
21700138 | ETHERLINE ACCESS U04TP01T | Unmanaged | 5 x RJ45 | PoE |

**Accessories**
- ETHERLINE® EC FD Cat.5e RJ45 refer to main catalogue 2020/21

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

Industrial Ethernet • Active network components

ETHERLINE® ACCESS M
Industrial managed Ethernet switches

Info

- Redundant power inputs
- Robust metal housing and DIN rail mounting
- Fanless maintenance free

Benefits

- Improve your total cost of ownership with faster installation and lower downtime
- Most flexible and globally present solutions from one hand

Product features

- Simple setup of redundant network topologies with reconfiguration time < 20 ms
- RJ45 Ports: 10 / 100BaseT(X)
- Packet Buffer Size: 1 Mbit
- Supported protocols: HTTP, Telnet, EtherNet/IP, Modbus/TCP, IPv6, and many more
- Redundant Power Input: 24 VDC

Norm references / Approvals

- UL 61010
- Shock IEC 60068-2-27
- Freefall IEC60068-2-32
- Vibration IEC 60068-2-6

Technical data

- Classification ETIM 5/6
- ETIM 5.0/6.0 Class-ID: EC000734
- ETIM 5.0/6.0 Class-Description: Network switch
- power supply DC 24 V (18-30 V DC)
- Protection rating IP 40
- Temperature range -40°C up to +75°C

Table:

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<tr>
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<td>SFP Port</td>
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Accessories

- ETHERLINE® EC FD Cat.5e RJ45 refer to main catalogue 2020/21

For current information see: www.lappgroup.com
## Optical transmission systems

### GOF - Fiber optic accessories • Housing and distribution boxes

### HITRONIC® SBX

Industrial splice boxes for splicing fibre optic cables

#### Product features
- SC-RJ variants are suitable for PROFINET® applications
- Mounting type on contract rail: TH35
- Three different cable inlets and positions on contract rail possible
- Available in 6x and 12x duplex adapter
- Plastic or metal version

### Info
- For different connector types in singlemode and multimode versions

### Article number | Article designation | Housing material | Colour | PU
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<td><strong>Multimode G50 OM4</strong></td>
<td></td>
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<tr>
<td>29500792</td>
<td>HITRONIC SBX 12xST-D MT PG150 G50 OM4</td>
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<td>29500796</td>
<td>HITRONIC SBX 12xSC-D VT PG150 G50 OM4</td>
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<td>29500805</td>
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<tr>
<td>29500777</td>
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<tr>
<td>29500782</td>
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<tr>
<td>29500801</td>
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</tr>
<tr>
<td><strong>Multimode G50 OM3</strong></td>
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<tr>
<td>29500791</td>
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<tr>
<td>29500795</td>
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<tr>
<td>29500776</td>
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<tr>
<td><strong>Multimode G62.5 OM2</strong></td>
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<td></td>
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<tr>
<td>29500790</td>
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<tr>
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<td>29500799</td>
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<tr>
<td><strong>Multimode G62.5 OM1</strong></td>
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<tr>
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<td>1 piece</td>
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<tr>
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<tr>
<td><strong>Singlemode E9/125 OS2</strong></td>
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<tr>
<td>29500793</td>
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<td>blue</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

Other types of connectors (e.g. LC, MTRJ, E2000) are available upon request.

Judy Lim: This will not apply to Hitronic anymore, as LC will become a standard product and MTRJ/E2000 will be removed.

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
Optical transmission systems
GOF - Fiber optic accessories • Housing and distribution boxes

Product features
- Directly mountable on carrier acc. to DIN 50022 in industrial environment
- Available for breakout cables with clutch SC Simplex, SC-RJ and LC duplex
- Labeling for better identification
- Easy to install with screwdriver
- Suitable for GOF singlemode and multimode fibers
- Ideal for the industry due to its compact design
- Colour: grey (RAL 7035)
- Material housing: PC-GFIO
- Loading force ≥ 100 N
- Extraction force: ≥ 40 N

Technical data
- Classification ETIM 5/6
  - ETIM 5.0/6.0 Class-ID: EC001130
  - ETIM 5.0/6.0 Class-Description: Patch panel fibre optic
- Protection rating
  - IP 20
- Temperature range
  - -10 bis + 60°C (operation)

