

# THE WORLD OF LAPP

Solutions for railway technology



**LAPP GROUP**

# Legend for icons

## PRODUCT CHARACTERISTICS



Suitable for outdoor use



Good chemical resistance



Flame-retardant



Wide clamping range



Halogen-free



Heat-resistant



Cold-resistant



Corrosion-resistant



Mechanical resistance



Assembly time



Low weight



Oil-resistant



Space requirement



Robust



Acid-resistant



Reliability



Voltage



Interference signals



Temperature-resistant



UV-resistant



Waterproof



Variety of approval certifications

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



**Informations about the company**

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**ÖLFLEX®** Power and control cables

**15**



**UNITRONIC®** Data communication systems

**33**



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

**49**



**HITRONIC®** Optical transmission systems

**65**



**EPIC®** Industrial connectors

**71**



**SKINTOP®** Cable glands

**87**



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

**101**



**FLEXIMARK®** Cable marking systems

**115**



**Cable Accessories**

**119**



**Appendix**

Selection tables, Technical tables, Item number list, Product list,  
Power rating

**133**

# Success through values

Rock solid, high performance. Regional roots, global aspirations. Fast, reliable, high quality – and development that is always one step ahead. For products for the railway industry as well. This is Lapp.

The southwest region of Germany is considered one of the most innovative and powerful industrial sectors in the world, and for good reason. Lapp is a part of this region, helping to guide it and its success worldwide.

As a completely family run company, we know: Everything that we have achieved since our founding in 1957 is based on

the daily commitment of our skilled staff and partnerships with our customers based on trust. Each of them has made a decisive contribution to our mutual success. Today, Lapp is one of the world's leading manufacturers of cables, leads, cable accessories and systems of the highest level of quality. We have approximately 3,300 employees worldwide. With 17 production sites on four continents, more than 39 sales companies and hundreds of dedicated consulting experts, we are always close by. And not just physically: customer proximity cannot be meas-

ured in mere kilometres. It is based on listening, making your challenges our own and developing solutions that help to further your business model. Candid closeness and a trusting, partnership-based cooperation are more than just words for Lapp, they are values upon which we have built our family company.

The result? Intelligent and reliable connectivity solutions precisely tailored to the needs of our globally active customers. For you as well.

Customer-oriented  
Successful  
Family based  
Innovative. **Lapp.**

- Founded in 1957
- A leading manufacturer of cables, leads, accessories and complete system solutions for connection technology
- Approximately 3,300 employees worldwide
- 17 production facilities
- More than 39 sales companies
- Hundreds of dedicated consulting experts worldwide
- Years of experience in the rail industry



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



# Reliably connecting the world

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

No matter where you are – we are always by your side. Our plants, sales companies,

partners and, above all, our competent teams of advisers ensure we offer you a comprehensive service on every continent. We do not simply distribute cable technology, we also manufacture our products ourselves – which represents another advantage for you. As a manufacturer with 18 of our own production facilities, you will benefit from our expertise in the development, design and manufacture of cables, system

products and cable accessories. Thanks to this expertise, we can guarantee that Lapp will provide you with the quality that you require and that you demand.

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

**8**  
strong  
brands

**100**  
sales partners

**1**  
innovation  
after  
another

Employees from  
**152**  
countries

More than  
**40,000**  
standard products

**39**  
proprietary sales  
companies

**3,300**  
employees

# Our global corporate network



Find other sales partners in your location:  
[www.lappgroup.com](http://www.lappgroup.com)

## America

|        |                                                               |
|--------|---------------------------------------------------------------|
| Brazil | Cabos Lapp Brasil Ltda.                                       |
| Canada | Lapp Canada Inc.                                              |
| Mexico | Lapp Mexico S. de R.L. de C.V.                                |
| Panama | Lapp Latinamerica Support Corp.                               |
| USA    | Lapp USA Inc.<br>Lapp Cable Works Inc.<br>Lapp Tannehill Inc. |

## Europe

|                |                                                                                                        |
|----------------|--------------------------------------------------------------------------------------------------------|
| Austria        | Lapp Austria GmbH                                                                                      |
| Benelux        | Lapp Benelux B.V.                                                                                      |
| Czech Republic | Lapp Kabel s.r.o.                                                                                      |
| France         | Lapp France S.a.r.l.<br>Cableries Lapp S.a.r.l.<br>Lapp Muller S.A.S.                                  |
| Germany        | U.I. Lapp GmbH<br>Lapp GmbH Kabelwerke<br>Lapp Systems GmbH<br>Contact GmbH<br>Elektrische Bauelemente |
| Great Britain  | Lapp Ltd.                                                                                              |
| Hungary        | Lapp Hungária KFT                                                                                      |

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| Italy                | Lapp Italia s.r.l.<br>Camuna Cavi s.r.l.<br>Lapp Sistemi Italia s.r.l. |
| Kazakhstan           | Lapp Kazakhstan LLP                                                    |
| Latvia               | Lapp Miltronic SIA                                                     |
| Norway               | Miltronic AS                                                           |
| Poland               | Lapp Kabel Sp.Z.o.o.                                                   |
| Portugal             | Policabos S.A.                                                         |
| Romania              | Lapp Kabel Romania SRL.                                                |
| Russia               | Lapp Russia OOO                                                        |
| Slovakia             | Lapp Slovensko s.r.o.                                                  |
| Slovenia             | Lapp, d.o.o.                                                           |
| Spain                | Lapp Kabel España S.L.U.                                               |
| Sweden               | Miltronic AB<br>Fleximark AB                                           |
| Switzerland          | Lapp Tec AG                                                            |
| Turkey               | Lapp Kablo SAN.VE TIC. LTD.STI                                         |
| Ukraine              | Lapp Ukraine LLC                                                       |
| United Arab Emirates | Lapp Cables Middle East F.Z.E.                                         |

## Africa

|              |                                |
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| South Africa | Lapp Southern Africa Pty. Ltd. |
|--------------|--------------------------------|

## Asia

|             |                                                                    |
|-------------|--------------------------------------------------------------------|
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| India       | Lapp India Pvt. Ltd.                                               |
| Indonesia   | JPT JJ-Lapp Cable SMI                                              |
| Japan       | Lapp Japan KK                                                      |
| Malaysia    | JJ Lapp Cable (M) Sdn Bhd                                          |
| Philippines | JJ Lapp Cable (P) Inc                                              |
| Singapore   | JJ-Lapp Cable (S) Pte. Ltd.<br>Lapp Logistics Pte. Ltd.            |
| South Korea | Lapp Korea LLC.                                                    |
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**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

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Fax: +381 11 4049-077  
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www.lappusa.com

## Lapp Tannehill, Inc.

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4ta Transversal de Montecristo c/  
calle el Carmen, de los Dos Caminos  
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## Yemen

**see United Arab Emirates**  
LAPP CABLES MIDDLE EAST FZE

# Railway cables – quality makes the difference

The railway industry opens up to great opportunities: Numerous emerging markets around the world are developing with increasing momentum. And their demand for transport systems grows – in Asia and in the Middle East, Eastern Europe, Latin America and more recently in Africa as well. Even in Germany, with its dense transportation infrastructure, the market is growing at a disproportionate rate, in particular in the short-distance sector.

The modernisation of old system alone is a task of Herculean proportions – both for public budgets and for manufacturers and operators.

This is due to the fact that a significant innovation backlog has built up. At the same time, the demand for urban transport and fast short-distance systems grows. For larger distances, high-speed projects are gaining in importance, cities are growing and freight traffic is steadily increasing.

This is coupled with increasingly stringent safety regulations and quality standards that must be met. Fire protection standards are particularly demanding. Based on decades of experience as a

full-service provider for electrical cables, cable connections and accessories, Lapp has rounded out its portfolio with products for the railway industry and can offer its customers high-quality solutions in this sector as well.

Lapp now supplies a large number of customers in this market. One of our refer-

ence customers is the Korean manufacturer Hyundai-Rotem. They have placed their trust in use for a number of years and have equipped their high-speed trains for the new line of the Korea Train eXpress (KTX) from Seoul to Mokpo and Pusan with Lapp cables. Here, our quality and delivery service were the decisive factors to gain the edge over our competitors.

At the  
forefront of  
development.  
Also for  
the railway  
industry.

**Lapp.**

- Almost 60 years of experience in the development and production of electrical cables, cable connections and accessories
- In-house production expertise
- Current reference project: High-speed trains for the Korea Train eXpress (KTX)
- IRIS certified



# Your interests in mind – and passengers'



We are prepared and have systematically built up our know-how and expertise in the railway technology sector in order to provide convincing arguments to the railway industry regarding our global capabilities.

Because we have a great deal to offer. This starts with the ability to speak your language. Our employees come from 152 countries. With our sales companies and competent consulting teams, we are represented locally around the world, providing you with comprehensive services. An effective customer focus is part of Lapp, as is our keen sense for trends, sectors and markets. Using this as a basis, we develop the components and solutions of tomorrow for your ideas and projects.

Even for complex requirements, we provide you with the perfect solution, from proven standard products to sophisticated custom solutions. We back up these promises with our actions. To make the procurement process as simple as possible, we can connect your inventory management system to our system. And in our e-shop, you can order any of our 40,000+ standard articles, including railway products, with a simple click – including individual price enquiries, availability and delivery time details, as well as shipment tracking.

Our full service, fast worldwide availability and small minimum order quantities reduce the overall cost to our customers. In short: We are your partner, and we always keep your interests in mind, ensure

uncomplicated cooperation and provide you with the highest quality from a single source paired with a clear added value for your business.

- A local presence, worldwide
- More than 40,000 standard items, for order with the click of a mouse
- Excellent full service
- Fast worldwide availability
- Small minimum order quantities
- Total cost optimisation
- Highest quality
- Complete solutions for the railway industry from a single source = one-stop shop
- e-Service solutions

Clear added value for your company. Optimised total cost for rail equipment providers.

**Lapp.**

# Technological lead, step-by-step

**Our manufacturing facility for the ÖLFLEX® TRAIN is certified in accordance with the IRIS (International Rail Industry Standard), thus operating within the framework of the required processes of the railway industry.**

We are a technology group in our sector. We live up to this expectation every day. This is a key success factor for us, something that is more important today in the railway business than ever. Lapp solutions set standards for safety, quality and functionality. And at a great value for money too.

ÖLFLEX® has long become synonymous in the market for power and control cables. Our flexible, oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions. We have now developed our ÖLFLEX® TRAIN product line, thus providing the railway industry with connectivity solutions of the highest quality that satisfy a wide range of national and international standards.

## ÖLFLEX® TRAIN manufacturing technology:

Cable insulation products are usually made of thermoplastic materials, mainly consisting of macromolecules.

When warmed, the mobility of the molecule chains increases, making the plastic soft and malleable and eventually melting – an exclusion criterion for the use of such materials in railway equipment with its demanding safety and environmental conditions and high temperature requirements.

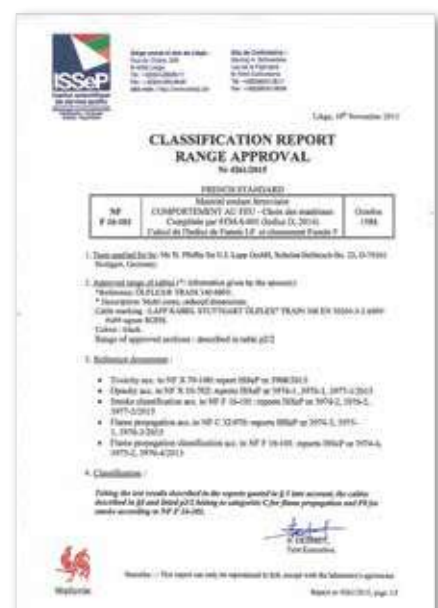
To counteract these factors, ÖLFLEX® TRAIN cables are physically cross-linked in our electron beam system using high-energy beams. This gives them significantly improved mechanical and chemical resistance, even at elevated temperatures.

However, durability and resistance is important not only at high temperatures. In some climatic zones, cables running along

the outside of the railways vehicles must be able to withstand temperatures down to -40°C. No problem for cross-linked products from Lapp.

## This also applies to our other established brands:

- ÖLFLEX® CONNECT assembled cable solutions
- ETHERLINE® data communication systems for Ethernet technology
- UNITRONIC® data communication systems
- SKINTOP® cable glands
- EPIC® industrial connectors
- SILVYN® cable protection and guiding systems
- FLEXIMARK® marking systems
- HITRONIC® optical data communication systems



# Absolute safety on the tracks

The topic is well known: Railway lines must fulfil demanding national and international standards. In addition to these provisions, EU standards has achieved great importance. These include design standards such as EN 50264 and EN 50306. They define the required panel thickness and design and stipulate the mechanical, thermal, fire safety and chemical tests.

These testing standards are part of DIN EN 45545-2: Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components. It defines the requirements for the fire behaviour.

Lapp has fulfilled the technological requirements for satisfying this standard for railway cables. The result: Cables and

wires from Lapp fulfil the key requirements for railway equipment with flying colours. Reliable and safe – up to the highest level defined in EN 45545-2, Hazard Level 3 (HL3).

Testing standards that define the requirements for behaviour in case of fire are of particular importance. These include:

**Flame propagation for a single cable**  
DIN EN 60332-1-2

**Smoke density**  
DIN EN 61034-2

**Content of halogens**  
DIN EN 60754-1

**Acidity/Corrosiveness**  
DIN EN 60754-2

**Flame spread of bunched cables**  
DIN EN 60332-3-24/25

**Fluorine content**  
DIN EN 60684-2

**Toxicity**  
EN 50305

- The highest level of technology
- Top priority: Safety and fire protection
- Test in accordance with EN 45545-2 at accredited and approved test laboratories passed successfully
- Important railway transport standards are satisfied and observed by Lapp



Arrival in  
the global  
railway  
market.  
A sure thing.  
**Lapp.**



# Only the toughest tests guarantee the highest quality

## Test centre at Lapp headquarters in Stuttgart

Our trial and test centre, with its extremely high standards for material testing and quality assurance, is a further guarantee of the decisive quality advancements of Lapp products. It is here that every Lapp Group design is subjected to tough performance and endurance tests. For example, our high-flexibility cables undergo millions of bending cycles at different speeds and extreme bending radii. Only products that survive the “folding chamber” are good enough to be included in our product range.

## Comprehensive quality tests for cables

- Tensile and shearing strength test
- Resistance test
- Electrical test
- Torsion test
- Torsion-bending test
- Drag chain test
- Roll bending test
- Fire tests

## Quality checks for cable glands

- Protection class testing - water (IP X3 to X8)
- Protection class testing - dust (IP 5X, IP 6X)
- Oil spray test according to UL 514 B
- Pulling protection testing

## Strict materials testing

- Infra-red spectroscopy for material identification
- Thermogravimetry to determine material proportions
- Thermal analysis to test the thermal properties of materials
- Climate cabinets to test ageing and storability

## Our test centre is also open for our customers

A customer-focused mentality and perfect service form part of the Lapp Group company values. We therefore offer our customers the chance to profit from our trial and test centre beyond the scope of qual-

ity assurance of our products.

We will test your products and carry out material tests in accordance with your wishes. For instance, you might bring us a length of cable whose material composition you wish to find out. We will test it for you using infrared spectroscopy and tell you what materials it contains. Using thermoanalysis we can give you information about the material properties. And we can test materials for aging and shelf-life.

In short: The entire know-how of our specialists is available to you for your analysis and quality assurance.

- ÖLFLEX® TRAIN solutions for the railway industry
- Perfect material properties thanks to electron beam cross-linking in our in-house production facility
- IRIS certified
- In-house test centre at our headquarters

With expertise  
in the railway  
sector. **Lapp.**



# Railway equipment – available soon worldwide

You can forget about long delivery times and high minimum order quantities. We keep railway products in stock for you and deliver quickly. Regardless of where in the world you need them. Even in smaller quantities.

To make this possible, we have built up a close-knit network of logistics centres and professionally trained consulting experts. Our fast, smooth delivery service is based on sophisticated, completely digitised and reliable logistics processes.

Our logistics and service centre in Ludwigsburg is setting the benchmark in many ways: 30,000 m<sup>2</sup> total floor, fully automated high-rack facility, 120 logistics employees, 30 truck loading ramps, over 90,000 articles and nearly 500,000 km

cables delivered every year represent the most important facts.

With our Track & Trace web service, you can always view the current status of your deliveries. Or you can give us your e-mail address and request our evening delivery update. It includes all the details on your current shipment, including the package or shipment number.

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

- Delivery within a short time worldwide from the warehouse
- Track & Trace web service
- Daily delivery update with mail-push service
- Fully automatic high-rack facilities
- Sustainability and environmental awareness

Fast and reliable.  
All over  
the world. **Lapp.**

## 65,000 m<sup>2</sup>

of storage space in Germany alone enables us to keep 40,000 km of ÖLFLEX® constantly in stock.

This is longer than the length of the equator





LAPP KABEL STUTTGART ÖLFLEX® SERVO FD 796 CP

## Special application

### Rolling Stock

ÖLFLEX TRAIN GWK SC  
 ÖLFLEX TRAIN GWK MC  
 ÖLFLEX TRAIN GWK C MC  
 ÖLFLEX TRAIN GWK IC MC  
 ÖLFLEX TRAIN 3GWK SC  
 ÖLFLEX TRAIN 3GWK MC  
 ÖLFLEX TRAIN 3GWK C MC  
 ÖLFLEX TRAIN 4GWK  
 ÖLFLEX TRAIN 4GWK HF (HIGH FLEXIBLE)  
 ÖLFLEX TRAIN 4GWK C  
 ÖLFLEX TRAIN 9GWK  
 ÖLFLEX TRAIN 9GWK HF (HIGH FLEXIBLE)  
 ÖLFLEX TRAIN 9GWK C  
 ÖLFLEX TRAIN GWK JUMPER

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# ÖLFLEX®

## Power and control cables



## ÖLFLEX TRAIN GKW SC

ÖLFLEX TRAIN GKW SC

CE



## Info

- Meets highest fire protection requirements

## ■ Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24, BS6853)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, special round conductor
- Insulation : Electron beam cross-linked polyolefin copolymer
- Colour : Grey , Black or Green-yellow

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 5 (SRC=Special Round Conductor)



## Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



## Rated voltage

Uo/U AC 300 / 500 V  
Uo/U DC 450 / 750 V



## Test voltage

2 KV AC



## Range of temperature

Fixed installation :  
-40 °C up to +125 °C max.  
Occasional flexing :  
-35 °C up to +90 °C max.  
Short circuit : +200 °C

| No. of core | conductor size(mm <sup>2</sup> ) | Average outer diameter(mm) | Weight (Kg/Km) approx. | Part Number |          |              |
|-------------|----------------------------------|----------------------------|------------------------|-------------|----------|--------------|
|             |                                  |                            |                        | Grey        | Black    | Green-Yellow |
| 1           | 0.5                              | 1.3                        | 5.4                    | 3833220-    | 3823220- | 3843220-     |
| 1           | 0.75                             | 1.5                        | 8.0                    | 3833221-    | 3823221- | 3843221-     |
| 1           | 1                                | 1.7                        | 9.9                    | 3833222-    | 3823222- | 3843222-     |
| 1           | 1.5                              | 2.1                        | 16.1                   | 3833223-    | 3823223- | 3843223-     |
| 1           | 2.5                              | 2.7                        | 27.2                   | 3833224-    | 3823224- | 3843224-     |
| 1           | 4                                | 3.3                        | 41.3                   | 3833225-    | 3823225- | 3843225-     |



## ÖLFLEX TRAIN GKW MC

ÖLFLEX TRAIN GKW MC



### Info

- Meets highest fire protection requirements

### Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24, BS6853)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

### Approval(Norm reference)



### Design

- Tinned copper strand, special round conductor
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core Colour : black with white printed numbers
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

### Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 5 (SRC=Special Round Conductor)



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



#### Rated voltage

Uo/U AC 300 / 500 V  
Uo DC 450 V



#### Test voltage

2 KV AC



#### Range of temperature

Fixed installation :  
-40 °C up to +125 °C max.  
Occasional flexing :  
-35 °C up to +90 °C max.  
Short circuit : +200 °C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823827-    | 4           | 0.5                              | 4.5                      | 33.0                   |
| 3824230-    | 7           | 0.5                              | 5.2                      | 51.3                   |
| 3824236-    | 13          | 0.5                              | 7.3                      | 95.1                   |
| 3824242-    | 19          | 0.5                              | 8.0                      | 128.4                  |
| 3824260-    | 37          | 0.5                              | 10.7                     | 236.3                  |
| 3823791-    | 4           | 0.75                             | 5.0                      | 44.9                   |
| 3824432-    | 7           | 0.75                             | 5.9                      | 71.2                   |
| 3824438-    | 13          | 0.75                             | 8.2                      | 132.8                  |
| 3824444-    | 19          | 0.75                             | 9.1                      | 181.3                  |
| 3824462-    | 37          | 0.75                             | 12.1                     | 337.8                  |
| 3824473-    | 48          | 0.75                             | 13.9                     | 432.8                  |
| 3823527-    | 4           | 1                                | 5.3                      | 53.8                   |
| 3823530-    | 7           | 1                                | 6.3                      | 86.1                   |
| 3823536-    | 13          | 1                                | 8.8                      | 161.0                  |
| 3823542-    | 19          | 1                                | 9.8                      | 221.0                  |
| 3823560-    | 37          | 1                                | 13.1                     | 413.9                  |
| 3824436-    | 4           | 1.5                              | 6.4                      | 82.2                   |
| 3824439-    | 7           | 1.5                              | 7.8                      | 137.6                  |
| 3824445-    | 13          | 1.5                              | 10.8                     | 251.7                  |
| 3824451-    | 19          | 1.5                              | 12.0                     | 348.4                  |
| 3824469-    | 37          | 1.5                              | 16.3                     | 658.5                  |
| 3823378-    | 2           | 2.5                              | 7.0                      | 75.3                   |
| 3823379-    | 3           | 2.5                              | 7.4                      | 104.2                  |
| 3823376-    | 4           | 2.5                              | 8.1                      | 135.5                  |

## ÖLFLEX TRAIN GKW C MC

ÖLFLEX TRAIN GKW C MC

CE



## Info

- Meets highest fire protection requirements

### Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24, BS6853)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

### Approval(Norm reference)



### Design

- Tinned copper strand, special round conductor
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core Colour : Black with white printed numbers
- Tinned copper braid
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

### Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



#### Rated voltage

Uo/U AC 300 / 500 V  
Uo DC 450 V



#### Test voltage

2 KV AC



#### Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823380-    | 2           | 0.5                              | 4.5                      | 30.6                   |
| 3823381-    | 3           | 0.5                              | 4.7                      | 37.2                   |
| 3823382-    | 4           | 0.5                              | 5.0                      | 45.0                   |
| 3823383-    | 6           | 0.5                              | 5.8                      | 62.7                   |
| 3823385-    | 8           | 0.5                              | 6.3                      | 78.9                   |
| 3823386-    | 2           | 0.75                             | 4.9                      | 38.3                   |
| 3823387-    | 3           | 0.75                             | 5.1                      | 47.7                   |
| 3823388-    | 4           | 0.75                             | 5.5                      | 58.5                   |
| 3824450-    | 6           | 0.75                             | 6.6                      | 88.5                   |
| 3824452-    | 8           | 0.75                             | 7.0                      | 104.4                  |
| 3823389-    | 2           | 1                                | 5.2                      | 43.8                   |
| 3823390-    | 3           | 1                                | 5.4                      | 55.7                   |
| 3823391-    | 4           | 1                                | 5.9                      | 68.3                   |
| 3823395-    | 6           | 1                                | 7.0                      | 103.7                  |
| 3823396-    | 8           | 1                                | 7.7                      | 126.7                  |
| 3823389A-   | 2           | 1.2                              | 5.8                      | 58.6                   |
| 3823390A-   | 3           | 1.2                              | 6.1                      | 74.0                   |
| 3823391A-   | 4           | 1.2                              | 6.8                      | 92.0                   |
| 3823392-    | 2           | 1.5                              | 6.1                      | 61.5                   |
| 3823393-    | 3           | 1.5                              | 6.6                      | 85.3                   |
| 3823394-    | 4           | 1.5                              | 7.1                      | 106.4                  |
| 3824458-    | 6           | 1.5                              | 8.6                      | 156.5                  |
| 3824460-    | 8           | 1.5                              | 9.2                      | 188.2                  |
| 3823394A-   | 4           | 2.0                              | 8.1                      | 108.3                  |
| 3824454-    | 2           | 2.5                              | 7.7                      | 101.3                  |
| 3824455-    | 3           | 2.5                              | 8.1                      | 131.9                  |
| 3824456-    | 4           | 2.5                              | 8.8                      | 166.0                  |

## ÖLFLEX TRAIN GKW IC MC

ÖLFLEX TRAIN GKW IC MC



### Info

- Meets highest fire protection requirements

### Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24, BS6853)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

### Approval(Norm reference)



### Design

- Tinned copper strand, special round conductor
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core Colour : Black with white printed numbers
- Tinned copper braid
- Inner sheath : Electron beam cross-linked polyolefin copolymer
- Inner sheath colour : Black
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

### Technical data

**Conductor stranding**  
Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)

**Official Test Report**  
BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130

**Minimum bending radius**  
Fixed installation > 5 X D  
Occasional movement > 6 X D

**Rated voltage**  
U<sub>0</sub>/U AC 300 / 500 V  
U<sub>0</sub> DC 450 V

**Test voltage**  
2 KV AC

**Range of temperature**  
Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823826P    | 3x2         | 0.5                              | 11.3                     | 180                    |
| 3823392P    | 2x2         | 1.5                              | 14.1                     | 242                    |
| 3823393P    | 3x2         | 1.5                              | 14.6                     | 299                    |

## ÖLFLEX TRAIN 3GKW SC

ÖLFLEX TRAIN 3GKW SC CE



## Info

- Meets highest fire protection requirements

## ■ Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, fine wired
- Insulation : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Grey , Black or Green-yellow

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)



## Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

< 12mm fixed installation > 3 X D  
Occasional movement > 4 X D  
> 12mm fixed installation > 4 X D  
Occasional movement > 5 X D



## Rated voltage

Uo/U AC 0.6 / 1(1.2) KV  
Uo DC 0.9 KV



## Test voltage

3.5 KV AC



## Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| No. of core | conductor size(mm²) | Average out diameter(mm) | Weight (Kg/Km) approx. | Grey     | Black    | Green-Yellow |
|-------------|---------------------|--------------------------|------------------------|----------|----------|--------------|
| 1           | 0.5                 | 2.1                      | 8.4                    | 3833293- | 3823293- | 3843293-     |
| 1           | 0.75                | 2.3                      | 11.3                   | 3833294- | 3823294- | 3843294-     |
| 1           | 1                   | 2.5                      | 13.5                   | 3833295- | 3823295- | 3843295-     |
| 1           | 1.5                 | 3.0                      | 21.2                   | 3833296- | 3823296- | 3843296-     |
| 1           | 2.5                 | 3.5                      | 32.6                   | 3833297- | 3823297- | 3843297-     |
| 1           | 4                   | 3.9                      | 41.3                   | 3833298- | 3823298- | 3843298-     |
| 1           | 6                   | 4.5                      | 59.2                   | 3833299- | 3823299- | 3843299-     |
| 1           | 10                  | 5.5                      | 98.2                   | 3833300- | 3823300- | 3843300-     |
| 1           | 16                  | 7.1                      | 163.3                  | 3833301- | 3823301- | 3843301-     |
| 1           | 25                  | 8.9                      | 252.0                  | 3833302- | 3823302- | 3843302-     |
| 1           | 35                  | 10.2                     | 351.7                  | 3833303- | 3823303- | 3843303-     |
| 1           | 50                  | 12.3                     | 500.1                  | 3833304- | 3823304- | 3843304-     |
| 1           | 70                  | 14.4                     | 694.9                  | 3833305- | 3823305- | 3843305-     |
| 1           | 95                  | 16.3                     | 920.6                  | 3833306- | 3823306- | 3843306-     |
| 1           | 120                 | 18.2                     | 1148.4                 | 3833307- | 3823307- |              |
| 1           | 150                 | 20.4                     | 1418.5                 | 3833308- | 3823308- |              |
| 1           | 185                 | 22.8                     | 1772.1                 | 3833309- | 3823309- |              |
| 1           | 240                 | 25.9                     | 2298.5                 | 3833310- | 3823310- |              |
| 1           | 300                 | 28.8                     | 2885.8                 | 3833311- | 3823311- |              |

## ÖLFLEX TRAIN 3GKW MC

ÖLFLEX TRAIN 3GKW MC


**Info**

- Meets highest fire protection requirements

### Benefits

- High flexibility and slim diameters enable small bending radii at fixed installation
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

### Approval(Norm reference)



### Design

- Tinned copper strand, fine wired
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core Colour : Black with white printed numbers
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

### Technical data

- Conductor stranding**  
Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)
- Official Test Report**  
BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130
- Minimum bending radius**  
Fixed installation > 4 X D  
Occasional movement >5 X D
- Rated voltage**  
Uo/U AC 0.6 / 1(1.2) kV  
Uo DC 0.9 kV
- Test voltage**  
3.5 KV AC
- Range of temperature**  
Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823410-    | 2           | 1.5                              | 7.5                      | 73.7                   |
| 3823411-    | 3           | 1.5                              | 8.0                      | 94.7                   |
| 3823413-    | 4           | 1.5                              | 8.8                      | 120.1                  |
| 3823417-    | 2           | 2.5                              | 8.5                      | 103.2                  |
| 3823418-    | 3           | 2.5                              | 9.1                      | 135.2                  |
| 3823420-    | 4           | 2.5                              | 10.0                     | 173.1                  |
| 3823424-    | 2           | 4                                | 9.3                      | 126.0                  |
| 3823425-    | 3           | 4                                | 9.9                      | 166.3                  |
| 3823427-    | 4           | 4                                | 11.1                     | 218.9                  |
| 3823429-    | 2           | 6                                | 10.6                     | 175.4                  |
| 3823430-    | 3           | 6                                | 11.3                     | 233.5                  |
| 3823432-    | 4           | 6                                | 12.9                     | 312.7                  |
| 3823434-    | 2           | 10                               | 13.0                     | 282.8                  |
| 3823435-    | 3           | 10                               | 13.9                     | 379.4                  |
| 3823436-    | 4           | 10                               | 15.3                     | 490.1                  |
| 3823438-    | 2           | 16                               | 16.3                     | 449.4                  |
| 3823439-    | 3           | 16                               | 17.4                     | 608.4                  |
| 3823440-    | 4           | 16                               | 19.7                     | 808.2                  |
| 3823447-    | 2           | 25                               | 20.2                     | 690.5                  |
| 3823448-    | 3           | 25                               | 21.6                     | 935.5                  |
| 3823449-    | 4           | 25                               | 24.3                     | 1215.7                 |
| 3823457-    | 2           | 35                               | 22.9                     | 931.7                  |
| 3823458-    | 3           | 35                               | 24.5                     | 1272.8                 |
| 3823459-    | 4           | 35                               | 27.6                     | 1685.2                 |
| 3823493-    | 2           | 50                               | 27.5                     | 1325.8                 |
| 3823494-    | 3           | 50                               | 29.4                     | 1810.1                 |
| 3823495-    | 4           | 50                               | 33.0                     | 2391.2                 |



## ÖLFLEX TRAIN 3GKW C MC

ÖLFLEX TRAIN 3GKW C MC

CE



## Info

- Meets highest fire protection requirements

## ■ Benefits

- Cooper screening complies with EMC requirements and protects against electromagnetic interference
- High flexibility and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, fine wired
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core colour : Black with white printed numbers
- Tinned copper braid
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)



## Official Test Report

BS 6853 1a  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

Fixed installation > 4 X D  
Occasional movement > 5 X D



## Rated voltage

Uo/U AC 0.6 / 1(1.2) kV  
Uo DC 0.9 kV



## Test voltage

3.5 kV AC



## Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823448-    | 2           | 0.75                             | 6.9                      | 69.2                   |
| 3823449-    | 3           | 0.75                             | 7.2                      | 82.3                   |
| 3823450-    | 4           | 0.75                             | 7.8                      | 99.4                   |
| 3823452-    | 8           | 0.75                             | 10.8                     | 174.0                  |
| 3823455-    | 2           | 1                                | 7.1                      | 75.8                   |
| 3823456-    | 3           | 1                                | 7.5                      | 91.4                   |
| 3823455A-   | 2           | 1.25                             | 7.6                      | 85.4                   |
| 3823456A-   | 3           | 1.25                             | 8.0                      | 104.9                  |
| 3823460-    | 2           | 1.5                              | 8.2                      | 102.7                  |
| 3823461-    | 3           | 1.5                              | 8.7                      | 125.6                  |
| 3823463-    | 4           | 1.5                              | 9.5                      | 154.1                  |
| 3823467-    | 2           | 2.5                              | 9.2                      | 136.3                  |
| 3823468-    | 3           | 2.5                              | 9.8                      | 170.6                  |
| 3823470-    | 4           | 2.5                              | 10.9                     | 217.5                  |
| 3823474-    | 2           | 4.0                              | 10.2                     | 167.9                  |
| 3823475-    | 3           | 4.0                              | 10.8                     | 211.3                  |
| 3823477-    | 4           | 4.0                              | 11.8                     | 263.7                  |
| 3823479-    | 2           | 6.0                              | 11.4                     | 217.8                  |
| 3823480-    | 3           | 6.0                              | 12.1                     | 278.9                  |
| 3823482-    | 4           | 6.0                              | 13.6                     | 363.6                  |
| 3823484-    | 2           | 10.0                             | 13.7                     | 332.0                  |
| 3823485-    | 3           | 10.0                             | 14.6                     | 432.1                  |
| 3823487-    | 4           | 10.0                             | 16.0                     | 548.4                  |
| 3823490-    | 2           | 16.0                             | 17.4                     | 552.0                  |
| 3823491-    | 3           | 16.0                             | 18.9                     | 736.4                  |
| 3823492-    | 4           | 16.0                             | 20.8                     | 931.7                  |
| 3823500-    | 2           | 25.0                             | 21.3                     | 818.2                  |
| 3823501-    | 3           | 25.0                             | 22.7                     | 1071.9                 |
| 3823502-    | 4           | 25.0                             | 25.4                     | 1390.9                 |

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823510-    | 2           | 35.0                             | 24.6                     | 1123.5                 |
| 3823511-    | 3           | 35.0                             | 26.2                     | 1478.0                 |
| 3823512-    | 4           | 35.0                             | 28.9                     | 1888.3                 |
| 3823520-    | 2           | 50.0                             | 28.8                     | 1525.1                 |
| 3823521-    | 3           | 50.0                             | 31.1                     | 2052.6                 |
| 3823522-    | 4           | 50.0                             | 34.3                     | 2620.1                 |

## ÖLFLEX TRAIN 4GKW

ÖLFLEX TRAIN 4GKW



## Info

- Meets highest fire protection requirements

### Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction
- High flexibility and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Excellent chemical resistance and high Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

### Approval(Norm reference)



### Design

- Tinned copper strand, fine wired
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black or green-yellow

### Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 5 (SRC=Special Round Conductor)



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

< 12mm fixed installation > 3 X D  
Occasional movement > 4 X D  
> 12mm fixed installation >4 X D  
Occasional movement > 5 X D



#### Rated voltage

Uo/U AC 1.8 / 3 KV  
Uo DC 2.7 KV



#### Test voltage

6.5 KV AC



#### Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. | Part Number |              |
|-------------|----------------------------------|--------------------------|------------------------|-------------|--------------|
|             |                                  |                          |                        | Black       | Green-Yellow |
| 1           | 1.5                              | 3.6                      | 26.5                   | 3822082-    | 3842082-     |
| 1           | 2.5                              | 4.1                      | 38.8                   | 3822083-    | 3842083-     |
| 1           | 4                                | 4.5                      | 48.1                   | 3822084-    | 3842084-     |
| 1           | 6                                | 5.3                      | 69.4                   | 3822085-    | 3842085-     |
| 1           | 10                               | 6.5                      | 113.3                  | 3822086-    | 3842086-     |
| 1           | 16                               | 8.5                      | 191.1                  | 3822087-    | 3842087-     |
| 1           | 25                               | 10.3                     | 286.9                  | 3822088-    | 3842088-     |
| 1           | 35                               | 11.8                     | 396.9                  | 3822089-    | 3842089-     |
| 1           | 50                               | 14.3                     | 566.2                  | 3822090-    | 3842090-     |
| 1           | 70                               | 16.2                     | 764.2                  | 3822091-    | 3842091-     |
| 1           | 95                               | 18.1                     | 998.7                  | 3822092-    | 3842092-     |
| 1           | 120                              | 20.4                     | 1254.6                 | 3822093-    |              |
| 1           | 150                              | 22.1                     | 1516.9                 | 3822094-    |              |
| 1           | 185                              | 24.5                     | 1884.8                 | 3822095-    |              |
| 1           | 240                              | 27.5                     | 2413.6                 | 3822096-    |              |
| 1           | 300                              | 30.6                     | 3029.5                 | 3822097-    |              |

## ÖLFLEX TRAIN 4GKW HF (HIGH FLEXIBLE)

ÖLFLEX TRAIN 4GKW HF



### Info

- Meets highest fire protection requirements

### Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction
- More improved high flexibility than 4GKW and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Excellent chemical resistance and high Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks
- For carrying energy between cars

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

### Approval(Norm reference)



### Design

- Tinned copper strand, Super fine wired
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black or green-yellow

### Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 6



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



#### Rated voltage

Uo/U AC 1.8 / 3 KV  
Uo DC 2.7 KV



#### Test voltage

6.5 KV AC



#### Range of temperature

Fixed installation :  
-45°C up to +120°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. | Part Number |              |
|-------------|----------------------------------|--------------------------|------------------------|-------------|--------------|
|             |                                  |                          |                        | Black       | Green-Yellow |
| 1           | 6                                | 5.6                      | 74.3                   | 3852085-    | 3862085-     |
| 1           | 16                               | 8.4                      | 187.8                  | 3852086-    | 3862086-     |
| 1           | 50                               | 14.3                     | 551.4                  | 3852090-    | 3862090-     |
| 1           | 70                               | 16.4                     | 757.6                  | 3852091-    | 3862091-     |
| 1           | 95                               | 18.3                     | 974.6                  | 3852092-    | 3862092-     |
| 1           | 120                              | 20.7                     | 1245.1                 | 3852093-    | 3862093-     |
| 1           | 150                              | 22.4                     | 1511.3                 | 3852094-    | 3862094-     |
| 1           | 185                              | 24.3                     | 1843.9                 | 3852095-    | 3862095-     |
| 1           | 240                              | 27.1                     | 2352.7                 | 3852096-    | 3862096-     |
| 1           | 300                              | 30.2                     | 2939.4                 | 3852097-    | 3862097-     |

## ÖLFLEX TRAIN 4GKW C

ÖLFLEX TRAIN 4GKW C



## Info

- Meets highest fire protection requirements

## ■ Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction
- High flexibility and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Excellent chemical resistance and high Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, fine wired
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Tinned copper braid
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 5 (SRC=Special Round Conductor)



## Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

Fixed installation > 4 X D  
Occasional movement > 5 X D



## Rated voltage

Uo/U AC 1.8 / 3 KV  
Uo DC 2.7 KV



## Test voltage

6.5 KV AC



## Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823336-    | 1           | 1.5                              | 5.2                      | 49.3                   |
| 3823337-    | 1           | 2.5                              | 5.7                      | 64.4                   |
| 3823338-    | 1           | 4                                | 6.5                      | 84.2                   |
| 3823339-    | 1           | 6                                | 7.9                      | 123.5                  |
| 3823340-    | 1           | 10                               | 9.3                      | 181.5                  |
| 3823341-    | 1           | 16                               | 11.0                     | 259.0                  |
| 3823342-    | 1           | 25                               | 13.2                     | 383.2                  |
| 3823343-    | 1           | 35                               | 14.6                     | 496.2                  |
| 3823344-    | 1           | 50                               | 16.8                     | 680.6                  |
| 3823345-    | 1           | 70                               | 18.7                     | 890.4                  |
| 3823346-    | 1           | 95                               | 20.6                     | 1136.7                 |
| 3823347-    | 1           | 120                              | 23.1                     | 1415.9                 |
| 3823348-    | 1           | 150                              | 25.4                     | 1725.3                 |
| 3823349-    | 1           | 185                              | 27.8                     | 2121.5                 |
| 3823350-    | 1           | 240                              | 30.7                     | 2686.7                 |
| 3823351-    | 1           | 300                              | 34.1                     | 3342.8                 |



## ÖLFLEX TRAIN 9GKW

ÖLFLEX TRAIN 9GKW



### Info

- Meets highest fire protection requirements

### Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction
- High flexibility and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Excellent chemical resistance and high Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks

### Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

### Approval(Norm reference)



### Design

- Tinned copper strand, special round Conductor
- Semi-conductive layer
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black or green-yellow

### Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 5 (SRC=Special Round Conductor)



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

< 12mm fixed installation > 3 X D  
Occasional movement > 4 X D  
> 12mm fixed installation > 4 X D  
Occasional movement > 5 X D



#### Rated voltage

Uo/U AC 3.6 / 6 kV  
Uo DC 5.4 kV



#### Test voltage

11 KV AC



#### Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. | Part Number |              |
|-------------|----------------------------------|--------------------------|------------------------|-------------|--------------|
|             |                                  |                          |                        | Black       | Green-Yellow |
| 1           | 2.5                              | 5.1                      | 50.6                   | 3822932-    | 3842932-     |
| 1           | 4                                | 5.7                      | 62.6                   | 3822933-    | 3842933-     |
| 1           | 6                                | 6.3                      | 83.1                   | 3822934-    | 3842934-     |
| 1           | 10                               | 7.7                      | 134.0                  | 3822935-    | 3842935-     |
| 1           | 16                               | 9.5                      | 216.9                  | 3822936-    | 3842936-     |
| 1           | 25                               | 11.1                     | 310.2                  | 3822937-    | 3842937-     |
| 1           | 35                               | 12.6                     | 421.9                  | 3822938-    | 3842938-     |
| 1           | 50                               | 15.3                     | 598.1                  | 3822939-    | 3842939-     |
| 1           | 70                               | 17.4                     | 805.3                  | 3822940-    | 3842940-     |
| 1           | 95                               | 19.3                     | 1041.4                 | 3822941-    | 3842941-     |
| 1           | 120                              | 21.4                     | 1290.9                 | 3822942-    |              |
| 1           | 150                              | 23.5                     | 1573.8                 | 3822943-    |              |
| 1           | 185                              | 25.5                     | 1917.4                 | 3822944-    |              |
| 1           | 240                              | 28.9                     | 2481.8                 | 3822945-    |              |
| 1           | 300                              | 32.0                     | 3098.3                 | 3822946-    |              |

## ÖLFLEX TRAIN 9GKW HF (HIGH FLEXIBLE)

ÖLFLEX TRAIN 9GKW HF



## Info

- Meets highest fire protection requirements

## ■ Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction  
More improved high flexibility than 9GKW and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions  
Expanded temperature range
- Excellent chemical resistance and high
- Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks
- For carrying energy between cars

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
  - Low fire load (DIN 51900)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)
  - No fluorine (EN 60684-2)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, Super fine wired
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black or green-yellow

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 6



## Official Test Report

BS 6853 la  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



## Rated voltage

Uo/U AC 3.6 / 6 KV  
Uo DC 5.4 KV



## Test voltage

11 KV AC



## Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. | Part Number |              |
|-------------|----------------------------------|--------------------------|------------------------|-------------|--------------|
|             |                                  |                          |                        | Black       | Green-Yellow |
| 1           | 50                               | 15.1                     | 576.0                  | 3852939-    | 3862939-     |
| 1           | 70                               | 17.2                     | 780.6                  | 3852940-    | 3862940-     |
| 1           | 95                               | 19.1                     | 1005.6                 | 3852941-    | 3862941-     |
| 1           | 120                              | 21.3                     | 1266.8                 | 3852942-    | 3862942-     |
| 1           | 150                              | 23.5                     | 1549.9                 | 3852943-    | 3862943-     |
| 1           | 185                              | 25.3                     | 1872.2                 | 3852944-    | 3862944-     |
| 1           | 240                              | 28.6                     | 2414.7                 | 3852945-    | 3862945-     |
| 1           | 300                              | 31.6                     | 3008.2                 | 3852946-    | 3862946-     |

## ÖLFLEX TRAIN 9GKW C

ÖLFLEX TRAIN 9GKW C



### Info

- Meets highest fire protection requirements

### ■ Benefits

- High electrical strength and mechanical durability due to dual-layer cable construction
- High flexibility and slim diameters enable small bending radii at fixed installation
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Excellent chemical resistance and high Flammability rating as well
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

### ■ Application range

- For fixed and protected installations inside or outside of railed vehicles and busses
- For connection of stationary and moving parts
- Suitable for cabling of switchboards, converters, panel units and rheostatic braking blocks

### ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

### ■ Approval(Norm reference)



### ■ Design

- Tinned copper strand, special round Conductor
- Semi-conductive layer
- Insulation : cross-linked polyolefin Copolymer
- Insulation colour : Natural
- Tinned copper braid
- Outer Sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black

### ■ Technical data



#### Conductor stranding

Fine wired according VDE 0295, Class 5  
(SRC=Special Round Conductor)



#### Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



#### Minimum bending radius

Fixed installation > 4 X D  
Occasional movement > 5 X D



#### Rated voltage

Uo/U AC 3.6 / 6 KV  
Uo DC 5.4 KV



#### Test voltage

11 KV AC

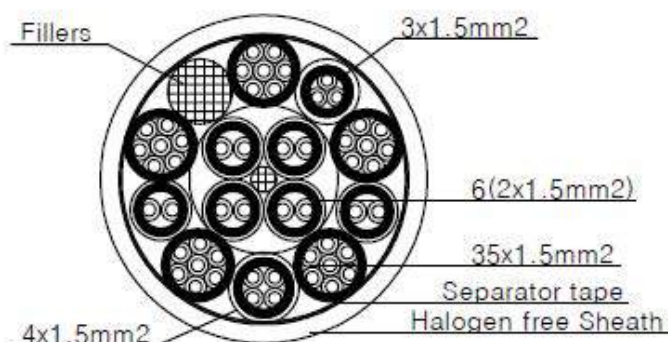


#### Range of temperature

Fixed installation :  
-40 °C up to +125 °C max.  
Occasional flexing :  
-35 °C up to +90 °C max.  
Short circuit : +200 °C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3823354-    | 1           | 2.5                              | 7.1                      | 88.1                   |
| 3823355-    | 1           | 4                                | 8.1                      | 114.0                  |
| 3823356-    | 1           | 6                                | 9.1                      | 149.1                  |
| 3823357-    | 1           | 10                               | 10.5                     | 211.3                  |
| 3823358-    | 1           | 16                               | 12.4                     | 315.4                  |
| 3823359-    | 1           | 25                               | 14.4                     | 437.5                  |
| 3823360-    | 1           | 35                               | 15.8                     | 556.2                  |
| 3823361-    | 1           | 50                               | 18.4                     | 755.6                  |
| 3823362-    | 1           | 70                               | 20.7                     | 993.1                  |
| 3823363-    | 1           | 95                               | 22.6                     | 1248.9                 |
| 3823364-    | 1           | 120                              | 25.3                     | 1566.0                 |
| 3823365-    | 1           | 150                              | 27.2                     | 1860.8                 |
| 3823366-    | 1           | 185                              | 29.6                     | 2258.6                 |
| 3823367-    | 1           | 240                              | 32.9                     | 2860.3                 |
| 3823368-    | 1           | 300                              | 36.5                     | 3551.9                 |

## ÖLFLEX TRAIN GKW JUMPER



## ■ Benefits

- High flexibility enable small bending radii
- Easy to strip and to dismantle
- Resistant to mechanical influences in harsh environmental conditions
- Expanded temperature range
- Reduced formation of toxic gases and fire spreading in the event of fire increase the protection against damage to persons and property

## ■ Application range

- For protected installations inside or outside of railed vehicles and busses
- Suitable for the connection of fixed and moving objects such as lamps, heating, electrical equipment, wiring of vehicles, terminal boxes and power supply

## ■ Product features

- Fire behaviour :
  - Halogen-free (IEC 60754-1)
  - No corrosive gases (IEC 60754-2)
  - No toxic gases (EN 50305)
  - Low smoke density (IEC 61034)
  - Flame retardant (IEC 60332-1-2)
  - No fire spreading (IEC 60332-3-24, BS6853)
- Chemical properties :
  - Oil and fuel resistance (EN 50305)
  - Ozone resistance (EN 50305)

## ■ Approval(Norm reference)



## ■ Design

- Tinned copper strand, special round conductor
- Insulation : Electron beam cross-linked polyolefin copolymer
- Core Colour : Black with white printed numbers
- Tinned copper braid
- Inner sheath : Electron beam cross-linked polyolefin copolymer
- Inner sheath colour : Black
- Outer sheath : Electron beam cross-linked polyolefin copolymer
- Outer sheath colour : Black



## Info

- Meets highest fire protection requirements

## ■ Technical data



## Conductor stranding

Fine wired according VDE 0295, Class 6 (SRC=Special Round Conductor)



## Official Test Report

BS 6853 Ia  
EN 45545-2 HL3  
NEPA 130



## Minimum bending radius

Fixed installation > 3 X D  
Occasional movement > 4 X D



## Rated voltage

Uo/U AC 300 / 500 V  
Uo/U DC 450 / 750 V



## Test voltage

2 KV AC



## Range of temperature

Fixed installation :  
-40°C up to +125°C max.  
Occasional flexing :  
-35°C up to +90°C max.  
Short circuit : +200°C

| Part Number | No. of core | conductor size(mm <sup>2</sup> ) | Average out diameter(mm) | Weight (Kg/Km) approx. |
|-------------|-------------|----------------------------------|--------------------------|------------------------|
| 3824438J-   | 54          | 1.5                              | 34                       | 1580                   |

## Bus system for special applications

Bus systems for TCN

UNITRONIC® TRAIN BUS

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## Cables for bus system CAN UL/CSA-approved

Characteristic impedance: 120 Ohm

UNITRONIC® BUS CAN

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UNITRONIC® BUS CAN FD P

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## Accessories for CAN

EPIC® Data Connectors

EPIC® Data CAN-Bus Connectors 90°

34

EPIC® Data CAN-Bus Connectors 180°

35

## UNITRONIC® Fieldbus

Y connectors

Y distributor

36

## UNITRONIC® Fieldbus

Passive sensor/actuator boxes

S/A box with M8 slots and master cable

37

S/A box, M8 slots and master cable connection M16/M12

38

S/A box with M12 slots and master cable

New

39

S/A box with M12 slots and master cable connection

40

Field mountable connectors and wall ducts

Field mountable S/A connectors M12

New

41

Field mountable S/A connectors M8

New

42

BUS System Components

BUS M12 connectors that can be assembled

43

Terminating resistor M12 for DeviceNet/CANopen/PROFIBUS

44

M12 T distributor for PROFIBUS

45

S/A T-connector M12 as parallel distributor

46

## Coxial cables

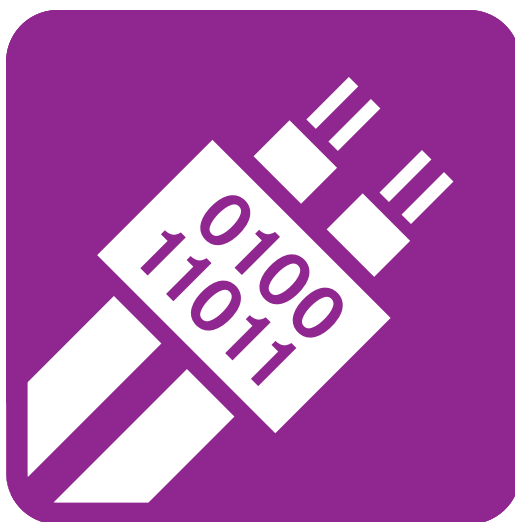
High frequencies

Coaxial - RG

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# UNITRONIC®

## Data communication systems





## TRAIN BUS

LAPP KABEL TRAIN BUS 1x2x0.5



### Info

- Small outer diameters for maximum saving of space and weight
- Extremely low attenuation  $\leq 5$  MHz

### Benefits

- Good chemical resistance  
Resistant to mechanical influences in harsh environmental conditions  
Extended temperature range  
Reduced flame spreading increase the protection against damage to persons and property in the event of a fire  
EMC-optimised design

### Application range

- The communication systems WTB (wire train bus) and MVB (multifunction vehicle bus) make up the so-called TCN (train communication network)
- UNITRONIC® TRAIN bus cables are designed for use in TCN acc. IEC 61375 MVB according IEC 61375-3-1 WTB according IEC 61375-2-1
- For use in railway vehicles and buses, for fixed installations and applications where limited movement may occur
- Also applicable within oily environments and areas with increased ambient temperature

### Product features

- Fire behaviour according to EN/IEC:  
-Halogen-free acc. to EN 60754-1  
-No corrosive gases acc. to EN 60754-2  
-No fluorine acc. to EN 60684-2  
-No toxic gases acc. to EN 50305  
-Low smoke density acc. to EN 61034-2  
-Flame-retardant acc. to EN 60332-1-2  
-No flame propagation acc. to EN 60332-3-25
- Chemical properties:  
-Oil resistant acc. to EN 50264-1  
-Fuel resistant acc. to EN 50264-1  
-Ozone resistant acc. to EN 50264-3-2

### Product Make-up

- Stranded tinned 19-wire conductor
- Core insulation: Based on Polyolefin
- Outer sheath: electron beam cross-linked polymer-compound EM 104
- Outer sheath colour: Black

### Technical data



#### Classification

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



#### Peak operating voltage

(not for power applications) 125 V



#### Minimum bending radius

Flexing: 10 x outer diameter  
Fixed installation: 6 x outer diameter



#### Test voltage

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



#### Characteristic impedance

120 ohm ( $\pm 10\%$ )



#### Temperature range

Fixed installation:  
-40°C to +70°C

| Article number        | Article designation | Number of cores and mm <sup>2</sup> per conductor | Outer diameter (mm) | Copper index (kg/km) |
|-----------------------|---------------------|---------------------------------------------------|---------------------|----------------------|
| <b>Cables for MVB</b> |                     |                                                   |                     |                      |
| 3823791C              | TRAIN 2x2x0,5       | 2x2x0,5                                           | 11.5                | 40                   |
| 3823791D              | TRAIN 4x0,5+4x0,25  | 4x0,5+4x0,25                                      | 8.2                 | 50                   |
| <b>Cables for WTB</b> |                     |                                                   |                     |                      |
| 3823791B              | TRAIN 2x0,75        | 2x0,75                                            | 8.5                 | 33                   |

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





**Info**

- CAN = Controller Area Network

**Application range**

**UNITRONIC® BUS CAN**

- Fixed installation

**UNITRONIC® BUS CAN FD P**

- For highly flexible applications

**Product features**

**UNITRONIC® BUS CAN**

- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according to IEC 60332.1.2

**UNITRONIC® BUS CAN FD P**

- Halogen-free
- Maximum bit rate: 1 Mbit/s for 40 m segment length
- Larger conductor cross-section is necessary with increasing length. Refer to the table below (reference values from ISO 11898).
- ISO 11898 makes recommendations for the segment length, cable cross section and bit rate
- Flame-retardant according to IEC 60332.1.2

**Approvals**



- Standardised internationally in ISO 11898
- UL/CSA type CMX (UL 444)

**Design**

**UNITRONIC® BUS CAN**

- 0.22 + 0.34 + 0.5: bare stranded conductor, 7-wire
- 0.75: bare stranded conductor, fine-wire
- Colour-coded in accordance with DIN 47100
- Copper braiding
- PVC outer sheath
- Colour: violet (RAL 4001)

**UNITRONIC® BUS CAN FD P**

- Stranded bare conductor
- Screening: wrapped with braided copper wires
- PUR outer sheath
- Colour: violet (RAL 4001)
- UV-resistant (but colour may change after some time)

**Technical data**



**Mutual capacitance**  
**UNITRONIC® BUS CAN**  
 (800 Hz): max. 40 nF/km  
**UNITRONIC® BUS CAN FD P**  
 (800 Hz): max. 60 nF/km



**Peak operating voltage**  
**UNITRONIC® BUS CAN**  
 (not for power applications) 250 V  
**UNITRONIC® BUS CAN FD P**  
 250 V (not for power transmission)



**Conductor resistance**  
**UNITRONIC® BUS CAN**  
 (loop):  
 max. 186 Ohm/km  
**UNITRONIC® BUS CAN FD P**  
 (loop): max. 159.8 Ohm/km



**Minimum bending radius**  
**UNITRONIC® BUS CAN**  
 Fixed installation: 8 x outer diameter  
**UNITRONIC® BUS CAN FD P**  
 Flexing: 15 x outer diameter



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



**Temperature range**  
**UNITRONIC® BUS CAN**  
 Fixed installation:  
 -30°C to +80°C  
 Flexing: -5°C to +70°C  
**UNITRONIC® BUS CAN FD P**  
 Fixed installation: -40°C to +80°C  
 Flexing: -30°C to +70°C



**Characteristic impedance**  
 120 Ohm

| Article number                                                               | Article designation     | Number of pairs/conductor cross section (mm²) | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------------------------------------------|-------------------------|-----------------------------------------------|---------------------|----------------------|----------------|
| <b>for fixed installation</b>                                                |                         |                                               |                     |                      |                |
| 2170260                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,22                                  | 5.7                 | 16.7                 | 42.0           |
| 2170261                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,22                                  | 7.6                 | 34.8                 | 68.0           |
| 2170263                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,34                                  | 6.8                 | 25.0                 | 55.0           |
| 2170264                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,34                                  | 8.5                 | 46.4                 | 88.0           |
| 2170266                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,5                                   | 7.5                 | 41.6                 | 90.0           |
| 2170267                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,5                                   | 9.7                 | 59.4                 | 106.0          |
| 2170269                                                                      | UNITRONIC® BUS CAN      | 1 x 2 x 0,75                                  | 8.7                 | 52.7                 | 108.0          |
| 2170270                                                                      | UNITRONIC® BUS CAN      | 2 x 2 x 0,75                                  | 11.5                | 80.6                 | 142.0          |
| <b>For highly flexible applications (power chains, moving machine parts)</b> |                         |                                               |                     |                      |                |
| 2170272                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,25                                  | 6.4                 | 24.0                 | 40.0           |
| 2170273                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,25                                  | 8.4                 | 33.0                 | 65.0           |
| 2170275                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,34                                  | 6.8                 | 32.8                 | 60.0           |
| 2170276                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,34                                  | 9.6                 | 52.4                 | 88.0           |
| 2170278                                                                      | UNITRONIC® BUS CAN FD P | 1 x 2 x 0,5                                   | 8.0                 | 41.9                 | 74.0           |
| 2170279                                                                      | UNITRONIC® BUS CAN FD P | 2 x 2 x 0,5                                   | 10.8                | 59.4                 | 100.0          |

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

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

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

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

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

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

**Accessories**

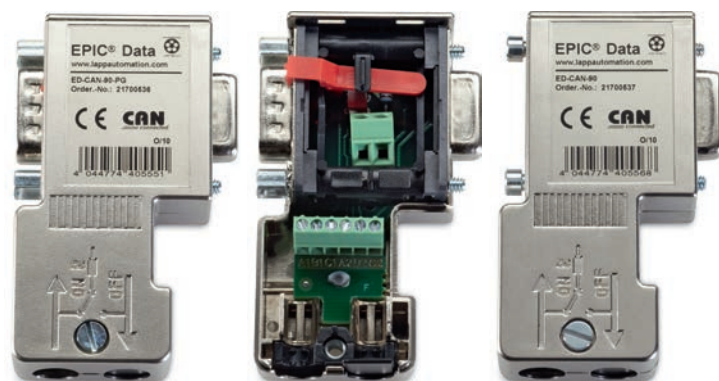
**UNITRONIC® BUS CAN**

- Multipurpose shears A and B refer to Main Catalogue page 902
- SMARTSTRIP stripping tool refer to Main Catalogue page 907

**UNITRONIC® BUS CAN FD P**

- SILVYN® CHAIN
- Multipurpose shears A and B refer to Main Catalogue page 902
- SMARTSTRIP stripping tool refer to Main Catalogue page 907

## EPIC® Data CAN-Bus Connectors 90°



EPIC® Data CAN-Bus Connectors 90°

## Benefits

- With additional 24 V DC output to supply external devices (GND = pin 6, CAN V+ = pin 9)
- Cost-saving due to quick installation
- Easy to connect
- Standardised interfaces
- Small design

## Application range

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

## Product features

- Screw termination
- Adjustable termination resistor is integrated
- The integrated, connectable terminal resistors enable the CAN-Bus to be terminated or connected through
- When used as a through connector, the switch must be in the "OFF" position. If used as a terminating connector, the switch must be in the "ON" position.
- No loose parts

## Approvals



## Design

- Sub-D plug, 9-pin
- Metallised housing
- For cable diameter: 5.0 to 8.0 mm
- (-PG) With additional programming/diagnostic interface: Sub-D socket, 9-pin

## Suitable cables

- Cables for Bus-System CAN Main Catalogue page 329
- Cables for Bus-System DeviceNet Main Catalogue page 327



## Info

- Fully compatible with market standard
- CAN, CANopen, DeviceNet™

## Technical data



## Dimensions

65 mm x 48 mm x 16 mm (LxWxH)

## Connection type

Screwing

## Degree of soiling

2



## Weight

Approx. 40 g



## Protection rating

IP20

## Cable outlet

90°

## Terminating resistor

120 Ohms integrated, and connectable with slide switch

## Transmission rate

max. 1 MBit/s

## Interfaces

CAN bus station: SUB-D socket, 9-pin  
CAN bus cable: 6 terminal blocks for wires up to 1.0 mm<sup>2</sup>  
 Sub-D pin assignment:  
 CAN Low = Pin 2  
 CAN High = Pin 7  
 CAN Gnd = Pin 3  
 GND = Pin 6  
 CAN V+ = Pin 9

## Permissible ambient conditions

Operating temperature:  
 0°C to +60°C

Transport and storage temperature:  
 -25°C to +75°C

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

| Article number                       | Article designation | Cable outlet | PG  | Pieces / PU |
|--------------------------------------|---------------------|--------------|-----|-------------|
| <b>EPIC® data CAN bus connectors</b> |                     |              |     |             |
| 21700537                             | ED-CAN-90           | 90°          | no  | 1           |
| 21700536                             | ED-CAN-90-PG        | 90°          | yes | 1           |

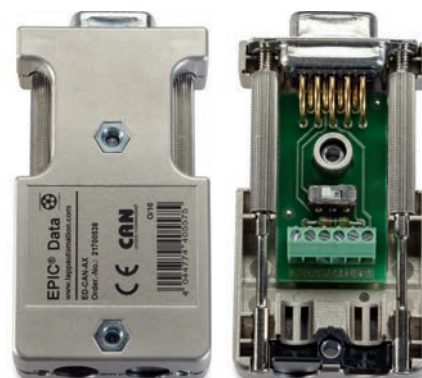
Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products. For detailed technical information please refer to [www.lappautomation.com](http://www.lappautomation.com)

## EPIC® Data CAN-Bus Connectors 180°



### Info

- Fully compatible with market standard
- CAN, CANopen, DeviceNet™



EPIC® Data CAN-Bus Connectors 180°

### Benefits

- Standardised interfaces
- Cost-saving due to quick installation
- Easy to connect

### Application range

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

### Product features

- Screw termination
- Adjustable termination resistor is integrated
- The integrated, connectable terminal resistors enable the CAN-Bus to be terminated or connected through
- When used as a through connector, the switch must be in the "OFF" position. If used as a terminating connector, the switch must be in the "ON" position.
- No loose parts

### Approvals



### Design

- Sub-D plug, 9-pin
- Metallised housing
- No loose parts
- For cable diameter: 5.0 to 8.0 mm

### Design

- Cables for Bus-System CAN Main Catalogue page 329
- Cables for Bus-System DeviceNet Main Catalogue page 327

### Technical data



**Dimensions**  
67.5 mm x 35 mm x 17 mm (LxWxH)

**Connection type**  
Screwing

**Degree of soiling**  
2



**Weight**  
Approx. 40 g



**Protection rating**  
IP20

**Cable outlet**  
180°

**Terminating resistor**  
120 Ohms integrated,  
and connectable with slide switch

**Transmission rate**  
max. 1 MBit/s

#### Interfaces

**CAN bus station:** SUB-D socket, 9-pin  
**CAN bus cable:** 6 terminal blocks for wires  
up to 1.0 mm<sup>2</sup>  
Sub-D pin assignment:  
CAN Low = Pin 2  
CAN High = Pin 7  
CAN Gnd = Pin 3

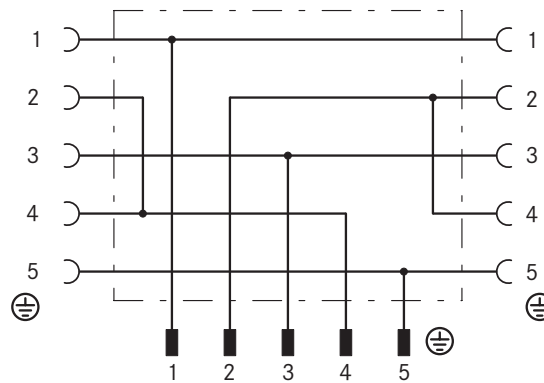
#### Permissible ambient conditions

Operating temperature:  
0°C to +60°C  
Transport and storage temperature:  
-25°C to +75°C  
Relative humidity:  
max. 75 % at +25°C

| Article number                       | Article designation | Cable outlet | PG | Pieces / PU |
|--------------------------------------|---------------------|--------------|----|-------------|
| <b>EPIC® data CAN BUS connectors</b> |                     |              |    |             |
| 21700538                             | ED-CAN-AX           | 180° axial   | no | 1           |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.  
For detailed technical information please refer to [www.lappautomation.com](http://www.lappautomation.com)

## Y distributor



### Y distributor

#### Benefits

- Cost-saving due to quick and easy installation
- Space-saving due to compact dimensions
- Fast and easy error tracking
- Standardised interfaces

#### Application range

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

#### Product features

- M 12 and M 8 design
- M 12 design with screw hole
- Free of substances that could hinder paint or varnish

#### Approvals



#### Technical data



**Protection rating**  
IP65 / IP67



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +90°C

**Contact material**  
CuSn

**Contact surface material**  
Ni/Au

**Coding**  
A - Standard

**Knurl material**  
Zinc die-cast, nickel-plated

**Gripping body material**  
TPU, flame-retardant, self-extinguishing

| Article number                                                                                            | Article designation    | Nominal voltage $U_N$ (V) | Nominal current $I_N$ in (A) | PU |
|-----------------------------------------------------------------------------------------------------------|------------------------|---------------------------|------------------------------|----|
| <b>M 12 Y distributor, 3-pin, +PE, straight M12 connector to 2 x straight M12 socket, PIN 2+4 bridged</b> |                        |                           |                              |    |
| 22260600                                                                                                  | AB-C3-M12Y-2XM12FS B E | 60                        | 4                            | 5  |
| <b>M 12 Y distributor, 3-pin, +PE, straight M12 connector to 2 x straight M12 socket</b>                  |                        |                           |                              |    |
| 22260601                                                                                                  | AB-C3-M12Y-2XM12FS E   | 60                        | 4                            | 5  |
| <b>M 12 Y distributor, 5-pin, straight M12 connector to 2 x straight M12 socket, parallel distributor</b> |                        |                           |                              |    |
| 22260602                                                                                                  | AB-C5-M12Y-2XM12FS V   | 60                        | 4                            | 5  |
| <b>M 8 Y distributor, with 4-pin M8 connector to 2 x 3-pin M8 socket</b>                                  |                        |                           |                              |    |
| 22260603                                                                                                  | AB-C3-M8Y-2XM8FS       | 30                        | 3                            | 5  |
| <b>M 8 Y distributor, with M8 connector to M8 socket, 3-pin parallel distributor</b>                      |                        |                           |                              |    |
| 22260604                                                                                                  | AB-C3-M8Y-2XM8FS V     | 60                        | 3                            | 5  |

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

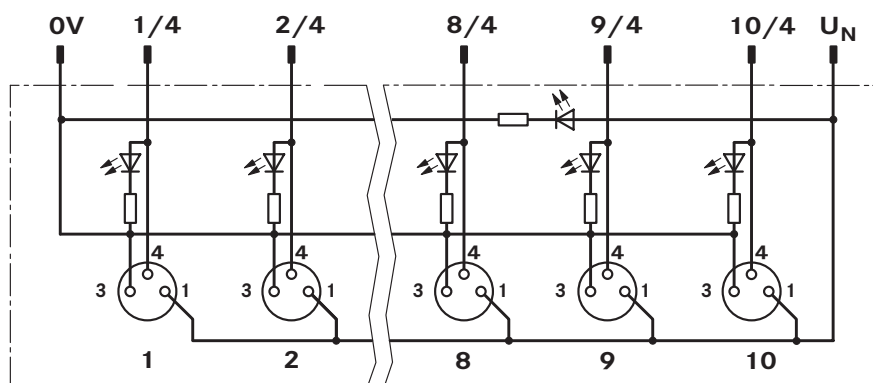
Photographs are not to scale and do not represent detailed images of the respective products.

Note: the table value 'Number of pins' corresponds to the number of pins for sockets

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

For the UNITRONIC® field bus type code, please see Main Catalogue table T6

## S/A box with M8 slots and master cable



S/A box with M8 slots and master cable

### Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The master cable is designed as a hybrid that transmits signals and power.
- There are no assembly costs as the master cable is already pre-assembled

### Application range

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

### Product features

- With fixed master cable connection
- Single-occupied sensor/actuator box
- LEDs indicate the operating mode of the distributor and the status of the sensors
- Free of substances that could hinder paint or varnish

### Approvals



### Design

- PUR/PVC cable
- Fixed flexible control cable
- Outer sheath colour: black

### Suitable tools

- Suitable tools are available upon request (e.g. M8 torque screwdriver)

### Technical data

|             |                                                                                                                                                               |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IP</b>   | <b>Protection rating</b><br>IP65/IP67                                                                                                                         |
| <b>0-1</b>  | <b>Ambient temperature (operation)</b><br>-30 °C to +80 °C<br>Cable, fixed installation<br>-40 °C to +90 °C<br>Cable, flexible installation<br>-5 °C to 80 °C |
| <b>Amp.</b> | <b>Current rating per slot</b><br>2 A                                                                                                                         |

| Article number                         | Article designation   | Length (m) | Number of slots | Nominal voltage<br>U <sub>N</sub> (V) | SACB total current<br>(A) | Status display | PU |
|----------------------------------------|-----------------------|------------|-----------------|---------------------------------------|---------------------------|----------------|----|
| <b>With M8 master cable connection</b> |                       |            |                 |                                       |                           |                |    |
| 22260026                               | AB-B4-M8L-4-5,0PUR    | 5.0        | 4               | 24                                    | 6                         | With LEDs      | 1  |
| 22260027                               | AB-B4-M8L-4-10,0PUR   | 10.0       | 4               | 24                                    | 6                         | With LEDs      | 1  |
| 22260028                               | AB-B6-M8L-6-5,0PUR    | 5.0        | 6               | 24                                    | 6                         | With LEDs      | 1  |
| 22260029                               | AB-B6-M8L-6-10,0PUR   | 10.0       | 6               | 24                                    | 6                         | With LEDs      | 1  |
| 22260030                               | AB-B8-M8L-8-5,0PUR    | 5.0        | 8               | 24                                    | 6                         | With LEDs      | 1  |
| 22260031                               | AB-B8-M8L-8-10,0PUR   | 10.0       | 8               | 24                                    | 6                         | With LEDs      | 1  |
| 22260032                               | AB-B10-M8L-10-5,0PUR  | 5.0        | 10              | 24                                    | 6                         | With LEDs      | 1  |
| 22260033                               | AB-B10-M8L-10-10,0PUR | 10.0       | 10              | 24                                    | 6                         | With LEDs      | 1  |

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

Copper price basis: inclusive of copper. Refer to Appendix T 17 for the definition and calculation of copper-related surcharges.

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

For the UNITRONIC® field bus type code, please see table T6

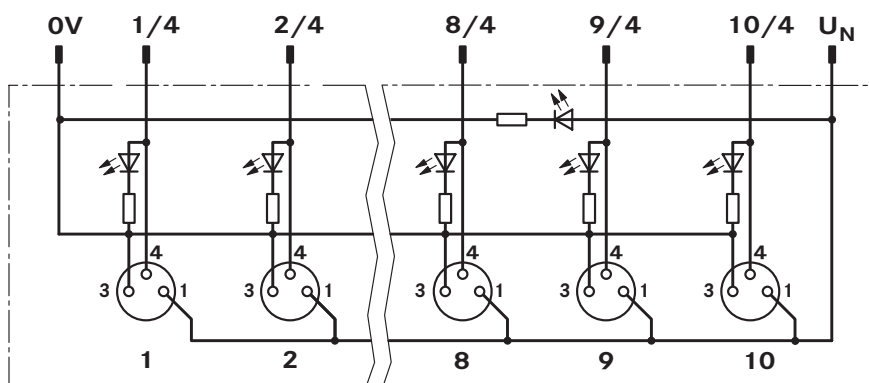
Unused female connectors must be covered with protective caps (see accessories)

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

### Accessories

- Screw plug for unoccupied sockets refer to Main Catalogue page 376

## S/A box, M8 slots and master cable connection M16/M12



S/A box, M8 slots and master cable connection M16/M12

## Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The detachable screw connection ensures universal pluggability and simple on-site assembly

## Application range

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

## Product features

- With M12/M16 plug-in connection
- Single-occupied sensor/actuator box
- LEDs indicate the operating mode of the distributor and the status of the sensors
- Free of substances that could hinder paint or varnish

## Approvals



## Suitable cables

- M16 socket with connected master cable  
Main Catalogue page 374
- M12 socket with connected master cable  
Main Catalogue page 375

## Suitable tools

- Suitable tools are available upon request (e.g. M8 torque screwdriver)

## Technical data



Protection rating  
IP65/IP67



Ambient temperature (operation)  
-30°C to +80°C



Current rating per slot  
2 A

| Article number                                  | Article designation | Number of slots | Nominal voltage $U_N$ (V) | SACB total current (A) | Status display | PU |
|-------------------------------------------------|---------------------|-----------------|---------------------------|------------------------|----------------|----|
| <b>With M16, 8-pin master cable connection</b>  |                     |                 |                           |                        |                |    |
| 22260034                                        | AB-B4-M8L-4-M16     | 4               | 24                        | 6                      | With LEDs      | 1  |
| <b>With M16, 10-pin master cable connection</b> |                     |                 |                           |                        |                |    |
| 22260035                                        | AB-B6-M8L-6-M16     | 6               | 24                        | 6                      | With LEDs      | 1  |
| <b>With M16, 12-pin master cable connection</b> |                     |                 |                           |                        |                |    |
| 22260036                                        | AB-B8-M8L-8-M16     | 8               | 24                        | 6                      | With LEDs      | 1  |
| <b>With M16, 14-pin master cable connection</b> |                     |                 |                           |                        |                |    |
| 22260037                                        | AB-B10-M8L-10-M16   | 10              | 24                        | 6                      | With LEDs      | 1  |
| <b>With M12, 8-pin master cable connection</b>  |                     |                 |                           |                        |                |    |
| 22260038                                        | AB-B4-M8L-4-M12     | 4               | 24                        | 4                      | With LEDs      | 1  |
| 22260039                                        | AB-B6-M8L-6-M12     | 6               | 24                        | 4                      | With LEDs      | 1  |

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

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

For the UNITRONIC® field bus type code, please see table T6

Unused female connectors must be covered with protective caps (see accessories)

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

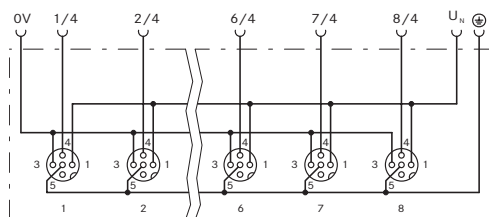
## Accessories

- Screw plug for unoccupied sockets refer to Main Catalogue page 376



**New**

## S/A box with M 12 slots and master cable



S/A box with M 12 slots and master cable

### Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The master cable is designed as a hybrid that transmits signals and power.
- There are no assembly costs as the master cable is already pre-assembled

### Application range

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

### Product features

- With fixed master cable connection
- Single or double-occupied sensor/actuator box
- With M 12 quick-locking system, metal thread
- With LED diagnostic indicator
- Free of substances that could hinder paint or varnish

### Approvals



### Design

- PUR/PVC cable
- Fixed flexible control cable
- Outer sheath colour: black

### Suitable tools

- Suitable tools are available upon request (e.g. M 12 torque screwdriver)

### Technical data

|             |                                             |
|-------------|---------------------------------------------|
| <b>IP</b>   | <b>Protection rating</b><br>IP65/IP67/IP69K |
| <b>Amp.</b> | <b>Max. current rating per path</b><br>2 A  |
| <b>Amp.</b> | <b>Current rating per slot</b><br>4 A       |

| Article number                             | Article designation   | Length (m) | Number of slots | Nominal voltage<br>U <sub>N</sub> (V) | SACB total current<br>(A) | Status display | PU |
|--------------------------------------------|-----------------------|------------|-----------------|---------------------------------------|---------------------------|----------------|----|
| <b>Single-occupied boxes, without LEDs</b> |                       |            |                 |                                       |                           |                |    |
| 22260010                                   | AB-B4-M12-4-5,0PUR    | 5.0        | 4               | 120                                   | 12                        | no             | 1  |
| 22260011                                   | AB-B4-M12-4-10,0PUR   | 10.0       | 4               | 120                                   | 12                        | no             | 1  |
| 22260014                                   | AB-B8-M12-8-5,0PUR    | 5.0        | 8               | 120                                   | 12                        | no             | 1  |
| 22260015                                   | AB-B8-M12-8-10,0PUR   | 10.0       | 8               | 120                                   | 12                        | no             | 1  |
| <b>Single occupied boxes, with LEDs</b>    |                       |            |                 |                                       |                           |                |    |
| 22260018                                   | AB-B4-M12L-4-5,0PUR   | 5.0        | 4               | 24                                    | 12                        | With LEDs      | 1  |
| 22260019                                   | AB-B4-M12L-4-10,0PUR  | 10.0       | 4               | 24                                    | 12                        | With LEDs      | 1  |
| 22260970                                   | AB-B6-M12L-6-5,0PUR   | 5.0        | 6               | 24                                    | 12                        | With LEDs      | 1  |
| 22260022                                   | AB-B8-M12L-8-5,0PUR   | 5.0        | 8               | 24                                    | 12                        | With LEDs      | 1  |
| 22260023                                   | AB-B8-M12L-8-10,0PUR  | 10.0       | 8               | 24                                    | 12                        | With LEDs      | 1  |
| <b>Double-occupied boxes, without LEDs</b> |                       |            |                 |                                       |                           |                |    |
| 22260012                                   | AB-B4-M12-8-5,0PUR    | 5.0        | 4               | 120                                   | 12                        | no             | 1  |
| 22260013                                   | AB-B4-M12-8-10,0PUR   | 10.0       | 4               | 120                                   | 12                        | no             | 1  |
| 22260016                                   | AB-B8-M12-16-5,0PUR   | 5.0        | 8               | 120                                   | 12                        | no             | 1  |
| 22260017                                   | AB-B8-M12-16-10,0PUR  | 10.0       | 8               | 120                                   | 12                        | no             | 1  |
| <b>Double-occupied boxes, with LEDs</b>    |                       |            |                 |                                       |                           |                |    |
| 22260020                                   | AB-B4-M12L-8-5,0PUR   | 5.0        | 4               | 24                                    | 12                        | With LEDs      | 1  |
| 22260021                                   | AB-B4-M12L-8-10,0PUR  | 10.0       | 4               | 24                                    | 12                        | With LEDs      | 1  |
| 22260024                                   | AB-B8-M12L-16-5,0PUR  | 5.0        | 8               | 24                                    | 12                        | With LEDs      | 1  |
| 22260025                                   | AB-B8-M12L-16-10,0PUR | 10.0       | 8               | 24                                    | 12                        | With LEDs      | 1  |

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

Copper price basis: inclusive of copper. Refer to Appendix T 17 for the definition and calculation of copper-related surcharges.

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

Unused female connectors must be covered with protective caps (see accessories)

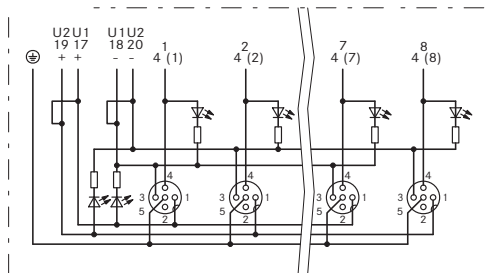
For detailed technical information please refer to the data sheet ([www.lappautomation.com](http://www.lappautomation.com)). For the type code, please refer to table T6.

UL approvals can be found in the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

### Accessories

- Screw plug for unoccupied sockets refer to Main Catalogue page 376

## S/A box with M 12 slots and master cable connection



## Info

☒ For individual master cable assembly

## S/A box with M 12 slots and master cable connection

## Benefits

- Inexpensive and efficient wiring of sensors and actuators
- Instead of numerous individual conductors, one master cable is laid to the control unit
- The detachable screw connection ensures universal pluggability and simple on-site assembly

## Application range

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

## Product features

- With detachable screw connection
- Single or double-occupied sensor/actuator box
- With M 12 quick-locking system, metal thread
- With LED diagnostic indicator
- Free of substances that could hinder paint or varnish

## Approvals



## Suitable cables

- UNITRONIC® SENSOR master cable bulk stock Main Catalogue page 373

## Suitable tools

- Kraftform® adjustable torque screwdriver/ Kraftform Kompakt® Set refer to Main Catalogue page 976
- Suitable tools are available upon request (e.g. M 12 torque screwdriver)

## Technical data



**Protection rating**  
IP65/IP68/IP69K



**Ambient temperature (operation)**  
-30 °C to +80 °C



**Max. current rating per path**  
2 A



**Current rating per slot**  
4 A

| Article number                                           | Article designation | Number of slots | Nominal voltage<br>U <sub>N</sub> (V) | SACB total current<br>(A) | Status display | PU |
|----------------------------------------------------------|---------------------|-----------------|---------------------------------------|---------------------------|----------------|----|
| <b>Single-occupied boxes, without LEDs, 4 slots, 1.)</b> |                     |                 |                                       |                           |                |    |
| 22260005                                                 | AB-B4-M12-4-C       | 4               | 120                                   | 10                        | no             | 1  |
| <b>Single-occupied boxes, without LEDs, 8 slots, 2.)</b> |                     |                 |                                       |                           |                |    |
| 22260007                                                 | AB-B8-M12-8-C       | 8               | 120                                   | 10                        | no             | 1  |
| <b>Single-occupied boxes, with LEDs, 4 slots, 1.)</b>    |                     |                 |                                       |                           |                |    |
| 22260001                                                 | AB-B4-M12L-4-C      | 4               | 24                                    | 10                        | With LEDs      | 1  |
| <b>Single-occupied boxes, with LEDs, 8 slots, 2.)</b>    |                     |                 |                                       |                           |                |    |
| 22260003                                                 | AB-B8-M12L-8-C      | 8               | 24                                    | 10                        | With LEDs      | 1  |
| <b>Double-occupied boxes, without LEDs, 4 slots, 2.)</b> |                     |                 |                                       |                           |                |    |
| 22260006                                                 | AB-B4-M12-8-C       | 4               | 120                                   | 10                        | no             | 1  |
| <b>Double-occupied boxes, without LEDs, 8 slots, 3.)</b> |                     |                 |                                       |                           |                |    |
| 22260008                                                 | AB-B8-M12-16-C      | 8               | 120                                   | 10                        | no             | 1  |
| <b>Double-occupied boxes, with LEDs, 4 slots, 2.)</b>    |                     |                 |                                       |                           |                |    |
| 22260002                                                 | AB-B4-M12L-8-C      | 4               | 24                                    | 10                        | With LEDs      | 1  |
| <b>Double-occupied boxes, with LEDs, 8 slots, 3.)</b>    |                     |                 |                                       |                           |                |    |
| 22260004                                                 | AB-B8-M12L-16-C     | 8               | 24                                    | 10                        | With LEDs      | 1  |

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

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

Unused female connectors must be covered with protective caps (see accessories)

For detailed technical information please refer to the data sheet ([www.lappautomation.com](http://www.lappautomation.com)). For the type code, please refer to table T6.

1.) Compatible master cable: 7038880; 2) Compatible master cable: 7038881; 3.) Compatible master cable: 7038882

## Accessories

- Screw plug for unoccupied sockets refer to Main Catalogue page 376
- Complete connection hood with 4, 6 or 8 slots refer to Main Catalogue page 376

**New**

## Field mountable S/A connectors M12



Field mountable S/A connectors M12

### Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Standardised interfaces
- No special tools required for connecting the cables (fast-connect designs)

### Application range

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

### Product features

- 4, 5 and 8-pin version
- Screened and non-screened version
- Fast-connect and screw connection design
- Free of substances that could hinder paint or varnish

### Approvals



### Suitable cables

- Cable for sensor / actuator components age

### Technical data



**Protection rating**  
IP 65/IP 67 (IDC)  
IP 67 (screw)



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +80°C (IDC)  
-25°C to +85°C (piercing)  
-40°C to +85°C (screw)

**Contact material**  
CuSn

**Contact surface material**  
CuSnZn

**Coding**  
A - Standard

| Article number                                                    | Article designation      | Number of pins | Min. conductor cross-section, flexible, in mm <sup>2</sup> | Max. conductor cross-section, flexible, in mm <sup>2</sup> | Min. cable diameter (mm) | Max. cable diameter (mm) | Nominal voltage U <sub>N</sub> (V) | Nominal current I <sub>N</sub> in (A) | PU |
|-------------------------------------------------------------------|--------------------------|----------------|------------------------------------------------------------|------------------------------------------------------------|--------------------------|--------------------------|------------------------------------|---------------------------------------|----|
| <b>Straight connector, fast-connect (insulation displacement)</b> |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260132                                                          | AB-C4-M12MS-F0,34        | 4              | 0.14                                                       | 0.34                                                       | 3.5                      | 6                        | 125                                | 4                                     | 1  |
| 22260134                                                          | AB-C4-M12MS-F0,75        | 4              | 0.34                                                       | 0.75                                                       | 4                        | 8                        | 250                                | 4                                     | 1  |
| <b>Straight connector, screw connection</b>                       |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260649                                                          | AB-C4-M12MS-PG7          | 4              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 250                                | 4                                     | 1  |
| 22260995                                                          | AB-C4-M12MS-PG9          | 4              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 250                                | 4                                     | 1  |
| 22260129                                                          | AB-C5-M12MS-PG7          | 5              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 60                                 | 4                                     | 1  |
| 22260651                                                          | AB-C5-M12MS-PG9          | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| 22260996                                                          | AB-C5-M12MS-PG9-SKINTOP® | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 125                                | 4                                     | 1  |
| <b>Straight socket, fast-connect (insulation displacement)</b>    |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260131                                                          | AB-C4-M12FS-F0,34        | 4              | 0.14                                                       | 0.34                                                       | 3.5                      | 6                        | 125                                | 4                                     | 1  |
| 22260133                                                          | AB-C4-M12FS-F0,75        | 4              | 0.34                                                       | 0.75                                                       | 4                        | 8                        | 250                                | 4                                     | 1  |
| <b>Straight socket, screw connection</b>                          |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260640                                                          | AB-C4-M12FS-PG7          | 4              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 250                                | 4                                     | 1  |
| 22260641                                                          | AB-C4-M12FS-PG9          | 4              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 250                                | 4                                     | 1  |
| 22260127                                                          | AB-C5-M12FS-PG7          | 5              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 60                                 | 4                                     | 1  |
| 22260644                                                          | AB-C5-M12FS-PG9          | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| 22260997                                                          | AB-C5-M12FS-PG9-SKINTOP® | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 125                                | 4                                     | 1  |
| <b>Angled connector, screw connection</b>                         |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260647                                                          | AB-C4-M12MA-PG7          | 4              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 250                                | 4                                     | 1  |
| 22260130                                                          | AB-C5-M12MA-PG7          | 5              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 60                                 | 4                                     | 1  |
| 22260648                                                          | AB-C5-M12MA-PG9          | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| <b>Angled socket, screw connection</b>                            |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260636                                                          | AB-C4-M12FA-PG7          | 4              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 250                                | 4                                     | 1  |
| 22260128                                                          | AB-C5-M12FA-PG7          | 5              | 0.25                                                       | 0.75                                                       | 4                        | 6                        | 60                                 | 4                                     | 1  |
| 22260638                                                          | AB-C5-M12FA-PG9          | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| <b>Straight connector, shielded, screw connection</b>             |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260135                                                          | AB-C5-M12MS-PG9-SH       | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| 22260825                                                          | AB-C8-M12MS-PG9-SH       | 8              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 30                                 | 2                                     | 1  |
| <b>Straight socket, shielded, screw connection</b>                |                          |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260136                                                          | AB-C5-M12FS-PG9-SH       | 5              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 60                                 | 4                                     | 1  |
| 22260826                                                          | AB-C8-M12FS-PG9-SH       | 8              | 0.25                                                       | 0.75                                                       | 6                        | 8                        | 30                                 | 2                                     | 1  |

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

IDC = insulation displacement connector

For the UNITRONIC® field bus type code, please see Main Catalogue table T6

## UNITRONIC® Fieldbus

Field mountable connectors and wall ducts

New

## Field mountable S/A connectors M8



## Field mountable S/A connectors M8

## Benefits

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

## Application range

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

## Product features

- 3 and 4-pin version
- Fast-connect and screw connection design
- Free of substances that could hinder paint or varnish

## Approvals



## Suitable cables

- Cable for sensor / actuator components
- Page

## Technical data



**Protection rating**  
IP 65/IP 67 (IDC)  
IP 68 (piercing)  
IP 67 (screw)



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +80°C (IDC)  
-25°C to +85°C (piercing)  
-40°C to +85°C (screw)

**Contact material**  
CuSn

**Contact surface material**  
Au

**Coding**  
A - Standard

| Article number                                                    | Article designation | Number of pins | Min. conductor cross-section, flexible, in mm <sup>2</sup> | Max. conductor cross-section, flexible, in mm <sup>2</sup> | Min. cable diameter (mm) | Max. cable diameter (mm) | Nominal voltage U <sub>N</sub> (V) | Nominal current I <sub>N</sub> in (A) | PU |
|-------------------------------------------------------------------|---------------------|----------------|------------------------------------------------------------|------------------------------------------------------------|--------------------------|--------------------------|------------------------------------|---------------------------------------|----|
| <b>Straight connector, fast-connect (insulation displacement)</b> |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260993                                                          | AB-C3-M8MS-F0,25    | 3              | 0.08                                                       | 0.25                                                       | 2.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260985                                                          | AB-C3-M8MS-F0,5     | 3              | 0.25                                                       | 0.5                                                        | 2.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260043                                                          | AB-C4-M8MS-F0,25    | 4              | 0.08                                                       | 0.25                                                       | 2.5                      | 5                        | 30                                 | 4                                     | 1  |
| 22260044                                                          | AB-C4-M8MS-F0,5     | 4              | 0.25                                                       | 0.5                                                        | 2.5                      | 5                        | 30                                 | 4                                     | 1  |
| <b>Straight connector, fast-connect (piercing)</b>                |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260122                                                          | AB-C3-M8MS-P        | 3              | 0.14                                                       | 0.38                                                       | 3                        | 5                        | 60                                 | 4                                     | 1  |
| 22260123                                                          | AB-C4-M8MS-P        | 4              | 0.14                                                       | 0.38                                                       | 3                        | 5                        | 30                                 | 4                                     | 1  |
| <b>Straight connector, screw connection</b>                       |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260120                                                          | AB-C3-M8MS          | 3              | 0.14                                                       | 0.5                                                        | 3.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260121                                                          | AB-C4-M8MS          | 4              | 0.14                                                       | 0.5                                                        | 3.5                      | 5                        | 30                                 | 4                                     | 1  |
| <b>Straight socket, fast-connect (insulation displacement)</b>    |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260994                                                          | AB-C3-M8FS-F0,25    | 3              | 0.08                                                       | 0.25                                                       | 2.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260986                                                          | AB-C3-M8FS-F0,5     | 3              | 0.25                                                       | 0.5                                                        | 2.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260045                                                          | AB-C4-M8FS-F0,25    | 4              | 0.08                                                       | 0.25                                                       | 2.5                      | 5                        | 30                                 | 4                                     | 1  |
| 22260046                                                          | AB-C4-M8FS-F0,5     | 4              | 0.25                                                       | 0.5                                                        | 2.5                      | 5                        | 30                                 | 4                                     | 1  |
| <b>Straight socket, fast-connect (piercing)</b>                   |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260124                                                          | AB-C3-M8FS-P        | 3              | 0.14                                                       | 0.38                                                       | 3                        | 5                        | 60                                 | 4                                     | 1  |
| 22260119                                                          | AB-C4-M8FS-P        | 4              | 0.14                                                       | 0.38                                                       | 3                        | 5                        | 30                                 | 4                                     | 1  |
| <b>Straight socket, screw connection</b>                          |                     |                |                                                            |                                                            |                          |                          |                                    |                                       |    |
| 22260125                                                          | AB-C3-M8FS          | 3              | 0.14                                                       | 0.5                                                        | 3.5                      | 5                        | 60                                 | 4                                     | 1  |
| 22260126                                                          | AB-C4-M8FS          | 4              | 0.14                                                       | 0.5                                                        | 3.5                      | 5                        | 30                                 | 4                                     | 1  |