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation</th>
<th>PU</th>
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</thead>
<tbody>
<tr>
<td>29500762</td>
<td>EPIC DATA TS GOF LC-D MM</td>
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</tr>
<tr>
<td>29500763</td>
<td>EPIC DATA TS GOF LC-D SM</td>
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<tr>
<td>29500760</td>
<td>EPIC DATA TS GOF SC MM</td>
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</tr>
<tr>
<td>29500761</td>
<td>EPIC DATA TS GOF SC SM</td>
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</tr>
<tr>
<td>29500764</td>
<td>EPIC DATA TS GOF SC-RJ MM</td>
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<tr>
<td>29500765</td>
<td>EPIC DATA TS GOF SC-RJ SM</td>
<td>1 piece</td>
</tr>
</tbody>
</table>

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

Accessories
- GOF DUPLEX Patchcord refer to main catalogue 2020/21

For current information see: www.lappgroup.com
EPIC® Industrial connectors

Rectangular connectors • EPIC® H-A 3 Housings

EPIC® H-A 3 MTG
Innovative metal and plastic housing design

EPIC® H-A 3 MTS
Innovative metal and plastic housing design

Benefits
• Housing in plastic or metal version. For power supply in the smallest possible space

Application range
• Machine and equipment manufacturing
• Control engineering
• Electronic laboratory

Product features
• Hood
• Bolts for single lever
• Straight or side cable entry
• Versions with cable gland

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
<th>Protection rating</th>
<th>Material</th>
<th>Colour</th>
<th>Cable gland</th>
<th>Cable clamping range</th>
<th>Pieces / PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETIM 5.0/6.0 Class-ID: EC000437</td>
<td>IP 65 (latched)</td>
<td>EPIC® H-A 3 MTG</td>
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<td>yes</td>
<td>7.0 - 13.0</td>
<td>10</td>
</tr>
<tr>
<td>ETIM 5.0/6.0 Class-Description: Housing for industrial connectors</td>
<td>NEMA 250 (latched)</td>
<td>EPIC® H-A 3 MTS</td>
<td></td>
<td>yes</td>
<td>7.0 - 13.0</td>
<td>10</td>
</tr>
</tbody>
</table>

Material
• EPIC® H-A 3 MTG
  - Housing: powder-coated zinc die-casting, grey
  - Lever: zinc-plated steel

• EPIC® H-A 3 MTS
  - Housing: powder-coated zinc die-casting, grey
  - Lever: zinc-plated steel

Protection rating
- IP 65 (latched)
- NEMA 250 (latched)

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

Temperature range
-40°C to +100°C, short-term up to +125°C

Article number   Article description  Material  Colour  Cable gland  Cable clamping range  Pieces / PU
19912102  H-A housing: hood (straight cable entry)  Zinc die-casting  |  yes | 7.0 - 13.0 | 10 |
10422507  H-A housing: hood (side cable entry)  Zinc die-casting | grey  yes | 7.0 - 13.0 | 10 |

Photographs and graphics are not to scale and do not represent detailed images of the respective products.
EPIC® Industrial connectors
Rectangular connectors • EPIC® H-A 3 Housings

Info
• Small, rugged metal housing in high version

Benefits
• Housing for power supply in the smallest possible space

Application range
• Machine and equipment manufacturing
• Control engineering
• Electronic laboratory

Product features
• Hood, high version
• Bolts for single lever
• Straight cable entry
• Versions with / without cable gland

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
<th>Material</th>
<th>Protection rating</th>
<th>Temperature range</th>
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</thead>
<tbody>
<tr>
<td>ETIM 5.0/6.0 C-ID: EC000437</td>
<td>Housing: powder-coated zinc die-casting, grey Lever: zinc-plated steel</td>
<td>IP 65 (latched) NEMA 250 (latched)</td>
<td>-40°C to +100°C, short-term up to +125°C</td>
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<td>ETIM 5.0/6.0 C-Description: Housing for industrial connectors</td>
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<table>
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<tr>
<th>Material</th>
<th>VDE-tested</th>
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Technical data

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<th>Article number</th>
<th>Article description</th>
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<th>Cable gland</th>
<th>Cable clamping range</th>
<th>Material</th>
<th>Pieces / PU</th>
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</thead>
<tbody>
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<td>EPIC® H-A 3 MTGH</td>
<td>EPIC H-A 3 MTGH M25</td>
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<td>19512103</td>
<td>EPIC H-A 3 MTGHV 9-17</td>
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</tbody>
</table>