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

IDC = insulation displacement connector

For the UNITRONIC® field bus type code, please see Main Catalogue table T6

## BUS M12 connectors that can be assembled



### Info

- For
  - PROFIBUS
  - CANopen
  - DeviceNet
  - PROFINET
  - ETHERNET



BUS M12 connectors that can be assembled

### Benefits

- Quick and easy on-site assembly
- Creating individual cable lengths
- Inexpensive and efficient wiring for BUS installations
- Space-saving due to compact dimensions
- Standardised interfaces

### Application range

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

### Product features

- Screened version
- For CANopen/DeviceNet applications (A-coded)
- For PROFIBUS applications (B-inverse coded)
- For PROFINET applications (D-coded)
- For Ethernet applications (D-coded)

### Approvals



### Suitable cables

- Cables for BUS-Systems PROFIBUS-DP/ FMS/FIP Main Catalogue page 302
- Cables for Bus-System CAN Main Catalogue page 329
- Cables for Bus-System DeviceNet Main Catalogue page 327
- PROFIBUS cable: M12 connector on free conductor end Main Catalogue page 391
- ETHERLINE® 2-pairs CAT.5/5e Main Catalogue page [P327]

### Technical data

**Number of pins**  
5 (PROFIBUS/CANopen/DeviceNet)  
4 (PROFINET/ETHERNET)



**Protection rating**  
IP67



**Ambient temperature (operation)**  
Plug/ socket  
-40°C to +85°C

**Contact material**  
CuSn

**Contact surface material**  
Au (PROFIBUS/CANopen/DeviceNet)  
Ni/Au (PROFINET/ETHERNET)

**Coding**  
A - CANopen/DeviceNet  
B - inverse (PROFIBUS)  
D - data (PROFINET/ETHERNET)

**Knurl material**  
Nickel-plated brass

**Gripping body material**  
Zinc die-cast, nickel-plated

**Sealing material**  
NBR (PROFIBUS/CANopen/DeviceNet)  
Neoprene (PROFINET/ETHERNET)

**Contact carrier material**  
PA 66

**Nominal voltage  $U_N$**   
60 V

**Nominal current  $I_N$**   
4 A (PROFIBUS/CANopen/DeviceNet)  
1,75 A (PROFINET/ETHERNET)

**PG screw connection**  
PG 9 (PROFIBUS/CANopen/DeviceNet)

| Article number                                                       | Article designation    | Min. conductor cross-section, flexible, in mm <sup>2</sup> | Max. conductor cross-section, flexible, in mm <sup>2</sup> | Min. conductor cross-section AWG/kcmil | Max. conductor cross-section AWG/kcmil | Min. cable diameter (mm) | Max. cable diameter (mm) | PU |
|----------------------------------------------------------------------|------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------|----------------------------------------|--------------------------|--------------------------|----|
| <b>PROFIBUS, 5-pin straight connector, screw connection</b>          |                        |                                                            |                                                            |                                        |                                        |                          |                          |    |
| 22260653                                                             | AB-C5-M12MSB-PG9-SH-AU | 0.25                                                       | 0.75                                                       | 24                                     | 18                                     | 6                        | 8.5                      | 1  |
| <b>PROFIBUS, 5-pin straight socket, screw connection</b>             |                        |                                                            |                                                            |                                        |                                        |                          |                          |    |
| 22260646                                                             | AB-C5-M12FSB-PG9-SH-AU | 0.25                                                       | 0.75                                                       | 24                                     | 18                                     | 6                        | 8.5                      | 1  |
| <b>PROFINET/ETHERNET, 4-pin straight connector, fast-connection</b>  |                        |                                                            |                                                            |                                        |                                        |                          |                          |    |
| 22260820                                                             | AB-C4-M12MSD-SH        | 0.14                                                       | 0.34                                                       | 26                                     | 22                                     | 4                        | 8                        | 1  |
| <b>CANopen/DeviceNet, 5-pin straight connector, screw connection</b> |                        |                                                            |                                                            |                                        |                                        |                          |                          |    |
| 22260135                                                             | AB-C5-M12MS-PG9-SH     | 0.25                                                       | 0.75                                                       | 24                                     | 18                                     | 6                        | 8                        | 1  |
| <b>CANopen/DeviceNet, 5-pin straight socket, screw connection</b>    |                        |                                                            |                                                            |                                        |                                        |                          |                          |    |
| 22260136                                                             | AB-C5-M12FS-PG9-SH     | 0.25                                                       | 0.75                                                       | 24                                     | 18                                     | 6                        | 8                        | 1  |

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

DeviceNet is a registered trademark of ODVA

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

## Terminating resistor M12 for DeviceNet/CANopen/PROFIBUS



### Info

- Fully industrialised

### Terminating resistor M12 for DeviceNet/CANopen/PROFIBUS

#### Benefits

- Inexpensive termination of BUS cables
- Space-saving due to compact dimensions
- Robust design
- Standardised interfaces

#### Application range

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

#### Product features

- Free of substances that could hinder paint or varnish
- For DeviceNet und CANopen applications (A-Standard coded)
- For PROFIBUS applications (B-inverse coded)

#### Approvals



#### Design

- Straight connector M12 with integrated termination resistor

#### Technical data



**Protection rating**  
IP65/IP68/IP69K



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +90°C

**Contact material**  
CuSn

**Contact surface material**  
Ni/Au

**Coding**  
B - inverse (PROFIBUS)  
A - Standard (DeviceNet/CANopen)

**Knurl material**  
Zinc die-cast, nickel-plated

**Gripping body material**  
TPU, flame-retardant, self-extinguishing

**Sealing material**  
VITON®

**Contact carrier material**  
TPU GF

**Nominal voltage  $U_N$**   
60 V

**Nominal current  $I_N$**   
4 A

| Article number                                                   | Article designation | Nominal current $I_N$ in (A) | Nominal voltage $U_N$ (V) | Coding       | Number of pins | PU |
|------------------------------------------------------------------|---------------------|------------------------------|---------------------------|--------------|----------------|----|
| <b>For PROFIBUS applications (B-inverse coded)</b>               |                     |                              |                           |              |                |    |
| 22260722                                                         | AB-C4-M12MS-PB-TR   | 4                            | 60                        | B - inverse  | 4              | 5  |
| <b>For DeviceNet und CANopen applications (A-Standard coded)</b> |                     |                              |                           |              |                |    |
| 22260766                                                         | AB-C5-M12MS-DN-TR   | 4                            | 60                        | A - Standard | 5              | 5  |

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

For the UNITRONIC® field bus type code, please see table T6

#### Accessories

- M12 T distributor for PROFIBUS refer to page 397
- S/A T-connector M12 as parallel distributor refer to Main Catalogue page 398

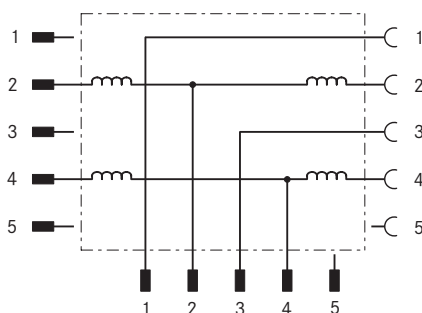


## M 12 T distributor for PROFIBUS



### Info

☑ Fully industrialised



M 12 T distributor for PROFIBUS

### Benefits

- Inexpensive and efficient wiring for PROFIBUS installations
- Space-saving due to compact dimensions
- Robust design
- Standardised interfaces

### Application range

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

### Product features

- 4-pin PROFIBUS T-connector
- M 12 B-coded (inverse)
- Screened version
- M 12 plug to M 12 plug and M 12 socket
- Free of substances that could hinder paint or varnish

### Approvals



### Technical data

|               |                                                                         |
|---------------|-------------------------------------------------------------------------|
| <b>IP</b>     | <b>Protection rating</b><br>IP 67                                       |
| <b>0-85°C</b> | <b>Ambient temperature (operation)</b><br>Plug/socket<br>-25°C to +80°C |
|               | <b>Contact material</b><br>Copper alloy                                 |
|               | <b>Contact surface material</b><br>Ni/Au                                |
|               | <b>Coding</b><br>B - inverse                                            |
|               | <b>Knurl material</b><br>Nickel-plated brass                            |
|               | <b>Gripping body material</b><br>PUR                                    |
|               | <b>Sealing material</b><br>VITON®                                       |
|               | <b>Contact carrier material</b><br>PUR                                  |
|               | <b>Nominal voltage U<sub>N</sub></b><br>60 V                            |
|               | <b>Nominal current I<sub>N</sub></b><br>4 A                             |

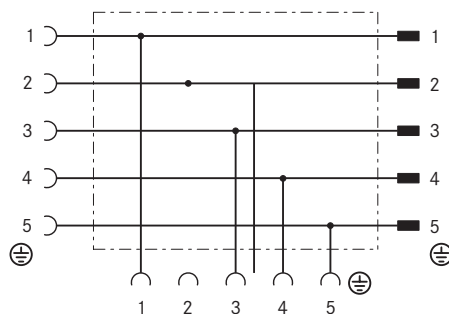
| Article number | Article designation   | Nominal current I <sub>N</sub> in (A) | Nominal voltage U <sub>N</sub> (V) | Number of pins | PU |
|----------------|-----------------------|---------------------------------------|------------------------------------|----------------|----|
| 22260761       | AB-C2-M12T-2XM12FS PB | 4                                     | 30                                 | 4              | 1  |

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For detailed technical information please refer to the data sheet ([www.lappautomation.com](http://www.lappautomation.com))  
For the UNITRONIC® field bus type code, please see table T6

### Accessories

- Terminating resistor M 12 for DeviceNet/CANopen/PROFIBUS refer to Main Catalogue page 396

## S/A T-connector M 12 as parallel distributor



S/A T-connector M 12 as parallel distributor

## Benefits

- Cost-effective and efficient wiring of field bus installations, sensors and actuators
- Space-saving due to compact dimensions
- Robust design
- Standardised interfaces

## Application range

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

## Product features

- 5-pin DeviceNet/CANopen T-Connector
- M 12 A-coded
- Parallel distributor with M 12 socket to M 12 plug and M 12 socket
- Free of substances that could hinder paint or varnish

## Approvals



## Info

- For DeviceNet and CANopen!

## Technical data

**Number of pins**  
5



**Protection rating**  
IP65/IP68/IP69K



**Ambient temperature (operation)**  
Plug/socket  
-25°C to +90°C

**Contact material**  
CuZn

**Contact surface material**  
Ni/Au

**Coding**  
A - Standard

**Knurl material**  
Zinc die-cast, nickel-plated

**Gripping body material**  
TPU, flame-retardant, self-extinguishing

**Sealing material**  
NBR

**Contact carrier material**  
TPU GF

**Nominal voltage  $U_N$**   
60 V

**Nominal current  $I_N$**   
4 A

| Article number | Article designation   | Nominal current $I_N$ in (A) | Nominal voltage $U_N$ (V) | Number of pins | PU |
|----------------|-----------------------|------------------------------|---------------------------|----------------|----|
| 22260765       | AB-C5-M12T-2XM12FS DN | 4                            | 60                        | 5              | 5  |

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

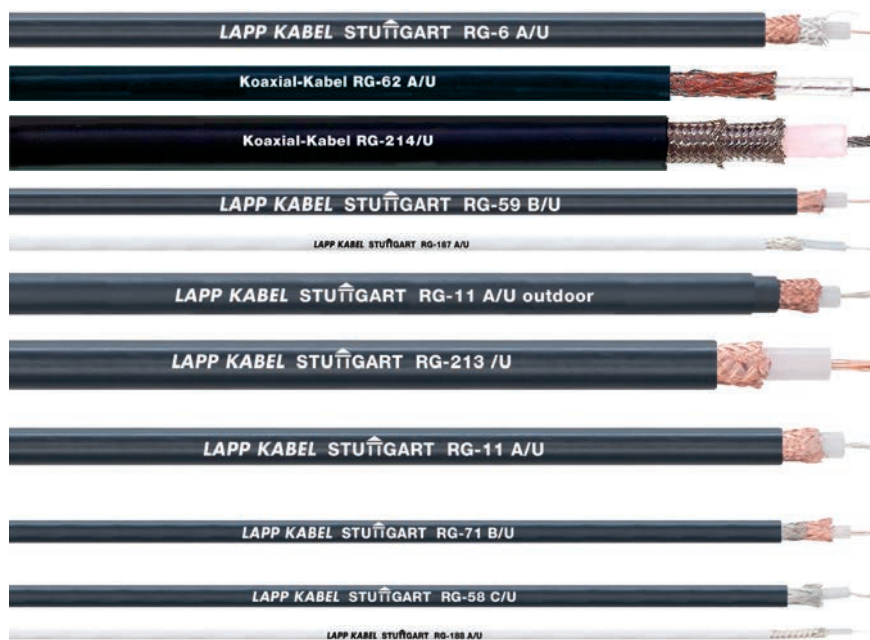
For detailed technical information please refer to the data sheet ([www.lappautomation.com](http://www.lappautomation.com))

For the UNITRONIC® field bus type code, please see table T6

## Accessories

- Terminating resistor M 12 for DeviceNet/CANopen/PROFIBUS refer to Main Catalogue page 396

## Coaxial - RG



## Benefits

- Coaxial cables allow distortion-free and low-attenuation transmission of signals with a high bandwidth.
- High frequencies

## Application range

- For applications with limited movements and for fixed installation in dry or damp interiors and outdoors
- For radio and computer systems, as well as all applications related to commercial radio-frequency technology and electronics

## Product features

- Flame-retardant according to IEC 60332.1.2

## Approvals



## Design

- Coaxial cables are significantly less sensitive to external interference due to their structure.

## Technical data

## Dielectric constant

- Polyethylene (PE) 2.3
- Polyethylene, hollow (PE-ho) 1.5
- Polytetrafluoroethylene (PTFE) 2.1



## Minimum bending radius

Fixed installation: 6 x outer diameter



## Temperature range

Fixed installation: PE outer sheath:  
-40°C to +80°C  
Fixed installation: PVC outer sheath:  
-40°C to +80°C  
Fixed installation: fluoroplastic  
-55°C to +250°C

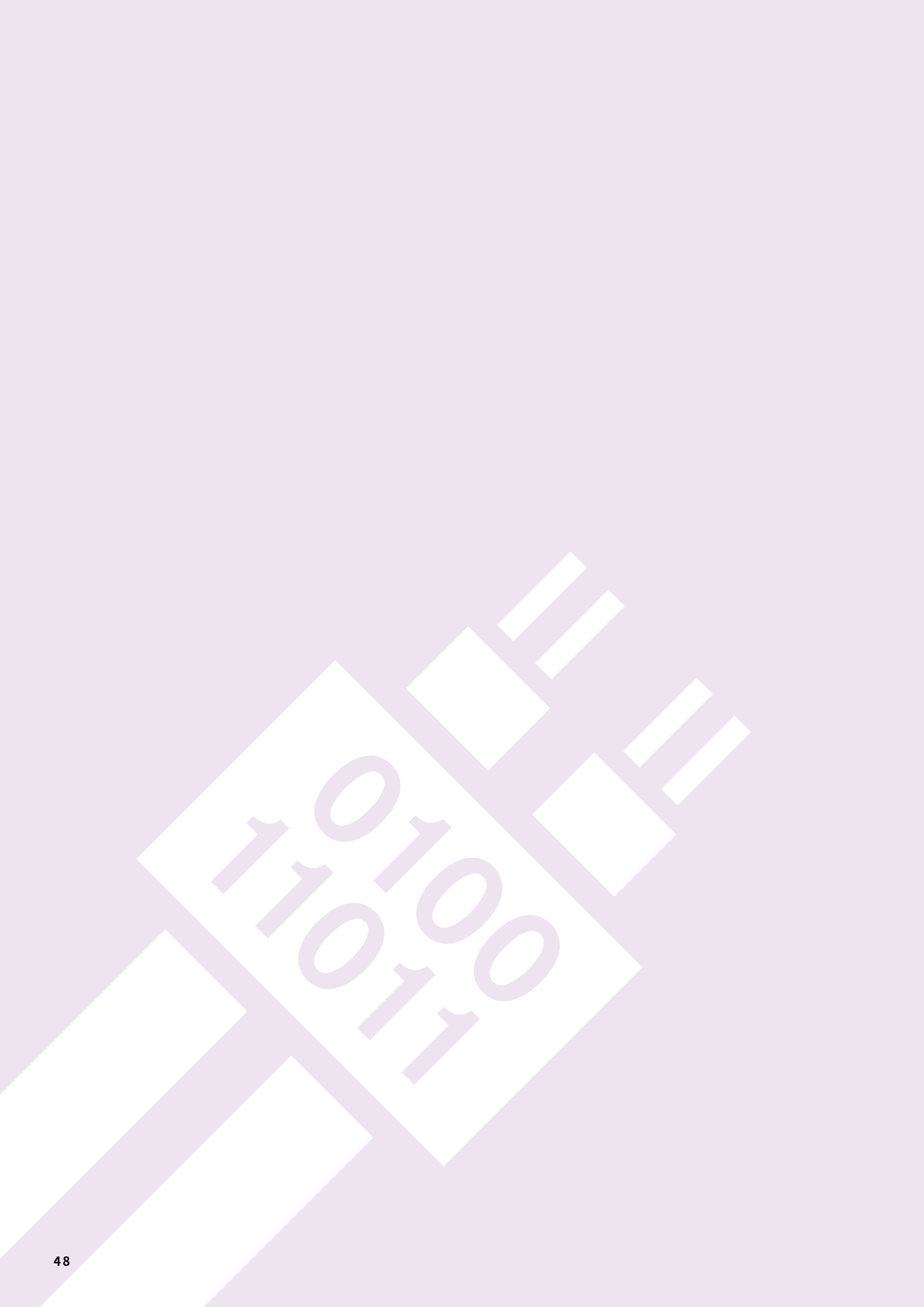


## Specifications and approvals

Similar to MIL C-17F

| Article number | Article designation | Characteristic impedance in Ohm | Capacity pF/m | Attenuation approx. dB/100 m at 200 MHz/400 MHz | Propagation rate (%) | Operating voltage 50 Hz eff. kV | Test voltage (kV) | Inner conductor material | Internal Ø | Dielectric material | Dielectric Ø | Outer conductor material | Outer cable sheath | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------|---------------------------------|---------------|-------------------------------------------------|----------------------|---------------------------------|-------------------|--------------------------|------------|---------------------|--------------|--------------------------|--------------------|---------------------|----------------------|----------------|
| 2170000        | RG-58 C/U           | 50 +/- 2 Ω                      | 101           | 24 / 33                                         | 66                   | 2.0                             | 5.0               | CuLivz                   | 0.90       | PE                  | 2.95         | Cvz                      | PVC                | 4.95                | 19.1                 | 38             |
| 2170001        | RG-174 A/U          | 50 +/- 2 Ω                      | 101           | 40 / 59                                         | 66                   | 1.5                             | 2.0               | StCuLibl                 | 0.48       | PE                  | 1.52         | Cvz                      | PVC                | 2.80                | 5.4                  | 12             |
| 2170002        | RG-178 B/U          | 50 +/- 2 Ω                      | 95            | 63 / 93                                         | 70                   | 0.7                             | 2.0               | StCuLivs                 | 0.30       | PTFE                | 0.86         | Cvs                      | FEP                | 1.91                | 4.4                  | 9              |
| 2170003        | RG-188 A/U          | 50 +/- 2 Ω                      | 95            | 47 / 56                                         | 70                   | 1.5                             | 2.0               | StCuLivs                 | 0.51       | PTFE                | 1.52         | Cvs                      | PTFE               | 2.76                | 8.3                  | 17.5           |
| 2170005        | RG-213 /U           | 50 +/- 2 Ω                      | 101           | 10 / 15                                         | 66                   | 5.0                             | 10.0              | CuLibl                   | 2.25       | PE                  | 7.25         | Cbl                      | PVC                | 10.30               | 75.8                 | 157            |
| 2170006        | RG-214 /U           | 50 +/- 2 Ω                      | 101           | 9 / 14                                          | 66                   | 5.0                             | 10.0              | CuLivs                   | 2.25       | PE                  | 7.25         | CvsCvs                   | PVC                | 10.80               | 117.8                | 207            |
| 2170007        | RG-223 /U           | 50 +/- 2 Ω                      | 101           | 23 / 34                                         | 66                   | 2.0                             | 3.0               | CuMvs                    | 0.89       | PE                  | 2.95         | CvsCvs                   | PVC                | 5.50                | 38.5                 | 60             |
| 2170016        | RG-6 A/U            | 75 +/- 3 Ω                      | 67            | 14 / 20                                         | 66                   | 2.0                             | 5.0               | StCuMbl                  | 0.72       | PE                  | 4.70         | Cbl                      | PVC                | 8.40                | 72.0                 | 120            |
| 2170009        | RG-11 A/U           | 75 +/- 3 Ω                      | 67            | 11 / 16                                         | 66                   | 5.0                             | 10.0              | CuLivz                   | 1.20       | PE                  | 7.30         | Cbl                      | PVC                | 10.30               | 55.5                 | 140            |
| 2170011        | RG-11 A/U outdoor   | 75 +/- 3 Ω                      | 67            | 11 / 16                                         | 66                   | 5.0                             | 10.0              | CuLivz                   | 1.20       | PE                  | 7.30         | Cbl                      | PVC                | 12.10               | 55.5                 | 170            |
| 2170012        | RG-59 B/U           | 75 +/- 3 Ω                      | 67            | 16.5/23                                         | 66                   | 1.7                             | 7.0               | StCuMbl                  | 0.60       | PE                  | 3.70         | Cbl                      | PVC                | 6.15                | 25.0                 | 57             |
| 2170010        | RG-187 A/U          | 75 +/- 3 Ω                      | 65            | 47 / 56                                         | 70                   | 1.5                             | 2.0               | StCuLivs                 | 0.31       | PTFE                | 1.52         | Cvs                      | PTFE               | 2.80                | 7.3                  | 17             |
| 2170008        | RG-62 A/U           | 93 +/- 5 Ω                      | 43            | 15 / 19                                         | 75                   | 0.8                             | 2.0               | StCuMbl                  | 0.65       | PE hollow           | 3.70         | Cbl                      | PVC                | 6.15                | 24.0                 | 52             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100kg. Refer to Main Catalogue Appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)  
Photographs are not to scale and do not represent detailed images of the respective products.



## Accessories for INDUSTRIAL networking

### LAN cables for structured industrial cabling

|                                       |        |
|---------------------------------------|--------|
| ETHERLINE® TRAIN                      | 50     |
| ETHERLINE® Cat.5e                     | 51     |
| ETHERLINE® Cat.5e FLEX                | 51     |
| ETHERLINE® Cat.5e FD                  | 52     |
| ETHERLINE® Cat.5 FD BK                | 52     |
| ETHERLINE® Cat.5 ARM                  | 53     |
| ETHERLINE® Cat.5 FRNC HYBRID          | 53     |
| ETHERLINE® PN Cat.5                   | 54     |
| ETHERLINE® PN FLEX                    | 54     |
| ETHERLINE® PN Cat.5 FD                | 54     |
| ETHERLINE® Y Cat.5e BK 2x2AWG22/7     | New 55 |
| ETHERLINE® TORSION Cat. 5             | 55     |
| ETHERLINE® Cat.6 <sub>A</sub> + Cat.7 | 56     |
| ETHERLINE® CAT.6 FD                   | New 56 |

## Components for building-networking

### LAN cables for structured building cabling

|                                         |        |
|-----------------------------------------|--------|
| UNITRONIC® LAN 200 - CAT.5e             | New 57 |
| UNITRONIC® LAN 250 - CAT.6              | New 58 |
| UNITRONIC® LAN 500 - Cat.6 <sub>A</sub> | New 59 |

### RJ45 Ethernet connector

|                                                  |        |
|--------------------------------------------------|--------|
| UNITRONIC® LAN 1000 S/FTP Cat.7                  | New 60 |
| UNITRONIC® LAN 1200 S/FTP Cat.7 <sub>A</sub>     | New 61 |
| UNITRONIC® LAN 1500 S/FTP Cat.7 <sub>A</sub>     | New 51 |
| UNITRONIC® LAN OUTDOOR                           | New 62 |
| UNITRONIC® LAN FLEX                              | New 62 |
| Connector RJ45 CAT.5 Hirose TM11                 | 63     |
| Connector RJ45 CAT.5 Stewart SS37                | 63     |
| Field-Terminable Connector RJ45 CAT.5e FM45      | 63     |
| Connector RJ45 CAT.6 Hirose TM21                 | 64     |
| Connector RJ45 Cat.6 <sub>A</sub> fieldmountable | New 64 |

# ETHERLINE®

Data communication systems  
for ETHERNET-Technology



## Industrial Ethernet

Industrial Ethernet for special applications



## ETHERLINE® TRAIN

Ethernet cables according to EN 50264-3-1 Type XM for high requirements in railway applications

LAPP KABEL STUTTGART ETHERLINE® TRAIN FLEX Cat.5e PE 1x4x0,5 EN 50264-3-1 XM

LAPP KABEL STUTTGART ETHERLINE® TRAIN FLEX Cat.7 PE 4x2x24/7 AWG EN 50264-3-1 XM



## Info

- Meets EN 50264-3-2 type XM and EN 45545-2
- Cat.5e Performance up to 100 / 1000 MBit/s
- Cat.6<sub>A</sub> & Cat.7 qualified for 10 GBit/s

## Benefits

- Good chemical resistance
- Resistant to mechanical influences in harsh environmental conditions
- Extended temperature range
- Reduced flame spreading increase the protection against damage to persons and property in the event of a fire

## Application range

- For use in railway vehicles and buses, for fixed installations and applications where limited movement may occur
- Suitable for connecting to of e.g. camera systems, enter-/infotainment for passengers, ticketing systems
- Also applicable within oily environments and areas with increased ambient temperature

## Product features

- Fire behaviour according to EN/IEC:
  - Halogen-free acc. to EN 60754-1
  - No corrosive gases acc. to EN 60754-2
  - No fluorine acc. to EN 60684-2
  - No toxic gases acc. to EN 50305
  - Low smoke density acc. to EN 61034-2
  - Flame-retardant acc. to EN 60332-1-2
  - No flame propagation acc. to EN 60332-3-25

- Fire behaviour according to NF:
  - Toxicity of gases acc. to NF X 70-100
  - Low smoke density acc. to NF X 10-702
  - No flame propagation acc. to NF C 32-070, Cat. C1 and C2
- Chemical properties:
  - Oil resistant acc. to EN 50264-1
  - Fuel resistant acc. to EN 50264-1
  - Acid resistant acc. to EN 50264-1
  - Alkali resistant acc. to EN 50264-1
  - Ozone resistant acc. to EN 50264-3-2

## Norm references / Approvals

- Electrical requirements acc. to IEC 61156-6 EN 50264-1 EN 45545-2 HL1, HL2, HL3

## Design

- Stranded tinned 7-wire conductor
- Core insulation: Based on Polyolefin
- Cat.5e: SF/UTP - copper braid and foil screening as overall screening
- Cat.6 A /Cat.7: S/FTP - copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath: electron beam cross-linked polymer-compound EM 104
- Outer sheath colour: Black

## Technical data



## Classification

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



## Peak operating voltage

(not for power applications) 125 V



## Minimum bending radius

Flexing: 10 x outer diameter  
Fixed installation: 8 x outer diameter



## Test voltage

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



## Characteristic impedance

nom. 100 Ohm acc. to IEC 61156-6



## Temperature range

Fixed installation:  
-45°C to +90°C  
Occasional flexing: -35°C up to +90°C

| Article number                | Article designation                                  | Number of pairs and AWG per conductor | Max. outer diameter (mm) | Copper index (kg/km) |
|-------------------------------|------------------------------------------------------|---------------------------------------|--------------------------|----------------------|
| <b>Cat.5e, 2-pair version</b> |                                                      |                                       |                          |                      |
| 2170906                       | ETHERLINE® TRAIN FLEX Cat.5e 1x4x22/7 PE             | 1 x 4 x AWG22/7                       | 6.5                      | 30.4                 |
| 2170910                       | ETHERLINE® TRAIN FLEX Cat.5e 1x4x0,5 PE              | 1 x 4 x 0,5/7                         | 7.6                      | 41                   |
| <b>Cat.5e, 2-pair version</b> |                                                      |                                       |                          |                      |
| 2170907                       | ETHERLINE® TRAIN Cat.5e 4x2x24/7 PE                  | 4 x 2 x AWG24/7                       | 7.7                      | 38                   |
| <b>Cat.6<sub>A</sub></b>      |                                                      |                                       |                          |                      |
| 2170908                       | ETHERLINE® TRAIN FLEX Cat.6 <sub>A</sub> 4x2x24/7 PE | 4 x 2 x AWG24/7                       | 8.4                      | 38                   |
| <b>Cat.7</b>                  |                                                      |                                       |                          |                      |
| 2170909                       | ETHERLINE® TRAIN FLEX Cat.7 4x2x24/7 PE              | 4 x 2 x AWG24/7                       | 8.4                      | 38                   |

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

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

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

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

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



## ETHERLINE® Cat.5e

### Fixed installation

LAPP KABEL STUTTGART ETHERLINE® CAT.5e

LAPP KABEL STUTTGART ETHERLINE® H-H CAT.5e



#### Info

- Industrial Ethernet cable
- Cat.5e

#### Benefits

- Very low installation cost due to the use of Ethernet cables
- Screened against interference

#### Application range

- 10/100 Mbit/s for Industrial Ethernet
- Seamless communication from the sensor/ actuator level to the Internet
- Industrial use
- Suitable for fixed installation in dry and damp rooms

#### Product features

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

- PUR outer sheath is highly resistant to mineral oils and abrasion
- Halogen-free and flame-retardant FRNC outer sheath

#### Approvals



#### Design

- Solid conductor
- Core insulation made of foam skin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)
- 2 or 4-pair version

#### Technical data

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

**Minimum bending radius**  
Fixed installation: see data sheet

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

**Temperature range**  
During installation: -5 °C to +60 °C  
Operation: see data sheet

**Characteristic impedance**  
100 Ohm ± 15%

| Article number                         | Article designation   | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------|-----------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>2-pair version</b>                  |                       |                                       |                     |                      |                |
| <b>Halogen-free compound</b>           |                       |                                       |                     |                      |                |
| 2170280                                | ETHERLINE® H CAT.5e   | 2 x 2 x AWG24/1                       | 5.8                 | 22.0                 | 45             |
| <b>PUR outer sheath, halogen-free</b>  |                       |                                       |                     |                      |                |
| 2170281                                | ETHERLINE® P CAT.5e   | 2 x 2 x AWG24/1                       | 5.8                 | 22.0                 | 53             |
| <b>4-pair version</b>                  |                       |                                       |                     |                      |                |
| <b>Halogen-free compound</b>           |                       |                                       |                     |                      |                |
| 2170296                                | ETHERLINE® H CAT.5e   | 4 x 2 x AWG24/1                       | 6.3                 | 32.0                 | 54             |
| 2170298                                | ETHERLINE® H-H CAT.5e | 4 x 2 x AWG24/1                       | 6.0 / 7.5           | 32.0                 | 80             |
| <b>Outer sheath: PUR, halogen-free</b> |                       |                                       |                     |                      |                |
| 2170297                                | ETHERLINE® P CAT.5e   | 4 x 2 x AWG24/1                       | 6.3                 | 32.0                 | 62             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## ETHERLINE® Cat.5e FLEX

### Flexible use

LAPP KABEL STUTTGART ETHERLINE® Flex CAT.5

LAPP KABEL STUTTGART ETHERLINE® P Flex CAT.5e



#### Info

- Industrial Ethernet cable
- Cat.5e
- Only for patch cable applications (max. 60 m)

#### Benefits

- For directly connecting two electric components
- Very low installation cost due to the use of Ethernet cables
- Screened against interference

#### Application range

- Suitable for fixed installation in dry and damp rooms
- 10/100 Mbit/s for Industrial Ethernet
- For flexible applications (7-wire stranded conductor)
- Industrial use

#### Product features

- Premium screening against electromagnetic interference
- Halogen-free outer sheath
- PUR outer sheath is highly resistant to mineral oils and abrasion

#### Design

- Stranded conductor, 7-wire, bare
- Core insulation made of foam skin
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)
- 2 or 4-pair version

#### Technical data

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

**Minimum bending radius**  
See data sheet

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

**Temperature range**  
During installation: -5 °C to +60 °C  
Operation: see data sheet

**Characteristic impedance**  
100 Ohm ± 15%

| Article number                         | Article designation      | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------------------------------|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>2-pair version</b>                  |                          |                                       |                     |                      |                |
| <b>Halogen-free compound</b>           |                          |                                       |                     |                      |                |
| 2170283                                | ETHERLINE® H Flex CAT.5e | 2 x 2 x AWG26/7                       | 5.4                 | 19.0                 | 43             |
| <b>PUR outer sheath, halogen-free</b>  |                          |                                       |                     |                      |                |
| 2170284                                | ETHERLINE® P Flex CAT.5e | 2 x 2 x AWG26/7                       | 5.8                 | 19.0                 | 45             |
| <b>4-pair version</b>                  |                          |                                       |                     |                      |                |
| <b>Halogen-free compound</b>           |                          |                                       |                     |                      |                |
| 2170299                                | ETHERLINE® H Flex CAT.5e | 4 x 2 x AWG26/7                       | 6.1                 | 25.0                 | 48             |
| <b>Outer sheath: PUR, halogen-free</b> |                          |                                       |                     |                      |                |
| 2170300                                | ETHERLINE® P Flex CAT.5e | 4 x 2 x AWG26/7                       | 6.1                 | 25.0                 | 54             |

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**ETHERLINE® Cat.5e FD**

Highly flexible application

**Benefits**

- Very low installation cost due to the use of Ethernet cables
- Screened against interference
- Seamless communication from the sensor/ actuator level to the Internet

**Application range**

- 10/ 100 Mbit/s for Industrial Ethernet
- Industrial use
- Power chain applications
- Dry or damp rooms

**Product features**

- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference
- PUR outer sheath is highly resistant to mineral oils and abrasion

**Design**

- Braided conductor, 19-wire
- Inner sheath: thermoplastic elastomer, halogen-free
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- PUR outer sheath
- Colour: water blue (RAL 5021)
- 2 or 4-pair version

| Article number        | Article designation    | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|-----------------------|------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>2-pair version</b> |                        |                                       |                     |                      |                |
| 2170289               | ETHERLINE® FD P CAT.5e | 2 x 2 x AWG26/19                      | 6.1                 | 20.0                 | 48             |
| <b>4-pair version</b> |                        |                                       |                     |                      |                |
| 2170489               | ETHERLINE® FD P CAT.5e | 4 x 2 x AWG26/19                      | 6.3                 | 27.0                 | 54             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

**Info**

- Industrial Ethernet cable
- For highly flexible applications
- Only for patch cable applications (max. 60 m)

**Technical data**

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



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



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



**Temperature range**  
Flexing: -20 °C to +70 °C  
Fixed installation:  
-30 °C to +80 °C



**Characteristic impedance**  
100 Ohm +/- 15%

**ETHERLINE® Cat.5 FD BK**

The Ethernet cable for installation in events

LAPP KABEL STUTTGART ETHERLINE® CAT.5 FD BK

**Info**

- Suitable for outdoor use and direct burial
- Usable on the roads
- CAT.5-Performance

**Technical data**

**Minimum bending radius**  
95 mm



**Temperature range**  
Flexible use: -5 °C to +50 °C  
Fixed installation: -40 °C to +70 °C

**Benefits**

- Very low installation cost due to the use of Ethernet cables
- Additional application options thanks to suitability for outdoor use, UV-resistant
- Good flexibility - easy installation with tight space requirements
- Screened against interference
- Easy to coil for mobile use

**Application range**

- Suitable for the transfer of audio signals (ETHERSOUND), light control signals (DMX over Ethernet), or for computer networking

**Product features**

- ETHERLINE® CAT.5 FD BK is a highly flexible, halogen-free, CATEGORY 5 high-speed data transmission cable, which specifically developed for road environments.
- Complies with standards EIA/TIA-568, TSB-36 and ISO/IEC IS 11801

**Approvals****Design**

- Bare stranded copper wire, 26AWG (19 x 0.10), (0.14 mm<sup>2</sup>)
- Insulation: foam skin, max. core diameter 1.0 mm
- Twisting: 2 twisted-pair cores, stranding from 4 pairs
- Inner sheath: halogen-free TPE compound
- Screening: braided tinned-copper wires, coverage of 85% ± 5
- Outer sheath: halogen-free PUR, black

| Article number | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------------|---------------------|----------------------|----------------|
| CE217489       | 4x2xAWG26/19                          | 6.3                 | 27.0                 | 54             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Copper price basis: EUR 150/100kg. Refer to Appendix T17 for the definition and calculation of copper-related surcharges.  
Standard lengths: (100; 500; 1000) m  
Packaging size: coil ≤ 30 kg or ≤ 250 m, otherwise drum  
Please specify the preferred type of packaging (e.g. 1 x 500 m drum or 5 x 100 m coils).  
Photographs are not to scale and do not represent detailed images of the respective products.

**Similar products**

- ETHERLINE® FD P CAT.5

## ETHERLINE® Cat.5 ARM

Fixed installation



### Info

- Industrial Ethernet cable
- With armouring for improved rodent protection

### Benefits

- Very low installation cost due to the use of Ethernet cables
- EMC-optimised
- Rodent-protection

### Application range

- Can be used for Industrial Ethernet in harsh industrial environments
- 10/100 Mbit/s for Industrial Ethernet



### Product features

- CAT.5-Performance

### Design

- Solid and bare copper conductor
- Core insulation: PE
- Overlapping plastic tape
- Overall screening with copper braid and plastic-laminated aluminium foil
- Inner sheath made of PVC (green) 2 layer galvanizid steel tape
- Outer sheath made of black polyethylene (PE)

### Technical data



#### Minimum bending radius

Fixed installation:  
10 x cable diameter  
Fixed installation: 5 x cable diameter, once



#### Test voltage

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



#### Temperature range

Operation: -40 °C to +70 °C  
During installation: -20 °C to +60 °C



#### Characteristic impedance

100 Ohm ± 15%

| Article number | Article designation  | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|----------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170496        | ETHERLINE® Cat.5 ARM | 2 x 2 x AWG22/1                       | 9.3                 | 30.4                 | 124            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## ETHERLINE® Cat.5 FRNC HYBRID

Flexible use



### Info

- HYBRID: cable for data transmission + power supply

### Benefits

- For use where the combination of a halogen-free outer sheath with properties similar to PUR and enhanced flame-retardance is required

### Application range

- Industrial Ethernet cable
- 10/100 Mbit/s for Industrial Ethernet
- High-quality, double screening ensures high transmission reliability in areas with electromagnetic interference

### Product features

- Flame-retardant according to IEC 60332.1.2
- HYBRID: cable for data transmission + power supply

### Design

- Colour: green (based on RAL 6018)
- Cores for Power Supply 4 x 1.5 mm<sup>2</sup> (AWG16)
- Data transfer: braided conductor, 7-wire, bare
- Screening: wrapped with foil and braided copper wires
- Twisting: data pairs and power supply pairs twisted together
- Overlapping plastic tape
- FRNC outer sheath

### Technical data



#### Minimum bending radius

Fixed installation:  
10 x cable diameter  
Fixed installation: 5 x cable diameter, once



#### Test voltage

See data sheet



#### Temperature range

Operation: -20 °C to +70 °C



#### Characteristic impedance

impedance

| Article number | Article designation          | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170887        | ETHERLINE® Cat.5 FRNC HYBRID | 2x2xAWG22/7 + 4x1.5                   | 10.3                | 94.2                 | 153            |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## ETHERLINE® PN Cat.5

## Fixed installation

LAPP KABEL STUTTGART ETHERLINE® CAT.5e

## Benefits

- For Profinet applications
- Screened against interference

## Application range

- for industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702

## Product features

- Fixed installation
- FC: "Fast Connect" cable design

- Flame-retardant according to IEC 60332-1-2
- ETHERLINE® Y FC version: flame-retardant according to IEC 60332-3

## Design

- Solid and bare copper conductor
- Core insulation: PE
- Star quad
- Overall screening with copper braid and plastic-laminated aluminium foil
- Outer sheath made of PVC

| Article number                                    | Article designation                | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|---------------------------------------------------|------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170891                                           | ETHERLINE® PN Cat.5e Y             | 2 x 2 x AWG22/1                       | 6.4                 | 30.4                 | 56             |
| <b>FC: "Fast Connect" cable design</b>            |                                    |                                       |                     |                      |                |
| 2170893                                           | ETHERLINE® Y FC UL/CSA (CMG) CAT.5 | 2 x 2 x AWG22/1                       | 6.5                 | 30.4                 | 70             |
| <b>Suitable for outdoor use and direct burial</b> |                                    |                                       |                     |                      |                |
| 2170494                                           | ETHERLINE® PN Cat.5e YY            | 2 x 2 x AWG22/1                       | 7.8                 | 30.4                 | 62             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## ETHERLINE® PN FLEX

LAPP KABEL STUTTGART ETHERLINE® Flex CAT.5

## Benefits

- Screened against interference
- Conductor: AWG22 = PROFINET-compliant

## Application range

- for industrial secondary and tertiary cabling according to EN 50173-3 ISO/IEC 24702

## Product features

- Flame-retardant according to CSA FT4 UL Vertical-Tray Flame Test

## Design

- Stranded 7-wire bare conductor
- Core insulation: PE
- Inner sheath made of PVC
- Overall screening with copper braid and plastic-laminated aluminium foil
- PVC-based outer sheath
- Colour: green

| Article number | Article designation           | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|-------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170886        | ETHERLINE® PN Cat.5 Y FLEX FC | 2 x 2 x AWG22/7                       | 6.5                 | 31.3                 | 67             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

## ETHERLINE® PN Cat.5 FD

LAPP KABEL STUTTGART ETHERLINE® CAT.5e

LAPP KABEL STUTTGART ETHERLINE® FD P CAT.5 2x2xAWG22/7

## Benefits

- Screened against interference
- Conductor: AWG22 = PROFINET-compliant

## Application range

- Power chain applications
- Dry or damp rooms
- Industrial use

## Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion

- Flame-retardant according to IEC 60332.1.2

## Design

- Stranded 7-wire bare conductor
- Inner sheath: thermoplastic copolymer (FRNC)
- Overall screening with copper braid and plastic-laminated aluminium foil
- PUR outer sheath
- Colour: green (based on RAL 6018)

| Article number                                                               | Article designation      | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------------------------------------------------------|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>For highly flexible applications (7-wire stranded conductor) = type C</b> |                          |                                       |                     |                      |                |
| 2170894                                                                      | ETHERLINE® FD P FC CAT.5 | 2 x 2 x AWG22/7                       | 6.5                 | 31.3                 | 63             |

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



## Info

- Conductor: AWG22 = PROFINET-compliant
- CAT.5/5e

## Technical data



**Minimum bending radius**  
See data sheet



**Test voltage**  
See data sheet



**Temperature range**  
See data sheet



**Characteristic impedance**  
100 Ohm +/- 15%



## Info

- for Profinet applications
- CAT.5-Performance
- Flexible use

## Technical data



**Minimum bending radius**  
Fixed installation: 7 x outer diameter  
Fixed installation: 3 x outer diameter



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



**Temperature range**  
Operation: -40 °C to +70 °C



**Characteristic impedance**  
100 Ohm +/- 15%



## Info

- Highly flexible application
- for Profinet applications

## Technical data



**Minimum bending radius**  
Flexing: 7.5 x outer diameter  
Fixed installation: 5 x cable diameter, once



**Test voltage**  
Core/core: 700 V  
Core/screen: 700 V



**Temperature range**  
Operation: -20 °C to +70 °C



**Characteristic impedance**  
100 Ohm +/- 15%

New

## ETHERLINE® Y Cat.5e BK 2x2AWG22/7



### Benefits

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

### Application range

- Many applications with Industrial Ethernet, e.g. PROFINET type B, i.e. fixed installation and flexible use.
- Resistant to acids, alkalis and certain oils at room temperature

### Product features

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

### Approvals



### Design

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

### Technical data

- Peak operating voltage**  
(not for power applications) 125 V
- Minimum bending radius**  
Fixed installation: 10 x outer diameter  
Flexing: 15 x outer diameter
- Test voltage**  
Core/core: 1000 V  
Core/screen: 500 V
- Temperature range**  
Flexing: -10°C to +70°C  
Fixed installation: -40°C to +80°C
- Characteristic impedance**  
At 1 - 100 MHz: 100 ± 15 Ohm

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

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

## ETHERLINE® TORSION Cat. 5



### Info

- Industrial Ethernet Cable, 2-pair, suitable for torsion stress

### Benefits

- This cable is an important supplement to the range of ETHERLINE® Industrial Ethernet cables.
- Cable suitable for high torsion stress. Tested with more than 1 million bending cycles and a right/left movement of 180° per metre.

### Application range

- Many applications with Industrial Ethernet, e.g. PROFINET, i.e. fixed installation, flexible and highly flexible use as well as TORSION.

### Product features

- Flame-retardant according to IEC 60332.1.2
- Outer sheath with high abrasion-resistance

### Approvals



- UL AWM (Style 21161)

### Design

- Stranded conductor, tinned
- AWG 22 (19-wire)
- PE core insulation
- Star quad
- PUR outer sheath, halogen-free

### Technical data

- Peak operating voltage**  
max. 100 V (not for power applications)
- Minimum bending radius**  
Installation: 5 x outer diameter
- Test voltage**  
700 V
- Temperature range**  
-40°C to +80°C
- Characteristic impedance**  
At 1 - 100 MHz: 100 ± 15 Ohm

| Article number | Article designation      | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|--------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170888        | ETHERLINE® TORSION CAT.5 | 2 x 2 x AWG22/19                      | 6.5                 | 31.3                 | 52             |

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

### Accessories

- Multipurpose shears A and B refer to Main Catalogue page 902
- SMARTSTRIP stripping tool refer to Main Catalogue page 907



ETHERLINE® Cat.6<sub>A</sub> + Cat.7

## Fixed installation



## Benefits

- Screened against interference
- Cat.6<sub>A</sub> = 500 MHz
- CAT.7 = 600 MHz

## Application range

- Can be used for Industrial Ethernet in harsh industrial environments
- Can be used in dry or damp rooms

## Product features

- PUR outer sheath is highly resistant to mineral oils and abrasion

- Robust, halogen-free outer sheath
- PVC outer sheath

## Approvals



## Design

- Solid bare copper wire AWG22
- Core insulation made of polyethylene (PE)
- Overall screening with copper braid and plastic-laminated aluminium foil
- Colour: green

| Article number | Article designation             | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|---------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170466        | ETHERLINE® Cat.6 <sub>A</sub> H | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 99             |
| 2170476        | ETHERLINE® CAT.7 H              | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 99             |
| 2170465        | ETHERLINE® CAT.6 <sub>A</sub> P | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 91             |
| 2170475        | ETHERLINE® CAT.7 P              | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 91             |
| 2170464        | ETHERLINE® Cat.6 <sub>A</sub> Y | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 98             |
| 2170474        | ETHERLINE® Cat.7 Y              | 4 x 2 x AWG22/1                       | 8.7                 | 53.0                 | 98             |

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

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

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

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

PROFINET® is a registered trademark of the PNO (PROFIBUS user organisation)

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

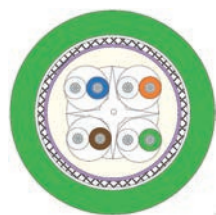
## Accessories

- DATA STRIP stripping tool refer to Main Catalogue page 907

## New

## ETHERLINE® CAT.6 FD

## Fixed installation



## Benefits

- PUR outer sheath is highly resistant to most oils, abrasion, and UV-radiation
- Premium screening against electromagnetic interference

## Application range

- For use in power chains and moving machinery parts in dry or damp rooms

## Product features

- Flame-retardant according to IEC 60332.1.2

## Approvals



- UL/CSA type CMX (UL 444)

## Design

- Stranded conductor, tinned
- AWG 26 (19-wire)
- PP core insulation
- Inner sheath: thermoplastic copolymer (FRNC)
- PUR outer sheath, halogen-free
- Colour: green (based on RAL 6018)

## Suitable connectors

- Field-Terminable Connector RJ45 CAT.5e FM45 418
- Connector RJ45 Cat.6A fieldmountable 419

| Article number | Article designation   | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|-----------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170488        | ETHERLINE® FD P CAT.6 | 4 x 2 x AWG26/19                      | 7.8                 | 31.7                 | 63             |

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

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

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

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

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

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



## Info

- Industrial Ethernet cable

## Technical data



Characteristic impedance  
100 Ohm at 1 - 100 MHz



## Info

- CAT.6 for drag chain!
- Only for patch cable applications (max. 60 m)

## Technical data



Peak operating voltage  
max. 100 V (not for power applications)



Minimum bending radius  
Fixed installation:  
4 x outer diameter  
Flexing: 7.5 x outer diameter



Test voltage  
700 V



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



Characteristic impedance  
At 1 - 100 MHz: 100 ± 15 Ohm



New

## UNITRONIC® LAN 200 - CAT.5e



### Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin

### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T
- IEEE 802.5: ISDN; FDDI; ATM

### Approvals



- Class D in ISO/IEC 11801 standard corresponds to CAT.5
- LAN CAT.5e cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class D).

### Design

- U/UTP: no overall or pair shielding
- F/UTP: foil screening as overall screening
- SF/UTP: copper braid and foil screening as overall screening
- Solid conductor
- Outer sheath either as PVC or LSZH

### Technical data



**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C



**Characteristic impedance**  
100 Ohm ± 15%

| Article number               | Article designation    | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>PVC version</b>           |                        |                                       |                     |                      |                |
| 2170125                      | 200 U/UTP Cat.5e       | 4 x 2 x AWG24/1                       | 5.6                 | 17.0                 | 32             |
| 2170126                      | 200 F/UTP Cat.5e       | 4 x 2 x AWG24/1                       | 6.4                 | 18.0                 | 42             |
| 2170128                      | 200 SF/UTP Cat.5e      | 4 x 2 x AWG24/1                       | 6.7                 | 32.0                 | 60             |
| <b>Halogen-free versions</b> |                        |                                       |                     |                      |                |
| 2170185                      | 200 U/UTP Cat.5e LSZH  | 4 x 2 x AWG24/1                       | 5.6                 | 17.0                 |                |
| 2170138                      | 200 SF/UTP Cat.5e LSZH | 4 x 2 x AWG24/1                       | 6.7                 | 32.0                 | 61             |

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

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

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

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

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

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

### Accessories

- Connector RJ45 CAT.5 Hirose TM11 refer to Main Catalogue page 418
- Connector RJ45 CAT.5 Stewart SS37 refer to Main Catalogue page 418
- Field-Terminable Connector RJ45 CAT.5e FM45 refer to Main Catalogue page 418
- DATA STRIP stripping tool refer to Main Catalogue page 907

New

## UNITRONIC® LAN 250 - CAT.6



## Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin

## Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

## Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

## Product features

- Transfer of digital and analogue data signals
- LAN Cat.6 cables are specified up to 350 MHz
- The characteristic impedance of this cable is 100 Ohm  $\pm$  15 %
- IEEE 802.3: 10/100/1000Base-T  
IEEE 802.5: ISDN; FDDI; ATM

## Approvals



- Class E out of the standard ISO/IEC 11801 corresponds to CAT.6
- LAN CAT.6 cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class E - permanent link).

## Design

- U/UTP: no overall or pair shielding
- F/UTP: foil screening as overall screening
- Solid conductor
- Outer sheath either as PVC or LSZH

## Technical data



## Minimum bending radius

during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



## Temperature range

Operating temperature: -20 °C to +60 °C  
During installation: 0 °C to +50 °C



## Characteristic impedance

100 Ohm  $\pm$  15%

| Article number               | Article designation  | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) |
|------------------------------|----------------------|---------------------------------------|---------------------|----------------------|
| <b>PVC versions</b>          |                      |                                       |                     |                      |
| 2170186                      | 250 U/UTP Cat.6      | 4 x 2 x AWG24/1                       | 6.5                 | 18.0                 |
| <b>Halogen-free versions</b> |                      |                                       |                     |                      |
| 2170193                      | 250 U/UTP Cat.6 LSZH | 4 x 2 x AWG24/1                       | 6.5                 | 18.0                 |
| 2170194                      | 250 F/UTP Cat.6 LSZH | 4 x 2 x AWG24/1                       | 7.5                 | 19.0                 |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

New

## UNITRONIC® LAN 500 - Cat.6<sub>A</sub>



### Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin

### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM

### Approvals



- Class E<sub>A</sub> out of the standard ISO/IEC 11801 corresponds to Cat.6<sub>A</sub>
- LAN Cat.6<sub>A</sub> cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class E<sub>A</sub> - permanent link).

### Design

- U/FTP: aluminium compound foil as pair screening
- F/FTP: aluminium compound foil as overall screening and pair screening
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Solid conductor
- Outer sheath either as PVC or LSZH

### Technical data



**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C



**Characteristic impedance**  
100 Ohm ± 15%

| Article number               | Article designation               | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|-----------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>PVC version</b>           |                                   |                                       |                     |                      |                |
| 2170143                      | 500 S/FTP Cat.6 <sub>A</sub>      | 4 x 2 x AWG23/1                       | 7.7                 | 27.0                 | 53             |
| <b>Halogen-free versions</b> |                                   |                                       |                     |                      |                |
| 2170195                      | 500 U/FTP Cat.6 <sub>A</sub> LSZH | 4 x 2 x AWG23/1                       | 7.4                 | 21.0                 |                |
| 2170196                      | 500 F/FTP Cat.6 <sub>A</sub> LSZH | 4 x 2 x AWG23/1                       | 7.6                 | 22.0                 |                |

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

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

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

CAT.6a is available as a draft

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

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

### Accessories

- Connector RJ45 CAT.6 Hirose TM21 refer to Main Catalogue page 419
- DATA STRIP stripping tool refer to Main Catalogue page 907

New

## UNITRONIC® LAN 1000 S/FTP Cat.7

LAPP KABEL STUTTGART UNITRONIC® LAN S/FTP 1000 MHz Cat.7

LAPP KABEL STUTTGART UNITRONIC® LAN S/FTP 1000 MHz Cat.7 DUPLEX



## Info

- EIA = Electronic Industries Association
- TIA = Telecommunication Industries Association
- TSB = Technical Systems Bulletin

## Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

## Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

## Product features

- Transfer of digital and analogue data signals
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T  
IEEE 802.5: ISDN; FDDI; ATM; cable sharing  
IEEE 802.3at: suitable for PoE

## Approvals



- Class F in the ISO/IEC 11801 standard corresponds to CAT.7

## Design

- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Solid conductor
- Outer sheath: halogen-free, flame-retardant compound

## Technical data



## Minimum bending radius

during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



## Temperature range

Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C



## Characteristic impedance

100 Ohm ± 15%

| Article number               | Article designation     | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|-------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>Halogen-free versions</b> |                         |                                       |                     |                      |                |
| 2170614                      | 1000 S/FTP Cat.7 LSZH   | 4 x 2 x AWG23/1                       | 7.7                 | 27.0                 | 78             |
| 2170634                      | 1000 S/FTP Cat.7 duplex | 2 x (4 x 2 x AWG23/1)                 | 7.7 x 15.4          | 54.0                 | 156            |

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

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

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

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

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

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

New

## UNITRONIC® LAN 1200 S/FTP Cat.7<sub>A</sub>



### Info

- Complies with the EN 50173 and ISO/IEC 11801 standards

### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

### Product features

- Transfer of digital and analogue data signals
- The cable is specified for up to 1.2 GHz
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE

### Approvals



- LAN Cat.7<sub>A</sub> cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class F<sub>A</sub> - permanent link).
- Exceeds the requirements of EN 50173 and ISO/IEC 11801 standards

### Design

- Solid bare copper wire AWG22
- Cellular polyolefin core insulation, max. core diameter 1.6 mm
- Pair screen made of aluminium-lined plastic foil, overall screening made of tinned-copper braiding
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 7032)

### Technical data



**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C



**Characteristic impedance**  
100 Ohm ± 15%

| Article number | Article designation                | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|----------------|------------------------------------|---------------------------------------|---------------------|----------------------|----------------|
| 2170615        | 1200 S/FTP Cat.7 <sub>A</sub> LSZH | 4 x 2 x AWG22/1                       | 8.1                 | 34.0                 | 80             |

Copper price basis: EUR 150/100kg. Refer to Main Catalogue Appendix T17 for the definition and calculation of copper-related surcharges.  
Please find our standard lengths at: [www.lappkabel.de/en/cable-standardlengths](http://www.lappkabel.de/en/cable-standardlengths)

Packaging size: Drum

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

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

### Accessories

- Multipurpose shears A and B refer to Main Catalogue page 902
- DATA STRIP stripping tool refer to Main Catalogue page 907

New

## UNITRONIC® LAN 1500 S/FTP Cat.7<sub>A</sub>



### Info

- Complies with the EN 50173 and ISO/IEC 11801 standards

### Benefits

- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

### Application range

- Mainly used where the terminal density is very high, e.g. for wiring office, administration and development buildings in the tertiary area (floor wiring).

### Product features

- Transfer of digital and analogue data signals
- Cable is specified for up to 1.5 GHz
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T
- IEEE 802.5: ISDN; FDDI; ATM; cable sharing
- IEEE 802.3at: suitable for PoE, VoIP

### Approvals

- LAN Cat.7<sub>A</sub> cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36 as well as ISO/IEC 11801 or EN 50173 (Class F<sub>A</sub> - permanent link).
- Exceeds the requirements of EN 50173 and ISO/IEC 11801 standards

### Design

- Solid bare copper wire AWG22
- Cellular polyolefin core insulation, max. core diameter 1.6 mm
- Pair screen made of aluminium-lined plastic foil, overall screening made of tinned-copper braiding
- Outer sheath: halogen-free, flame-retardant compound
- Colour: yellow (RAL 7032)

### Technical data



**Minimum bending radius**  
during installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



**Temperature range**  
Operating temperature: -20°C to +60°C  
During installation: 0 °C to +50 °C



**Characteristic impedance**  
100 Ohm ± 15%

| Article number | Article designation                | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) |
|----------------|------------------------------------|---------------------------------------|---------------------|----------------------|
| 2170199        | 1500 S/FTP Cat.7 <sub>A</sub> LSZH | 4 x 2 x AWG22/1                       | 8.5                 | 42.0                 |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.

New

## UNITRONIC® LAN OUTDOOR

LAPP KABEL STUTTGART UNITRONIC® LAN 1000 MHz S/FTP CAT.7 PE 4x2x23AWG/1



## Info

- Data cable for primary, secondary and tertiary cabling with PE outer sheath for outdoor applications

## Benefits

- Suitable for outdoor use and direct burial
- UV and water-resistant
- LAN cables for structured building cabling according to EN 50173 and ISO/IEC 11801

## Application range

- For outdoor use
- Cable length in tertiary area (horizontal area, floor) should not exceed a length of 100 m in accordance with the ISO/IEC 11801 and EN 50173 standards (90 m in cable duct + 10 m in working area)

## Product features

- Transfer of digital and analogue data signals
- The characteristic impedance of this cable is 100 Ohm ± 15 %
- IEEE 802.3: 10/100/1000Base-T, 10GBase-T  
IEEE 802.5: ISDN; FDDI; ATM; cable sharing  
IEEE 802.3at: suitable for PoE

## Approvals

- LAN Cat.7 cables from Lapp Kabel for "Structured Cabling Systems" meet the requirements in accordance with EIA/TIA-568 and TSB36, as well as ISO/IEC 11801 or EN 50173 (Class F - permanent link).

## Design

- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Solid conductor
- Core insulation: foamed polyolefin
- PE outer sheath
- Colour: black (RAL 9005)

## Technical data



## Minimum bending radius

During installation: 10 x outer diameter  
Fixed installation: 4 x outer diameter



## Temperature range

Operation: up to +60 °C  
During installation: -15 °C to +60 °C



## Characteristic impedance

100 Ohm ± 15 %

| Article number                                                              | Article designation    | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|-----------------------------------------------------------------------------|------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>Suitable for direct burial</b>                                           |                        |                                       |                     |                      |                |
| 2170198                                                                     | 1000 S/FTP Cat.7 (L)PE | 4 x 2 x AWG23/1                       | 10.0                | 34.0                 | 72             |
| <b>Suitable for direct routing underground, not transversely waterproof</b> |                        |                                       |                     |                      |                |
| 2170197                                                                     | 1000 S/FTP Cat.7 PE    | 4 x 2 x AWG23/1                       | 9.6                 | 34.0                 | 75             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.

New

## UNITRONIC® LAN FLEX

Flexible use

LAPP KABEL STUTTGART UNITRONIC® LAN 200 MHz F/UTP CAT.5e Y 4x2x26AWG/7



## Info

- Only for patch cable applications (max. 60 m)

## Benefits

- For directly connecting two electric components
- Easy to assemble

## Application range

- Indoor applications
- LAN connections
- Control cabinet wiring

## Product features

- Good flexibility - easy installation with tight space requirements

## Design

- F/UTP: foil screening as overall screening
- SF/UTP: copper braid and foil screening as overall screening
- S/FTP: copper braid as overall screening and pair screening with aluminium compound foil
- Outer sheath either as PVC or LSZH

## Technical data



## Minimum bending radius

During installation: 8 x outer diameter  
Fixed installation: 4 x outer diameter



## Characteristic impedance

100 Ohm ± 15 %

| Article number               | Article designation    | Number of pairs and AWG per conductor | Outer diameter (mm) | Copper index (kg/km) | Weight (kg/km) |
|------------------------------|------------------------|---------------------------------------|---------------------|----------------------|----------------|
| <b>PVC versions</b>          |                        |                                       |                     |                      |                |
| 2170127                      | 200 F/UTP Cat.5e       | 4 x 2 x AWG26/7                       | 5.6                 | 13.0                 | 30             |
| 2170129                      | 200 SF/UTP Cat.5e      | 4 x 2 x AWG26/7                       | 6.0                 | 22.0                 | 41             |
| 2170144                      | 600 S/FTP CAT7 Y       | 4 x 2 x AWG26/7                       | 6.5                 | 22.0                 | 40             |
| <b>Halogen-free versions</b> |                        |                                       |                     |                      |                |
| 2170137                      | 200 F/UTP Cat.5e LSZH  | 4 x 2 x AWG26/7                       | 5.6                 | 13.0                 | 31             |
| 2170139                      | 200 SF/UTP Cat.5e LSZH | 4 x 2 x AWG26/7                       | 6.0                 | 22.0                 | 42             |

Unless specified otherwise, the shown product values are nominal values. Detailed values (e.g. tolerances) are available upon request. Photographs are not to scale and do not represent detailed images of the respective products.



## Connector RJ45 CAT.5 Hirose TM 11

### Product features

- Screened version
- Suitable for stranded conductors (AWG26)
- Included: bend protection and guide plate
- Anti-kink protection: beige
- Max. outer sheath diameter: 5.8 mm

### Approvals



| Article number | Article designation               | PU        |
|----------------|-----------------------------------|-----------|
| CE6321         | Connector RJ45 CAT.5 Hirose TM 11 | 50 pieces |

Hirose is a registered trademark of the HIROSE ELECTRIC Group  
Other colours are available upon request.

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

### Accessories

- Crimping tool RJ45 Hirose refer to Main Catalogue page 420

## Connector RJ45 CAT.5 Stewart SS37

### Product features

- Screened version
- Suitable for stranded conductors (AWG26)
- Included: bend protection and guide plate
- Anti-kink protection: light grey
- Max. outer sheath diameter: 5.72 mm

### Approvals



| Article number | Article designation               | PU        |
|----------------|-----------------------------------|-----------|
| CE6323         | Connector RJ45 CAT.5 Stewart SS37 | 50 pieces |

Stewart is a registered trademark of Bel Fuse Inc.

Other colours are available upon request.

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

### Accessories

- Crimping tool RJ45 Stewart refer to Main Catalogue page 420

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

### Product features

- Screened version
- FM45 is a tool-free switchable, field-terminable RJ45 Connector with IDC contacting and CAT.5e performance. The 8-pin connection is tension and vibration-resistant, and can be re-switched. The connecting block can accommodate both screened and unscreened cable of up to 8 mm diameter.
- Suitable for AWG 23 - 26, AWG 22 possible with restrictions
- IDC/piercing terminal according to 60352-4
- Suitable for solid and stranded conductors
- Suitable for use in industrial applications
- Protection rating: IP20

### Approvals



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

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

## Connector RJ45 CAT.6 Hirose TM21



### Product features

- Channel Class E up to 250 MHz (CAT.6)
- Fully screened
- Conductor: Ø 0.5 mm solid wire:  
AWG 24 & 26;  
guide plate for 1.1 mm diameter wire;  
cable outer diameter: 6.6 mm
- Easy to handle
- Included: bend protection and guide plate
- Anti-kink protection: beige
- Suitable for solid and stranded conductors

### Approvals



| Article number | Article designation              | PU        |
|----------------|----------------------------------|-----------|
| CE6324         | Connector RJ45 CAT.6 Hirose TM21 | 50 pieces |

Hirose is a registered trademark of the HIROSE ELECTRIC Group

Other colours are available upon request.

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

### Accessories

- Crimping tool RJ45 Stewart refer to Main Catalogue page 420

**New**

## Connector RJ45 Cat.6<sub>A</sub> fieldmountable



### Product features

- Field assembly Industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- Qualified for 10 Gigabit Ethernet
- Housing: zinc die-casting, grey

- By a multi-level relief setting the connector can accommodate a cable diameter from 5,0 mm up to 9,0 mm
- Suitable for stranded cores with AWG27/7-22/7 and for solid conductors with AWG24/1-22/1
- Suitable for use in industrial applications
- Available with colour code T568A or T568B

| Article number | Article designation            | PU        |
|----------------|--------------------------------|-----------|
| 21700600       | EPIC® DATA ED-IE-AX-6A-A-20-FC | 10 pieces |
| 21700601       | EPIC® DATA ED-IE-AX-6A-B-20-FC | 10 pieces |

**For communication technology**

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# HITRONIC®

## Optical transmission systems



## HITRONIC® HQN Outdoor Cable



## Info

- A-DQ(ZN)B2Y
- Outdoor cable with central loose tube and non-metallic strain relief

## ■ Benefits

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV and water-resistant
- Zero electromagnetic interference as the cable contains no metal

## ■ Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environment
- Methods of Deployment: empty plastic pipes, ducts and trays

## ■ Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

## ■ Approvals



## ■ Design

- Glass fibres with primary coating
- Gel-filled loose tube
- Water-blocking reinforced glass yarn strength members
- PE outer sheath
- Colour: black (RAL 9005)

## ■ Technical data



## Optical fibre type

Core material: Glass  
Cladding material: Glass



## Temperature range

Operation: -20 °C to +60 °C  
Installation: 0 °C to +50 °C  
Storage: -40 °C to +70 °C



## Permissible bending radius

Static:  $\geq 15 \times$  outer diameter  
Dynamic:  $\geq 20 \times$  outer diameter



## Permissible tensile force

Fixed installation: 1500 N  
Short-term: 3000 N

| Article number              | Article designation                | Fibre type   | Number of fibres | Outer diameter (mm) |
|-----------------------------|------------------------------------|--------------|------------------|---------------------|
| <b>Multimode G 50 OM3</b>   |                                    |              |                  |                     |
| 27600304                    | HITRONIC® HQN1500 4G 50/125 OM3    | 50/125 OM3   | 4                | 7.3                 |
| 27600308                    | HITRONIC® HQN1500 8G 50/125 OM3    | 50/125 OM3   | 8                | 7.3                 |
| 27600312                    | HITRONIC® HQN1500 12G 50/125 OM3   | 50/125 OM3   | 12               | 7.3                 |
| 27600324                    | HITRONIC® HQN1500 24G 50/125 OM3   | 50/125 OM3   | 24               | 8.3                 |
| <b>Multimode G 50 OM2</b>   |                                    |              |                  |                     |
| 27600204                    | HITRONIC® HQN1500 4G 50/125 OM2    | 50/125 OM2   | 4                | 7.3                 |
| 27600208                    | HITRONIC® HQN1500 8G 50/125 OM2    | 50/125 OM2   | 8                | 7.3                 |
| 27600212                    | HITRONIC® HQN1500 12G 50/125 OM2   | 50/125 OM2   | 12               | 7.3                 |
| 27600224                    | HITRONIC® HQN1500 24G 50/125 OM2   | 50/125 OM2   | 24               | 8.3                 |
| <b>Multimode G 62.5 OM1</b> |                                    |              |                  |                     |
| 27600104                    | HITRONIC® HQN1500 4G 62.5/125 OM1  | 62.5/125 OM1 | 4                | 7.3                 |
| 27600108                    | HITRONIC® HQN1500 8G 62.5/125 OM1  | 62.5/125 OM1 | 8                | 7.3                 |
| 27600112                    | HITRONIC® HQN1500 12G 62.5/125 OM1 | 62.5/125 OM1 | 12               | 7.3                 |
| 27600124                    | HITRONIC® HQN1500 24G 62.5/125 OM1 | 62.5/125 OM1 | 24               | 8.3                 |
| <b>Singlemode E 9 OS2</b>   |                                    |              |                  |                     |
| 27600904                    | HITRONIC® HQN1500 4E 9/125 OS2     | 9/125 OS2    | 4                | 7.3                 |
| 27600908                    | HITRONIC® HQN1500 8E 9/125 OS2     | 9/125 OS2    | 8                | 7.3                 |
| 27600912                    | HITRONIC® HQN1500 12E 9/125 OS2    | 9/125 OS2    | 12               | 7.3                 |
| 27600924                    | HITRONIC® HQN1500 24E 9/125 OS2    | 9/125 OS2    | 24               | 8.3                 |

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

The cables can also be supplied as pre-terminated fibre optic trunks.

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

## ■ Accessories

- Simplex Pigtail refer to Main Catalogue page 438
- DATA STRIP stripping tool refer to Main Catalogue page 907

## Duplex Jumper/Patchcord



### Info

- J-VH 2x1 G/E
- Pre-terminated tight buffered duplex cable with durable ceramic ferrules



### Benefits

- Suitable for direct burial
- Easy to install due to the compact design, high flexibility, robust sheath and small bending radii
- UV and water-resistant
- Zero electromagnetic interference as the cable contains no metal

### Application range

- For outdoor use
- Campus backbone
- WAN applications
- Industrial environment
- Methods of Deployment: empty plastic pipes, ducts and trays

### Product features

- Central loose tube with up to 24 fibres
- Colour-coded fibres
- Longitudinal watertight
- Rodent-protection
- Robust, halogen-free outer sheath

### Approvals



### Design

- Tight-buffered duplex cable with FRNC outer sheath
- Connector: LC, SC or ST
- Cable colour:  
aqua for multimode OM3,  
orange for multimode OM2 and OM1,  
yellow for single-mode OS2
- Standard length: 2 m

### Technical data



#### Optical fibre type

Core material: Glass  
Cladding material: Glass



#### Temperature range

Operation: -20°C to +60°C  
Installation: 0°C to +50°C  
Storage: -25°C to +70°C



#### Permissible bending radius

Static: ≥ 30 mm  
Dynamic: ≥ 40 mm



#### Permissible tensile force

Fixed installation: 150 N

| Article number                         | Article designation                     | PU      |
|----------------------------------------|-----------------------------------------|---------|
| <b>Duplex Jumper Singlemode 9 µm</b>   |                                         |         |
| 94841                                  | Duplex Jumper ST/ST 9 µm, 2 m           | 1 piece |
| 94891                                  | Duplex Jumper SC/SC 9 µm, 2 m           | 1 piece |
| 94931                                  | Duplex Jumper ST/SC 9 µm, 2 m           | 1 piece |
| 9498                                   | Duplex Jumper LSH APC/LC 9 µm, 2 m      | 1 piece |
| 9477                                   | Duplex Jumper LSH APC/LSH APC 9 µm, 2 m | 1 piece |
| 9495                                   | Duplex Jumper LSH APC/SC 9 µm, 2 m      | 1 piece |
| <b>Duplex Jumper Multimode 50 µm</b>   |                                         |         |
| 93681                                  | Duplex Jumper ST/ST 50 µm, 2 m          | 1 piece |
| 93561                                  | Duplex Jumper SC/SC 50 µm, 2 m          | 1 piece |
| 94641                                  | Duplex Jumper ST/SC 50 µm, 2 m          | 1 piece |
| 9510                                   | Duplex Jumper MTRJ/MTRJ 50 µm, 2 m      | 1 piece |
| 9513                                   | Duplex Jumper MTRJ/ST 50 µm, 2 m        | 1 piece |
| 9509                                   | Duplex Jumper LC/LC 50 µm, 2 m          | 1 piece |
| 9508                                   | Duplex Jumper LC/SC 50 µm, 2 m          | 1 piece |
| 9501                                   | Duplex Jumper LC/ST 50 µm, 2 m          | 1 piece |
| 9457                                   | Duplex Jumper LSH/LSH 50 µm, 2 m        | 1 piece |
| 9511                                   | Duplex Jumper MTRJ/SC 50 µm, 2 m        | 1 piece |
| <b>Duplex Jumper Multimode 62,5 µm</b> |                                         |         |
| 93781                                  | Duplex Jumper ST/ST 62.5 µm, 2 m        | 1 piece |
| 93581                                  | Duplex Jumper SC/SC 62.5 µm, 2 m        | 1 piece |
| 94651                                  | Duplex Jumper ST/SC 62.5 µm, 2 m        | 1 piece |
| 9519                                   | Duplex Jumper LC/LC 62.5 µm, 2 m        | 1 piece |
| 9531                                   | Jumper Duplex LC/ST 62.5 µm, 2 m        | 1 piece |
| 9521                                   | Duplex Jumper MTRJ/SC 62.5 µm, 2 m      | 1 piece |
| 9528                                   | Duplex Jumper LC/SC 62.5 µm, 2 m        | 1 piece |
| 9523                                   | Duplex Jumper MTRJ/ST 62.5 µm, 2 m      | 1 piece |

Other lengths and types of connectors are available upon request.

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

## Simplex Pigtail



### Info

- J-VH 1 G/E
- Pre-terminated tight-buffered simplex cable with one durable ceramic ferrule

### Benefits

- Create a direct plug connection for installation cables with splicing
- Ease of installation and assembly
- Zero electromagnetic interference as the cable contains no metal

### Application range

- For indoor use
- Connection to an end optical device

### Product features

- Flame-retardant and halogen-free
- High flexibility
- Cable termination with durable ceramic ferrules
- Set consisting of 12 colour-coded pigtails

### Approvals



### Design

- Tight-buffered simplex fibre with FRNC secondary coating (900 µm)
- Connector: LC, SC or ST
- Colour-coded primary and secondary coatings
- Standard length: 2 m

### Technical data



#### Optical fibre type

Core material: Glass  
Cladding material: Glass



#### Temperature range

Operation: -20°C to +60°C  
Installation: 0°C to +50°C  
Storage: -25°C to +70°C



#### Permissible tensile force

Fixed installation: 150 N

| Article number                   | Article designation               | PU       |
|----------------------------------|-----------------------------------|----------|
| <b>Pigtail Multimode 50 µm</b>   |                                   |          |
| 93911                            | ST Pigtail Simplex 50 µm, 2 m     | 12 piece |
| 93411                            | SC Pigtail 50 µm, 2 m             | 12 piece |
| <b>Pigtail Multimode 62.5 µm</b> |                                   |          |
| 93931                            | ST Pigtail Simplex 62.5 µm, 2 m   | 12 piece |
| 93441                            | SC Pigtail Simplex 62.5 µm, 2 m   | 12 piece |
| <b>Pigtail Singlemode 9 µm</b>   |                                   |          |
| 93471                            | ST Pigtail Simplex 9 µm, 2 m      | 12 piece |
| 93401                            | SC Pigtail Simplex 9 µm, 2 m      | 12 piece |
| 9396                             | LSH APC Pigtail Simplex 9 µm, 2 m | 12 piece |

Other lengths and types of connectors are available upon request.  
Photographs are not to scale and do not represent detailed images of the respective products.



## 19" Splice Box for ST

### Product features

- For up to 12 or 24 fibres
- Can be pulled out
- Unpopulated
- For a maximum of 4 splicing cartridges
- Height: 1 RU
- Dimensions (WxHxD): 483 x 44.5 x 244 mm
- Material: sheet steel, 1.5 mm
- Colour: light grey (RAL 7035)

### Approvals



| Article number            | Article designation      | PU      |
|---------------------------|--------------------------|---------|
| <b>Splice Box Compact</b> |                          |         |
| CE9138                    | 19" Splice Box for 12 ST | 1 piece |
| CE9139                    | 19" Splice Box for 24 ST | 1 piece |

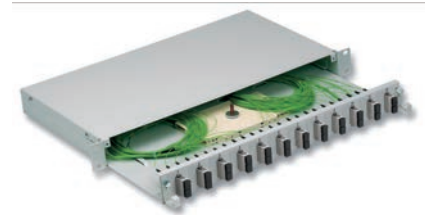
Splice boxes for more fibres with other types of connectors are available upon request. Also available in pre-assembled versions with couplings and pigtails.  
Photographs are not to scale and do not represent detailed images of the respective products.

## 19" Splice Box for SC

### Product features

- For up to 24 fibres
- Included: front panel with 12 SC-duplex holes
- Can be pulled out
- Unpopulated
- Height: 1 RU
- Dimensions (WxHxD): 483 x 44.5 x 170 mm
- Material: steel plate, 1.5 mm
- Colour: light grey (RAL 7035)

### Approvals



| Article number            | Article designation   | PU      |
|---------------------------|-----------------------|---------|
| <b>Splice Box Compact</b> |                       |         |
| CE9135                    | 19" Splice Box für SC | 1 piece |

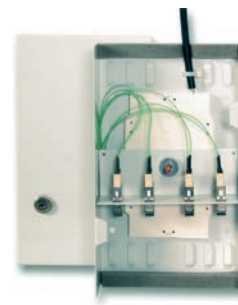
Splice boxes for more fibres with other types of connectors are available upon request. Also available in pre-assembled versions with couplings and pigtails.  
Photographs are not to scale and do not represent detailed images of the respective products.

## Splice Box Compact

### Product features

- Panel mounting
- Lockable
- Max. capacity of 8 splicing cartridges or 4 splicing cartridges and one distribution plate
- Includes distributor plate for 8 ST couplings
- Includes distributor plate for 4 SC duplex couplings
- Dimensions (WxHxD): 265 x 150 x 55 mm
- Colour: light grey (RAL 7035)

### Approvals



| Article number            | Article designation | PU      |
|---------------------------|---------------------|---------|
| <b>Splice Box Compact</b> |                     |         |
| CE9147                    | Splice Box Compact  | 1 piece |

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

## Mini Wall mounted Rack



### Product features

- Panel mounting
- Lockable
- Max. capacity of 8 splicing cartridges or 4 splicing cartridges and one distribution plate
- Accessories for Mini wall-mounted rack:
  - Distributor plate for 24 ST couplings
  - Distributor plate for 24 SC Simplex couplings
  - Distributor plate for 12 SC Duplex couplings
- Dimensions (W x H x D): 320 x 280 x 54 mm
- Colour: light grey (RAL 7035)

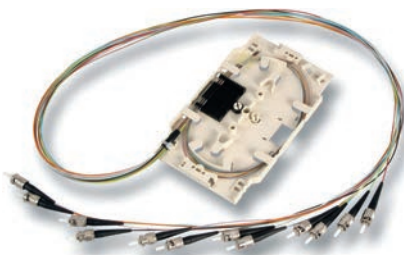
### Approvals



| Article number                                | Article designation                             | PU      |
|-----------------------------------------------|-------------------------------------------------|---------|
| CE9150                                        | Mini Wall mounted Rack                          | 1 piece |
| <b>Accessories for Mini wall-mounted rack</b> |                                                 |         |
| CE9151                                        | Distribution plate for 24 x ST-Couplers         | 1 piece |
| CE9152                                        | Distribution plate for 24 x SC-simplex-Couplers | 1 piece |
| CE9153                                        | Distribution plate for 12 x SC-duplex-Couplers  | 1 piece |

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

## Accessories for Splice Box and Wall mounted Rack



### Product features

- Splicing cassette for up to 2 splicing protection holders
- Cover for splicing cartridge
- 12-fold splicing protection holder
- Splicing protection sleeve for ANT splicing device
- Dummy cap instead of E2000 coupling
- Dummy cap instead of ST coupling
- Dummy cap instead of SC duplex coupling

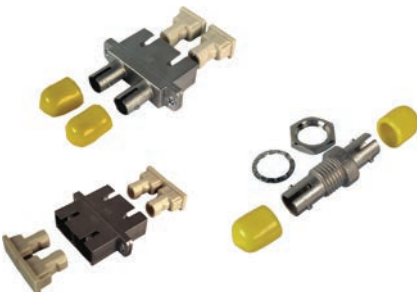
### Approvals



| Article number                                            | Article designation                                     | PU        |
|-----------------------------------------------------------|---------------------------------------------------------|-----------|
| <b>Accessories for splice boxes and wall-mounted rack</b> |                                                         |           |
| CE9914                                                    | Splicing cartridge for up to 2 splicing protection hold | 1 piece   |
| CE9914D                                                   | Cover for splicing cartridge                            | 1 piece   |
| CE9916                                                    | Splicing protection holder 12-fold                      | 1 piece   |
| CE9913                                                    | Splicing protection sleeve for ANT splicing device      | 15 pieces |
| CE9917                                                    | Blind cap instead of E2000 coupling                     | 10 pieces |
| CE9918                                                    | Blind cap instead of ST coupling                        | 10 pieces |
| CE9919                                                    | Blind cap instead of SC duplex coupling                 | 10 pieces |

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

## LWL-Kupplungen



### Product features

- The couplings connect the glass fibre connectors with the same or different connector types.

### Approvals



| Article number    | Article designation                              | PU      |
|-------------------|--------------------------------------------------|---------|
| <b>Multimode</b>  |                                                  |         |
| CE93191           | SC / SC Duplex-Adapter for 50 µm or 62.5 µm      | 4 piece |
| CE94611           | SC / SC Duplex-Adapter for 50 µm or 62.5 µm      | 4 piece |
| CE9462            | LC / LC Duplex-Adapter for 50 µm or 62.5 µm      | 4 piece |
| CE9441            | SC / ST Duplex-Adapter for 50 µm or 62.5 µm      | 4 piece |
| CE9449            | MTRJ / MTRJ Simplex-Adapter for 50 µm or 62.5 µm | 4 piece |
| <b>Singlemode</b> |                                                  |         |
| CE94591           | SC / SC Duplex-Coupler for 9 µm                  | 4 piece |
| CE9460            | SC / ST Duplex-Adapter for 9 µm                  | 4 piece |
| CE9009            | E2000 / E2000 Simplex-Adapter for 9 µm           | 4 piece |
| CE9011            | E2000 / E2000 Simplex-Adapter 8° for 9 µm        | 4 piece |
| CE9458            | LC / LC Duplex-Adapter for 9 µm                  | 4 piece |

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

For current information see: [www.lappkorea.com](http://www.lappkorea.com)

**Rectangular Connectors**

EPIC® H-A Inserts  
Housings

72  
73

**Selection Table**

A10: Technical Data of EPIC® Rectangular Connectors

74

**Rectangular Connectors**

EPIC® Rectangular Kits  
EPIC® H-A 3 Kits Thermoplastic  
EPIC® H-A 3 Kits Metal  
EPIC® H-A 4 Kits Thermoplastic  
EPIC® H-A 4 Kits Metal  
EPIC® H-A 10 Kits  
EPIC® H-A 16 Kits  
EPIC® H-BE 6 Kits  
EPIC® H-BE 10 Kits  
EPIC® H-BE 16 Kits  
EPIC® H-BE 24 Kits

76  
76  
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81  
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84  
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**EPIC®**  
**Industrial connectors**



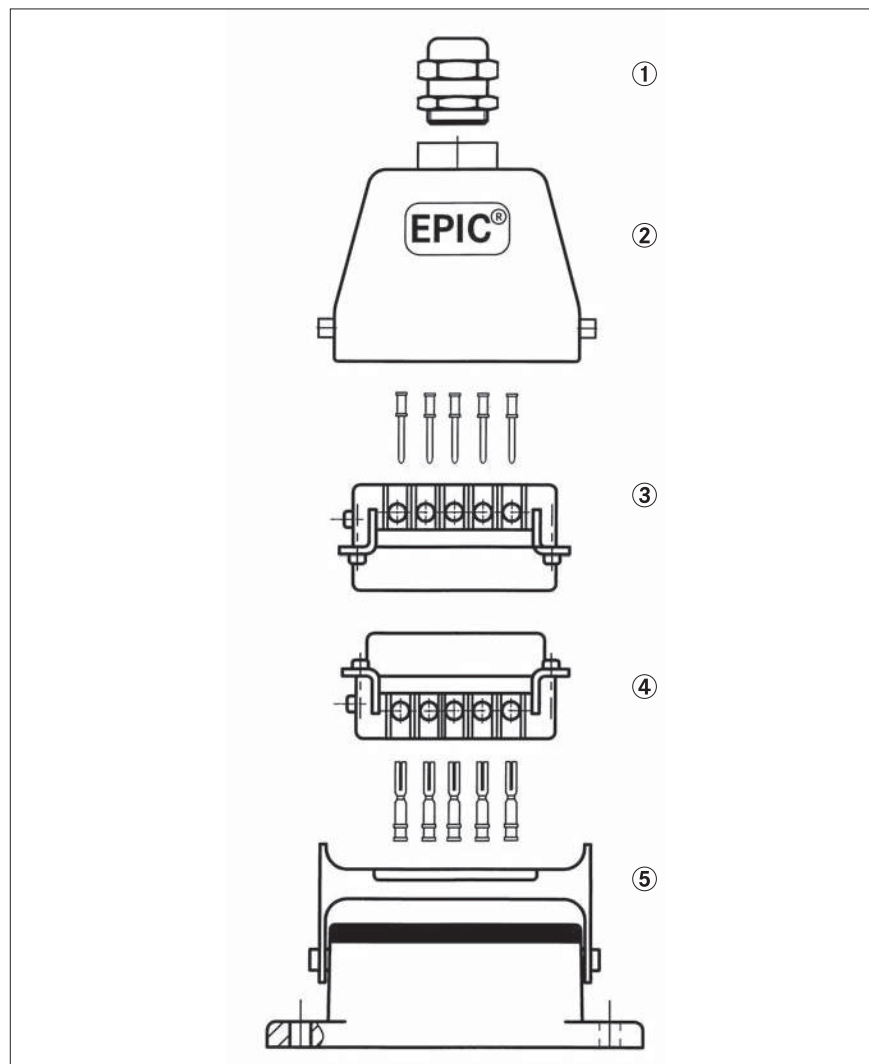
Please pay attention to the EPIC® Selection table A10, this table is a great guide in helping you to find the right insert and suitable housings for your application. Please also pay attention to the new, complete configured Connector-Kits.

## Solutions for many applications:

- Number of poles from 2 up to 216
- Currents up to 82A
- Voltages up to 1000V
- Modular system for current supply, signal-/data transmission and compressed air
- Termination technologies:  
solder, screw, crimp, cage clamp

### Tip:

- for inserts with screw termination please use the processing tool (Chapter: Tools)



### 1. Cable Gland:

The Cable Gland provides a seal between the cable and the connector housing. It may also be used to offer additional functions like strain relief and braid continuity for EMC protection.

### 2. Hood:

The connector housing for the cable entry.

### 3. Male insert:

Types of contact termination

- Screw
- Crimp (contacts must be ordered separately)
- Cage clamp

### 4. Female insert:

Types of contact termination

- Screw
- Crimp (contacts must be ordered separately)
- Cage clamp

### 5. Base:

- Panel mounting (cable entry through cut out in panel)
- or
- Surface mounting (cable entry through a gland into the side of the connector base)
- or
- Cable Connector Hood, cable to cable connection

| Screw connection technology (as DIN EN 60999) |     |     |     |     |
|-----------------------------------------------|-----|-----|-----|-----|
| Screw thread                                  | M3  | M4  | M5  | M6  |
| Starting torque Nm                            | 0.5 | 1.2 | 2.0 | 2.5 |
| Clamping screw: H-A, H-BE, H-BVE              | •   |     |     |     |
| Clamping screw: H-BS                          |     | •   |     |     |
| Grounding screw: H-A, H-BE, H-BVE             |     | •   |     |     |
| Grounding screw: H-BS                         |     |     | •   |     |
| Clamping screw: Module High-Current           |     |     |     | •   |
| Fixing screw: Inserts and Module frames       | •   |     |     |     |

All EPIC® connectors refer to IEC 61984

Please pay attention to the EPIC® Selection table A10, this table is a great guide in helping you to find the right insert and the suitable housings for your application. Please pay attention to the new, complete configured Connector-Kits.

## Solutions for many applications:

- Housing variations for cable connection and for the assembly on devices
- Degree of protection max. IP 65 (locked, depends on the cable gland). Therefore we recommend to use a brass cable gland with integrated sealing ring, for example: **SKINTOP® MS...**

Housings with cover:  
IP 40, locked max. IP 65

Housings H-A 3: max. IP 65  
(locked, depends on the cable gland)

- Housing material and colors:  
Aluminium alloy: grey, similar RAL 7001, Zinc die cast (H-A 3):  
grey, similar RAL 7001  
Thermoplastics (H-A 3):  
grey, similar RAL 7035  
Thermoplastics (H-A 3):  
black, similar RAL 7021

### Hood:

A hood may have a top or angle (side) entry of different PG sizes to accommodate a wide range of cable diameters. The hood can be mated with either a surface or panel mounting base, or a cable coupler hood (for cable to cable connection).



### Socket housing:

The surface base is a complete enclosure only offering cable entry through a cable gland mounted either on one or both sides of the base.



### Panel Base housing:

The panel base is wired from below through a hole cut in a panel. The panel base is attached to the surface of a control panel for connection of control or power cables.