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® H-A 3 MEG
Innovative metal housing

Benefits
- Housing for power supply in the smallest possible space

Application range
- Machine and equipment manufacturing
- Control engineering
- Electronic laboratory

Product features
- Screw mounted housing
- 1 lever
- Screw mounted housing, flat gasket included

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
<th>Protection rating</th>
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<tbody>
<tr>
<td>ETIM 5.0/6.0 Class-ID: EC000437</td>
<td>IP 65 (latched)</td>
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<tr>
<td>ETIM 5.0/6.0 Class-Description: Housing for industrial connectors</td>
<td>NEMA 250 (latched)</td>
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<table>
<thead>
<tr>
<th>Material</th>
<th>VDE-tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing: powder-coated zinc die-casting, grey</td>
<td>Certified production control: VDE-REG. no.: B437</td>
</tr>
<tr>
<td>Lever: zinc-plated steel</td>
<td>UL-tested: UL File Number: E75770</td>
</tr>
<tr>
<td>Sealing: NBR</td>
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</tr>
<tr>
<td>Housing: grey thermoplastic, black</td>
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</tr>
<tr>
<td>Lever: zinc-plated steel</td>
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<tr>
<td>Sealing: NBR</td>
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</tr>
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Temperature range
-40°C to +100°C, short-term up to +125°C

Article number | Article description | Material | Pieces / PU |
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>10422505</td>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.
EPIC® Industrial connectors
Rectangular connectors • EPIC® ULTRA H-B 6

EPIC® ULTRA H-A 3 TG
The robust and reliable industry connector housing as EMC version

Info
- EMC protection
- Corrosion-resistant
- Integrated cable gland

EPIC® ULTRA H-A 3 TS
The robust and reliable industry connector housing as EMC version

Info
- EMC protection
- Corrosion-resistant
- Integrated cable gland

EPIC® ULTRA H-A 3 EGS
The robust and reliable industry connector housing as EMC version

Info
- EMC protection
- Corrosion-resistant
- Integrated cable gland

Benefits
- Pluggable with standard housings
- Optimum, low-resistance 360° screening
- All-purpose due to high corrosion resistance and high environmental protection.
- Space-saving due to compact dimensions
- High mechanical and chemical resistance

Application range
- In EMC-sensitive environments
- For fixed and flexible applications (e.g. machinery building, wind turbines)
- Construction machinery
- Electric motor manufacturing

Technical data

<table>
<thead>
<tr>
<th>Classification</th>
<th>ETIM 5/6</th>
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<tbody>
<tr>
<td>ETIM 5.0/6.0 Class-ID: EC000437</td>
<td></td>
</tr>
<tr>
<td>ETIM 5.0/6.0 Class-Description: Housing for industrial connectors</td>
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</tr>
</tbody>
</table>

Material
- Housing: nickel-plated zinc diecasting
- Lever: stainless steel
- Sealing: NBR

Protection rating
- IP 65
- NEMA 250 (latched)

Temperature range
- -40°C to +100°C, short-term up to +125°C

Product features
- Resistance to cyclic salt spray is tested according to IEC 68-2-52, severity level 2
- Salt spray testing according to DIN EN ISO 9227, method NSS, period of test 480 hours
- Corrosion-resistant according to DIN EN 6988
- Delivery including stainless steel screw for the inserts

EPIC® ULTRA H-A 3 EGS
- Screw mounted housing with one cable entry

For current information see: www.lappgroup.com
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 16

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

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
• 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
• Machine and equipment manufacturing
• Control engineering
• Plastics industry

Suitable tools
• Kraftform® adjustable torque screwdriver/
  Kraftform Kompakt® Set