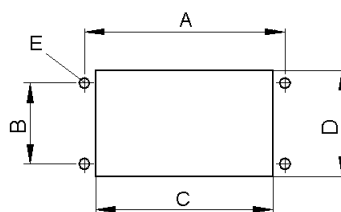


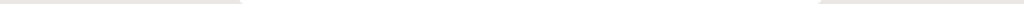
### Cable Connector Hood:

The cable connector hood mates with a top entry hood to offer cable to cable connection. This is frequently used to extend cables.



| Panel cut out for panel mount base (mm) |     |      |       |      |     |
|-----------------------------------------|-----|------|-------|------|-----|
| Panel mount base                        | A   | B    | C     | D    | E   |
| H-A 3                                   | 30  | —    | 21    | 21   | 3,3 |
| H-A 10                                  | 70  | 17,5 | 57,5  | 24   | 3,6 |
| H-A 16                                  | 86  | 17,5 | 73,7  | 24   | 3,6 |
| H-A 32                                  | 92  | 42   | 74,2  | 48,4 | 4,3 |
| H-A 48                                  | 110 | 65   | 85,5  | 71   | 5,5 |
| H-B 6                                   | 70  | 32   | 52,2  | 35   | 4,3 |
| H-B 10                                  | 83  | 32   | 65,2  | 35   | 4,3 |
| H-B 16                                  | 103 | 32   | 85,5  | 35   | 4,3 |
| H-B 24                                  | 130 | 32   | 112,2 | 35   | 4,3 |
| H-B 32                                  | 110 | 65   | 85,5  | 71   | 5,5 |
| H-B 48                                  | 148 | 70   | 117   | 82   | 7   |







## Technical Data

| Inserts                      | Number of contacts | Termination technology | Suitable contacts | Cross-section [mm <sup>2</sup> ] | IEC : Rated voltage [V] | IEC : Rated current [A] | UL : Rated voltage [V] | UL : Rated current [A] | CSA : Rated voltage [V] | CSA : Rated current [A] | Suitable housings |
|------------------------------|--------------------|------------------------|-------------------|----------------------------------|-------------------------|-------------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------|
| EPIC® Rectangular Connectors |                    |                        |                   |                                  |                         |                         |                        |                        |                         |                         |                   |
| H-BE 32                      | 32 + PE            | screw                  | -                 | 0.5 - 2.5                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 32            |
| H-BE 32                      | 32 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 32            |
| H-BE 32                      | 32 + PE            | cage clamp             | -                 | 0.5 - 2.5                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 32            |
| H-BE 48                      | 48 + PE            | screw                  | -                 | 0.5 - 2.5                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 4 8         |
| H-BE 48                      | 48 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 4 8         |
| H-BE 48                      | 48 + PE            | cage clamp             | -                 | 0.5 - 2.5                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 4 8         |
| H-EE 10                      | 10 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 6             |
| H-EE 18                      | 18 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 10            |
| H-EE 32                      | 32 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 16            |
| H-EE 46                      | 46 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 2 4         |
| H-EE 64                      | 64 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 32            |
| H-EE 92                      | 92 + PE            | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 4 8         |
| H-BS 6                       | 6 + PE             | screw                  | -                 | 0.5 - 6.0                        | 400                     | 35                      | 600                    | 35                     | 600                     | 35                      | H-B 16            |
| H-BS 12                      | 12 + PE            | screw                  | -                 | 0.5 - 6.0                        | 400                     | 35                      | 600                    | 35                     | 600                     | 35                      | H-B 32            |
| H-BVE 3                      | 3+2+PE             | screw                  | -                 | 0.5 - 2.5                        | 630                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 10            |
| H-BVE 3                      | 3+2+PE             | cage clamp             | -                 | 0.5 - 2.5                        | 830                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 10            |
| H-BVE 6                      | 6+2+PE             | screw                  | -                 | 0.5 - 2.5                        | 630                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 1 6         |
| H-BVE 10                     | 10+2+PE            | screw                  | -                 | 0.5 - 2.5                        | 630                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 24            |
| Terminal Block TB-H-BE 6     | 6 + PE             | screw                  | -                 | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 6             |
| Terminal Block TB-H-BE 10    | 10 + PE            | screw                  | -                 | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 10            |
| Terminal Block TB-H-BE 16    | 16 + PE            | screw                  | -                 | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H - B 1 6         |
| Terminal Block TB-H-BE 24    | 24 + PE            | screw                  | -                 | 0.5 - 4.0                        | 500                     | 16                      | 600                    | 16                     | 600                     | 16                      | H-B 24            |
| Module High current 1+PE     | 1 + PE             | screw                  | -                 | 10.0 - 25.0                      | 1000                    | 82                      | -                      | -                      | -                       | -                       | Module frame      |
| Module High current 2pol.    | 2                  | screw                  | -                 | 10.0 - 25.0                      | 1000                    | 82                      | -                      | -                      | -                       | -                       | Module frame      |
| Module High voltage 3pol.    | 3                  | crimp                  | MC 3.6 machined   | 1.5 - 10.0                       | 1000                    | 50                      | -                      | -                      | -                       | -                       | Module frame      |
| Module High voltage 4+PE     | 4 + PE             | crimp                  | MC 2.5 stamped    | 0.5 - 2.5                        | 1000                    | 16                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 3pole                  | 3                  | crimp                  | MC 3.6 machined   | 1.5 - 10.0                       | 630                     | 40                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 4pole HE               | 4                  | crimp                  | H-BE 2.5 machined | 0.5 - 4.0                        | 630                     | 25                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 4pole cage clamp       | 4                  | cage clamp             | -                 | 0.5 - 2.5                        | 400                     | 14                      | 600                    | 14                     | 600                     | 14                      | Module frame      |
| Modul 5pole                  | 5                  | crimp                  | MC 2.5 machined   | 0.5 - 4.0                        | 400                     | 20                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 10pole machined        | 10                 | crimp                  | H-D 1.6 machined  | 0.14 - 2.5                       | 250                     | 10                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 10pole stamped         | 10                 | crimp                  | H-D 1.6 stamped   | 0.14 - 2.5                       | 250                     | 10                      | -                      | -                      | -                       | -                       | Module frame      |
| Modul 20pole                 | 20                 | crimp                  | M-D 1.0 stamped   | 0.08 - 0.52                      | 100                     | 4                       | -                      | -                      | -                       | -                       | Module frame      |
| Modul 3pole Coax             | 3                  | solder                 | MC Coax           | -                                | 250                     | -                       | -                      | -                      | -                       | -                       | Module frame      |
| Modul Profibus DP            | 2+shield           | screw                  | -                 | max. 1.5                         | 30                      | 1                       | -                      | -                      | -                       | -                       | Module frame      |
| Modul Universal Bus          | 4+shield           | screw                  | -                 | max. 1.5                         | 30                      | 1                       | -                      | -                      | -                       | -                       | Module frame      |
| Modul RJ45                   | 8 + 4              | crimp                  | H-D 1.6 machined  | Cat.5/0.14 - 2.5                 | 125/600                 | 1.5/10                  | -                      | -                      | -                       | -                       | Module frame      |
| Module frame MCR 6           | -                  | -                      | for 2 modules     | -                                | -                       | -                       | -                      | -                      | -                       | -                       | H-B 6             |
| Module frame MCR 10          | -                  | -                      | for 3 modules     | -                                | -                       | -                       | -                      | -                      | -                       | -                       | H-B 10            |
| Module frame MCR 16          | -                  | -                      | for 5 modules     | -                                | -                       | -                       | -                      | -                      | -                       | -                       | H-B 16            |
| Module frame MCR 24          | -                  | -                      | for 7 modules     | -                                | -                       | -                       | -                      | -                      | -                       | -                       | H-B 24            |
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## EPIC® H-A 3 Kits Thermoplastic



| Article number | Pieces / PU |
|----------------|-------------|
| 75009601       | 1           |

### Article numbers for single components

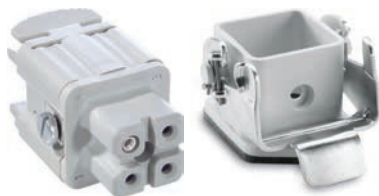
- H-A 3 SS 10420000 (Main Catalogue Page 450)
- H-A 3 Tgv M20 19426000 (Main Catalogue Page 497)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009603       | 1           |

### Article numbers for single components

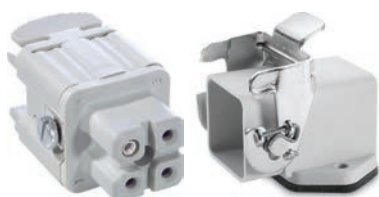
- H-A 3 SS 10420000 (Main Catalogue Page 450)
- H-A 3 Ts M20 19427000 (Main Catalogue Page 498)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009605       | 1           |

### Article numbers for single components

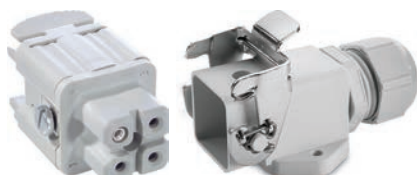
- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Ag 10422000 (Main Catalogue Page 499)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009607       | 1           |

### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Ags 10423000 (Main Catalogue Page 499)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009609       | 1           |

### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Tgvb M20 19429000 (Main Catalogue Page 501)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009611       | 1           |

### Article numbers for single components

- H-A 3 SS 10420000 (Main Catalogue Page 450)
- H-A 3 Tgv M20 19426000 (Main Catalogue Page 497)

### EPIC KIT H-A 3 SS TG M20



- EPIC® H-A 3 screw-termination male insert
- EPIC® H-A 3 hood
- Housing: thermoplastic grey

### EPIC KIT H-A 3 SS TS M20



- EPIC® H-A 3 screw-termination male insert
- EPIC® H-A 3 hood
- Side cable entry
- Housing: thermoplastic grey

### EPIC KIT H-A 3 BS AG



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Straight version
- Housing: thermoplastic grey

### EPIC KIT H-A 3 BS AGS



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: thermoplastic grey

### EPIC KIT H-A 3 BS AGS M20



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: thermoplastic grey

### EPIC KIT H-A 3 BS TGB M20



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 cable coupler hood
- Housing: thermoplastic grey



### Info

- Complete connectors - easy to order

### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

### Similar products

- EPIC® H-A 3 Kits Metal refer to Main Catalogue page 584

### Technical data

#### Rated voltage (V)

IEC: 400 V  
UL: 600 V  
CSA: 600 V

#### Rated current (A)

IEC: 23 A  
UL: 10 A  
CSA: 10 A

#### Number of contacts

3 + PE

## EPIC® H-A 3 Kits Metal

### EPIC KIT H-A 3 SS MTG M20



- EPIC® H-A 3 screw-termination male insert
- EPIC® H-A 3 hood
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009602       | 1           |

#### Article numbers for single components

- H-A 3 SS 10420000 (Main Catalogue Page 450)
- H-A 3 MTgv M20 19512100 (Main Catalogue Page 497)

### EPIC KIT H-A 3 SS MTS M20



- EPIC® H-A 3 screw-termination male insert
- EPIC® H-A 3 hood
- Side cable entry
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009604       | 1           |

#### Article numbers for single components

- H-A 3 SS 10420000 (Main Catalogue Page 450)
- H-A 3 Ts M20 19512300 (Main Catalogue Page 498)

### EPIC KIT H-A 3 BS MAG



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Straight version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009606       | 1           |

#### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Mag 10422500 (Main Catalogue Page 499)

### EPIC KIT H-A 3 BS MAGS



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009608       | 1           |

#### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Mags 10423500 (Main Catalogue Page 499)

### EPIC KIT H-A 3 BS MAGS M20



- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009610       | 1           |

#### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 Magsv M20 19512700 (Main Catalogue Page 500)

### EPIC KIT H-A 3 BS MTGB M20

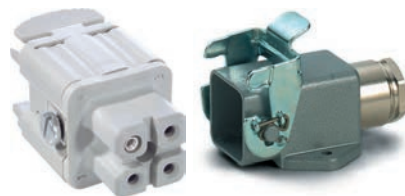
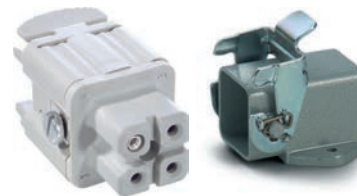


- EPIC® H-A 3 screw termination female insert
- EPIC® H-A 3 cable coupler hood
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009612       | 1           |

#### Article numbers for single components

- H-A 3 BS 10421000 (Main Catalogue Page 450)
- H-A 3 MTgvb M20 19512900 (Main Catalogue Page 501)



#### Info

- Complete connectors - easy to order

#### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

#### Similar products

- EPIC® H-A 3 Kits Thermoplastic refer to Main Catalogue page 583

#### Technical data

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

**Rated current (A)**  
IEC: 23 A  
UL: 10 A  
CSA: 10 A

**Number of contacts**  
3 + PE

## EPIC® H-A 4 Kits Thermoplastic



| Article number | Pieces / PU |
|----------------|-------------|
| 75009613       | 1           |

### Article numbers for single components

- H-A 4 SS 10431000 (Main Catalogue Page 450)
- H-A 3 Tgv M20 19426000 (Main Catalogue Page 497)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009615       | 1           |

### Article numbers for single components

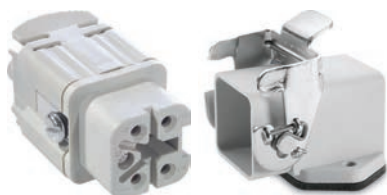
- H-A 4 SS 10431000 (Main Catalogue Page 450)
- H-A 3 Ts M20 19427000 (Main Catalogue Page 498)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009617       | 1           |

### Article numbers for single components

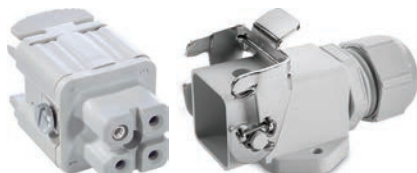
- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Ag 10422000 (Main Catalogue Page 499)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009619       | 1           |

### Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Ags 10423000 (Main Catalogue Page 499)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009621       | 1           |

### Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Agsv M20 19421900 (Main Catalogue Page 500)



| Article number | Pieces / PU |
|----------------|-------------|
| 75009623       | 1           |

### Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Tgvb M20 19429000 (Main Catalogue Page 501)

### EPIC KIT H-A 4 SS TG M20



- EPIC® H-A 4 screw-termination male insert
- EPIC® H-A 3 hood
- Straight cable entry
- Housing: thermoplastic grey

### EPIC KIT H-A 4 SS TS M20



- EPIC® H-A 4 screw-termination male insert
- EPIC® H-A 3 hood
- Side cable entry
- Housing: thermoplastic grey

### EPIC KIT H-A 4 BS AG



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Straight version
- Housing: thermoplastic grey

### EPIC KIT H-A 4 BS AGS



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: thermoplastic grey

### EPIC KIT H-A 4 BS AGS M20



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: thermoplastic grey

### EPIC KIT H-A 4 BS TGB M20



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 cable coupler hood
- Straight cable entry
- Housing: thermoplastic grey



### Info

- Complete connectors - easy to order

### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

### Similar products

- EPIC® H-A 4 Kits Metal refer to Main Catalogue page 586

### Technical data

#### Rated voltage (V)

IEC: 400 V  
UL: 600 V  
CSA: 600 V

#### Rated current (A)

IEC: 23 A  
UL: 10 A  
CSA: 10 A

#### Number of contacts

4 + PE



## EPIC® H-A 4 Kits Metal

### ■ EPIC KIT H-A 4 SS MTG M20



- EPIC® H-A 4 screw-termination male insert
- EPIC® H-A 3 hood
- Straight cable entry
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009614       | 1           |

#### ■ Article numbers for single components

- H-A 4 SS 10431000 (Main Catalogue Page 450)
- H-A 3 MTgv M20 19512100 (Main Catalogue Page 497)

### ■ EPIC KIT H-A 4 SS MTS M20



- EPIC® H-A 4 screw-termination male insert
- EPIC® H-A 3 hood
- Side cable entry
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009616       | 1           |

#### ■ Article numbers for single components

- H-A 4 SS 10431000 (Main Catalogue Page 450)
- H-A 3 Ts M20 19512300 (Main Catalogue Page 498)

### ■ EPIC KIT H-A 4 BS MAG



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Straight version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009618       | 1           |

#### ■ Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Mag 10422500 (Main Catalogue Page 499)

### ■ EPIC KIT H-A 4 BS MAGS



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009620       | 1           |

#### ■ Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Mags 10423500 (Main Catalogue Page 499)

### ■ EPIC KIT H-A 4 BS MAGS M20



- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 panel-mount base
- Angled version
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009622       | 1           |

#### ■ Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 Magsv M20 19512700 (Main Catalogue Page 500)

### ■ EPIC KIT H-A 4 BS TGB M20

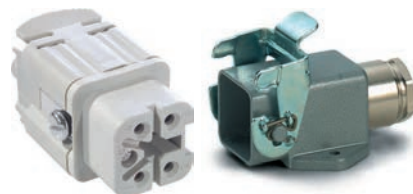
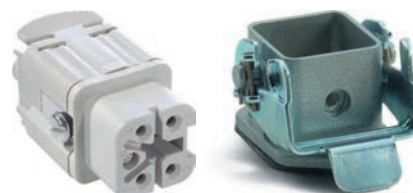


- EPIC® H-A 4 screw termination female insert
- EPIC® H-A 3 cable coupler hood
- Straight cable entry
- Housing: zinc die-casting, grey

| Article number | Pieces / PU |
|----------------|-------------|
| 75009624       | 1           |

#### ■ Article numbers for single components

- H-A 4 BS 10432000 (Main Catalogue Page 450)
- H-A 3 MTgvb M20 19512900 (Main Catalogue Page 501)



#### Info

- Complete connectors - easy to order

#### ■ Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

#### ■ Similar products

- EPIC® H-A 4 Kits Thermoplastic refer to Main Catalogue page 585

#### ■ Technical data

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

**Rated current (A)**  
IEC: 23 A  
UL: 10 A  
CSA: 10 A

**Number of contacts**  
4 + PE

## EPIC® H-A 10 Kits



| Article number | Pieces / PU |
|----------------|-------------|
| 75009625       | 1           |

### Article numbers for single components

- H-A 10 SS 10440100 (Main Catalogue Page 451)
- H-A 10 TG M20 19446000 (Main Catalogue Page 502)

### EPIC KIT H-A 10 SS TG M20



- EPIC® H-A 10 screw-termination male insert
- With wire protection
- EPIC® H-A 10 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009626       | 1           |

### Article numbers for single components

- H-A 10 SS 10440100 (Main Catalogue Page 451)
- H-A 10 TS M20 19445000 (Main Catalogue Page 503)

### EPIC KIT H-A 10 SS TS M20



- EPIC® H-A 10 screw-termination male insert
- With wire protection
- EPIC® H-A 10 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009627       | 1           |

### Article numbers for single components

- H-A 10 BS 10441100 (Main Catalogue Page 451)
- H-A 10 AG-LB 10442000 (Main Catalogue Page 504)

### EPIC KIT H-A 10 BS AG



- EPIC® H-A 10 screw termination female insert
- With wire protection
- EPIC® H-A 10 panel-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009628       | 1           |

### Article numbers for single components

- H-A 10 BS 10441100 (Main Catalogue Page 451)
- H-A 10 SGR-LB M20 19448100 (Main Catalogue Page 505)

### EPIC KIT H-A 10 BS SGR-LB M20



- EPIC® H-A 10 screw termination female insert
- With wire protection
- EPIC® H-A 10 surface-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009629       | 1           |

### Article numbers for single components

- H-A 10 BS 10441100 (Main Catalogue Page 451)
- H-A 10 TBF-LB M20 19439000 (Main Catalogue Page 507)

### EPIC KIT H-A 10 BS TBF-LB M20



- EPIC® H-A 10 screw termination female insert
- With wire protection
- EPIC® H-A 10 cable coupler hood



### Info

- Complete connectors - easy to order

### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

### Technical data

#### Rated voltage (V)

IEC: 250 V  
UL: 600 V  
CSA: 600 V

#### Rated current (A)

IEC: 16 A  
UL: 14 A  
CSA: 16 A

#### Number of contacts

10 + PE



## EPIC® H-A 16 Kits

### ■ EPIC KIT H-A 16 SS TG M20



- EPIC® H-A 16 screw-termination male insert
- With wire protection
- EPIC® H-A 16 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009630       | 1           |

#### ■ Article numbers for single components

- H-A 16 SS 10530000 (Main Catalogue Page 451)
- H-A 16 TG M20 19565000 (Main Catalogue Page 508)



### ■ EPIC KIT H-A 16 SS TS M20



- EPIC® H-A 16 screw-termination male insert
- With wire protection
- EPIC® H-A 16 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009631       | 1           |

#### ■ Article numbers for single components

- H-A 16 SS 10530000 (Main Catalogue Page 451)
- H-A 16 TS M20 19564000 (Main Catalogue Page 509)



### ■ EPIC KIT H-A 16 BS AG



- EPIC® H-A 16 screw termination female insert
- With wire protection
- EPIC® H-A 16 panel-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009632       | 1           |

#### ■ Article numbers for single components

- H-A 16 BS 10531000 (Main Catalogue Page 451)
- H-A 16 AG-LB 10462000 (Main Catalogue Page 510)



### ■ EPIC KIT H-A 16 BS SGR-LB M20

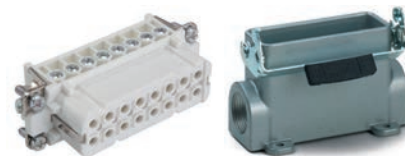


- EPIC® H-A 16 screw termination female insert
- With wire protection
- EPIC® H-A 16 surface-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009633       | 1           |

#### ■ Article numbers for single components

- H-A 16 BS 10531000 (Main Catalogue Page 451)
- H-A 16 SGR-LB M20 19567100 (Main Catalogue Page 511)



### ■ EPIC KIT H-A 16 BS TBF-LB M20



- EPIC® H-A 16 screw termination female insert
- With wire protection
- EPIC® H-A 16 cable coupler hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009634       | 1           |

#### ■ Article numbers for single components

- H-A 16 BS 10531000 (Main Catalogue Page 451)
- H-A 16 TBF-LB M20 19563000 (Main Catalogue Page 513)



#### Info

- Complete connectors - easy to order

#### ■ Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

#### ■ Technical data

##### Rated voltage (V)

IEC: 250 V  
UL: 600 V  
CSA: 600 V

##### Rated current (A)

IEC: 16 A  
UL: 14 A  
CSA: 16 A

##### Number of contacts

16 + PE

## EPIC® H-BE 6 Kits



| Article number | Pieces / PU |
|----------------|-------------|
| 75009635       | 1           |

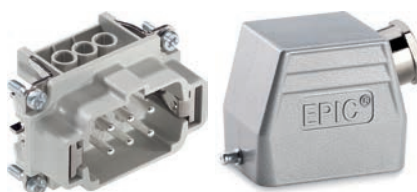
### Article numbers for single components

- H-BE 6 SS 10190000 (Main Catalogue Page 465)
- H-B 6 TG M20 19011000 (Main Catalogue Page 526)

### EPIC KIT H-BE 6 SS TG M20



- EPIC® H-BE 6 screw-termination male insert
- With wire protection
- EPIC® H-B 6 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009636       | 1           |

### Article numbers for single components

- H-BE 6 SS 10190000 (Main Catalogue Page 465)
- H-B 6 TS M20 19012000 (Main Catalogue Page 526)

### EPIC KIT H-BE 6 SS TS M20



- EPIC® H-BE 6 screw-termination male insert
- With wire protection
- EPIC® H-B 6 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009637       | 1           |

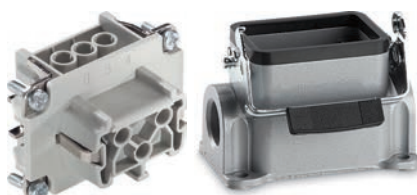
### Article numbers for single components

- H-BE 6 BS 10191000 (Main Catalogue Page 465)
- H-B 6 AG-LB 10003000 (Main Catalogue Page 527)

### EPIC KIT H-BE 6 BS AG-LB



- EPIC® H-BE 6 screw termination female insert
- With wire protection
- EPIC® H-B 6 panel-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009638       | 1           |

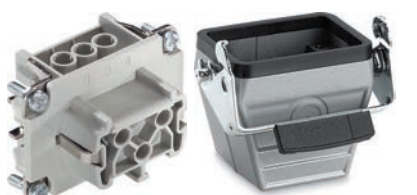
### Article numbers for single components

- H-BE 6 BS 10191000 (Main Catalogue Page 465)
- H-B 6 SGR M20 19005000 (Main Catalogue Page 528)

### EPIC KIT H-BE 6 BS SGR-LB M20



- EPIC® H-BE 6 screw termination female insert
- With wire protection
- EPIC® H-B 6 surface-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009639       | 1           |

### Article numbers for single components

- H-BE 6 BS 10191000 (Main Catalogue Page 465)
- H-B 6 TBF M20 19014000 (Main Catalogue Page 531)

### EPIC KIT H-BE 6 BS TBF-LB M20



- EPIC® H-BE 6 screw termination female insert
- With wire protection
- EPIC® H-B 6 cable coupler hood



### Info

- Complete connectors - easy to order

### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

### Technical data

#### Rated voltage (V)

IEC: 500 V  
UL: 600 V  
CSA: 600 V

#### Rated current (A)

IEC: 16 A  
UL: 16 A  
CSA: 16 A

Number of contacts  
6 + PE

## EPIC® H-BE 10 Kits

### ■ EPIC KIT H-BE 10 SS TG M25

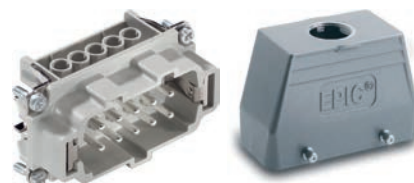


- EPIC® H-BE 10 screw-termination male insert
- With wire protection
- EPIC® H-B 10 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009640       | 1           |

#### ■ Article numbers for single components

- H-BE 10 SS 10192000 (Main Catalogue Page 466)
- H-B 10 TG M25 19040100 (Main Catalogue Page 533)



### ■ EPIC KIT H-BE 10 SS TS M25

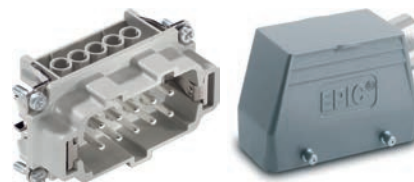


- EPIC® H-BE 10 screw-termination male insert
- With wire protection
- EPIC® H-B 10 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009641       | 1           |

#### ■ Article numbers for single components

- H-BE 10 SS 10192000 (Main Catalogue Page 466)
- H-B 10 TS M25 19042100 (Main Catalogue Page 534)



### ■ EPIC KIT H-BE 10 BS AG



- EPIC® H-BE 10 screw termination female insert
- With wire protection
- EPIC® H-B 10 panel-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009642       | 1           |

#### ■ Article numbers for single components

- H-BE 10 BS 10193000 (Main Catalogue Page 466)
- H-B 10 AG 10032000 (Main Catalogue Page 536)



### ■ EPIC KIT H-BE 10 BS SGR M25

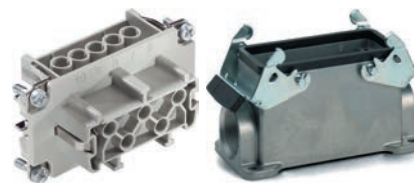


- EPIC® H-BE 10 screw termination female insert
- With wire protection
- EPIC® H-B 10 surface-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009643       | 1           |

#### ■ Article numbers for single components

- H-BE 10 BS 10193000 (Main Catalogue Page 466)
- H-B 10 SGR M25 19034100 (Main Catalogue Page 540)



### ■ EPIC KIT H-BE 10 BS TBF M25

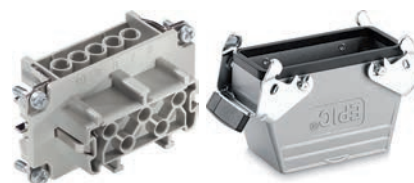


- EPIC® H-BE 10 screw termination female insert
- With wire protection
- EPIC® H-B 10 cable coupler hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009644       | 1           |

#### ■ Article numbers for single components

- H-BE 10 BS 10193000 (Main Catalogue Page 466)
- H-B 10 TBF M25 79040200 (Main Catalogue Page 543)



#### Info

- Complete connectors - easy to order

#### ■ Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

#### ■ Technical data

##### Rated voltage (V)

IEC: 500 V  
UL: 600 V  
CSA: 600 V

##### Rated current (A)

IEC: 16 A  
UL: 16 A  
CSA: 16 A

Number of contacts  
10 + PE

## EPIC® H-BE 16 Kits



| Article number | Pieces / PU |
|----------------|-------------|
| 75009645       | 1           |

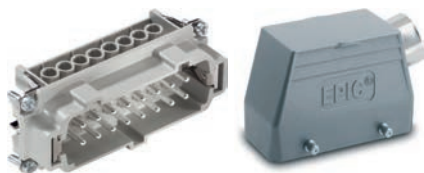
### Article numbers for single components

- H-BE 16 SS 10194000 (Main Catalogue Page 467)
- H-B 16 TG M25 19080000 (Main Catalogue Page 546)

### EPIC KIT H-BE 16 SS TG M25



- EPIC® H-BE 16 screw termination female insert
- With wire protection
- EPIC® H-B 16 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009646       | 1           |

### Article numbers for single components

- H-BE 16 SS 10194000 (Main Catalogue Page 467)
- H-B 16 TS M25 19082000 (Main Catalogue Page 548)

### EPIC KIT H-BE 16 SS TS M25



- EPIC® H-BE 16 screw termination female insert
- With wire protection
- EPIC® H-B 16 hood



| Article number | Pieces / PU |
|----------------|-------------|
| 75009647       | 1           |

### Article numbers for single components

- H-BE 16 BS 10195000 (Main Catalogue Page 467)
- H-B 16 AG 10072000 (Main Catalogue Page 550)

### EPIC KIT H-BE 16 BS AG



- EPIC® H-BE 16 screw termination female insert
- With wire protection
- EPIC® H-B 16 panel-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009648       | 1           |

### Article numbers for single components

- H-BE 16 BS 10195000 (Main Catalogue Page 467)
- H-B 16 SGR M25 19074000 (Main Catalogue Page 554)

### EPIC KIT H-BE 16 BS SGR M25



- EPIC® H-BE 16 screw termination female insert
- With wire protection
- EPIC® H-B 16 surface-mount base



| Article number | Pieces / PU |
|----------------|-------------|
| 75009649       | 1           |

### Article numbers for single components

- H-BE 16 BS 10195000 (Main Catalogue Page 467)
- H-B 16 TBF M25 19086000 (Main Catalogue Page 557)

### EPIC KIT H-BE 16 BS TBF M25



- EPIC® H-BE 24 screw termination female insert
- With wire protection
- EPIC® H-B 16 cable coupler hood



### Info

- Complete connectors - easy to order

### Benefits

- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

### Technical data

#### Rated voltage (V)

IEC: 500 V  
UL: 600 V  
CSA: 600 V

#### Rated current (A)

IEC: 16 A  
UL: 16 A  
CSA: 16 A

#### Number of contacts

16 + PE



## EPIC® H-BE 24 Kits

### ■ EPIC KIT H-BE 24 SS TG M25

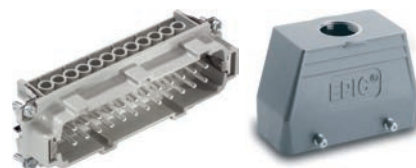


- EPIC® H-BE 24 screw-termination male insert
- With wire protection
- EPIC® H-B 24 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009650       | 1           |

#### ■ Article numbers for single components

- H-BE 24 SS 10196000 (Main Catalogue Page 468)
- H-B 24 TG M25 19121000 (Main Catalogue Page 560)



### ■ EPIC KIT H-BE 24 SS TS M25

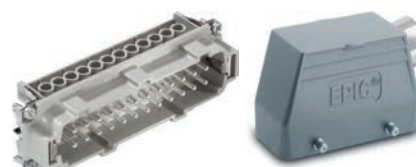


- EPIC® H-BE 24 screw-termination male insert
- With wire protection
- EPIC® H-B 24 hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009651       | 1           |

#### ■ Article numbers for single components

- H-BE 24 SS 10196000 (Main Catalogue Page 468)
- H-B 24 TS M25 19113000 (Main Catalogue Page 562)



### ■ EPIC KIT H-BE 24 BS AG



- EPIC® H-BE 24 screw termination female insert
- With wire protection
- EPIC® H-B 24 panel-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009652       | 1           |

#### ■ Article numbers for single components

- H-BE 24 BS 10197000 (Main Catalogue Page 468)
- H-B 24 AG 10102000 (Main Catalogue Page 564)



### ■ EPIC KIT H-BE 24 BS SGR M25



- EPIC® H-BE 24 screw termination female insert
- With wire protection
- EPIC® H-B 24 surface-mount base

| Article number | Pieces / PU |
|----------------|-------------|
| 75009653       | 1           |

#### ■ Article numbers for single components

- H-BE 24 BS 10197000 (Main Catalogue Page 468)
- H-B 24 SGR M25 19104000 (Main Catalogue Page 568)



### ■ EPIC KIT H-BE 24 BS TBF M25



- EPIC® H-BE 24 screw termination female insert
- With wire protection
- EPIC® H-B 24 cable coupler hood

| Article number | Pieces / PU |
|----------------|-------------|
| 75009654       | 1           |

#### ■ Article numbers for single components

- H-BE 24 BS 10197000 (Main Catalogue Page 468)
- H-B 24 TBF M25 19127000 (Main Catalogue Page 571)



#### Info

- Complete connectors - easy to order

#### ■ Benefits

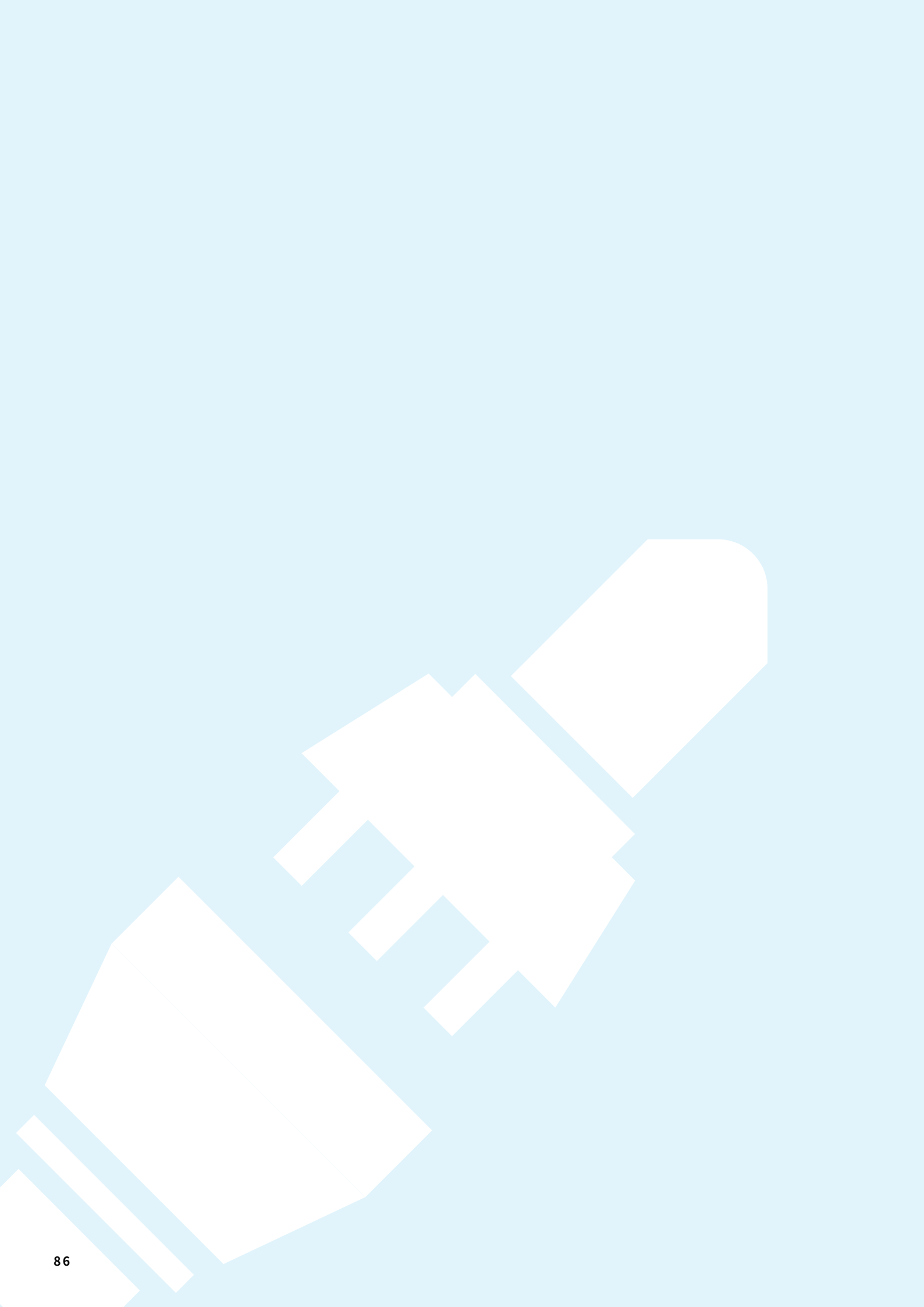
- Pre-packed kits with compatible components
- Uncomplicated ordering
- No misplaced orders

#### ■ Technical data

**Rated voltage (V)**  
IEC: 500 V  
UL: 600 V  
CSA: 600 V

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

**Number of contacts**  
24 + PE





## SKINTOP® metric nickel-plated brass cable glands

### SKINTOP® MS-M/SKINTOP® MSR-M

SKINTOP® MS-M / SKINTOP® MSR-M

New 88

### SKINTOP® MS-M-XL/SKINTOP® MSR-M-XL

SKINTOP® MS-M-XL / SKINTOP® MSR-M-XL

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### SKINTOP® COLD

SKINTOP® COLD / SKINTOP® COLD-R

New 90

### SKINTOP® explosion-proof

SKINTOP® MS-M ATEX BRUSH

New 91

### SKINTOP® EMC/Earthing

SKINTOP® MS-SC-M

New 92

SKINTOP® MS-M BRUSH

New 93

## SKINDICHT® metric cable gland accessories

### SKINDICHT® counter nuts

SKINDICHT® SM-M

94

SKINDICHT® SM-PE-M

94

SKINDICHT® BL-M

95

### SKINDICHT® reducers

SKINDICHT® KU-M

96

SKINDICHT® MR-M

96

### SKINDICHT® enlargers

SKINDICHT® EKU-M

97

SKINDICHT® ME-M

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### SKINDICHT® fittings

SKINDICHT® ZS-M

98

SKINDICHT® ZSE-M

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# SKINTOP®

## Cable glands

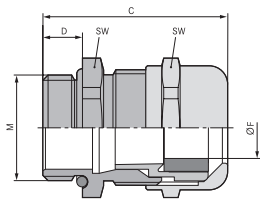


New

## SKINTOP® MS-M / SKINTOP® MSR-M



SKINTOP® MS-M



SKINTOP® MSR-M



## Info

- SKINTOP® MS-M sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket or easier assembling of cables with large diameters.
- Now with IP 69 K approval! Proven to withstand the most demanding cleaning procedures for industrial machinery with high-pressure cleaners and hot water!

## Benefits

## SKINTOP® MS-M

- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges
- For cable diameters up to 98 mm

## SKINTOP® MSR-M

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

## Application range

## SKINTOP® MS-M

- In areas where mechanical and chemical stability are critical
- Machine and equipment manufacturing
- Measurement and control technology
- Machine and equipment manufacturing
- Plant engineering

## SKINTOP® MSR-M

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

## Approvals



- UL File Nr. E79903

## Design

- Metric connection thread acc. to EN 50262

## Note

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

## Suitable cables

## SKINTOP® MS-M

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

## Technical data



## Caution

Refer to Main Catalogue Appendix T21 for the installation dimensions and torques



## Approvals

IP 69 K approval from size M75 x 1.5 pending. UL, CSA, DNV and VDE approval for sizes M90 x 2 to M110 x 2 pending.



## Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



## Protection rating

IP 68  
IP 69 K



## Temperature range

Dynamic: -30 °C to +100 °C  
Fixed: -40 °C to +100 °C

| Article number                        | Article designation / size | Clamping range ØF (mm) | SW (mm) | Overall length, C (mm) | Thread length, D (mm) | Pieces / PU |
|---------------------------------------|----------------------------|------------------------|---------|------------------------|-----------------------|-------------|
| <b>SKINTOP® MS-M / SKINTOP® MSR-M</b> |                            |                        |         |                        |                       |             |
| 53112000                              | 12 x 1,5                   | 3-7                    | 16      | 26.5                   | 6.5                   | 100         |
| 53112010                              | 16 x 1,5                   | 4,5-10                 | 20      | 32.0                   | 7.0                   | 100         |
| 53112020                              | 20 x 1,5                   | 7-13                   | 24      | 35.5                   | 8.0                   | 50          |
| 53112030                              | 25 x 1,5                   | 9-17                   | 29      | 37.5                   | 8.0                   | 25          |
| 53112040                              | 32 x 1,5                   | 11-21                  | 36      | 42.2                   | 9.0                   | 25          |
| 53112050                              | 40 x 1,5                   | 19-28                  | 45      | 49.5                   | 9.0                   | 10          |
| 53112060                              | 50 x 1,5                   | 27-35                  | 54      | 52.0                   | 10.0                  | 5           |
| 53112070                              | 63 x 1,5                   | 34-45                  | 67      | 61.3                   | 15.0                  | 5           |
| 53112080                              | 63 x 1,5 plus              | 44-55                  | 75      | 65.5                   | 15.0                  | 5           |
| 53112510                              | 75 x 1,5                   | 58-68                  | 95      | 105.0                  | 15.0                  | 1           |
| 53112512                              | 90 x 2                     | 66-78                  | 115     | 136.0                  | 20.0                  | 1           |
| 53112514                              | 110 x 2                    | 86-98                  | 135     | 154.0                  | 25.0                  | 1           |
| <b>SKINTOP® MSR-M</b>                 |                            |                        |         |                        |                       |             |
| 53112100                              | 12 x 1,5                   | 1-5                    | 16      | 26.5                   | 6.5                   | 100         |
| 53112110                              | 16 x 1,5                   | 2-7                    | 20      | 32.0                   | 7.0                   | 100         |
| 53112120                              | 20 x 1,5                   | 5-10                   | 24      | 35.5                   | 8.0                   | 50          |
| 53112130                              | 25 x 1,5                   | 6-13                   | 29      | 37.5                   | 8.0                   | 25          |
| 53112140                              | 32 x 1,5                   | 7-15                   | 36      | 42.2                   | 9.0                   | 25          |
| 53112150                              | 40 x 1,5                   | 15-23                  | 45      | 49.5                   | 9.0                   | 10          |
| 53112160                              | 50 x 1,5                   | 22-29                  | 54      | 52.0                   | 10.0                  | 5           |
| 53112170                              | 63 x 1,5                   | 28-39                  | 67      | 61.3                   | 15.0                  | 5           |
| 53112511                              | 75 x 1,5                   | 53-63                  | 95      | 105.0                  | 15.0                  | 1           |
| 53112515                              | 110 x 2                    | 76-88                  | 135     | 154.0                  | 25.0                  | 1           |

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

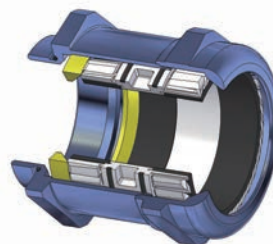
## Accessories

## SKINTOP® MS-M

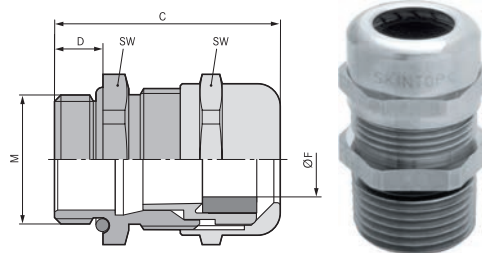
- SKINDICHT® SM-M refer to Main Catalogue page 694
- SKINTOP® DIX-M refer to Main Catalogue page 672
- SKINMATIC® MH Set refer to Main Catalogue page 710
- SKINTOP® DIX-M AUTOMATION refer to Main Catalogue page 673
- SKINTOP® SDV-M ATEX refer to Main Catalogue page 674
- SKINTOP® SD-M refer to Main Catalogue page 675
- SKINTOP® DV-M refer to Main Catalogue page 675

## SKINTOP® MSR-M

- SKINDICHT® SM-M refer to Main Catalogue page 694
- SKINTOP® SDVR-M ATEX refer to Main Catalogue page 674
- SKINTOP® SD-M refer to Main Catalogue page 675



## SKINTOP® MS-M-XL / SKINTOP® MSR-M-XL



### Benefits

#### SKINTOP® MS-M-XL

- Especially for thick walls
- Maximum reliability
- Optimum strain relief
- Wide, variable clamping ranges

#### SKINTOP® MSR-M-XL

- For the benefits, refer to SKINTOP® MS-M-XL

### Application range

#### SKINTOP® MS-M-XL

- With long connection thread for applications involving a thicker wall.

#### SKINTOP® MSR-M-XL

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

### Approvals



- UL File Nr. E79903

### Design

- Metric connection thread acc. to EN 50262

### Note

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

### Technical data



#### Caution

Refer to Main Catalogue Appendix T21 for the installation dimensions and torques



#### Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



#### Protection rating

IP 68 - 10 bar  
IP 69 K



#### Temperature range

Dynamic: -30 °C to +100 °C  
Fixed: -40 °C to +100 °C

| Article number           | Article designation / size | Clamping range ØF (mm) | SW (mm) | Overall length, C (mm) | Thread length, D (mm) | Pieces / PU |
|--------------------------|----------------------------|------------------------|---------|------------------------|-----------------------|-------------|
| <b>SKINTOP® MS-M-XL</b>  |                            |                        |         |                        |                       |             |
| 53112005                 | 12 x 1,5                   | 3-7                    | 16      | 32.8                   | 12.0                  | 100         |
| 53112015                 | 16 x 1,5                   | 4,5-10                 | 20      | 37.0                   | 12.0                  | 50          |
| 53112025                 | 20 x 1,5                   | 7-13                   | 24      | 39.5                   | 12.0                  | 50          |
| 53112035                 | 25 x 1,5                   | 9-17                   | 29      | 41.5                   | 12.0                  | 25          |
| 53112045                 | 32 x 1,5                   | 11-21                  | 36      | 48.2                   | 15.0                  | 25          |
| 53112055                 | 40 x 1,5                   | 19-28                  | 45      | 53.5                   | 15.0                  | 10          |
| 53112065                 | 50 x 1,5                   | 27-35                  | 54      | 57.0                   | 15.0                  | 5           |
| <b>SKINTOP® MSR-M-XL</b> |                            |                        |         |                        |                       |             |
| 53112105                 | 12 x 1,5                   | 1-5                    | 16      | 32.8                   | 12.0                  | 100         |
| 53112115                 | 16 x 1,5                   | 2-7                    | 20      | 37.0                   | 12.0                  | 50          |
| 53112125                 | 20 x 1,5                   | 5-10                   | 24      | 39.5                   | 12.0                  | 50          |
| 53112135                 | 25 x 1,5                   | 6-13                   | 29      | 41.5                   | 12.0                  | 25          |
| 53112145                 | 32 x 1,5                   | 7-15                   | 36      | 48.2                   | 15.0                  | 25          |
| 53112155                 | 40 x 1,5                   | 15-23                  | 45      | 53.5                   | 15.0                  | 10          |
| 53112165                 | 50 x 1,5                   | 22-29                  | 54      | 57.0                   | 15.0                  | 5           |

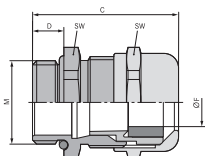
Photographs are not to scale and do not represent detailed images of the respective products.

New

## SKINTOP® COLD / SKINTOP® COLD-R



SKINTOP® COLD



SKINTOP® COLD-R



Info

- For extreme sub-zero temperatures

## ■ Benefits

## SKINTOP® COLD

- High cold-resistance
- Cold impact resistance
- High mechanical stability
- Optimum strain relief
- Wide, variable clamping ranges

## SKINTOP® COLD-R

- For the benefits, refer to SKINTOP® COLD

## ■ Application range

## SKINTOP® COLD

- In areas where mechanical stability and high cold-resistance are critical
- Air-conditioning technology
- Freezing plants, cold storage
- Offshore sector
- Plant engineering

## SKINTOP® COLD-R

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

## ■ Approvals



## ■ Design

- Metric connection thread acc. to EN 50262

## ■ Note

- Counter nut to be used: SKINDICHT® SM-M
- Refer to SKINTOP® metric accessories for suitable accessories

## ■ Technical data



## Caution

Refer to Main Catalogue Appendix T21 for the installation dimensions and torques



## Material

Metric connection thread acc. to EN 50262



## Protection rating

IP 68 - 10 bar



## Temperature range

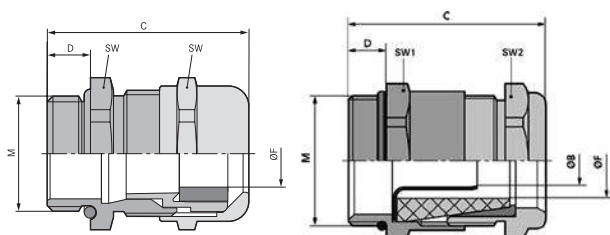
SKINTOP® MS-M ATEX BRUSH  
-30°C to +90°C  
SKINDICHT® SHVE-M ATEX  
-20°C to +80°C

| Article number         | Article designation / size | Clamping range ØF (mm) | SW (mm) | Overall length, C (mm) | Thread length, D (mm) | Pieces / PU |
|------------------------|----------------------------|------------------------|---------|------------------------|-----------------------|-------------|
| <b>SKINTOP® COLD</b>   |                            |                        |         |                        |                       |             |
| 53113500               | 12 x 1,5                   | 3-7                    | 16      | 26.5                   | 6.5                   | 100         |
| 53113510               | 16 x 1,5                   | 4,5-10                 | 20      | 32.0                   | 7.0                   | 100         |
| 53113520               | 20 x 1,5                   | 7-13                   | 24      | 35.5                   | 8.0                   | 50          |
| 53113530               | 25 x 1,5                   | 9-17                   | 29      | 37.5                   | 8.0                   | 25          |
| 53113540               | 32 x 1,5                   | 11-21                  | 36      | 42.2                   | 9.0                   | 25          |
| 53113550               | 40 x 1,5                   | 19-28                  | 45      | 49.5                   | 9.0                   | 10          |
| 53113560               | 50 x 1,5                   | 27-35                  | 54      | 52.0                   | 10.0                  | 5           |
| 53113570               | 63 x 1,5                   | 34-45                  | 67      | 61.3                   | 15.0                  | 5           |
| <b>SKINTOP® COLD-R</b> |                            |                        |         |                        |                       |             |
| 53113600               | 12 x 1,5                   | 1-5                    | 16      | 26.5                   | 6.5                   | 100         |
| 53113610               | 16 x 1,5                   | 2-7                    | 20      | 32.0                   | 7.0                   | 100         |
| 53113620               | 20 x 1,5                   | 5-10                   | 24      | 35.5                   | 8.0                   | 50          |
| 53113630               | 25 x 1,5                   | 6-13                   | 29      | 37.5                   | 8.0                   | 25          |
| 53113640               | 32 x 1,5                   | 7-15                   | 36      | 42.2                   | 9.0                   | 25          |
| 53113650               | 40 x 1,5                   | 15-23                  | 45      | 49.5                   | 9.0                   | 10          |
| 53113660               | 50 x 1,5                   | 22-29                  | 54      | 52.0                   | 10.0                  | 5           |
| 53113670               | 63 x 1,5                   | 28-39                  | 67      | 61.3                   | 15.0                  | 5           |

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

**New**

## SKINTOP® MS-M ATEX BRUSH



SKINTOP® MS-M ATEX BRUSH

### Benefits

- Faster and less complicated assembling than any other system
- Optimum, F8480 low-resistance 360° screen contact
- Simple cable adjustment
- Easy to uninstall
- Anti-static, safe, and impact-resistant at cold temperatures

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Chemical and petrochemical industry
- Plant engineering
- Equipment group II / Category 2G+1D
- Devices, machines and apparatus of enhanced safety protection type "e"

### Approvals



### Design

- Metric connection thread acc. to EN 50262

### Design

- SKINDICHT® SHVE-M 20 x 1.5 ATEX design with EMC earthing sleeve to cover smaller cable clamping ranges

### Technical data



**Caution**  
Refer to the instruction leaflet for the installation dimensions and torques



**Approvals**  
DNV for SKINDICHT® SHVE-M ATEX pending



**Note**  
SKINDICHT® SHVE-M ATEX  
IBExU08ATEX1161 X  
Ex II 2G Ex e II  
Ex II 1D Ex tD A20 IP 6X  
SKINTOP® MS-M ATEX BRUSH  
IBExU01ATEX1041 X  
Ex II 2G Ex e II  
Ex II 1D tD A20 IP6X



**Material**  
SKINTOP® MS-M ATEX BRUSH  
Body: nickel plated brass  
Insert: special polyamide  
EMV-Brush: brass  
Seal: special elastomer  
O-Ring: special elastomer  
SKINDICHT® SHVE-M ATEX  
Body: nickel plated brass  
Earthing sleeve: brass  
Seal: special elastomer  
O-Ring: special elastomer

**Tests**  
DIN EN 60079-0  
DIN EN 60079-7



**Protection rating**  
IP 68 - 10 bar



**Temperature range**  
SKINTOP® MS-M ATEX BRUSH  
-30°C to +90°C  
SKINDICHT® SHVE-M ATEX  
-20°C to +80°C

| Article number                  | Article designation / size | Outer Ø (mm), from - to | Minimum Ø above braiding (mm) | SW (mm) | Thread length, D (mm) | Pieces / PU |
|---------------------------------|----------------------------|-------------------------|-------------------------------|---------|-----------------------|-------------|
| <b>SKINDICHT® SHVE-M ATEX</b>   |                            |                         |                               |         |                       |             |
| 52107102                        | 20 x 1,5                   | 6,9-8,9                 | 5.0                           | 24      | 6.0                   | 10          |
| <b>SKINTOP® MS-M ATEX BRUSH</b> |                            |                         |                               |         |                       |             |
| 52110023                        | 25 x 1,5                   | 9.0-17.0                | 6.0                           | 29      | 8.0                   | 10          |
| 52110024                        | 32 x 1,5                   | 11.0-21.0               | 8.0                           | 36      | 9.0                   | 1           |
| 52110025                        | 40 x 1,5                   | 19.0-28.0               | 10.0                          | 45      | 9.0                   | 1           |
| 52110026                        | 50 x 1,5                   | 27.0-35.0               | 14.0                          | 54      | 10.0                  | 1           |
| 52110027                        | 63 x 1,5                   | 34.0-45.0               | 20.0                          | 67      | 15.0                  | 1           |
| 52110028                        | 63 x 1,5 plus              | 44.0-55.0               | 25.0                          | 75      | 15.0                  | 1           |

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

New

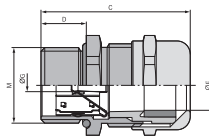
## SKINTOP® MS-SC-M



SKINTOP® MS-SC-M-XL



SKINTOP® MS-SC-M



## ■ Benefits

- Suitable for cables with and without inner sheath
- Also suitable for continuing the cable screen to another connection
- Low-resistance screen contact, optimum EMC protection
- Highly conductive, flexible EMC contact for clamping various screen diameters
- Few operation steps, easy to assemble

## ■ Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Telecommunication
- Industrial machinery and plant engineering
- Measurement and control technology
- Automation technology

## ■ Approvals



- UL File Nr. E79903

## ■ Design

- UL File Nr. E79903

## ■ Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings
- Refer to SKINTOP® metric accessories for suitable accessories
- As an alternative for thick-walled housings, we recommend SKINTOP® MS-SC-M-XL with long connection thread in the sizes M16 to M50

## ■ Technical data



## Caution

Refer to Main Catalogue Appendix T21 for the installation imensions and torques



## Material

Body: nickel-plated brass  
Insert: polyamide  
Sealing ring: CR  
O-ring: NBR



## Protection rating

IP 68 - 10 bar



## Temperature range

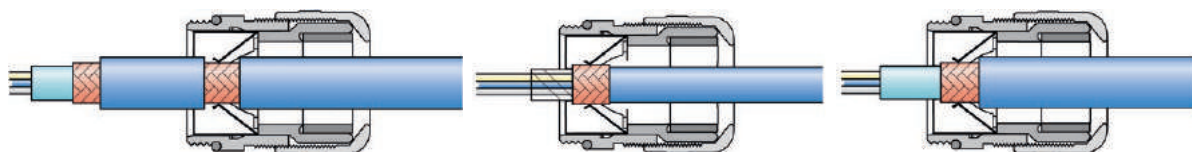
SKINTOP® MS-M ATEX BRUSH  
-30 °C to +100 °C

| Article number             | Article designation / size | Outer Ø (mm), from - to | Minimum Ø above braiding (mm) | SW (mm) | Thread length, D (mm) | Pieces / PU |
|----------------------------|----------------------------|-------------------------|-------------------------------|---------|-----------------------|-------------|
| <b>SKINTOP® MS-SC-M</b>    |                            |                         |                               |         |                       |             |
| 53112610                   | 12 x 1,5                   | 3,5-7,0                 | 2,0                           | 16      | 6,5                   | 50          |
| 53112620                   | 16 x 1,5                   | 4,5-9,0                 | 4,0                           | 20      | 7,0                   | 50          |
| 53112630                   | 20 x 1,5                   | 7,0-12,5                | 5,0                           | 24      | 8,0                   | 25          |
| 53112640                   | 25 x 1,5                   | 9,0-16,5                | 7,5                           | 29      | 8,0                   | 25          |
| 53112650                   | 32 x 1,5                   | 11,0-21,0               | 9,0                           | 36      | 9,0                   | 25          |
| 53112660                   | 40 x 1,5                   | 19,0-28,0               | 15,0                          | 45      | 9,0                   | 10          |
| 53112670                   | 50 x 1,5                   | 27,0-35,0               | 21,0                          | 54      | 10,0                  | 5           |
| <b>SKINTOP® MS-SC-M-XL</b> |                            |                         |                               |         |                       |             |
| 53112625                   | 16 x 1,5                   | 4,5-9,0                 | 4,0                           | 20      | 12,0                  | 50          |
| 53112635                   | 20 x 1,5                   | 7,0-12,5                | 5,0                           | 24      | 12,0                  | 25          |
| 53112645                   | 25 x 1,5                   | 9,0-16,5                | 7,5                           | 29      | 12,0                  | 25          |
| 53112655                   | 32 x 1,5                   | 11,0-21,0               | 9,0                           | 36      | 15,0                  | 25          |
| 53112665                   | 40 x 1,5                   | 19,0-28,0               | 15,0                          | 45      | 15,0                  | 10          |
| 53112675                   | 50 x 1,5                   | 27,0-35,0               | 21,0                          | 54      | 15,0                  | 5           |

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

## ■ Accessories

- SKINDICHT® SM-PE-M refer to Main Catalogue page 694





**New**

## SKINTOP® MS-M BRUSH

### Benefits

- Faster, easier screen contact
- Optimum, F8480 low-resistance 360° screen contact
- Faster than any other comparable system
- Uncomplicated and reliable
- Maximum assembly freedom during adjustment

### Application range

- For EMC-compliant earthing of the copper braiding, or for cables with copper shaft sheath
- Automation systems
- High-power drives
- Frequency converters
- Conveyor and transport systems

### Approvals



- UL File Nr. E79903

### Design

- Metric connection thread acc. to EN 50262

### Note

- SKINDICHT® SM-PE-M counter nut should be used to ensure optimum contact with painted, anodised or powder-coated housings



### Info

- **SKINTOP® MS-M BRUSH** sizes 75 x 1.5 to 110 x 2 with innovative double lamella gasket for easier assembling of cables with large diameters.
- Former product name: **SKINTOP® MSSC-M BRUSH**

### Technical data



#### Caution

Refer to Main Catalogue Appendix T21 for the installation dimensions and torques



#### Approvals

VDE, UL, CSA, DNV approval for size M90 x 2 and 110 x 2 pending  
SKINTOP® MSR-M BRUSH 25 x 1.5 approvals pending



#### Material

Body: nickel-plated brass  
EMC brush: brass  
Sealing ring: special elastomer  
O-ring: special elastomer



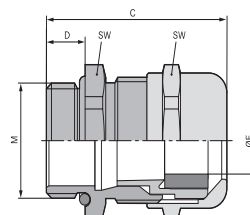
#### Protection rating

IP 68  
IP 69 K (M25x1,5 - M63x1,5)



#### Temperature range

Dynamic: -30 °C to +100 °C  
Fixed: -40 °C to +100 °C



| Article number              | Article designation / size | Outer Ø (mm), from - to | Minimum Ø above braiding (mm) | SW (mm) | Thread length, D (mm) | Pieces / PU |
|-----------------------------|----------------------------|-------------------------|-------------------------------|---------|-----------------------|-------------|
| <b>SKINTOP® MSR-M BRUSH</b> |                            |                         |                               |         |                       |             |
| 53112671                    | 25 x 1,5                   | 6,0-13,0                | 5,0                           | 29      | 8,0                   | 10          |
| <b>SKINTOP® MS-M BRUSH</b>  |                            |                         |                               |         |                       |             |
| 53112676                    | 25 x 1,5                   | 9,0-17,0                | 6,0                           | 29      | 8,0                   | 10          |
| 53112677                    | 32 x 1,5                   | 11,0-21,0               | 8,0                           | 36      | 9,0                   | 1           |
| 53112678                    | 40 x 1,5                   | 19,0-28,0               | 10,0                          | 45      | 9,0                   | 1           |
| 53112679                    | 50 x 1,5                   | 27,0-35,0               | 14,0                          | 54      | 10,0                  | 1           |
| 53112680                    | 63 x 1,5                   | 34,0-45,0               | 20,0                          | 67      | 15,0                  | 1           |
| 53112681                    | 63 x 1,5 plus              | 44,0-55,0               | 25,0                          | 75      | 15,0                  | 1           |
| 53112501                    | 75 x 1,5                   | 53,0-63,0               | 35,0                          | 95      | 15,0                  | 1           |
| 53112500                    | 75 x 1,5 plus              | 58,0-68,0               | 35,0                          | 95      | 15,0                  | 1           |
| 53112503                    | 90 x 2                     | 66,0-78,0               | 45,0                          | 115     | 20,0                  | 1           |
| 53112505                    | 110 x 2                    | 76,0-88,0               | 55,0                          | 135     | 25,0                  | 1           |
| 53112504                    | 110 x 2xplus               | 86,0-98,0               | 55,0                          | 135     | 25,0                  | 1           |

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

### Accessories

- SKINDICHT® SM-PE-M refer to Main Catalogue page 694



## SKINDICHT® SM-M



## SKINDICHT® SM-M

## ■ Application range

- Used when a gland has to be countered, or in through-holes on thin-walled housings

## ■ Approvals



## ■ Design

- Metric connection thread acc. to EN 50262

## ■ Technical data



**Material**  
Nickel-plated brass

| Article number         | Article designation / size | Thickness (mm) | SW (mm) | Outer Ø (mm) | Pieces / PU |
|------------------------|----------------------------|----------------|---------|--------------|-------------|
| <b>SKINDICHT® SM-M</b> |                            |                |         |              |             |
| 52103000               | 12 x 1,5                   | 3.0            | 15      | 16.5         | 100         |
| 52103010               | 16 x 1,5                   | 3.0            | 19      | 20.9         | 100         |
| 52103020               | 20 x 1,5                   | 3.5            | 24      | 26.4         | 100         |
| 52103030               | 25 x 1,5                   | 4.0            | 30      | 33.0         | 100         |
| 52103040               | 32 x 1,5                   | 4.0            | 36      | 39.6         | 100         |
| 52103050               | 40 x 1,5                   | 5.0            | 46      | 50.6         | 50          |
| 52103060               | 50 x 1,5                   | 5.0            | 60      | 66.0         | 50          |
| 52103070               | 63 x 1,5                   | 5.0            | 70      | 77.0         | 25          |
| 52103071               | 75 x 1,5                   | 8.0            | 85      | 95.0         | 5           |
| 52103072               | 90 x 2                     | 10.0           | 102     | 114.0        | 1           |
| 52103073               | 110 x 2                    | 12.0           | 124     | 135.0        | 1           |

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

## SKINDICHT® SM-PE-M



## SKINDICHT® SM-PE-M

## ■ Benefits

- Cutting edges cut through the insulating layer, thus guaranteeing an optimum EMC contact
- Suitable for all metric glands used in earthing and EMC applications

## ■ Approvals



## ■ Design

- Metric connection thread acc. to EN 50262

## ■ Technical data



**Material**  
Nickel-plated brass

| Article number            | Article designation / size | Thickness (mm) | SW (mm) | Outer Ø (mm) | Pieces / PU |
|---------------------------|----------------------------|----------------|---------|--------------|-------------|
| <b>SKINDICHT® SM-PE-M</b> |                            |                |         |              |             |
| 52103300                  | 12 x 1,5                   | 3.5            | 15      | 16.5         | 100         |
| 52103310                  | 16 x 1,5                   | 3.5            | 19      | 20.9         | 100         |
| 52103320                  | 20 x 1,5                   | 3.7            | 24      | 26.4         | 100         |
| 52103330                  | 25 x 1,5                   | 4.2            | 30      | 33.0         | 50          |
| 52103340                  | 32 x 1,5                   | 4.7            | 36      | 39.6         | 50          |
| 52103350                  | 40 x 1,5                   | 5.5            | 46      | 50.6         | 25          |
| 52103360                  | 50 x 1,5                   | 5.5            | 60      | 66.0         | 10          |
| 52103370                  | 63 x 1,5                   | 7.0            | 70      | 77.0         | 10          |
| 52103371                  | 75 x 1,5                   | 8.0            | 85      | 95.0         | 5           |
| 52103372                  | 90 x 2                     | 10.0           | 102     | 114.0        | 1           |
| 52103373                  | 110 x 2                    | 12.0           | 124     | 135.0        | 1           |

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

## SKINDICHT® BL-M



SKINDICHT® BL-M

### ■ Benefits

- For closing pre-threaded holes
- Assembling with screwdriver

### ■ Application range

- Machine and equipment manufacturing
- Electric motor manufacturing

### ■ Approvals



### ■ Design

- Metric connection thread acc. to EN 50262

### ■ Technical data



**Upon request**  
Fitted with FKM O-ring



**Material**  
Dummy plug: nickel-plated brass  
O-ring: NBR



**Protection rating**  
IP 54  
IP 68 with O-ring



**Temperature range**  
With O-ring: -30°C to +100°C  
Without O-ring: -60°C to +200°C

| Article number                     | Article designation / size | Outer Ø (mm) | Pieces / PU |
|------------------------------------|----------------------------|--------------|-------------|
| <b>SKINDICHT® BL-M</b>             |                            |              |             |
| 52103100                           | 12 x 1,5                   | 14.0         | 100         |
| 52103110                           | 16 x 1,5                   | 18.0         | 100         |
| 52103120                           | 20 x 1,5                   | 22.0         | 100         |
| 52103130                           | 25 x 1,5                   | 28.0         | 100         |
| 52103140                           | 32 x 1,5                   | 35.0         | 50          |
| 52103150                           | 40 x 1,5                   | 44.0         | 25          |
| 52103160                           | 50 x 1,5                   | 54.0         | 10          |
| 52103170                           | 63 x 1,5                   | 70.0         | 10          |
| <b>SKINDICHT® BL-M with O-ring</b> |                            |              |             |
| 52103105                           | 12 x 1,5                   | 14.0         | 100         |
| 52103115                           | 16 x 1,5                   | 18.0         | 100         |
| 52103125                           | 20 x 1,5                   | 22.0         | 100         |
| 52103135                           | 25 x 1,5                   | 28.0         | 100         |
| 52103145                           | 32 x 1,5                   | 35.0         | 50          |
| 52103155                           | 40 x 1,5                   | 44.0         | 25          |
| 52103165                           | 50 x 1,5                   | 54.0         | 10          |
| 52103175                           | 63 x 1,5                   | 70.0         | 10          |
| 52103190                           | 75 x 1,5                   | 80.0         | 1           |

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

## SKINDICHT® KU-M



## ■ Benefits

- Enables the use of cable glands with smaller connection threads than the existing threaded holes

## ■ Application range

- Machines
- Devices
- Housings

## ■ Approvals



## ■ Design

- Metric connection thread acc. to EN 50262

## ■ Technical data



**Colour delivered**  
Light grey (RAL 7035)



**Material**  
Polyamide, glass fibre-reinforced



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

| Article number                    | Thread, male M1 | Thread, female M2 | SW (mm) | Pieces / PU |
|-----------------------------------|-----------------|-------------------|---------|-------------|
| <b>SKINDICHT® KU-M light grey</b> |                 |                   |         |             |
| 52104505                          | 16 x 1.5        | 12 x 1.5          | 22      | 100         |
| 52104470                          | 20 x 1.5        | 12 x 1.5          | 24      | 100         |
| 52104504                          | 20 x 1.5        | 16 x 1.5          | 24      | 100         |
| 52104472                          | 25 x 1.5        | 12 x 1.5          | 29      | 100         |
| 52104473                          | 25 x 1.5        | 16 x 1.5          | 29      | 100         |
| 52104474                          | 25 x 1.5        | 20 x 1.5          | 29      | 100         |
| 52104475                          | 32 x 1.5        | 12 x 1.5          | 36      | 50          |
| 52104476                          | 32 x 1.5        | 16 x 1.5          | 36      | 50          |
| 52104477                          | 32 x 1.5        | 20 x 1.5          | 36      | 50          |
| 52104478                          | 32 x 1.5        | 25 x 1.5          | 36      | 50          |
| 52104479                          | 40 x 1.5        | 16 x 1.5          | 46      | 50          |
| 52104480                          | 40 x 1.5        | 20 x 1.5          | 46      | 50          |
| 52104481                          | 40 x 1.5        | 25 x 1.5          | 46      | 25          |
| 52104482                          | 40 x 1.5        | 32 x 1.5          | 46      | 25          |
| 52104483                          | 50 x 1.5        | 20 x 1.5          | 55      | 5           |
| 52104484                          | 50 x 1.5        | 25 x 1.5          | 55      | 5           |
| 52104485                          | 50 x 1.5        | 32 x 1.5          | 55      | 5           |
| 52104486                          | 50 x 1.5        | 40 x 1.5          | 55      | 5           |
| 52104487                          | 63 x 1.5        | 25 x 1.5          | 68      | 5           |
| 52104488                          | 63 x 1.5        | 32 x 1.5          | 68      | 5           |
| 52104489                          | 63 x 1.5        | 40 x 1.5          | 68      | 5           |
| 52104469                          | 63 x 1.5        | 50 x 1.5          | 68      | 5           |

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

## SKINDICHT® MR-M



## ■ Benefits

- Enables the use of cable glands with smaller connection threads than the existing threaded holes

## ■ Application range

- Machines
- Devices
- Housings

## ■ Approvals



## ■ Technical data



**Upon request**  
Also available with pre-installed O-ring



**Material**  
Nickel-plated brass



**Temperature range**  
-60°C to +200°C

## ■ Design

- Metric connection thread acc. to EN 50262

| Article number                                               | Thread, male M1 | Thread, female M2 | Pieces / PU |
|--------------------------------------------------------------|-----------------|-------------------|-------------|
| <b>SKINDICHT® MR-M</b>                                       |                 |                   |             |
| 52104310                                                     | 16 x 1.5        | 12 x 1.5          | 100         |
| 52104311                                                     | 20 x 1.5        | 12 x 1.5          | 100         |
| 52104312                                                     | 20 x 1.5        | 16 x 1.5          | 100         |
| 52104313                                                     | 25 x 1.5        | 16 x 1.5          | 50          |
| 52104314                                                     | 25 x 1.5        | 20 x 1.5          | 50          |
| 52104315                                                     | 32 x 1.5        | 20 x 1.5          | 50          |
| 52104316                                                     | 32 x 1.5        | 25 x 1.5          | 50          |
| 52104317                                                     | 40 x 1.5        | 25 x 1.5          | 25          |
| 52104318                                                     | 40 x 1.5        | 32 x 1.5          | 25          |
| 52104319                                                     | 50 x 1.5        | 32 x 1.5          | 25          |
| 52104320                                                     | 50 x 1.5        | 40 x 1.5          | 10          |
| 52104321                                                     | 63 x 1.5        | 40 x 1.5          | 10          |
| 52104322                                                     | 63 x 1.5        | 50 x 1.5          | 10          |
| <b>SKINDICHT® MR-M, blank brass, without hexagon</b>         |                 |                   |             |
| 52006579                                                     | 80 x 2          | 75 x 1.5          | 1           |
| <b>SKINDICHT® MR-M, nickel-plated brass, without hexagon</b> |                 |                   |             |
| 52006575                                                     | 72 x 2          | 63 x 1.5          | 1           |

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For current information see: [www.lappkorea.com](http://www.lappkorea.com)

## SKINDICHT® EKU-M

### ■ Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes
- Assembling with a wrench
- Supporting surface for spanner means scratches on the housing are avoided

### ■ Application range

- Machines
- Devices
- Housings

### ■ Approvals



### ■ Design

- Metric connection thread acc. to EN 50262

### ■ Technical data

|                                                                                   |                                                      |
|-----------------------------------------------------------------------------------|------------------------------------------------------|
|  | <b>Colour delivered</b><br>Light grey (RAL 7035)     |
|  | <b>Material</b><br>Polyamide, glass fibre-reinforced |
|  | <b>Temperature range</b><br>-40°C to +100°C          |



| Article number          | Thread, male M1 | Thread, female M2 | SW (mm) | Pieces / PU |
|-------------------------|-----------------|-------------------|---------|-------------|
| <b>SKINDICHT® EKU-M</b> |                 |                   |         |             |
| 52100300                | 12 x 1.5        | 16 x 1.5          | 20      | 100         |
| 52100301                | 16 x 1.5        | 20 x 1.5          | 24      | 100         |
| 52100302                | 20 x 1.5        | 25 x 1.5          | 29      | 100         |
| 52100303                | 25 x 1.5        | 32 x 1.5          | 36      | 50          |
| 52100304                | 32 x 1.5        | 40 x 1.5          | 46      | 25          |
| 52100305                | 40 x 1.5        | 50 x 1.5          | 55      | 10          |
| 52100306                | 50 x 1.5        | 63 x 1.5          | 68      | 10          |

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

## SKINDICHT® ME-M

### ■ Benefits

- Enables the use of cable glands with larger connection threads than the existing threaded holes

### ■ Application range

- Machines
- Devices
- Housings

### ■ Approvals



### ■ Design

- Metric connection thread acc. to EN 50262

### ■ Technical data

|                                                                                     |                                             |
|-------------------------------------------------------------------------------------|---------------------------------------------|
|  | <b>Upon request</b><br>with O-ring fitted   |
|  | <b>Material</b><br>Nickel-plated brass      |
|  | <b>Temperature range</b><br>-60°C to +200°C |



| Article number                 | Article designation / size | Thickness (mm) | Pieces / PU |
|--------------------------------|----------------------------|----------------|-------------|
| <b>SKINDICHT® ME-M</b>         |                            |                |             |
| 52104450                       | 12 x 1.5                   | 16 x 1.5       | 100         |
| 52104452                       | 16 x 1.5                   | 20 x 1.5       | 100         |
| 52104454                       | 20 x 1.5                   | 25 x 1.5       | 100         |
| 52104456                       | 25 x 1.5                   | 32 x 1.5       | 50          |
| 52104458                       | 32 x 1.5                   | 40 x 1.5       | 50          |
| 52104460                       | 40 x 1.5                   | 50 x 1.5       | 25          |
| 52104462                       | 50 x 1.5                   | 63 x 1.5       | 25          |
| <b>SKINDICHT® ME-M hexagon</b> |                            |                |             |
| 52104463                       | 63 x 1.5                   | 75 x 1.5       | 25          |

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

## SKINDICHT® ZS-M



## ■ Benefits

- Enables the use of PG accessories in metric threads
- Assembling with a wrench

## ■ Application range

- Hexagonal converter from a metric outer thread to a PG inner thread.
- Machines
- Devices
- Housings

## ■ Approvals



## ■ Design

- Metric connection thread acc. to EN 50262

## ■ Note

- SKINDICHT® ZS-M-XL offers a long metric connection thread

## ■ Technical data



## Material

Nickel-plated brass

| Article number            | Thread, male M 1 | Thread, female PG | SW (mm) | Outer thread length (mm) | Pieces / PU |
|---------------------------|------------------|-------------------|---------|--------------------------|-------------|
| <b>SKINDICHT® ZS-M</b>    |                  |                   |         |                          |             |
| 52104330                  | 12 x 1.5         | 7                 | 14      | 5                        | 100         |
| 52104340                  | 16 x 1.5         | 9                 | 18      | 5                        | 100         |
| 52104010                  | 16 x 1.5         | 11                | 20      | 5                        | 100         |
| 52104360                  | 20 x 1.5         | 11                | 22      | 6                        | 100         |
| 52104370                  | 20 x 1.5         | 13.5              | 22      | 6                        | 100         |
| 52104380                  | 20 x 1.5         | 16                | 24      | 6                        | 50          |
| 52104400                  | 25 x 1.5         | 21                | 30      | 7                        | 50          |
| 52104410                  | 32 x 1.5         | 29                | 40      | 8                        | 25          |
| 52104420                  | 40 x 1.5         | 36                | 50      | 8                        | 10          |
| 52104430                  | 50 x 1.5         | 42                | 57      | 9                        | 10          |
| 52104440                  | 63 x 1.5         | 48                | 66      | 10                       | 10          |
| <b>SKINDICHT® ZS-M-XL</b> |                  |                   |         |                          |             |
| 52104335                  | 12 x 1.5         | 7                 | 14      | 10                       | 100         |
| 52104345                  | 16 x 1.5         | 9                 | 18      | 10                       | 100         |
| 52104365                  | 20 x 1.5         | 11                | 22      | 10                       | 100         |
| 52104375                  | 20 x 1.5         | 13.5              | 22      | 10                       | 100         |
| 52104385                  | 20 x 1.5         | 16                | 24      | 10                       | 50          |
| 52104405                  | 25 x 1.5         | 21                | 30      | 11                       | 50          |
| 52104415                  | 32 x 1.5         | 29                | 40      | 13                       | 25          |
| 52104425                  | 40 x 1.5         | 36                | 50      | 13                       | 10          |
| 52104435                  | 50 x 1.5         | 42                | 57      | 14                       | 10          |
| 52104445                  | 63 x 1.5         | 48                | 66      | 14                       | 10          |

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



## SKINDICHT® ZSE-M

### ■ Benefits

- Enables the use of PG accessories in metric threads
- Assembling with a wrench

### ■ Application range

- Hexagonal converter from a metric outer thread to a PG inner thread.
- Machines
- Devices
- Housings

### ■ Approvals



### ■ Design

- Metric connection thread acc. to EN 50262

### ■ Note

- SKINDICHT® ZSE-M-XL offers a long metric connection thread

### ■ Design

- These converters are used in our cable glands:
- SKINDICHT® SHV-M
- SKINDICHT® SHVE-M
- SKINDICHT® SRE-M
- SKINDICHT® SR-SV-M

### ■ Technical data



**Material**  
Body: nickel-plated brass



| Article number             | Thread, male M1 | Thread, female PG | SW (mm) | Outer thread length (mm) | Pieces / PU |
|----------------------------|-----------------|-------------------|---------|--------------------------|-------------|
| <b>SKINDICHT® ZSE-M</b>    |                 |                   |         |                          |             |
| 52106000                   | 12 x 1.5        | 7                 | 14      | 5                        | 100         |
| 52106010                   | 16 x 1.5        | 9                 | 18      | 5                        | 100         |
| 52106020                   | 20 x 1.5        | 11                | 22      | 6                        | 100         |
| 52106030                   | 20 x 1.5        | 13.5              | 22      | 6                        | 100         |
| 52106040                   | 20 x 1.5        | 16                | 24      | 6                        | 50          |
| 52104050                   | 20 x 1.5        | 21                | 30      | 8                        | 50          |
| 52106050                   | 25 x 1.5        | 21                | 30      | 7                        | 50          |
| 52106060                   | 32 x 1.5        | 29                | 40      | 8                        | 25          |
| 52106070                   | 40 x 1.5        | 36                | 50      | 8                        | 10          |
| 52106080                   | 50 x 1.5        | 42                | 57      | 9                        | 10          |
| 52106090                   | 63 x 1.5        | 48                | 66      | 10                       | 10          |
| <b>SKINDICHT® ZSE-M-XL</b> |                 |                   |         |                          |             |
| 52106005                   | 12 x 1.5        | 7                 | 14      | 10                       | 100         |
| 52106015                   | 16 x 1.5        | 9                 | 18      | 10                       | 100         |
| 52106025                   | 20 x 1.5        | 11                | 22      | 13                       | 100         |
| 52106035                   | 20 x 1.5        | 13.5              | 22      | 13                       | 100         |
| 52106045                   | 20 x 1.5        | 16                | 24      | 13                       | 50          |
| 52106055                   | 25 x 1.5        | 21                | 30      | 13                       | 50          |
| 52106065                   | 32 x 1.5        | 29                | 40      | 13                       | 25          |

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



**Parallel corrugated protective cable conduit systems**

**SILVYN® RILL**

- SILVYN® RILL PA 6
- SILVYN® RILL PA 12
- SILVYN® KCLICK-GM
- SILVYN® KCLICK 90°M
- SILVYN® KCLICK GPZ-M
- SILVYN® KSE
- SILVYN® KCLICK-GP
- SILVYN® KCLICK-GPZ
- SILVYN® KCLICK 90° PG
- SILVYN® KCLICK-Y / SILVYN® KCLICK-Y (TPE)
- SILVYN® KCLICK-S / SILVYN® KCLICK-D / SILVYN® KCLICK-V
- SILVYN® KCLICK-RH
- SILVYN® K-EM

**SILVYN® FPAS**

- SILVYN® FPAS

- 102
- 103
- 104
- 105
- 106
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- 114

# SILVYN®

## Protective cable conduit and cable carrier systems



## SILVYN® RILL PA 6



SILVYN® RILL PA 6



## Info

- Maximum safety in the event of a fire

## Benefits

- Dimensionally stable
- Flexible
- High flame-retardance and self-extinguishing in accordance with UL 94V-0
- Crush-resistant
- Lightweight

## Application range

- Mechanical engineering
- Public utilities
- Railway applications / vehicle construction
- Moving applications
- Outdoor application (in black)

## Product features

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

## Approvals



- UL FILENUMBER E308201

## Design

- Fine-profile corrugated polyamide 6 conduit

## Note

- UV and weather-resistant in black

## Technical data



## Approvals

VDE EN/IEC 618386-23  
DNV, Lloyd's Register  
Rail: DB DIN 5510 Teil2 (S4/SR2/ST2)  
SNCF NFF16-101/102 (I2)



## Colour delivered

Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



## Material

PA 6  
Silicone-free  
Halogen-free  
UL 94V-0



## Temperature range

-40°C to +115°C  
short-term +150°C

| Article number                 | Article designation | Article IØ x OØ (mm) | Bending radius (mm) | Suitable for SILVYN® KLIKK-GM/WM | Suitable for SILVYN® KLIKK-GP/WP | Suitable for SILVYN® KLIKK-GPZ-M/GPZ | PU ring (m) |
|--------------------------------|---------------------|----------------------|---------------------|----------------------------------|----------------------------------|--------------------------------------|-------------|
| <b>SILVYN® RILL PA 6 grey</b>  |                     |                      |                     |                                  |                                  |                                      |             |
| 61746939                       | 7                   | 6.5 x 10.0           | 13                  | 10 x 1,0                         | 7/-                              | 12 x 1,5/7                           | 50          |
| 61746940                       | 9                   | 10.0 x 13.0          | 20                  | 12 x 1,5/16 x 1,5                | 9/9                              | 16x1,5/9                             | 50          |
| 61746950                       | 11                  | 12.0 x 15.8          | 35                  | 16 x 1,5/20 x 1,5                | 11/11                            | 20x1,5/11                            | 50          |
| 61747010                       | 13,5                | 14.3 x 18.5          | 40                  | 13,5/13,5                        | -/13,5                           | 50                                   |             |
| 61746960                       | 16                  | 16.5 x 21.2          | 45                  | 20 x 1,5                         | 16/16                            | 25x1,5/16                            | 50          |
| 61746970                       | 21                  | 23.0 x 28.5          | 55                  | 25 x 1,5                         | 21/21                            | 32x1,5/21                            | 50          |
| 61746980                       | 29                  | 29.0 x 34.5          | 65                  | 32 x 1,5                         | 29/29                            | 40x1,5/29                            | 25          |
| 61746990                       | 36                  | 36.0 x 42.5          | 90                  | 40 x 1,5                         | 36/-                             | 50x1,5/36                            | 25          |
| 61747000                       | 48                  | 48.0 x 54.5          | 100                 | 50 x 1,5                         | 48/-                             | 63x1,5/48                            | 25          |
| <b>SILVYN® RILL PA 6 black</b> |                     |                      |                     |                                  |                                  |                                      |             |
| 61746935                       | 7                   | 6.5 x 10.0           | 13                  | 10 x 1,0                         | 7/-                              | 12 x 1,5/7                           | 50          |
| 61746945                       | 9                   | 10.0 x 13.0          | 20                  | 12 x 1,5/16 x 1,5                | 9/9                              | 16x1,5/9                             | 50          |
| 61746955                       | 11                  | 12.0 x 15.8          | 35                  | 16 x 1,5/20 x 1,5                | 11/11                            | 20x1,5/11                            | 50          |
| 61747015                       | 13,5                | 14.3 x 18.5          | 40                  | 13,5/13,5                        | -/13,5                           | 50                                   |             |
| 61746965                       | 16                  | 16.5 x 21.2          | 45                  | 20 x 1,5                         | 16/16                            | 25x1,5/16                            | 50          |
| 61746975                       | 21                  | 23.0 x 28.5          | 55                  | 25 x 1,5                         | 21/21                            | 32x1,5/21                            | 50          |
| 61746985                       | 29                  | 29.0 x 34.5          | 65                  | 32 x 1,5                         | 29/29                            | 40x1,5/29                            | 25          |
| 61746995                       | 36                  | 36.0 x 42.5          | 90                  | 40 x 1,5                         | 36/-                             | 50x1,5/36                            | 25          |
| 61747005                       | 48                  | 48.0 x 54.5          | 100                 | 50 x 1,5                         | 48/-                             | 63x1,5/48                            | 25          |

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

## Similar products

- SILVYN® RILL PA 12 refer to Main Catalogue page 783

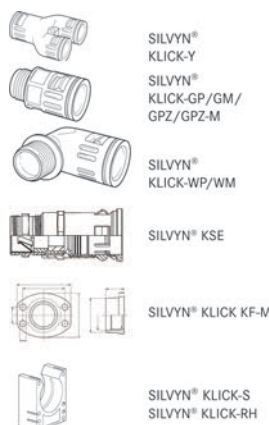
## Accessories

- SILVYN® KLIKK-GM refer to Main Catalogue page 784
- SILVYN® KLIKK 90°M refer to Main Catalogue page 785
- SILVYN® KLIKK GPZ-M refer to Main Catalogue page 786
- SILVYN® KLIKK- 90° Flange
- SILVYN® KSE refer to Main Catalogue page 787
- SILVYN® KLIKK-GP refer to Main Catalogue page 788
- SILVYN® KLIKK 90° PG refer to Main Catalogue page 790
- SILVYN® KLIKK-GPZ refer to Main Catalogue page 789
- SILVYN® KLIKK-Y refer to Main Catalogue page 791
- SILVYN® KLIKK-Y (TPE) refer to Main Catalogue page 791
- SILVYN® KLIKK-S refer to Main Catalogue page 792
- SILVYN® KLIKK-D refer to Main Catalogue page 792
- SILVYN® KLIKK-V refer to Main Catalogue page 792
- SILVYN® KLIKK-RH refer to Main Catalogue page 793
- SILVYN® K-EM refer to Main Catalogue page 793



**Info**

- Designed for robot applications



## SILVYN® RILL PA 12



SILVYN® RILL PA 12

### Benefits

- Dimensionally stable
- Highly flexible at cold temperatures
- Flame-retardant and self-extinguishing according to UL 94V-2
- Crush-resistant
- Highly flexible

### Application range

- Mechanical engineering
- In drag chains (SILVYN® CHAIN)
- Building Automation
- Robot-building
- Outdoor application (in black)

### Product features

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

### Approvals



- Railway: DB, SNCF

### Design

- Fine-profile corrugated polyamide 12 conduit

### Note

- UV and weather-resistant in black

### Technical data



#### Approvals

VDE EN/IEC 61386-23  
Lloyd's Register  
Rail:  
DB DIN 5510 Teil2 (S4/SR2/ST2)  
SNCF NFF-16-101/102 (I3/F2)



#### Colour delivered

Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



#### Material

PA 12  
Silicone-free  
Halogen-free  
UL 94V-2



#### Temperature range

-50°C bis +100°C  
short-term +150°C

| Article number                  | Article designation | Article IØ x OØ (mm) | Bending radius (mm) | Suitable for SILVYN® KLICK-GM/WM | Suitable for SILVYN® KLICK-GP/WM | Suitable for SILVYN® KLICK-GPZ-M/GPZ | PU ring (m) |
|---------------------------------|---------------------|----------------------|---------------------|----------------------------------|----------------------------------|--------------------------------------|-------------|
| <b>SILVYN® RILL PA 12 grey</b>  |                     |                      |                     |                                  |                                  |                                      |             |
| 61815100                        | 7                   | 6.5 x 10.0           | 13                  | 10 x 1,5                         | 7/-                              | 12 x 1,5/7                           | 50          |
| 61815110                        | 9                   | 10.0 x 13.0          | 15                  | 12 x 1,5/16 x 1,5                | 9/9                              | 16x1,5/9                             | 50          |
| 61815120                        | 11                  | 12.0 x 15.8          | 22                  | 16 x 1,5/20 x 1,5                | 11/11                            | 20x1,5/11                            | 50          |
| 61815180                        | 13,5                | 14.3 x 18.5          | 27                  | 13,5/13,5                        | -/13,5                           | 50                                   |             |
| 61815130                        | 16                  | 16.5 x 21.2          | 35                  | 20 x 1,5                         | 16/16                            | 25x1,5/16                            | 50          |
| 61815140                        | 21                  | 23.0 x 28.5          | 45                  | 25 x 1,5                         | 21/21                            | 32x1,5/21                            | 50          |
| 61815150                        | 29                  | 29.0 x 34.5          | 50                  | 32 x 1,5                         | 29/29                            | 40x1,5/29                            | 25          |
| 61815160                        | 36                  | 36.0 x 42.5          | 80                  | 40 x 1,5                         | 36/-                             | 50x1,5/36                            | 25          |
| 61815170                        | 48                  | 48.0 x 54.5          | 100                 | 50 x 1,5                         | 48/-                             | 63x1,5/48                            | 25          |
| <b>SILVYN® RILL PA 12 black</b> |                     |                      |                     |                                  |                                  |                                      |             |
| 61815105                        | 7                   | 6.5 x 10.0           | 13                  | 10 x 1,5                         | 7/-                              | 12 x 1,5/7                           | 50          |
| 61815115                        | 9                   | 10.0 x 13.0          | 15                  | 12 x 1,5/16 x 1,5                | 9/9                              | 16x1,5/9                             | 50          |
| 61815125                        | 11                  | 12.0 x 15.8          | 22                  | 16 x 1,5/20 x 1,5                | 11/11                            | 20x1,5/11                            | 50          |
| 61815185                        | 13,5                | 14.3 x 18.5          | 27                  | 13,5/13,5                        | -/13,5                           | 50                                   |             |
| 61815135                        | 16                  | 16.5 x 21.2          | 35                  | 20 x 1,5                         | 16/16                            | 25x1,5/16                            | 50          |
| 61815145                        | 21                  | 23.0 x 28.5          | 45                  | 25 x 1,5                         | 21/21                            | 32x1,5/21                            | 50          |
| 61815155                        | 29                  | 29.0 x 34.5          | 50                  | 32 x 1,5                         | 29/29                            | 40x1,5/29                            | 25          |
| 61815165                        | 36                  | 36.0 x 42.5          | 80                  | 40 x 1,5                         | 36/-                             | 50x1,5/36                            | 25          |
| 61815175                        | 48                  | 48.0 x 54.5          | 100                 | 50 x 1,5                         | 48/-                             | 63x1,5/48                            | 25          |