Technical data

<table>
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<tr>
<th>Classification ETIM 5/6</th>
<th>ETIM 5.0/6.0 Class-ID: EC000438</th>
<th>ETIM 5.0/6.0 Class-Description: Contact insert for industrial connectors</th>
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<tr>
<td>Rated voltage (V)</td>
<td>IEC: 400 V</td>
<td>UL: 600 V</td>
</tr>
<tr>
<td></td>
<td>CSA: 600 V</td>
<td></td>
</tr>
<tr>
<td>Rated impulse voltage</td>
<td>4 kV</td>
<td></td>
</tr>
<tr>
<td>Rated current (A)</td>
<td>IEC: 16 A</td>
<td>UL: 14 A</td>
</tr>
<tr>
<td></td>
<td>CSA: 16 A</td>
<td></td>
</tr>
<tr>
<td>Pollution degree</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Flammability</td>
<td>UL94 V-0</td>
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</tr>
<tr>
<td>Contact resistance</td>
<td>1.5 - 4 mohm</td>
<td></td>
</tr>
</tbody>
</table>

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, polycarbonate

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

Article number | Article description     | Contact type | Wire protection | Number of operating contacts | Pieces / PU |
---            |                        |             |                |                             |             |
10440100      | H-A 10 SS male         | yes         | male           | 1 - 10                       | 5           |
10441100      | H-A 10 BS female       | yes         | female         | 1 - 10                       | 5           |
10440000      | H-A 10 SS male         | yes         | male           | 1 - 10                       | 5           |
10441000      | H-A 10 BS female       | yes         | female         | 1 - 10                       | 5           |

10530000      | H-A 16 SS male         | yes         | male           | 1 - 16                       | 5           |
10531000      | H-A 16 BS female       | yes         | female         | 1 - 16                       | 5           |
10532000      | H-A 16 SS male         | yes         | male           | 1 - 16                       | 5           |
10533000      | H-A 16 BS female       | yes         | female         | 1 - 16                       | 5           |

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

Similar products
• Further products with higher numbering in the internet. (H-A 32, H-A 48)
SKINTOP® HYGIENIC / SKINTOP® HYGIENIC SC

Features
- New: Available up to size M40x1.5
- Ideal for hygienic critical areas - resistant, edge-free, robust and reliable
- No gaps, voids or outer lying thread - so no risk of contamination of food machines, facilities or components
- Also available with EMC contact spring for screened cables

Benefits
- Hygienic Design for ideal cleaning results
- Smooth surfaces and no edges prevent the accumulation of fluids and formation of micro-organisms

Application range
- Food machinery, equipment and components
- For use in product zone
- Pharmaceutical industry

Norm references / Approvals
- EHEDG (TYPE EL Class I AUX)
- ECOLAB®
- Industry standard in the field of professional cleaning and disinfection in the food and beverage industry
- FDA 21 CFR 177.2600
- Special sealing element for food and beverage industry in North America
- DIN EN 1672-2
- DIN EN ISO 14 159
- NSF/ANSI 169
- Hygienic design for machinery and components

Product Make-up
- Material and shape provide an easy and safe cleaning
- By the blue coloring of the sealing material clearly distinguishable from foodstuffs
- One complete assembly is easily mounted from the outside
- Metric connection thread acc. to DIN EN 60423
- Basis for technical information DIN IEC 62444

Note
- Installation wrench for very high packing density on request

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

Certifications
- UL approval for M32x1.5 and M40x1.5 pending

Material
- Body: stainless steel - V4A (1.4404 / 316L)
- Insert: polyamide
- Sealing: special elastomer

Protection rating
- IP 68 - 10 bar
- IP 69
- NEMA Type 1, 2, 4X, 6, 12

Temperature range
- -20°C to +100°C

Table: SKINTOP® HYGIENIC / SKINTOP® HYGIENIC SC

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation / size</th>
<th>Clamping range ØF mm</th>
<th>SW wrench size mm</th>
<th>Overall length C mm</th>
<th>Thread length D mm</th>
<th>Pieces / PU</th>
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<tr>
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SKINTOP® HYGIENIC SC

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Other sizes are available upon request.
Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
- SKINDICHT® SM-M INOX refer to main catalogue 2020/21
Cable glands

SKINTOP® cable glands nickel-plated brass metric • Flat cable

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 tools
• SKINMATIC® QUICK Set 1
• SKINMATIC® MH Set
• SKINMATIC® RZ

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
<th>ETIM 5.0/6.0 Class-ID: EC000441</th>
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<tbody>
<tr>
<td>ETIM 5.0/6.0 Class-Description: Cable screw gland</td>
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</tr>
</tbody>
</table>