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

### Similar products

- SILVYN® RILL PA 6 refer to Main Catalogue page 782

### Accessories

- SILVYN® KLICK-GM refer to Main Catalogue page 784
- SILVYN® KLICK 90°M refer to Main Catalogue page 785
- SILVYN® KLICK GPZ-M refer to Main Catalogue page 786
- SILVYN® KLICK- 90° Flange
- SILVYN® KSE refer to Main Catalogue page 787
- SILVYN® KLICK-GP refer to Main Catalogue page 788
- SILVYN® KLICK 90° PG refer to Main Catalogue page 790
- SILVYN® KLICK-GPZ refer to Main Catalogue page 789
- SILVYN® KLICK-Y refer to Main Catalogue page 791
- SILVYN® KLICK-Y (TPE) refer to Main Catalogue page 791
- SILVYN® KLICK-S refer to Main Catalogue page 792
- SILVYN® KLICK-D refer to Main Catalogue page 792
- SILVYN® KLICK-V refer to Main Catalogue page 792
- SILVYN® KLICK-RH refer to Main Catalogue page 793
- SILVYN® K-EM refer to Main Catalogue page 793

## SILVYN® KCLICK-GM



## ■ Benefits

- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance
- Can be rotated

## ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Rotating applications

## ■ Approvals



- UL FILENUMBER E308201

## ■ Design

- Metric connection thread
- Body with inner sealing
- Upper part with snap-in sleeve

## ■ Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

## ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

## ■ Technical data



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Protection rating**  
IP 68  
IP 69K according to DIN 40050 T.9



**Temperature range**  
-40 °C to +115 °C

| Article number                 | Connection thread M | Hole Ø (mm) | For conduit with outer Ø (mm) | Thread length, D (mm) | SW (mm) | Suitable for SILVYN® RILL | Pieces / PU |
|--------------------------------|---------------------|-------------|-------------------------------|-----------------------|---------|---------------------------|-------------|
| <b>SILVYN® KCLICK-GM grey</b>  |                     |             |                               |                       |         |                           |             |
| 55501000                       | 10 x 1.0            | 6.5         | 10.0                          | 12.0                  | 17.0    | 6,5 x 10,0                | 50          |
| 55501010                       | 12 x 1.5            | 8.0         | 13.0                          | 12.0                  | 20.0    | 10 x 13,0                 | 50          |
| 55501020                       | 16 x 1.5/1          | 10.0        | 13.0                          | 12.0                  | 20.0    | 10 x 13,0                 | 50          |
| 55501030                       | 16 x 1.5/2          | 12.0        | 15.8                          | 12.0                  | 23.0    | 12 x 15,8                 | 50          |
| 55501040                       | 20 x 1.5/1          | 12.0        | 15.8                          | 13.0                  | 23.0    | 12 x 15,8                 | 50          |
| 55501050                       | 20 x 1.5/2          | 16.0        | 21.2                          | 13.0                  | 29.5    | 16,5 x 21,2               | 50          |
| 55501060                       | 25 x 1.5            | 20.5        | 28.5                          | 13.0                  | 37.0    | 23 x 28,5                 | 25          |
| 55501070                       | 32 x 1.5            | 27.5        | 34.5                          | 15.0                  | 44.0    | 29 x 34,5                 | 25          |
| 55501080                       | 40 x 1.5            | 35.0        | 42.5                          | 15.0                  | 51.5    | 36 x 42,5                 | 25          |
| 55501090                       | 50 x 1.5            | 45.0        | 54.5                          | 15.3                  | 65.5    | 48 x 54,5                 | 10          |
| 55500990                       | 63 x 1.5            | 48.0        | 54.5                          | 16.0                  | 59.0    | 48 x 54,5                 | 10          |
| <b>SILVYN® KCLICK-GM black</b> |                     |             |                               |                       |         |                           |             |
| 55501005                       | 10 x 1.0            | 6.5         | 10.0                          | 12.0                  | 17.0    | 6,5 x 10,0                | 50          |
| 55501015                       | 12 x 1.5            | 8.0         | 13.0                          | 12.0                  | 20.0    | 10 x 13,0                 | 50          |
| 55501025                       | 16 x 1.5/1          | 10.0        | 13.0                          | 12.0                  | 20.0    | 10 x 13,0                 | 50          |
| 55501035                       | 16 x 1.5/2          | 12.0        | 15.8                          | 12.0                  | 23.0    | 12 x 15,8                 | 50          |
| 55501045                       | 20 x 1.5/1          | 12.0        | 15.8                          | 13.0                  | 23.0    | 12 x 15,8                 | 50          |
| 55501055                       | 20 x 1.5/2          | 16.0        | 21.2                          | 13.0                  | 29.5    | 16,5 x 21,2               | 50          |
| 55501065                       | 25 x 1.5            | 20.5        | 28.5                          | 13.0                  | 37.0    | 23 x 28,5                 | 25          |
| 55501075                       | 32 x 1.5            | 27.5        | 34.5                          | 15.0                  | 44.0    | 29 x 34,5                 | 25          |
| 55501085                       | 40 x 1.5            | 35.0        | 42.5                          | 15.0                  | 51.5    | 36 x 42,5                 | 25          |
| 55501095                       | 50 x 1.5            | 45.0        | 54.5                          | 15.3                  | 65.5    | 48 x 54,5                 | 10          |
| 55500995                       | 63 x 1.5            | 48.0        | 54.5                          | 16.0                  | 59.0    | 48 x 54,5                 | 10          |

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

## ■ Similar products

- SILVYN® KCLICK GPZ-M refer to Main Catalogue page 786



## SILVYN® KLIKK 90°M

### ■ Benefits

- 90° elbow enables best assembling
- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance

### ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- For applications with limited space
- Rotating applications

### ■ Approvals



- UL FILENUMBER E308201

### ■ Design

- Metric connection thread
- 90° elbow
- Body with inner sealing
- Upper part with snap-in sleeve

### ■ Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

### ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

### ■ Technical data

|                          |                                                                              |
|--------------------------|------------------------------------------------------------------------------|
| <b>RAL</b>               | <b>Colour delivered</b><br>Grey (RAL 7001)<br>Black (RAL 9005), UV-resistant |
| <b>Material</b>          | PA6                                                                          |
| <b>IP</b>                | <b>Protection rating</b><br>IP 68<br>IP 69K according to DIN 40050 T.9       |
| <b>Temperature range</b> | -40 °C to +115 °C                                                            |



| Article number                | Connection thread M | Hole Ø (mm) | For conduit with outer Ø (mm) | Thread length, D (mm) | Suitable for SILVYN® RILL | Pieces / PU |
|-------------------------------|---------------------|-------------|-------------------------------|-----------------------|---------------------------|-------------|
| <b>SILVYN® KLIKK-WM grey</b>  |                     |             |                               |                       |                           |             |
| 55501110                      | 10 x 1.0            | 7.0         | 10.0                          | 12.0                  | 6,5 x 10,0                | 50          |
| 55501120                      | 12 x 1.5            | 8.0         | 13.0                          | 12.0                  | 10,0 x 13,0               | 50          |
| 55501130                      | 16 x 1.5/1          | 12.0        | 13.0                          | 12.0                  | 10,0 x 13,0               | 50          |
| 55501140                      | 16 x 1.5/2          | 12.0        | 15.8                          | 12.0                  | 12 x 15,8                 | 50          |
| 55501150                      | 20 x 1.5/1          | 15.5        | 15.8                          | 13.0                  | 12 x 15,8                 | 50          |
| 55501160                      | 20 x 1.5/2          | 15.5        | 21.2                          | 13.0                  | 16,5 x 21,2               | 50          |
| 55501170                      | 25 x 1.5/1          | 18.0        | 21.2                          | 13.0                  | 16,5 x 21,2               | 50          |
| 55501180                      | 25 x 1.5/2          | 18.0        | 28.5                          | 13.0                  | 23 x 28,5                 | 25          |
| 55501190                      | 32 x 1.5/1          | 24.0        | 28.5                          | 15.0                  | 23 x 28,5                 | 25          |
| 55501200                      | 32 x 1.5/2          | 24.0        | 34.5                          | 15.0                  | 29 x 34,5                 | 10          |
| 55501210                      | 40 x 1.5/1          | 32.0        | 34.5                          | 15.0                  | 29 x 34,5                 | 10          |
| 55501220                      | 40 x 1.5/2          | 32.0        | 42.5                          | 15.0                  | 36 x 42,5                 | 10          |
| 55501230                      | 50 x 1.5/1          | 39.0        | 42.5                          | 16.0                  | 36 x 42,5                 | 10          |
| 55501240                      | 50 x 1.5/2          | 39.0        | 54.5                          | 16.0                  | 48 x 54,5                 | 5           |
| 55501250                      | 63 x 1.5            | 53.0        | 54.5                          | 16.0                  | 48 x 54,5                 | 5           |
| <b>SILVYN® KLIKK-WM black</b> |                     |             |                               |                       |                           |             |
| 55501115                      | 10 x 1.0            | 7.0         | 10.0                          | 12.0                  | 6,5 x 10,0                | 50          |
| 55501125                      | 12 x 1.5            | 8.0         | 13.0                          | 12.0                  | 10,0 x 13,0               | 50          |
| 55501135                      | 16 x 1.5/1          | 12.0        | 13.0                          | 12.0                  | 10,0 x 13,0               | 50          |
| 55501145                      | 16 x 1.5/2          | 12.0        | 15.8                          | 12.0                  | 12 x 15,8                 | 50          |
| 55501155                      | 20 x 1.5/1          | 15.5        | 15.8                          | 13.0                  | 12 x 15,8                 | 50          |
| 55501165                      | 20 x 1.5/2          | 15.5        | 21.2                          | 13.0                  | 16,5 x 21,2               | 50          |
| 55501175                      | 25 x 1.5/1          | 18.0        | 21.2                          | 13.0                  | 16,5 x 21,2               | 50          |
| 55501185                      | 25 x 1.5/2          | 18.0        | 28.5                          | 13.0                  | 23 x 28,5                 | 25          |
| 55501195                      | 32 x 1.5/1          | 24.0        | 28.5                          | 15.0                  | 23 x 28,5                 | 25          |
| 55501205                      | 32 x 1.5/2          | 24.0        | 34.5                          | 15.0                  | 29 x 34,5                 | 10          |
| 55501215                      | 40 x 1.5/1          | 32.0        | 34.5                          | 15.0                  | 29 x 34,5                 | 10          |
| 55501225                      | 40 x 1.5/2          | 32.0        | 42.5                          | 15.0                  | 36 x 42,5                 | 10          |
| 55501235                      | 50 x 1.5/1          | 39.0        | 42.5                          | 16.0                  | 36 x 42,5                 | 10          |
| 55501245                      | 50 x 1.5/2          | 39.0        | 54.5                          | 16.0                  | 48 x 54,5                 | 5           |
| 55501255                      | 63 x 1.5            | 53.0        | 54.5                          | 16.0                  | 48 x 54,5                 | 5           |

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

## SILVYN® KLIK GPZ-M



## ■ Benefits

- Fast assembly
- Easy to disassemble
- Additional cable strain relief
- Additional cable sealing

## ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

## ■ Approvals



- UL FILENUMBER E308201

## ■ Design

- Metric connection thread
- Cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

## ■ Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

## ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

## ■ Technical data



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Protection rating**  
IP 68  
IP 69K according to DIN 40050 T.9

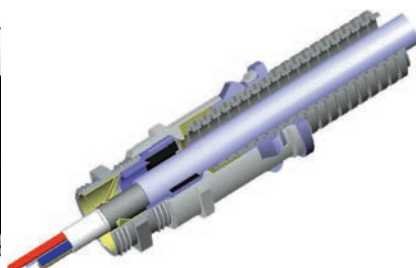
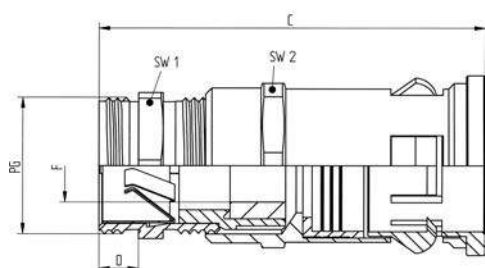


**Temperature range**  
-30°C to +100°C

| Article number                   | Article designation | Hole Ø (mm) | Clamping range (mm) | Thread length, D (mm) | For conduit with outer Ø (mm) | SW (mm) | Suitable for SILVYN® RILL | Pieces / PU |
|----------------------------------|---------------------|-------------|---------------------|-----------------------|-------------------------------|---------|---------------------------|-------------|
| <b>SILVYN® KLIK, GPZ-M grey</b>  |                     |             |                     |                       |                               |         |                           |             |
| 55500800                         | 12 x 1,5            | 7.0         | 4.0 - 6.5           | 8.0                   | 10.0                          | 16.0    | 7                         | 20          |
| 55500810                         | 16 x 1,5            | 8.0         | 5.0 - 9.5           | 8.0                   | 13.0                          | 18.0    | 9                         | 20          |
| 55500820                         | 20 x 1,5            | 10.0        | 8.0 - 12.0          | 8.0                   | 15.8                          | 21.0    | 11                        | 20          |
| 55500830                         | 25 x 1,5            | 12.0        | 11.0 - 16.0         | 8.0                   | 21.2                          | 27.0    | 16                        | 10          |
| 55500840                         | 32 x 1,5            | 18.0        | 15.0 - 21.0         | 11.0                  | 28.5                          | 34.0    | 21                        | 10          |
| 55500850                         | 40 x 1,5            | 25.0        | 16.0 - 26.0         | 12.0                  | 34.5                          | 40.0    | 29                        | 10          |
| 55500860                         | 50 x 1,5            | 32.0        | 27.0 - 35.0         | 13.0                  | 42.5                          | 49.0    | 36                        | 10          |
| 55500870                         | 63 x 1,5            | 44.0        | 32.0 - 42.0         | 14.0                  | 54.5                          | 60.0    | 48                        | 10          |
| <b>SILVYN® KLIK, GPZ-M black</b> |                     |             |                     |                       |                               |         |                           |             |
| 55500805                         | 12 x 1,5            | 7.0         | 4.0 - 6.5           | 8.0                   | 10.0                          | 16.0    | 7                         | 20          |
| 55500815                         | 16 x 1,5            | 8.0         | 5.0 - 9.5           | 8.0                   | 13.0                          | 18.0    | 9                         | 20          |
| 55500825                         | 20 x 1,5            | 10.0        | 8.0 - 12.0          | 8.0                   | 15.8                          | 21.0    | 11                        | 20          |
| 55500835                         | 25 x 1,5            | 12.0        | 11.0 - 16.0         | 8.0                   | 21.2                          | 27.0    | 16                        | 10          |
| 55500845                         | 32 x 1,5            | 18.0        | 15.0 - 21.0         | 11.0                  | 28.5                          | 34.0    | 21                        | 10          |
| 55500855                         | 40 x 1,5            | 25.0        | 16.0 - 26.0         | 12.0                  | 34.5                          | 40.0    | 29                        | 10          |
| 55500865                         | 50 x 1,5            | 32.0        | 27.0 - 35.0         | 13.0                  | 42.5                          | 49.0    | 36                        | 10          |
| 55500875                         | 63 x 1,5            | 44.0        | 32.0 - 42.0         | 14.0                  | 54.5                          | 60.0    | 48                        | 10          |

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

## SILVYN® KSE



SILVYN® KSE

### ■ Benefits

- Fast assembly
- Additional cable strain relief
- Additional cable sealing
- Optimum screen connection (EMC)

### ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Used in areas where screened cables and wires need to have additional protection

### ■ Approvals



### ■ Design

- Metric connection thread
- EMC cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

### ■ Note

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

### ■ Technical data

|                          |                                                           |
|--------------------------|-----------------------------------------------------------|
| <b>RAL</b>               | <b>Colour delivered</b><br>Black (RAL 9005), UV-resistant |
| <b>Material</b>          | Polyamide<br>Nickel-plated brass                          |
| <b>IP</b>                | <b>Protection rating</b><br>IP 68                         |
| <b>Temperature range</b> | -40 °C to +115 °C                                         |

| Article number     | PG size | For conduit with outer Ø (mm) | Clamping range (mm) | Overall length, C (mm) | Thread length, D (mm) | SW 1/2 mm | Suitable for SILVYN® RILL | Pieces / PU |
|--------------------|---------|-------------------------------|---------------------|------------------------|-----------------------|-----------|---------------------------|-------------|
| <b>SILVYN® KSE</b> |         |                               |                     |                        |                       |           |                           |             |
| 55001200           | 9       | 13.0                          | 4.0 - 8.0           | 57.0                   | 12.0                  | 17 / 22   | 9                         | 20          |
| 55001210           | 11      | 15.8                          | 6.5 - 10.0          | 62.0                   | 12.0                  | 20 / 25   | 11                        | 20          |
| 55001230           | 16      | 21.2                          | 10.0 - 14.0         | 70.0                   | 12.0                  | 24 / 31   | 16                        | 10          |
| 55001240           | 21      | 28.5                          | 14.0 - 17.5         | 75.0                   | 12.0                  | 30 / 39   | 21                        | 10          |

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

### ■ Similar products

- SILVYN® MSK-M EE refer to Main Catalogue page 776
- SILVYN® MSK-M US refer to Main Catalogue page 816
- SILVYN® KSE-M refer to Main Catalogue page 805

### ■ Accessories

- SKINDICHT® SM-PE refer to Main Catalogue page 741

## SILVYN® KCLICK-GP



## ■ Benefits

- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance
- Can be rotated

## ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Rotating applications

## ■ Approvals



- UL FILENUMBER E308201

## ■ Design

- PG connection thread
- Body with inner sealing
- Upper part with snap-in sleeve

## ■ Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

## ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

## ■ Technical data



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Protection rating**  
IP 68  
IP 69K according to DIN 40050 T.9



**Temperature range**  
-40 °C to +115 °C

| Article number                 | Article designation | Suitable for SILVYN® RILL | For conduit with outer Ø (mm) | Wrench size (mm) | Thread length (mm) | Hole (mm) | Pieces / PU |
|--------------------------------|---------------------|---------------------------|-------------------------------|------------------|--------------------|-----------|-------------|
| <b>SILVYN® KCLICK-GP grey</b>  |                     |                           |                               |                  |                    |           |             |
| 61800860                       | 7                   | 7                         | 10                            | 15.5             | 10                 | 7         | 50          |
| 61800870                       | 9                   | 9                         | 13                            | 18.0             | 10                 | 10        | 50          |
| 61800880                       | 11                  | 11                        | 15.8                          | 21.0             | 10                 | 12.5      | 50          |
| 61800850                       | 13,5                | 13,5                      | 18.2                          | 24.0             | 11                 | 13.5      | 50          |
| 61800890                       | 16                  | 16                        | 21.2                          | 27.0             | 12                 | 17        | 50          |
| 61800900                       | 21                  | 21                        | 28.5                          | 34.0             | 12                 | 23.5      | 25          |
| 61800910                       | 29                  | 29                        | 34.5                          | 40.0             | 12                 | 30.5      | 25          |
| 61800920                       | 36                  | 36                        | 42.5                          | 49.0             | 12                 | 36.5      | 25          |
| 61800930                       | 48                  | 48                        | 54.5                          | 60.0             | 15                 | 48.5      | 10          |
| <b>SILVYN® KCLICK-GP black</b> |                     |                           |                               |                  |                    |           |             |
| 61800865                       | 7                   | 7                         | 10                            | 15.5             | 10                 | 7         | 50          |
| 61800875                       | 9                   | 9                         | 13                            | 18.0             | 10                 | 10        | 50          |
| 61800885                       | 11                  | 11                        | 15.8                          | 21.0             | 10                 | 12.5      | 50          |
| 61800855                       | 13,5                | 13,5                      | 18.2                          | 24.0             | 11                 | 13.5      | 50          |
| 61800895                       | 16                  | 16                        | 21.2                          | 27.0             | 12                 | 17        | 50          |
| 61800905                       | 21                  | 21                        | 28.5                          | 34.0             | 12                 | 23.5      | 25          |
| 61800915                       | 29                  | 29                        | 34.5                          | 40.0             | 12                 | 30.5      | 25          |
| 61800925                       | 36                  | 36                        | 42.5                          | 49.0             | 12                 | 36.5      | 25          |
| 61800935                       | 48                  | 48                        | 54.5                          | 60.0             | 15                 | 48.5      | 10          |

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

## SILVYN® KLIICK-GPZ

### Benefits

- Fast assembly
- Easy to disassemble
- Additional cable strain relief
- Additional cable sealing

### Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Robot-building
- Used in areas where cables and wires need to be provided with strain relief and additional sealing

### Approvals



- UL FILENUMBER E308201

### Design

- PG connection thread
- Cable gland
- Body with inner sealing
- Upper part with snap-in sleeve

### Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

### Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

### Technical data

|                          |                                                                              |
|--------------------------|------------------------------------------------------------------------------|
| <b>RAL</b>               | <b>Colour delivered</b><br>Grey (RAL 7001)<br>Black (RAL 9005), UV-resistant |
| <b>Material</b>          | PA6                                                                          |
| <b>IP</b>                | <b>Protection rating</b><br>IP 68<br>IP 69K according to DIN 40050 T.9       |
| <b>Temperature range</b> | -40 °C to +115 °C                                                            |



| Article number                  | Article designation | Suitable for SILVYN® RILL | For conduit with outer Ø (mm) | Wrench size (mm) | Clamping range (mm) | Thread length (mm) | min. IØ (mm) | Pieces / PU |
|---------------------------------|---------------------|---------------------------|-------------------------------|------------------|---------------------|--------------------|--------------|-------------|
| <b>SILVYN® KLIICK-GPZ grey</b>  |                     |                           |                               |                  |                     |                    |              |             |
| 61801120                        | 7                   | 7                         | 10                            | 16.0             | 3 - 6.5             | 8                  | 7.0          | 20          |
| 61801130                        | 9                   | 9                         | 13                            | 18.0             | 4 - 8               | 8                  | 8.0          | 20          |
| 61801140                        | 11                  | 11                        | 15.8                          | 21.0             | 5 - 10              | 8                  | 10.0         | 20          |
| 61801200                        | 13,5 / 1            | 11                        | 15.8                          | 27.0             | 6 - 12              | 8                  | 12.0         | 20          |
| 61801202                        | 13,5 / 2            | 13,5                      | 18.5                          | 27.0             | 6 - 12              | 8                  | 12.0         | 20          |
| 61801150                        | 16                  | 16                        | 21.2                          | 27.0             | 10 - 14             | 10                 | 14.0         | 10          |
| 61801160                        | 21                  | 21                        | 28.5                          | 34.0             | 13 - 18             | 11                 | 18.0         | 10          |
| 61801170                        | 29                  | 29                        | 34.5                          | 40.0             | 18 - 25             | 12                 | 25.0         | 10          |
| 61801180                        | 36                  | 36                        | 42.5                          | 49.0             | 22 - 32             | 13                 | 32.0         | 10          |
| 61801190                        | 48                  | 48                        | 54.5                          | 60.0             | 34 - 44             | 14                 | 44.0         | 10          |
| <b>SILVYN® KLIICK-GPZ black</b> |                     |                           |                               |                  |                     |                    |              |             |
| 61801125                        | 7                   | 7                         | 10                            | 16.0             | 3 - 6.5             | 8                  | 7.0          | 20          |
| 61801135                        | 9                   | 9                         | 13                            | 18.0             | 4 - 8               | 8                  | 8.0          | 20          |
| 61801145                        | 11                  | 11                        | 15.8                          | 21.0             | 5 - 10              | 8                  | 10.0         | 20          |
| 61801205                        | 13,5 / 2            | 13,5                      | 18.5                          | 27.0             | 6 - 12              | 8                  | 12.0         | 20          |
| 61801155                        | 16                  | 16                        | 21.2                          | 27.0             | 10 - 14             | 10                 | 14.0         | 10          |
| 61801165                        | 21                  | 21                        | 28.5                          | 34.0             | 13 - 18             | 11                 | 18.0         | 10          |
| 61801175                        | 29                  | 29                        | 34.5                          | 40.0             | 18 - 25             | 12                 | 25.0         | 10          |
| 61801185                        | 36                  | 36                        | 42.5                          | 49.0             | 22 - 32             | 13                 | 32.0         | 10          |
| 61801195                        | 48                  | 48                        | 54.5                          | 60.0             | 34 - 44             | 14                 | 44.0         | 10          |

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

## SILVYN® KLINK 90° PG



## ■ Benefits

- 90° elbow enables best assembling
- Fast assembly
- Easy to disassemble
- High-tensile
- High sealing performance

## ■ Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- For applications with limited space
- Rotating applications

## ■ Approvals



- UL FILENUMBER E308201

## ■ Design

- PG connection thread
- 90° elbow
- Body with inner sealing
- Upper part with snap-in sleeve

## ■ Note

- For rotating applications, disassemble the upper part to remove sealing, then re-assemble.

## ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

## ■ Technical data



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Protection rating**  
IP 68  
IP 69K according to DIN 40050 T.9



**Temperature range**  
-40 °C to +115 °C

| Article number                | Article designation | For conduit with outer Ø (mm) | Thread length (mm) | Clear opening (mm) | Pieces / PU |
|-------------------------------|---------------------|-------------------------------|--------------------|--------------------|-------------|
| <b>SILVYN® KLINK-WP grey</b>  |                     |                               |                    |                    |             |
| 61801020                      | 9                   | 13                            | 10                 | 12.0               | 50          |
| 61801030                      | 11                  | 15.8                          | 10                 | 15.5               | 50          |
| 56000100                      | 13,5                | 18.5                          | 11                 | 13.5               | 50          |
| 61801040                      | 16                  | 21.2                          | 12                 | 18.0               | 50          |
| 61801050                      | 21                  | 28.5                          | 12                 | 24.0               | 25          |
| 61801060                      | 29                  | 34.5                          | 12                 | 32.0               | 10          |
| 61801061                      | 36                  | 42.5                          | 14                 | 36.5               | 10          |
| 61801062                      | 48                  | 54.5                          | 14                 | 48.5               | 5           |
| <b>SILVYN® KLINK-WP black</b> |                     |                               |                    |                    |             |
| 61801025                      | 9                   | 13                            | 10                 | 12.0               | 50          |
| 61801035                      | 11                  | 15.8                          | 10                 | 15.5               | 50          |
| 56000105                      | 13,5                | 18.5                          | 11                 | 13.5               | 50          |
| 61801045                      | 16                  | 21.2                          | 12                 | 18.0               | 50          |
| 61801055                      | 21                  | 28.5                          | 12                 | 24.0               | 25          |
| 61801065                      | 48                  | 54.5                          | 14                 | 48.5               | 5           |

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



## SILVYN® KCLICK-Y / SILVYN® KCLICK-Y (TPE)



SILVYN® KCLICK-Y



SILVYN® KCLICK-Y (TPE)

### Benefits

#### SILVYN® KCLICK-Y

- Fast mounting
- Easy to disassemble
- High-tensile
- Easy combination of different conduit sizes

#### SILVYN® KCLICK-Y (TPE)

- Easy to assemble
- High temperature resistance

### Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Y-distributor for SILVYN® RILL conduits

### Approvals



#### SILVYN® KCLICK-Y

- UL FILENUMBER E308201

### Design

#### SILVYN® KCLICK-Y

- 3 x conduit connection
- 2 x bore hole for fixation with M5 screws

#### SILVYN® KCLICK-Y (TPE)

- 3 x conduit connection
- 1 x bore hole for fixation with M4 screws

### Note

#### SILVYN® KCLICK-Y (TPE)

- For black (RAL 9005), replace the last digit of the part no. with "5".

### Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

### Technical data



Upon request  
**SILVYN® KCLICK-Y**  
More sizes / combinations



Colour delivered  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



Material  
**SILVYN® KCLICK-Y**  
PA6  
**SILVYN® KCLICK-Y (TPE)**  
TPE



Protection rating  
**SILVYN® KCLICK-Y**  
IP 68  
IP 69K according to DIN 40050 T.9  
**SILVYN® KCLICK-Y (TPE)**  
IP 66

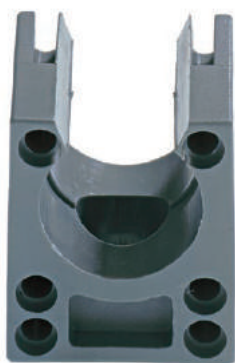


Temperature range  
-40 °C to +115 °C

| Article number                      | Article designation | Suitable for SILVYN® RILL | For conduit with outer Ø (mm) | Pieces / PU |
|-------------------------------------|---------------------|---------------------------|-------------------------------|-------------|
| <b>SILVYN® KCLICK-Y grey</b>        |                     |                           |                               |             |
| 61801090                            | 2 x 7/1 x 9         | 7/9                       | 10 / 13                       | 10          |
| 61801100                            | 3 x 9               | 9                         | 13                            | 10          |
| 61801110                            | 2 x 9/1 x 11        | 9/11                      | 13 / 15.8                     | 10          |
| 56000130                            | 3 x 11              | 11                        | 15.8                          | 10          |
| <b>SILVYN® KCLICK-Y black</b>       |                     |                           |                               |             |
| 61801095                            | 2 x 7/1 x 9         | 7/9                       | 10 / 13                       | 10          |
| 61801105                            | 3 x 9               | 9                         | 13                            | 10          |
| 61801115                            | 2 x 9/1 x 11        | 9/11                      | 13 / 15.8                     | 10          |
| 56000135                            | 3 x 11              | 11                        | 15.8                          | 10          |
| <b>SILVYN® KCLICK-Y (TPE) grey</b>  |                     |                           |                               |             |
| 56000120                            | 3 x 7               | 7                         | 10                            | 10          |
| 56000140                            | 2 x 11/1 x 16       | 11/16                     | 13 / 21.2                     | 10          |
| 56000150                            | 2 x 16/1 x 21       | 16/21                     | 21.2 / 28.5                   | 10          |
| 56000160                            | 2 x 21/1 x 29       | 21/29                     | 28.5 / 34.5                   | 10          |
| <b>SILVYN® KCLICK-Y (TPE) black</b> |                     |                           |                               |             |
| 56000125                            | 3 x 7               | 7                         | 10                            | 10          |
| 56000145                            | 2 x 11/1 x 16       | 11/16                     | 13 / 21.2                     | 10          |
| 56000155                            | 2 x 16/1 x 21       | 16/21                     | 21.2 / 28.5                   | 10          |
| 56000165                            | 2 x 21/1 x 29       | 21/29                     | 28.5 / 34.5                   | 10          |

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

## SILVYN® KLICK-S / SILVYN® KLICK-D / SILVYN® KLICK-V



SILVYN® KLICK-V



SILVYN® KLICK-D



SILVYN® KLICK-S

## ■ Benefits

**SILVYN® KLICK-S**

- Fast assembly
- Easy to disassemble
- Tear-proof connection
- No slack in the conduit

**SILVYN® KLICK-D**

- Ensures that the conduit is fixed to the conduit-holder

**SILVYN® KLICK-V**

- Connects several conduit holders with one another

## ■ Application range

**SILVYN® KLICK-S**

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Fastening of conduits on machine walls for all applications

**SILVYN® KLICK-D**

- In combination with
- SILVYN® KLICK S
- Cover for conduit holder SILVYN® KLICK S

**SILVYN® KLICK-V**

- In combination with

## ■ Product features

**SILVYN® KLICK-S**

- Impact-resistant polyamide

**SILVYN® KLICK-D**

- Fits tightly to SILVYN® KLICK S

**SILVYN® KLICK-V**

- Fits tightly to SILVYN® KLICK S

## ■ Approvals



## ■ Design

**SILVYN® KLICK-S**

- Multi-part conduit holder with M5 borehole for fixation

**SILVYN® KLICK-D**

- Cover with connection pins

**SILVYN® KLICK-V**

- Connection pin

## ■ Note

- For black (RAL 9005), replace the last digit of the part no. with "5".

## ■ Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

## ■ Technical data



**Colour delivered**  
Grey (RAL 7001)  
Black (RAL 9005), UV-resistant



**Material**  
PA6



**Temperature range**  
-40 °C to +115 °C

| Article number              | PG size | Pieces / PU |
|-----------------------------|---------|-------------|
| <b>SILVYN® KLICK-S grey</b> |         |             |
| 61811110                    | 7       | 100         |
| 61811120                    | 9       | 100         |
| 61811130                    | 11      | 50          |
| 61811190                    | 13,5    | 50          |
| 61811140                    | 16      | 50          |
| 61811150                    | 21      | 50          |
| 61811160                    | 29      | 30          |
| 61811170                    | 36      | 20          |
| 61811180                    | 48      | 20          |
| <b>SILVYN® KLICK-D grey</b> |         |             |
| 61811200                    | 7       | 100         |
| 61811260                    | 11      | 50          |
| 61811210                    | 16      | 50          |
| 61811220                    | 21      | 50          |
| 61811230                    | 29      | 30          |
| 61811240                    | 36      | 20          |
| 61811250                    | 48      | 20          |
| <b>SILVYN® KLICK-V grey</b> |         |             |
| 61811270                    | 100     |             |

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

## ■ Similar products

**SILVYN® KLICK-D**

- SILVYN® KLICK-S refer to Main Catalogue page 792

**SILVYN® KLICK-V**

- SILVYN® KLICK-S refer to Main Catalogue page 792

## SILVYN® KLIICK-RH

### Benefits

- Fast assembly
- Easy to disassemble
- Tear-proof connection
- No slack in the conduit
- No loose parts

### Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Fastening of conduits on machine walls for all applications

### Product features

- Impact-resistant polyamide
- One-piece conduit holder
- Suitable for mounting onto a C-profile rail
- Stackable

### Approvals



- UL FILENUMBER E308201

### Design

- One-piece conduit holder with M4/M5/M6 borehole for fixation

### Suitable conduits

- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

### Technical data

|            |                                                                              |
|------------|------------------------------------------------------------------------------|
| <b>RAL</b> | <b>Colour delivered</b><br>Grey (RAL 7001)<br>Black (RAL 9005), UV-resistant |
|            | <b>Material</b><br>PA6                                                       |
|            | <b>Temperature range</b><br>range                                            |



SILVYN® KLIICK-RH

| Article number                 | PG size | Pieces / PU |
|--------------------------------|---------|-------------|
| <b>SILVYN® KLIICK-RH grey</b>  |         |             |
| 65500300                       | 7       | 50          |
| 65500310                       | 9       | 50          |
| 65500320                       | 11      | 50          |
| 65500330                       | 13.5    | 50          |
| 65500340                       | 16      | 50          |
| 65500350                       | 21      | 25          |
| 65500360                       | 29      | 25          |
| 65500370                       | 36      | 25          |
| 65500380                       | 48      | 10          |
| <b>SILVYN® KLIICK-RH black</b> |         |             |
| 65500305                       | 7       | 50          |
| 65500315                       | 9       | 50          |
| 65500325                       | 11      | 50          |
| 65500335                       | 13.5    | 50          |
| 65500345                       | 16      | 50          |
| 65500355                       | 21      | 25          |
| 65500365                       | 29      | 25          |
| 65500375                       | 36      | 25          |
| 65500385                       | 48      | 10          |

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

### Benefits

- Easy to assemble
- High temperature resistance
- Cable damage can be prevented
- Additional sealing

### Application range

- In combination with protective conduit
- SILVYN® RILL PA6
- SILVYN® RILL PA12
- Intersection or end sleeve

### Technical data

|            |                                                                              |
|------------|------------------------------------------------------------------------------|
| <b>RAL</b> | <b>Colour delivered</b><br>Grey (RAL 7001)<br>Black (RAL 9005), UV-resistant |
|            | <b>Material</b><br>TPE-V                                                     |
|            | <b>Temperature range</b><br>-40°C to +120°C                                  |

### Approvals



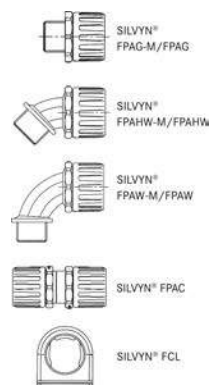
### Suitable conduits

- SILVYN® FPAS Page 797
- SILVYN® RILL PA 6 Page 782
- SILVYN® RILL PA 12 Page 783

| Article number            | Article designation | Article IØ x OØ (mm) | Bending radius (mm) | Suitable for SILVYN® KLIICK-GM/WM | Suitable for SILVYN® KLIICK-GP/WP | Suitable for SILVYN® KLIICK-GPZ-M/GPZ | PU ring (m) |
|---------------------------|---------------------|----------------------|---------------------|-----------------------------------|-----------------------------------|---------------------------------------|-------------|
| <b>SILVYN® K-EM grey</b>  |                     |                      |                     |                                   |                                   |                                       |             |
| 65500200                  | 7                   | 10                   | 1.0 - 8.0           | 29.0                              | 50                                |                                       |             |
| 65500210                  | 9                   | 13                   | 1.0 - 10.0          | 32.5                              | 50                                |                                       |             |
| 65500220                  | 11                  | 15.8                 | 4.0 - 12.0          | 36.5                              | 50                                |                                       |             |
| 65500230                  | 16                  | 21.2                 | 6.0 - 16.5          | 37.5                              | 50                                |                                       |             |
| 65500240                  | 21                  | 28.5                 | 6.0 - 23.0          | 40.2                              | 25                                |                                       |             |
| 65500250                  | 29                  | 34.5                 | 6.0 - 29.0          | 44.2                              | 25                                |                                       |             |
| 65500260                  | 36                  | 42.5                 | 10.0 - 37.0         | 46.0                              | 25                                |                                       |             |
| 65500270                  | 48                  | 54.5                 | 10.0 - 47.0         | 52.0                              | 10                                |                                       |             |
| <b>SILVYN® K-EM black</b> |                     |                      |                     |                                   |                                   |                                       |             |
| 65500205                  | 7                   | 10                   | 1.0 - 8.0           | 29.0                              | 50                                |                                       |             |
| 65500215                  | 9                   | 13                   | 1.0 - 10.0          | 32.5                              | 50                                |                                       |             |
| 65500225                  | 11                  | 15.8                 | 4.0 - 12.0          | 36.5                              | 50                                |                                       |             |
| 65500235                  | 16                  | 21.2                 | 6.0 - 16.5          | 37.5                              | 50                                |                                       |             |
| 65500245                  | 21                  | 28.5                 | 6.0 - 23.0          | 40.2                              | 25                                |                                       |             |
| 65500255                  | 29                  | 34.5                 | 6.0 - 29.0          | 44.2                              | 25                                |                                       |             |
| 65500265                  | 36                  | 42.5                 | 10.0 - 37.0         | 46.0                              | 25                                |                                       |             |
| 65500275                  | 48                  | 54.5                 | 10.0 - 47.0         | 52.0                              | 10                                |                                       |             |

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## SILVYN® FPAS



## SILVYN® FPAS

## ■ Benefits

- Dimensionally stable
- Flexible
- Flame-retardant and self-extinguishing according to UL 94V-2
- High crush-resistance
- Impact-resistant

## ■ Application range

- Mechanical engineering
- Plant engineering
- Railway applications / vehicle construction
- Moving applications
- Outdoors

## ■ Product features

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

## ■ Approvals



- UL FILENUMBER E308201
- UNDERGROUND

## ■ Design

- Fine-profile corrugated polyamide 6 conduit

## ■ Technical data



**Colour delivered**  
Black (RAL 9005), UV-resistant  
Grey (RAL 7001)



**Material**  
PA 6  
Halogen-free



**Temperature range**  
-40°C to +120°C static  
-20°C to +100°C dynamic

| Article number            | Article designation | Internal Ø x external Ø (mm) | Bending radius (mm) | Inner Ø (mm) | PU ring (m) |
|---------------------------|---------------------|------------------------------|---------------------|--------------|-------------|
| <b>SILVYN® FPAS black</b> |                     |                              |                     |              |             |
| 61754005                  | 10                  | 6.3 x 10.0                   | 15                  | 6.3          | 50          |
| 61754015                  | 13                  | 9.8 x 13.0                   | 25                  | 9.8          | 50          |
| 61754025                  | 16                  | 11.8 x 15.8                  | 40                  | 11.8         | 50          |
| 61754275                  | 18                  | 14.2 x 18.5                  | 40                  | 14.2         | 50          |
| 61754035                  | 21                  | 16.7 x 21.2                  | 45                  | 16.7         | 50          |
| 61754045                  | 28                  | 22.8 x 28.5                  | 50                  | 22.8         | 50          |
| 61754055                  | 34                  | 28.1 x 34.5                  | 60                  | 28.1         | 25          |
| 61754065                  | 42                  | 35.5 x 42.5                  | 70                  | 35.5         | 25          |
| 61754075                  | 54                  | 47.2 x 54.5                  | 80                  | 47.2         | 25          |
| 61754305                  | 67                  | 56.3 x 67.2                  | 130                 | 56.3         | 10          |
| <b>SILVYN® FPAS grey</b>  |                     |                              |                     |              |             |
| 61754000                  | 10                  | 6.3 x 10.0                   | 15                  | 6.3          | 50          |
| 61754010                  | 13                  | 9.8 x 13.0                   | 25                  | 9.8          | 50          |
| 61754020                  | 16                  | 11.8 x 15.8                  | 40                  | 11.8         | 50          |
| 61754270                  | 18                  | 14.2 x 18.5                  | 40                  | 14.2         | 50          |
| 61754030                  | 21                  | 16.7 x 21.2                  | 45                  | 16.7         | 50          |
| 61754040                  | 28                  | 22.8 x 28.5                  | 50                  | 22.8         | 50          |
| 61754050                  | 34                  | 28.1 x 34.5                  | 60                  | 28.1         | 25          |
| 61754060                  | 42                  | 35.5 x 42.5                  | 70                  | 35.5         | 25          |
| 61754070                  | 54                  | 47.2 x 54.5                  | 80                  | 47.2         | 25          |
| 61754300                  | 67                  | 56.3 x 67.2                  | 130                 | 56.3         | 10          |

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

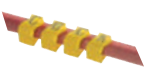
## ■ Similar products

- SILVYN® FPAG-M refer to Main Catalogue page 798
- SILVYN® FPAX-M refer to Main Catalogue page 799
- SILVYN® FPAHW-M
- SILVYN® FPAG 90° M refer to Main Catalogue page 800
- SILVYN® KSE-M refer to Main Catalogue page 805
- SILVYN® FPAG refer to Main Catalogue page 803
- SILVYN® FPAG 90° PG refer to Main Catalogue page 803
- SILVYN® FCL refer to Main Catalogue page 804
- SILVYN® FPAC refer to Main Catalogue page 805
- SILVYN® FLEXILOK M refer to Main Catalogue page 801
- SILVYN® FLEXILOK PG refer to Main Catalogue page 801
- SILVYN® FLEXILOK 90° M refer to Main Catalogue page 802
- SILVYN® FLEXILOK 90° PG refer to Main Catalogue page 802

# FLEXIMARK®

Cable marking systems



|                         |                                                                                     | BASIC SYSTEM                                                                        |                                                                                       | CUSTOMIZED SYSTEM                                                                     |                                                                                       |                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| How?                    |                                                                                     | Ready made to deliver for each environment                                          |                                                                                       | Your demand – we deliver                                                              |                                                                                       |                                                                                       |
| What?                   |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                                                       |
| CABLE                   | Outdoor & Indoor                                                                    |    |      |     |    |                                                                                       |
|                         |                                                                                     | MINI & MAXI & HOLDERS PTE                                                           | STAINLESS STEEL                                                                       | STAINLESS STEEL                                                                       | CABLE MARKING                                                                         |                                                                                       |
|                         |    |    |      |     |    |                                                                                       |
|                         | COLLARS TS & HF & MARKING TAGS                                                      | SHRINK TUBES                                                                        | COLLARS FOR CABLE TIES & MARKING TAGS                                                 | COLLARS FOR CABLE TIES & MARKING TAGS                                                 | TEXT COLLARS PTET                                                                     |                                                                                       |
| Indoor                  |   |   |    |   |                                                                                       |                                                                                       |
|                         | LABEL CARDS AND BLOCKS                                                              | DYMO® printer                                                                       | SHRINK TUBE MARKING                                                                   | CABLE TIE MARKING FKBB                                                                |                                                                                       |                                                                                       |
| WIRE                    | before mounting the wire                                                            |  |    |   |  |  |
|                         | FLEXIPART                                                                           | PA MARKING RINGS                                                                    | SHRINK TUBE MARKING                                                                   | FLEXIPART                                                                             | MARKING RINGS                                                                         |                                                                                       |
| after mounting the wire |  |  |  |                                                                                       |                                                                                       |                                                                                       |
|                         | SNAP-ON COLLARS & MARKING TAGS                                                      | PC MARKING RINGS                                                                    | SNAP-ON COLLARS & MARKING TAGS                                                        |                                                                                       |                                                                                       |                                                                                       |
| COMPONENT               | Device marking                                                                      |  |    |  |                                                                                       |                                                                                       |
|                         | MLM MOUNTING PROFILES & MINI                                                        | PGS CHARACTER HOLDERS                                                               | ENGRAVED MARKING                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                         | Terminal                                                                            |  |    |  |                                                                                       |                                                                                       |
|                         | TERMINAL BLOCK                                                                      | DYMO® printer                                                                       | TERMINAL BLOCK                                                                        |                                                                                       |                                                                                       |                                                                                       |
| Sensor                  |                                                                                     |                                                                                     |                                                                                       |                                                                                       |                                                                                       |                                                                                       |

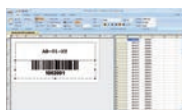


## DATA MARKING

Laser office printer



FLEXIMARK® 10.0



Thermal transfer printers



COLLARS FOR CABLE TIES LFL 4,2



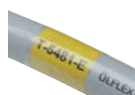
FLEXILABEL LFL & HOLDERS  
PTET/LAB



FLEXILABEL TFL & HOLDERS  
PTEF/LAB



COLLARS FOR CABLE TIES &  
MARKING TAGS TMB



LCK/LCFK LABELS



CABLE LABEL LFL & TIES



CABLELABEL LTFL & TIES



TCK LABELS



TAG TIES & LA/LB LABELS



FLEXIMARK® flat shrink tube



TAG TIES & TA LABELS



FLEXIPRINT LF



COLLARS TS/HF &  
FLEXILABEL LFL 4,2



FLEXIPRINT TF



SHRINKING TUBES  
SHRINK MARK SM



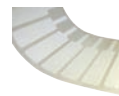
LCFK/LCK LABELS



BRADY® FLAG LABELS B-425



TCK LABELS



FLAG LABELS



SNAP-ON COLLARS &  
MARKING TAGS



LA/LB LABELS



LFL LEXEL/THORSMAN



TA LABELS



BRADY® EPREP



MLM MOUNTING  
PROFILES & TFL 9,5



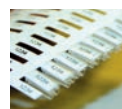
LA/LB/LC LABELS



TERMINAL BLOCK



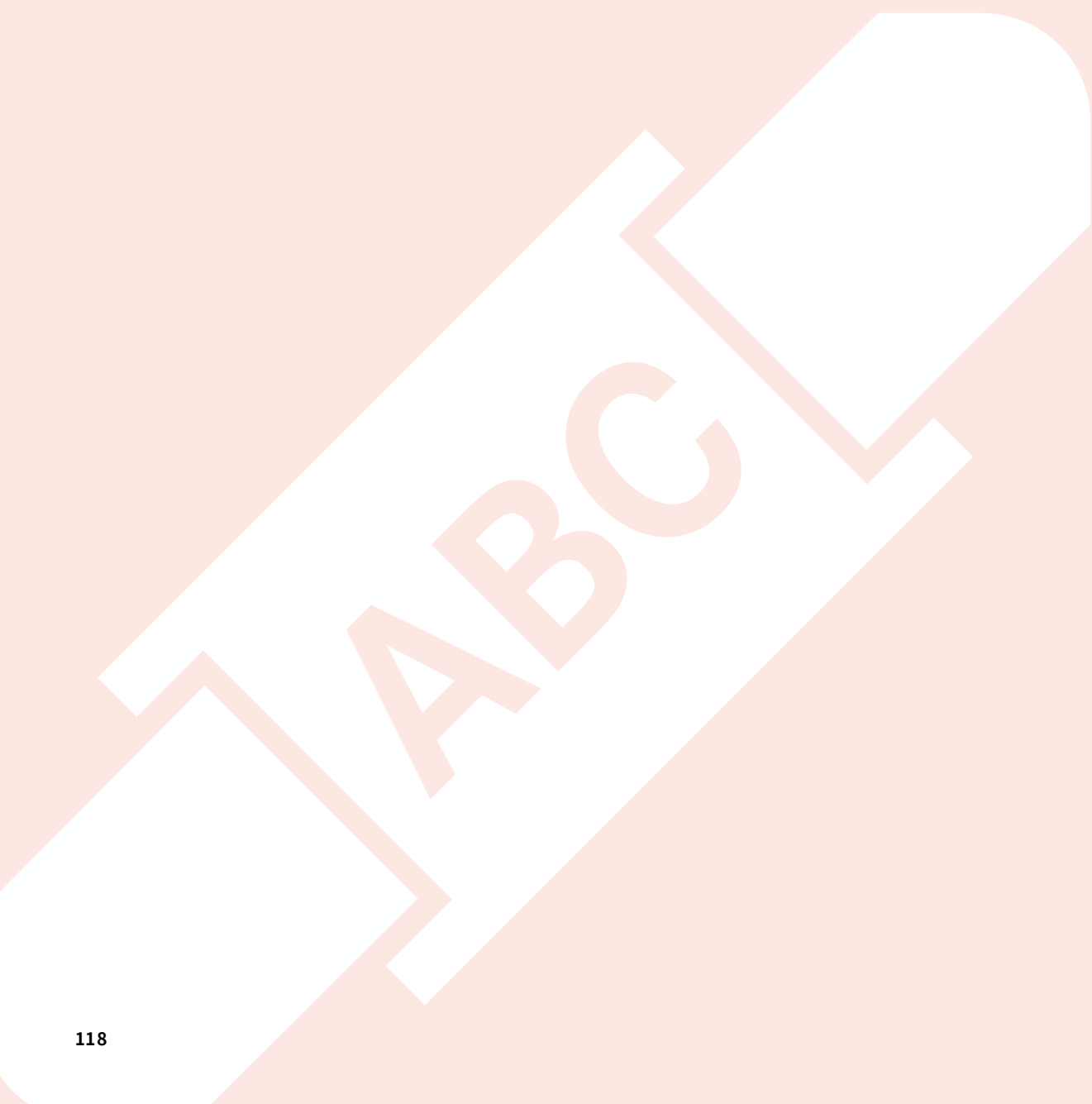
CLIP-ON COLLARS & LFL



BRADY® DURASLEEVE



CLIP-ON COLLARS &  
MARKING TAGS



## Connection and crimping

### Conductor end sleeves

|                                          |     |
|------------------------------------------|-----|
| Conductor end sleeves insulated          | 120 |
| DIN-assorted boxes conductor end sleeves | 121 |
| AHI assorted boxes                       | 121 |
| TWIN assorted boxes                      | 121 |

### Cable Lugs

|                      |     |
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| Cable lugs KB        | 123 |

### Pressing pliers for CU connections

|                                   |     |
|-----------------------------------|-----|
| V 1311 pressing pliers, hydraulic | 124 |
| Die holders for system 1311       | 124 |
| Die holders for system 1311       | 124 |

## Insulating, protecting, shrinking

### Screening

|                                |     |
|--------------------------------|-----|
| Copper braid                   | 125 |
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## Binding, bundling, fastening

### Cable bundling engineering

|                                   |     |
|-----------------------------------|-----|
| Cable-Eater bunched cable conduit | 126 |
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### Cable ties

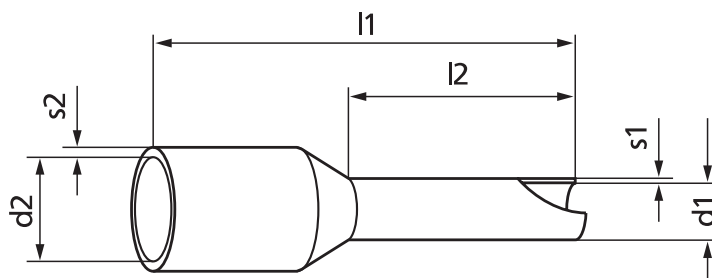
|                                                                      |     |
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New

# Cable Accessories



## Conductor end sleeves insulated



## Conductor end sleeves insulated

## Benefits

- The funnel-shaped opening makes it easy to slip them onto the strands.