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
SKINTOP® FLAT   53119375   M 25 x 1.5   11-16   3-6   29   37.5   8   5
53119376   M 32 x 1.5   15 - 20   3 - 7   36   42.2   9   5
53119377   M 40 x 1.5   18 - 28   3 - 9   45   49.5   9   5
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 2020/21
**SKINTOP® MULTI**

**Info**
- Compact multi cable bushing system with innovative gel technology

**Benefits**
- Large clamping range of 4 mm and AS-I BUS entry system by 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
- Error reduction through clear assignment of cable to be installed by a clear marker of implementing points
- 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**
- Integrated seal for the cable & housing (captive)
- Halogen-free
- UV-, Ozon and oil resistant
- The adhesive gel provides a very easy positioning at the enclosure during the assembling

**Norm references / Approvals**
- UL 508A for Industrial Control Panels
- UL File No. E349737

**Product Make-up**
- For cut-outs for 24-pin industrial connectors (36 x 112 mm)
- SKINTOP® MULTI including mounting material

**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 File No. E349737
  - Fire behaviour according to UL94 V-2
- Note
  - Individual hole configuration on request
- Material
  - Frame: Polycarbonat
  - Sealing: Gel
- Protection rating
  - IP 68
- Temperature range
  - -30°C to +110°C

**Article number**

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation / size</th>
<th>Max. number of executions</th>
<th>Number of cables x cable Ø</th>
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<td>SKINTOP® MULTI Version 2</td>
<td>21</td>
<td>5 x 2-6 mm, 8 x 4-8 mm, 3 x 5-9 mm, 2 x 8-12 mm, 1 x 12-16 mm, 2 x AS-I BUS / 2 x 2-4 mm</td>
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<tr>
<td>52220080</td>
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<td>52220085</td>
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<td>8 x 8-12 mm, 2 x 12-16 mm, 1 x 16-20 mm</td>
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<td>52220104</td>
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<td>24</td>
<td>10 x 2-6 mm, 8 x 4-8 mm, 4 x 7-11 mm, 2 x 10-14 mm</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® CUBE MULTI refer to main catalogue 2020/21
- SKINTOP® MULTI VENT refer to main catalogue 2020/21

**Accessories**
- SKINTOP® DIX-DV refer to main catalogue 2020/21

For current information see: www.lappgroup.com
SKINTOP® MULTI-M
Cable bushing system with metric thread

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, Ozone 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: Polycarbonate
  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

Article number | Article designation / size | Max. number of executions | Number of cables x cable Ø | SW wrench size mm | Pieces / PU
-----------------|--------------------------|---------------------------|---------------------------|------------------|----------
52220110         | M40x1,5                  | 12                        | 2 x 1-4 mm, 10 x 2-6 mm   | 66               | 1        
52220111         | M50x1,5                  | 18                        | 18 x 2-6 mm               | 55               | 1        
52220112         | M63x1,5                  | 30                        | 30 x 2-6 mm               | 66               | 1        

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 2020/21
- SKINTOP® CUBE MULTI refer to main catalogue 2020/21
- SKINTOP® MULTI refer to page 41
- SKINTOP® MULTI VENT refer to main catalogue 2020/21

Accessories
- SKINTOP® DIX-DV refer to main catalogue 2020/21

For current information see: www.lappgroup.com
Info

- For low temperature ranges up to -60°C

Benefits
- High degree of protection
- For the smallest conductor sizes
- Low height
- Gentle cable clamping
- High packing density

Application range
- For use wherever there is limited assembly space.
- Sensors
- Measurement and control technology

Product features
- Suitable for extreme minus temperatures

Technical data

<table>
<thead>
<tr>
<th>Classification ETIM 5/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETIM 5.0/6.0 Class-ID: EC000441</td>
</tr>
<tr>
<td>ETIM 5.0/6.0 Class-Description: Cable screw gland</td>
</tr>
</tbody>
</table>

Caution
Recommendation of torque
- M 6 x 1 1.5 Nm
- M 8 x 1 3.0 Nm
- M 10 x 1 6.0 Nm

Material
- Body: Nickel-plated brass
- Sealing: Silicone

Protection rating
- IP 66
- IP 68 - 5 bar

Temperature range
- -60°C to +100°C

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation / size</th>
<th>Clamping range ØF mm</th>
<th>SW wrench size mm</th>
<th>Overall length C mm</th>
<th>Thread length D mm</th>
<th>Clear opening F (mm)</th>
<th>Pieces / PU</th>
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<tr>
<td>52001878</td>
<td>M 8 x 1</td>
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<td>52001879</td>
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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 2020/21
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

Note
On request: size M12, M32, M40, M50, M63

Material
Body: nickel-plated brass
Spring ring: spring steel
Sealing: FKM

Protection rating
IP 68

Temperature range
-20°C up to +200°C

Article number | Thread, male M1 | Thread, female M2 | SW wrench size mm | Pieces / PU
---|---|---|---|---
SKINDICHT® TWIST-M
52104731 | 16 x 1.5 | 16 x 1.5 | 20 | 10
52104732 | 20 x 1.5 | 20 x 1.5 | 24 | 10
52104733 | 25 x 1.5 | 25 x 1.5 | 29 | 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 2020/21

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

Product features
• Combination of SILVYN® and SKINTOP®

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

Technical data

<table>
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<td>ETIM 5.0/6.0 Class-Description: Screw connection for protective metallic hose</td>
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Note
• For suitable accessories, refer to SKINTOP® metric accessories

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
• Fixed: -40°C up to +100°C
• Dynamic: -25°C up to +100°C

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

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

Accessibility
• SKINDICHT™ SM-M refer to main catalogue 2020/21
• SKINTOP® DIX-M refer to main catalogue 2020/21

For current information see: www.lappgroup.com
FLEXIMARK® Software 11.0

Benefits
• For ease of use, the interface has been designed to be familiar to users of Microsoft® Office applications
• Enables printing of barcodes, QR-codes, logos, other pictures and serial codes
• Module marking for creation of panel strips
• Improved usability
• Image library including symbols used in electrical engineering

Application range
• Marking software that enables you to print all kinds of FLEXIMARK® labels easily and quickly

Product features
• Printer: laser, thermal transfer
• Available languages: German, English, Swedish and French
• Available barcodes: QR-Code, EAN-8, EAN-13, EAN-128, Code-128, Code-39, interleaved 2/5, UPC-A
• System requirements: 20 MB free hard disc space
• Printer and driver for Microsoft® Windows 2000 or higher

Note
• Download www.lappkabel.com/service/downloadcenter/markingsystem
• Online update service for new labels via Internet

Included
• Operating manual and help function in the program

Table:

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation</th>
<th>Language</th>
<th>PU</th>
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<td>FLEXIMARK® Software 11.0</td>
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</tbody>
</table>

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
- Power supply USB cable (length 1.8 m)

**Technical data**
- **Classification ETIM 5/6**
  ETIM 5.0/6.0 Class-Description: Accessories for fax/printer/MFC
- **Dimensions**
  SQUIX: 274x242x446 mm (HxWxD)
  EOS5: 245x264x412mm (HxWxT)
- **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: 38.0-100.0 mm (SQUIX)
  38.0-76mm (EOS5)
- **Ribbons**
  Run length up to 500m (SQUIX) or 360m (EOS5)
- **Speed**
  EOS5: Up to 150.00 mm/s
  SQUIX: Up to 300.00 mm/s
- **Weight**
  SQUIX: 9.0 kg
  EOS5: 5 kg
- **Material**
  Labels or continuous material on coils

<table>
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<td>FLEXIMARK® thermal printer SQUIX and EOS5*</td>
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<td>FLEXIMARK® Thermalprinter EOS5/300M</td>
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<td>FLEXIMARK® Cutter EOS5</td>
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<td>83259603</td>
<td>FLEXIMARK® Perforation cutter PCU400 SQUIX</td>
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</tbody>
</table>

*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 2020/21

For current information see: www.lappgroup.com
Tools and cable accessories
Connection and crimping • Universal crimping tools and appliances

PEW 12 universal tool

Benefits
• Parallel jaw closing
• Ergonomic handles
• One or two-hand operation
• Inserts are easily changeable

Product features
• Version PEW 12S has a larger opening angle and is therefore intended for the larger PEW 12S crimping dies (see item description of the crimping dies)

Application range
• Compatible with most of the crimping dies for the PEW 12 system (see product description of the crimping dies)
• Crimping of almost all crimped connections with conductor cross-sections 0.08-95 mm²

Included
• Crimping tool will be delivered without case and without inserts
• Empty case included placeholders for 15 crimping dies and 4 locators

Technical data

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation</th>
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<tbody>
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<td>61813807</td>
<td>PEW 12 without inserts</td>
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</tr>
<tr>
<td>61814610</td>
<td>PEW 12S without inserts</td>
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<td>61813819</td>
<td>Case for PEW 12</td>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
• Crimping inserts for PEW 12 system refer to page 49

E-PEW 12 universal tool

Benefits
• Electromechanical tool with Li-Ion battery
• Dependable, reliable, low maintenance
• Precise tap positioning of contacts
• Quickstop, no overcrimping
• Process monitoring on multifunction display:
  - Battery charge level
  - Service interval display
  - Overheating / overload warning

Application range
• Compatible with most of the crimping dies for the PEW 12 system (see product description of the crimping dies)
• Crimping of almost all crimped connections with conductor cross-sections 0.08-95 mm²
• Various applications in the cable assembly

Included
• Supplied in plastic case (500 x 420 x 125 mm)
• Tool without crimping dies and locators
• Including battery and battery recharger

Technical data

<table>
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<tbody>
<tr>
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Photographs and graphics are not to scale and do not represent detailed images of the respective products.

Accessories
• Crimping inserts for PEW 12 system refer to page 49

For current information see: www.lappgroup.com
Crimping inserts for PEW 12 system

Benefits
- Product code is engraved on the upper and on the lower part of the die set
- Inserts are easily changeable

Note
- High flexibility: Interchangeable inserts that fit into either the PEW 12 / PDW 12S manual crimping tool, the E-PEW 12 electric crimping tool or the CM 25-1 crimping machine (compatibility see table)

Included
- Crimping dies are delivered without tool

Table: Crimping inserts for PEW 12 system

<table>
<thead>
<tr>
<th>Article number</th>
<th>Article designation</th>
<th>Suitable for</th>
<th>Pressing range (mm²)</th>
<th>Crimping profile</th>
<th>Shield Ø mm</th>
<th>PEW 12</th>
<th>PEW 12S</th>
<th>E-PEW</th>
<th>CM 25-1</th>
<th>Pieces / PU</th>
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One piece screen connectors RSK

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<th>Shield Ø mm</th>
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<th>PEW 12S</th>
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Two-part screen connectors SHIELD-KON®

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<th>Crimping profile</th>
<th>Shield Ø mm</th>
<th>PEW 12</th>
<th>PEW 12S</th>
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<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.

For current information see: www.lappgroup.com
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 2020/21

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, Yellow, White

Material
- Polyolefin

Temperature range
- Shrink tubing temperature: +90°C
- PROTECT-HF / Box: -30 °C to +105 °C
- PROTECT-HF RW: -55°C to +105°C

Table:

<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>
<th>PU</th>
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Shrink tube PROTECT-HF

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**Tools and cable accessories**

Insulating, protecting, shrinking • Heat-shrinking products

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**CHAMPION Drum dispenser**

**Info**

- For professional and gentle unwinding of even sensitive cables

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**Technical data**

- **Dimensions**
  - 52: 577x565x120mm
  - 67: 727x565x120mm

- **General data**
  - **Weight:**
    - 52: 7.2kg
    - 67: 9.3kg
  - **Material:** glass-fiber reinforced polyamide and aluminium

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**Benefits**

- Robust construction with 200kg load capacity
- Safer stability thanks to noise-reducing rubber feet
- Easily adjustable carrier rollers with 3 different positions
- Maintenance-free

**Application range**

- Drum dispenser for everyday use in the workshop or on the construction site
- Also as storage solution in the workshop
- With additional rollers for mobile use

**Product features**

- For drum diameter from 150 up to 900mm
- Available in two sizes for drums up to 520 or 670mm width
- Lightweight hybrid frame made of glass fiber reinforced polyamide and aluminium
- Provided with 4 non-slip rubber feet
- Optionally with 4 rollers for drum transport

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**Shrink tube PROTECT-HF RW**

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<th>Article number</th>
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<th>Panel thickness, shrunk ~ 0.1 mm</th>
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**Tools and cable accessories**

Transporting, storing, unwinding • Unwinding devices

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For current information see: www.lappgroup.com

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