## Application range

- Control cabinets and equipment wiring

## Product features

- The conductor is permanently connected to the collar by crimping.

## Approvals



- All DIN conductor end-sleeves are in accordance with DIN 46228 Part 4

## Note

- For processing tools see the keyword index "crimping pliers for conductor end sleeves"

## Suitable tools

- PEW 8.87 crimping pliers refer to Main Catalogue page 916
- K29 crimping pliers refer to Main Catalogue page 917

## Technical data



**Note**  
Halogen-free



**Material**  
Copper/PP  
Surface: tin-plated



**Temperature range**  
Permanent load from -55°C to +105°C

| Article number | Article designation | For mm <sup>2</sup> | AWG | Core colour | l1 mm | l2 mm | d 1 mm | s1 mm | d 2 mm | s2 mm | Pieces / PU |
|----------------|---------------------|---------------------|-----|-------------|-------|-------|--------|-------|--------|-------|-------------|
| 61721866       | AHI N 0,25/6        | 0.25                | 24  | light blue  | 10.50 | 6.0   | 0.80   | 0.25  | 2.00   | 0.25  | 500         |
| 61721867       | AHI L 0,25/8        | 0.25                | 24  | light blue  | 12.50 | 8.0   | 0.80   | 0.25  | 2.00   | 0.25  | 500         |
| 61721868       | AHI N 0,34/6        | 0.34                | 24  | turquoise   | 10.50 | 6.0   | 0.80   | 0.25  | 2.00   | 0.25  | 500         |
| 61721869       | AHI L 0,34/8        | 0.34                | 24  | turquoise   | 12.50 | 8.0   | 0.80   | 0.25  | 2.00   | 0.25  | 500         |
| 61801580       | AHI DIN K 0,5/6     | 0.50                | 20  | white       | 11.50 | 6.0   | 1.10   | 0.15  | 2.50   | 0.25  | 500         |
| 61801590       | AHI DIN N 0,5/8     | 0.50                | 20  | white       | 13.50 | 8.0   | 1.10   | 0.15  | 2.50   | 0.25  | 500         |
| 61801600       | AHI DIN HL 0,5/10   | 0.50                | 20  | white       | 15.50 | 10.0  | 1.10   | 0.15  | 2.50   | 0.25  | 500         |
| 61721871       | AHI N 0,5/8         | 0.50                | 20  | orange      | 13.50 | 8.0   | 1.10   | 0.15  | 2.50   | 0.25  | 500         |
| 61801620       | AHI DIN K 0,75/6    | 0.75                | 20  | grey        | 12.00 | 6.0   | 1.30   | 0.15  | 2.80   | 0.25  | 500         |
| 61801630       | AHI DIN N 0,75/8    | 0.75                | 20  | grey        | 14.00 | 8.0   | 1.30   | 0.15  | 2.80   | 0.25  | 500         |
| 61801640       | AHI DIN HL 0,75/10  | 0.75                | 20  | grey        | 16.00 | 10.0  | 1.30   | 0.15  | 2.80   | 0.25  | 500         |
| 61801650       | AHI DIN L 0,75/12   | 0.75                | 20  | grey        | 18.00 | 12.0  | 1.30   | 0.15  | 2.80   | 0.25  | 500         |
| 61721880       | AHI N 0,75/8        | 0.75                | 20  | white       | 14.00 | 8.0   | 1.30   | 0.15  | 2.80   | 0.25  | 500         |
| 61801660       | AHI DIN K 1/6       | 1.00                | 18  | red         | 12.50 | 6.0   | 1.50   | 0.15  | 3.00   | 0.30  | 500         |
| 61801670       | AHI DIN N 1/8       | 1.00                | 18  | red         | 14.50 | 8.0   | 1.50   | 0.15  | 3.00   | 0.30  | 500         |
| 61801680       | AHI DIN HL 1/10     | 1.00                | 18  | red         | 16.50 | 10.0  | 1.50   | 0.15  | 3.00   | 0.30  | 500         |
| 61801690       | AHI DIN L 1/12      | 1.00                | 18  | red         | 18.50 | 12.0  | 1.50   | 0.15  | 3.00   | 0.30  | 500         |
| 61721890       | AHI N 1/8           | 1.00                | 18  | yellow      | 14.50 | 8.0   | 1.50   | 0.15  | 3.00   | 0.30  | 500         |
| 61801700       | AHI K 1,5/6         | 1.50                | 16  | black       | 12.50 | 6.0   | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61801710       | AHI DIN N 1,5/8     | 1.50                | 16  | black       | 14.50 | 8.0   | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61801720       | AHI DIN HL 1,5/10   | 1.50                | 16  | black       | 16.50 | 10.0  | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61801730       | AHI DIN L 1,5/18    | 1.50                | 16  | black       | 24.50 | 18.0  | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61721900       | AHI N 1,5/8         | 1.50                | 16  | red         | 14.50 | 8.0   | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61721910       | AHI HL 1,5/10       | 1.50                | 16  | red         | 16.50 | 10.0  | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61746720       | AHI L 1,5/18        | 1.50                | 16  | red         | 24.50 | 18.0  | 1.80   | 0.15  | 3.40   | 0.30  | 500         |
| 61801750       | AHI DIN N 2,5/8     | 2.50                | 14  | blue        | 15.00 | 8.0   | 2.30   | 0.15  | 4.20   | 0.30  | 500         |
| 61801760       | AHI DIN HL 2,5/12   | 2.50                | 14  | blue        | 19.00 | 12.0  | 2.30   | 0.15  | 4.20   | 0.30  | 500         |
| 61801770       | AHI DIN L 2,5/18    | 2.50                | 14  | blue        | 25.00 | 18.0  | 2.30   | 0.15  | 4.20   | 0.30  | 500         |
| 61801780       | AHI DIN N 4/10      | 4.00                | 12  | grey        | 17.50 | 10.0  | 2.90   | 0.20  | 4.80   | 0.30  | 500         |
| 61801790       | AHI DIN HL 4/12     | 4.00                | 12  | grey        | 20.00 | 12.0  | 2.90   | 0.20  | 4.80   | 0.30  | 500         |
| 61801800       | AHI DIN L 4/18      | 4.00                | 12  | grey        | 26.00 | 18.0  | 2.90   | 0.20  | 4.80   | 0.30  | 100         |
| 61801810       | AHI DIN N 6/12      | 6.00                | 10  | yellow      | 20.00 | 12.0  | 3.60   | 0.20  | 6.20   | 0.30  | 100         |
| 61801820       | AHI DIN L 6/18      | 6.00                | 10  | yellow      | 25.00 | 18.0  | 3.60   | 0.20  | 6.20   | 0.30  | 100         |
| 61721940       | AHI N 6/12          | 6.00                | 10  | black       | 20.00 | 12.0  | 3.60   | 0.20  | 6.20   | 0.30  | 100         |
| 61721950       | AHI L 6/18          | 6.00                | 10  | black       | 26.00 | 18.0  | 3.60   | 0.20  | 6.20   | 0.30  | 100         |
| 61801830       | AHI DIN N 10/12     | 10.00               | 8   | red         | 21.00 | 12.0  | 4.60   | 0.20  | 7.50   | 0.30  | 100         |
| 61801840       | AHI DIN L 10/18     | 10.00               | 8   | red         | 27.00 | 18.0  | 4.60   | 0.20  | 7.50   | 0.30  | 100         |
| 61721960       | AHI N 10/12         | 10.00               | 8   | ivory       | 21.00 | 12.0  | 4.60   | 0.20  | 7.50   | 0.30  | 100         |
| 61721970       | AHI L 10/18         | 10.00               | 8   | ivory       | 27.00 | 18.0  | 4.60   | 0.20  | 7.50   | 0.30  | 100         |
| 61801850       | AHI DIN N 16/12     | 16.00               | 6   | blue        | 23.00 | 12.0  | 6.00   | 0.20  | 8.80   | 0.40  | 100         |
| 61801860       | AHI DIN L 16/18     | 16.00               | 6   | blue        | 29.00 | 18.0  | 6.00   | 0.20  | 8.80   | 0.40  | 100         |
| 61721980       | AHI N 16/12         | 16.00               | 6   | green       | 23.00 | 12.0  | 6.00   | 0.20  | 8.80   | 0.40  | 100         |
| 61721990       | AHI L 16/18         | 16.00               | 6   | green       | 29.00 | 18.0  | 6.00   | 0.20  | 8.80   | 0.40  | 100         |
| 61801870       | AHI DIN N 25/16     | 25.00               | 4   | yellow      | 29.00 | 16.0  | 7.50   | 0.20  | 11.00  | 0.50  | 50          |
| 61801890       | AHI DIN L 25/22     | 25.00               | 4   | yellow      | 35.00 | 22.0  | 7.50   | 0.20  | 11.00  | 0.50  | 50          |
| 61746770       | AHI N 25/16         | 25.00               | 4   | brown       | 29.00 | 16.0  | 7.50   | 0.20  | 11.00  | 0.50  | 50          |
| 61746780       | AHI L 25/22         | 25.00               | 4   | brown       | 35.00 | 22.0  | 7.50   | 0.20  | 11.00  | 0.50  | 50          |
| 61801900       | AHI DIN N 35/16     | 35.00               | 2   | red         | 30.00 | 16.0  | 8.50   | 0.20  | 12.50  | 0.50  | 50          |
| 61801920       | AHI DIN L 35/25     | 35.00               | 2   | red         | 39.00 | 25.0  | 8.50   | 0.20  | 12.50  | 0.50  | 50          |
| 61746790       | AHI N 35/16         | 35.00               | 2   | beige       | 30.00 | 16.0  | 8.50   | 0.20  | 12.50  | 0.50  | 50          |
| 61746800       | AHI L 35/25         | 35.00               | 2   | beige       | 39.00 | 25.0  | 8.50   | 0.20  | 12.50  | 0.50  | 50          |
| 61801930       | AHI DIN N 50/20     | 50.00               | 1   | blue        | 36.00 | 20.0  | 10.50  | 0.30  | 15.00  | 0.60  | 50          |
| 61801940       | AHI DIN L 50/25     | 50.00               | 1   | blue        | 41.00 | 25.0  | 10.50  | 0.30  | 15.00  | 0.60  | 50          |
| 61801950       | AHI N 70/20         | 70.00               | 2/0 | yellow      | 37.00 | 20.0  | 12.70  | 0.40  | 16.00  | 0.60  | 25          |
| 61801960       | AHI L 70/27         | 70.00               | 2/0 | yellow      | 44.00 | 27.0  | 12.70  | 0.40  | 16.00  | 0.60  | 25          |
| 61801970       | AHI N 95/25         | 95.00               | 3/0 | red         | 44.00 | 25.0  | 14.70  | 0.40  | 18.00  | 0.60  | 25          |
| 61801980       | AHI N 120/27        | 120.00              | 4/0 | blue        | 48.00 | 27.0  | 16.70  | 0.50  | 21.00  | 0.70  | 25          |
| 61801990       | AHI N 150/32        | 150.00              | 300 | yellow      | 58.00 | 32.0  | 19.50  | 0.50  | 23.00  | 1.00  | 25          |

K = short; N = medium; HL = large; L = extra large; Other sizes and colours are available upon request

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

For current information see: [www.lappkorea.com](http://www.lappkorea.com)

## DIN-assorted boxes conductor end sleeves / AHI assorted boxes / TWIN assorted boxes



TWIN assorted boxes



AHI assorted boxes



DIN-assorted boxes conductor end sleeves

### Benefits

- Convenient assortment boxes - several diameters always at your fingertips

### Application range

#### DIN-assorted boxes conductor end sleeves

- DIN conductor end sleeves
- Manufacturing of control cabinets and equipment

#### AHI assorted boxes

- AHI assortment box
- Manufacturing of control cabinets and equipment

#### TWIN assorted boxes

- TWIN assortment box
- Manufacturing of control cabinets and equipment

### Approvals



- The insulated conductor end sleeves are in accordance with DIN 46228, part 4 (0.25 mm<sup>2</sup> and 0.34 mm<sup>2</sup> not standardised) in assortment boxes

### Note

- For processing tools see the keyword index "crimping pliers for conductor end sleeves"

### Design

#### DIN-assorted boxes conductor end sleeves

- DIN assortment box I:  
30 x 0.25 - 6 mm BU, 30 x 0.34 - 6 mm YE,  
30 x 0.5 - 8 mm WH, 30 x 0.75 - 8 mm GY,  
30 x 1.00 - 8 mm RD
- DIN assortment box II:  
50 x 0.5 - 8 mm WH, 100 x 0.75 - 8 mm GY,  
100 x 1.00 - 8 mm RD, 100 x 1.5 - 8 mm BK,  
50 x 2.5 - 8 mm BU
- DIN assortment box III:  
40 x 4.00 - 10 mm GY, 20 x 6.0 - 12 mm YE,  
20 x 10.00 - 12 mm RD, 10 x 16.00 - 12 mm BU

#### AHI assorted boxes

- AHI assortment box I (yellow):  
30 x 0.25 - 6 mm LBU, 30 x 0.34 - 6 mm TQ,  
30 x 0.5 - 8 mm ON, 30 x 0.75 - 8 mm WH,  
30 x 1.00 - 8 mm YE
- AHI assortment box II (orange):  
50 x 0.5 - 8 mm OG, 100 x 0.75 - 8 mm WH,  
100 x 1.00 - 8 mm YE, 100 x 1.5 - 8 mm RD,  
50 x 2.5 - 8 mm BU

- AHI assortment box III (blue):

50 x 4.00 - 10 mm GY, 20 x 6.0 - 12 mm BK,  
20 x 10.00 - 12 mm WH, 10 x 16.00 - 12 mm GN

#### TWIN assorted boxes

- TWIN assortment box
- 2x0,75 - 8mm, 2x1,00 - 8mm, 2x1,5 - 8mm,  
2x2,5 - 10mm

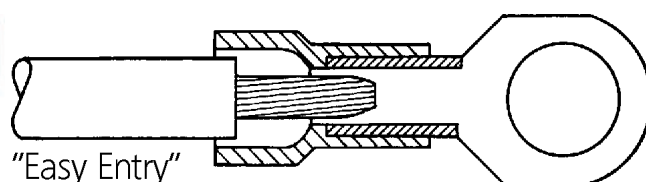
| Article number             | Article designation    | For mm <sup>2</sup> | Contents (unit) | PU |
|----------------------------|------------------------|---------------------|-----------------|----|
| <b>DIN assortment box</b>  |                        |                     |                 |    |
| 61802040                   | DIN assortment box I   | 0.25 - 1.00         | 150 x 1         | 1  |
| 61802041                   | DIN assortment box II  | 0.50 - 2.50         | 400 x 1         | 1  |
| 61802042                   | DIN assortment box III | 4.00 - 16.00        | 100 x 1         | 1  |
| <b>AHI assortment box</b>  |                        |                     |                 |    |
| 61794720                   | AHI assortment box I   | 0.25 - 1.00         | 150 x 1         | 1  |
| 61794730                   | AHI assortment box II  | 0.50 - 2.50         | 400 x 1         | 1  |
| 61794740                   | AHI assortment box III | 4.00 - 16.00        | 100 x 1         | 1  |
| <b>TWIN assortment box</b> |                        |                     |                 |    |
| 61802046                   | TWIN assortment box    | 2 x 0,75 - 2 x 2,5  | 200 x 1         | 1  |

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

## Insulated cable lugs



Insulated cable lugs



"Easy Entry"

## Benefits

- EASY-ENTRY funnel shape of the plastic sleeve enables simple, fast and safe insertion of the conductor
- No risk of bent and crushed cables
- For good strength and improved current conduction

## Application range

- Manufacturing of control cabinets and equipment

## Product features

- Hard-soldered cable lug that can be pressed in any position
- For first-class connection with simple operating principle
- Electrolytic tinning for max. corrosion protection
- Flat receptacle material in contact pressing is double-folded and hard-soldered
- Metal sleeves with internal corrugation

## Approvals



- Tested in accordance with DIN IEC 60352
- File Number E334109, see table

## Note

- For processing tools see the keyword index "crimping pliers for conductor end sleeves"

## Design

- 1 = ring cable lugs
- 2 = forked cable lugs
- 3 = pin cable lugs
- 4 = circular connector
- 5 = connector sleeve
- 6 = butt connector
- 7 = end connector

## Technical data



## General

Other sizes and colours (also DIN) are available upon request  
Halogen-free



## Note

For processing tools see the keyword index "crimping pliers for other connections"



## Material

High-quality electrolytic copper for good conductivity  
Polyamide insulation



## Temperature range

-40°C to +105°C  
Short-term: up to +120°C

## Suitable tools

- DSA 0110 + DSA 0725 crimping pliers refer to Main Catalogue page 924
- CSA 0760 + KSA 0760 crimping pliers refer to Main Catalogue page 924

| Article number                | Article designation | For mm <sup>2</sup> | UL approval | Connection bolt | Core colour | Pieces / PU |
|-------------------------------|---------------------|---------------------|-------------|-----------------|-------------|-------------|
| <b>Ring cable lugs</b>        |                     |                     |             |                 |             |             |
| 63104010                      | L-RZ 3              | 0.25 - 0.75         | no          | M 3             | green       | 100         |
| 63104020                      | L-RZ 4              | 0.25 - 0.75         | no          | M 4             | green       | 100         |
| 63104030                      | L-RZ 5              | 0.25 - 0.75         | no          | M 5             | green       | 100         |
| 63104040                      | L-RA 3              | 0.5 - 1.5           | yes         | M 3             | red         | 100         |
| 63104050                      | L-RA 35             | 0.5 - 1.5           | yes         | M 3.5           | red         | 100         |
| 63104060                      | L-RA 4              | 0.5 - 1.5           | yes         | M 4             | red         | 100         |
| 63104070                      | L-RA 5              | 0.5 - 1.5           | yes         | M 5             | red         | 100         |
| 63104080                      | L-RA 6              | 0.5 - 1.5           | yes         | M 6             | red         | 100         |
| 63104160                      | L-RB 3              | 1.5 - 2.5           | yes         | M 3             | blue        | 100         |
| 63104170                      | L-RB 4              | 1.5 - 2.5           | yes         | M 4             | blue        | 100         |
| 63104180                      | L-RB 5              | 1.5 - 2.5           | yes         | M 5             | blue        | 100         |
| 63104190                      | L-RB 6              | 1.5 - 2.5           | yes         | M 6             | blue        | 100         |
| 63104200                      | L-RB 8              | 1.5 - 2.5           | yes         | M 8             | blue        | 100         |
| 63104340                      | L-RC 4              | 4 - 6               | yes         | M 4             | yellow      | 100         |
| 63104350                      | L-RC 5              | 4 - 6               | yes         | M 5             | yellow      | 100         |
| 63104360                      | L-RC 6              | 4 - 6               | yes         | M 6             | yellow      | 100         |
| 63104370                      | L-RC 8              | 4 - 6               | yes         | M 8             | yellow      | 100         |
| 63104380                      | L-RC 10             | 4 - 6               | yes         | M 10            | yellow      | 50          |
| <b>Fork cable lugs</b>        |                     |                     |             |                 |             |             |
| 63105010                      | L-RZ 3 F            | 0.25 - 0.75         | no          | M 3             | green       | 100         |
| 63105020                      | L-RZ 4 F            | 0.25 - 0.75         | no          | M 4             | green       | 100         |
| 63105050                      | L-RA 4 F            | 0.5 - 1.5           | yes         | M 4             | red         | 100         |
| 63105060                      | L-RA 5 F            | 0.5 - 1.5           | yes         | M 5             | red         | 100         |
| 63105070                      | L-RA 6 F            | 0.5 - 1.5           | yes         | M 6             | red         | 100         |
| 63105130                      | L-RB 4 F            | 1.5 - 2.5           | yes         | M 4             | blue        | 100         |
| 63105140                      | L-RB 5 F            | 1.5 - 2.5           | yes         | M 5             | blue        | 100         |
| 63105150                      | L-RB 6 F            | 1.5 - 2.5           | yes         | M 6             | blue        | 100         |
| 63105210                      | L-RC 4 F            | 4 - 6               | yes         | M 4             | yellow      | 100         |
| 63105220                      | L-RC 5 F            | 4 - 6               | yes         | M 5             | yellow      | 100         |
| 63105230                      | L-RC 6 F            | 4 - 6               | yes         | M 6             | yellow      | 50          |
| <b>Narrow fork cable lugs</b> |                     |                     |             |                 |             |             |
| 63105040                      | L-RA 35 F           | 0.5 - 1.5           | yes         | M 3.5           | red         | 100         |
| 63105110                      | L-RB 3 F            | 1.5 - 2.5           | yes         | M 3             | blue        | 100         |
| 63105120                      | L-RB 35 F           | 1.5 - 2.5           | yes         | M 3.5           | blue        | 100         |
| <b>Flange fork cable lugs</b> |                     |                     |             |                 |             |             |
| 63108010                      | L-RA 35 FF          | 0.5 - 1.5           | no          | M 3.5           | red         | 100         |
| 63108040                      | L-RB 4 FF           | 1.5 - 2.5           | no          | M 4             | blue        | 100         |
| 63108050                      | L-RB 5 FF           | 1.5 - 2.5           | no          | M 5             | blue        | 100         |
| <b>Pin cable lugs</b>         |                     |                     |             |                 |             |             |
| 63107010                      | L-RZP               | 0.25 - 0.75         | no          |                 | green       | 100         |
| 63107020                      | L-RAP               | 0.5 - 1.5           | yes         |                 | red         | 100         |
| 63107040                      | L-RBP               | 1.5 - 2.5           | yes         |                 | blue        | 100         |
| 63107070                      | L-RCP               | 4 - 6               | yes         |                 | yellow      | 100         |
| <b>Circular connector</b>     |                     |                     |             |                 |             |             |
| 63110010                      | L-RABM              | 0.5 - 1.5           | no          |                 | red         | 100         |
| 63110020                      | L-RB 5 BM           | 1.5 - 2.5           | no          |                 | blue        | 100         |
| <b>Connector sleeve</b>       |                     |                     |             |                 |             |             |
| 63111010                      | L-RAB               | 0.5 - 1.5           | no          |                 | red         | 100         |
| 63111020                      | L-RB 5 B            | 1.5 - 2.5           | no          |                 | blue        | 100         |
| <b>Butt connector</b>         |                     |                     |             |                 |             |             |
| 63106020                      | L-RAA 15            | 0.5 - 1.5           | yes         |                 | red         | 100         |
| 63106040                      | L-RBB 25            | 1.5 - 2.5           | yes         |                 | blue        | 100         |
| 63106080                      | L-RCC 6             | 4 - 6               | yes         |                 | yellow      | 50          |
| <b>End joint</b>              |                     |                     |             |                 |             |             |
| 63112010                      | L-RBJ               | 1.5 - 2.5           | no          |                 | blue        | 100         |
| 63112020                      | L-RBJ               | 4 - 6               | no          |                 | yellow      | 100         |

Other sizes and colours are available upon request.

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

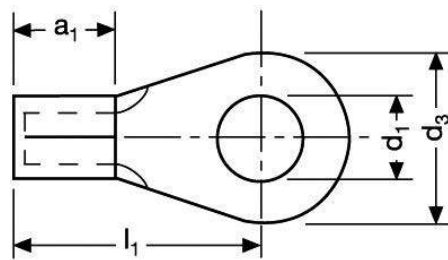
For current information see: [www.lappkorea.com](http://www.lappkorea.com)



## Cable lugs KB

### Technical data

- Note**  
s = thickness of material
- Material**  
High-quality electrolytic copper for good conductivity
- Temperature range**  
Max. temperature: +120°C (short-term)



### Benefits

- For first-class connection with simple operating principle
- Thus providing the best electrical conductivity (least resistance)

### Application range

- Manufacturing of control cabinets and equipment
- Trains and buses

### Approvals



- In accordance with VG 88710
- Coil form DIN 46234, non-insulated

### Note

- For processing tools see the keyword index "crimping pliers for other connections"

### Suitable tools

- PEW 12 universal tool refer to Main Catalogue page 932
- WT 4454 PNEU universal pressing pliers

| Article number | Article designation  | For mm <sup>2</sup> | UL approval | AWG   | Nominal size | d1   | d3   | l1   | a1   | s   | Pieces / PU |
|----------------|----------------------|---------------------|-------------|-------|--------------|------|------|------|------|-----|-------------|
| 63204015       | KB1-2,5R DIN 46234   | 0.5 - 1.5           | no          | 22-16 | 2.5-1.0      | 2.8  | 6.0  | 11.0 | 5.0  | 0.8 | 100         |
| 63204025       | KB1-3R DIN 46234     | 0.5 - 1.5           | no          | 22-16 | 3.2-1.0      | 3.2  | 6.0  | 11.0 | 5.0  | 0.8 | 100         |
| 63204035       | KB1-3.5R DIN 46234   | 0.5 - 1.5           | no          | 22-16 | 3.5-1.0      | 3.7  | 6.0  | 11.0 | 5.0  | 0.8 | 100         |
| 63204045       | KB1-4R DIN 46234     | 0.5 - 1.5           | no          | 22-16 | 4.0-1.0      | 4.3  | 8.0  | 12.0 | 5.0  | 0.8 | 100         |
| 63204055       | KB1-5R DIN 46234     | 0.5 - 1.5           | no          | 22-16 | 5.0-1.0      | 5.3  | 10.0 | 13.0 | 5.0  | 0.8 | 100         |
| 63204065       | KB1-6R DIN 46234     | 0.5 - 1.5           | no          | 22-16 | 6.0-1.0      | 6.5  | 10.0 | 13.0 | 5.0  | 0.8 | 100         |
| 63204075       | KB1-8R DIN 46234     | 0.5 - 1.5           | no          | 22-16 | 8.0-1.0      | 8.4  | 14.0 | 17.0 | 5.0  | 0.8 | 100         |
| 63204085       | KB1-10R DIN 46234    | 0.5 - 1.5           | no          | 22-16 | 10.0-1.0     | 10.5 | 14.0 | 17.0 | 5.0  | 0.8 | 100         |
| 63204095       | KB2-5-3R DIN 46234   | 1.5 - 2.5           | no          | 16-14 | 3.0-2.5      | 3.2  | 6.0  | 11.0 | 5.0  | 0.8 | 100         |
| 63204105       | KB2-5-3.5R DIN 46234 | 1.5 - 2.5           | no          | 16-14 | 3.5-2.5      | 3.7  | 6.0  | 11.0 | 5.0  | 0.8 | 100         |
| 63204115       | KB2-5-4R DIN 46234   | 1.5 - 2.5           | no          | 16-14 | 4.0-2.5      | 4.3  | 8.0  | 12.0 | 5.0  | 0.8 | 100         |
| 63204125       | KB2-5-5R DIN 46234   | 1.5 - 2.5           | no          | 16-14 | 5.0-2.5      | 5.3  | 10.0 | 14.0 | 5.0  | 0.8 | 100         |
| 63204135       | KB2-5-6R DIN 46234   | 1.5 - 2.5           | no          | 16-14 | 6.0-2.5      | 6.5  | 11.0 | 16.0 | 5.0  | 0.8 | 100         |
| 63204145       | KB2-5-8R DIN 46234   | 1.5 - 2.5           | no          | 16-14 | 8.0-2.5      | 8.4  | 14.0 | 17.0 | 5.0  | 0.8 | 100         |
| 63204155       | KB2-5-10R DIN 46234  | 1.5 - 2.5           | no          | 16-14 | 10.0-2.5     | 10.5 | 14.0 | 17.0 | 5.0  | 0.8 | 100         |
| 63204165       | KB2-5-12R DIN 46234  | 1.5 - 2.5           | no          | 16-14 | 12.0-2.5     | 13.0 | 18.0 | 20.0 | 5.0  | 0.8 | 100         |
| 63204175       | KB6-4R DIN 46234     | 2.5 - 6             | no          | 12-10 | 4.0-6.0      | 4.3  | 8.0  | 14.0 | 6.0  | 1.0 | 100         |
| 63204185       | KB6-5R DIN 46234     | 2.5 - 6             | no          | 12-10 | 5.0-6.0      | 5.3  | 10.0 | 15.0 | 6.0  | 1.0 | 100         |
| 63204195       | KB6-6R DIN 46234     | 2.5 - 6             | no          | 12-10 | 6.0-6.0      | 6.5  | 11.0 | 16.0 | 6.0  | 1.0 | 100         |
| 63204205       | KB6-8R DIN 46234     | 2.5 - 6             | no          | 12-10 | 8.0-6.0      | 8.4  | 14.0 | 19.0 | 6.0  | 1.0 | 100         |
| 63204215       | KB6-10R DIN 46234    | 2.5 - 6             | no          | 12-10 | 10.0-6.0     | 10.5 | 18.0 | 21.0 | 6.0  | 1.0 | 100         |
| 63204225       | KB6-12R DIN 46234    | 2.5 - 6             | no          | 12-10 | 12.0-6.0     | 13.0 | 18.0 | 21.0 | 6.0  | 1.0 | 100         |
| 63204235       | KB10-5R DIN 46234    | 10                  | no          | 8     | 5.0-10.0     | 5.3  | 10.0 | 16.0 | 8.0  | 1.1 | 100         |
| 63204245       | KB10-6R DIN 46234    | 10                  | no          | 8     | 6.0-10.0     | 6.5  | 11.0 | 17.0 | 8.0  | 1.1 | 100         |
| 63204255       | KB10-8R DIN 46234    | 10                  | no          | 8     | 8.0-10.0     | 8.4  | 14.0 | 20.0 | 8.0  | 1.1 | 100         |
| 63204265       | KB10-10R DIN 46234   | 10                  | no          | 8     | 10.0-10.0    | 10.5 | 18.0 | 21.0 | 8.0  | 1.1 | 100         |
| 63204275       | KB10-12R DIN 46234   | 10                  | no          | 8     | 12.0-10.0    | 13.0 | 22.0 | 23.0 | 8.0  | 1.1 | 100         |
| 63204285       | KB16-5R DIN 46234    | 16                  | no          | 6     | 5.0-16.0     | 5.3  | 11.0 | 20.0 | 10.0 | 1.2 | 100         |
| 63204295       | KB16-6R DIN 46234    | 16                  | no          | 6     | 6.0-16.0     | 6.5  | 11.0 | 20.0 | 10.0 | 1.2 | 100         |
| 63204305       | KB16-8R DIN 46234    | 16                  | no          | 6     | 8.0-16.0     | 8.4  | 14.0 | 22.0 | 10.0 | 1.2 | 100         |
| 63204315       | KB16-10R DIN 46234   | 16                  | no          | 6     | 10.0-16.0    | 10.5 | 18.0 | 24.0 | 10.0 | 1.2 | 100         |
| 63204325       | KB16-12R DIN 46234   | 16                  | no          | 6     | 12.0-16.0    | 13.0 | 22.0 | 26.0 | 10.0 | 1.2 | 100         |
| 63204335       | KB25-5R DIN 46234    | 25                  | no          | 4     | 5.0-25.0     | 5.3  | 12.0 | 25.0 | 11.0 | 1.5 | 100         |
| 63204345       | KB25-6R DIN 46234    | 25                  | no          | 4     | 6.0-25.0     | 6.5  | 12.0 | 25.0 | 11.0 | 1.5 | 100         |
| 63204355       | KB25-8R DIN 46234    | 25                  | no          | 4     | 8.0-25.0     | 8.4  | 16.0 | 25.0 | 11.0 | 1.5 | 100         |
| 63204365       | KB25-10R DIN 46234   | 25                  | no          | 4     | 10.0-25.0    | 10.5 | 18.0 | 26.0 | 11.0 | 1.5 | 100         |
| 63204375       | KB25-12R DIN 46234   | 25                  | no          | 4     | 12.0-25.0    | 13.0 | 31.0 | 31.0 | 11.0 | 1.5 | 100         |
| 63204385       | KB25-16R DIN 46234   | 25                  | no          | 4     | 16.0-25.0    | 17.0 | 35.0 | 36.0 | 11.0 | 1.5 | 100         |
| 63204395       | KB35-6R DIN 46234    | 35                  | no          | 2     | 6.0-35.0     | 6.5  | 15.0 | 26.0 | 12.0 | 1.6 | 100         |
| 63204405       | KB35-8R DIN 46234    | 35                  | no          | 2     | 8.0-35.0     | 8.4  | 16.0 | 26.0 | 12.0 | 1.6 | 100         |
| 63204415       | KB35-10R DIN 46234   | 35                  | no          | 2     | 10.0-35.0    | 10.5 | 18.0 | 27.0 | 12.0 | 1.6 | 100         |
| 63204425       | KB35-12R DIN 46234   | 35                  | no          | 2     | 12.0-35.0    | 13.0 | 22.0 | 31.0 | 12.0 | 1.6 | 100         |
| 63204435       | KB35-16R DIN 46234   | 35                  | no          | 2     | 16.0-35.0    | 17.0 | 28.0 | 36.0 | 12.0 | 1.6 | 100         |
| 63204445       | KB50-6R DIN 46234    | 50                  | no          | 1/0   | 6.0-50.0     | 6.5  | 18.0 | 34.0 | 16.0 | 1.8 | 100         |
| 63204455       | KB50-8R DIN 46234    | 50                  | no          | 1/0   | 8.0-50.0     | 8.4  | 18.0 | 34.0 | 16.0 | 1.8 | 100         |
| 63204465       | KB50-10R DIN 46234   | 50                  | no          | 1/0   | 10.0-50.0    | 10.5 | 18.0 | 34.0 | 16.0 | 1.8 | 100         |
| 63204475       | KB50-12R DIN 46234   | 50                  | no          | 1/0   | 12.0-50.0    | 13.0 | 22.0 | 36.0 | 16.0 | 1.8 | 100         |
| 63204485       | KB50-16R DIN 46234   | 50                  | no          | 1/0   | 16.0-50.0    | 17.0 | 28.0 | 40.0 | 16.0 | 1.8 | 100         |
| 63204495       | KB70-6R DIN 46234    | 70                  | no          | 2/0   | 6.0-70.0     | 6.5  | 22.0 | 38.0 | 18.0 | 2.0 | 100         |
| 63204505       | KB70-8R DIN 46234    | 70                  | no          | 2/0   | 8.0-70.0     | 8.4  | 22.0 | 38.0 | 18.0 | 2.0 | 100         |
| 63204515       | KB70-10R DIN 46234   | 70                  | no          | 2/0   | 10.0-70.0    | 10.5 | 22.0 | 38.0 | 18.0 | 2.0 | 100         |
| 63204525       | KB70-12R DIN 46234   | 70                  | no          | 2/0   | 12.0-70.0    | 13.0 | 22.0 | 38.0 | 18.0 | 2.0 | 100         |
| 63204535       | KB70-16R DIN 46234   | 70                  | no          | 2/0   | 16.0-70.0    | 17.0 | 28.0 | 42.0 | 18.0 | 2.0 | 100         |
| 63204545       | KB95-8R DIN 46234    | 95                  | no          | 3/0   | 8.0-95.0     | 8.4  | 24.0 | 42.0 | 20.0 | 2.5 | 50          |
| 63204555       | KB95-10R DIN 46234   | 95                  | no          | 3/0   | 10.0-95.0    | 10.5 | 24.0 | 42.0 | 20.0 | 2.5 | 50          |
| 63204565       | KB95-12R DIN 46234   | 95                  | no          | 3/0   | 12.0-95.0    | 13.0 | 24.0 | 42.0 | 20.0 | 2.5 | 50          |
| 63204575       | KB95-16R DIN 46234   | 95                  | no          | 3/0   | 16.0-95.0    | 17.0 | 28.0 | 44.0 | 20.0 | 2.5 | 50          |
| 63204585       | KB120-8R DIN 46234   | 120                 | no          | 4/0   | 8.0-120.0    | 8.4  | 24.0 | 44.0 | 22.0 | 3.0 | 25          |
| 63204595       | KB120-10R DIN 46234  | 120                 | no          | 4/0   | 10.0-120.0   | 10.5 | 24.0 | 44.0 | 22.0 | 3.0 | 25          |
| 63204605       | KB120-12R DIN 46234  | 120                 | no          | 4/0   | 12.0-120.0   | 13.0 | 24.0 | 44.0 | 22.0 | 3.0 | 25          |
| 63204615       | KB120-16R DIN 46234  | 120                 | no          | 4/0   | 16.0-120.0   | 17.0 | 28.0 | 48.0 | 22.0 | 3.0 | 25          |
| 63204625       | KB150-10R DIN 46234  | 150                 | no          | 5/0   | 10.0-150.0   | 10.5 | 30.0 | 50.0 | 24.0 | 3.2 | 25          |
| 63204635       | KB150-12R DIN 46234  | 150                 | no          | 5/0   | 12.0-150.0   | 13.0 | 30.0 | 50.0 | 24.0 | 3.2 | 25          |
| 63204645       | KB150-16R DIN 46234  | 150                 | no          | 5/0   | 16.0-150.0   | 17.0 | 30.0 | 50.0 | 24.0 | 3.2 | 25          |
| 63204655       | KB185-10R DIN 46234  | 185                 | no          | 6/0   | 10.0-185.0   | 10.5 | 36.0 | 50.0 | 28.0 | 3.5 | 20          |
| 63204665       | KB185-12R DIN 46234  | 185                 | no          | 6/0   | 12.0-185.0   | 13.0 | 36.0 | 50.0 | 28.0 | 3.5 | 20          |
| 63204675       | KB185-16R DIN 46234  | 185                 | no          | 6/0   | 16.0-185.0   | 17.0 | 36.0 | 50.0 | 28.0 | 3.5 | 20          |
| 63204685       | KB240-10R DIN 46234  | 240                 | no          | 7/0   | 10.0-240.0   | 10.5 | 38.0 | 56.0 | 32.0 | 4.0 | 10          |
| 63204695       | KB240-12R DIN 46234  | 240                 | no          | 7/0   | 12.0-240.0   | 13.0 | 38.0 | 56.0 | 32.0 | 4.0 | 10          |
| 63204705       | KB240-16R DIN 46234  | 240                 | no          | 7/0   | 16.0-240.0   | 17.0 | 38.0 | 56.0 | 32.0 | 4.0 | 10          |

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

## Connection and crimping

Pressing pliers for CU connections

## V 1311 pressing pliers, hydraulic



## ■ Benefits

- Ergonomic handles
- Pressing head rotates by 180 degrees
- Automatic quick feed of pressing dies and mandrels
- Few tool parts, easy to change

## ■ Application range

- System 1311 for pressing copper connections of 10 - 400 mm<sup>2</sup>

## ■ Technical data



## Note

Crimping profile: Hexagonal  
Pressing force: 130 kN (13 t)

## ■ Design

- Without pressing dies and die holders

## ■ Included

- Complete unit, no external pump required
- Included: FV 1311 bag

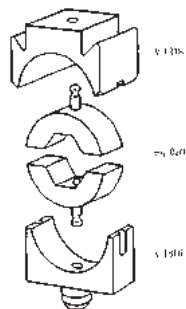
| Article number | Article designation | For mm <sup>2</sup> | Inner die holders | Outer die holders | Weight (kg) | Length (mm) | Pieces / PU |
|----------------|---------------------|---------------------|-------------------|-------------------|-------------|-------------|-------------|
| 61795925       | V 1311              | 10.0 - 400.0        | V 1316            | V 1318            | 4.9         | 590         | 1           |

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

## ■ Accessories

- Tube cable lugs KR/ KRT/ KRF refer to Main Catalogue page 927
- Die holders for system 1311 refer to Main Catalogue page 930
- Die holders for system 1311 refer to Main Catalogue page 930

## Die holders for system 1311



## ■ Benefits

- Systems 1311 for pressing copper connections of 10 - 400 mm<sup>2</sup>

## ■ Design

- For the V1311 pliers, both the inner die holder V1316 and the outer die holder V1318 are needed.
- These must be ordered separately.

## ■ Suitable tools

- V 1311 pressing pliers, hydraulic refer to Main Catalogue page 930

| Article number | Article designation     | For crimping tools | Dies per PU | PU |
|----------------|-------------------------|--------------------|-------------|----|
| 61795941       | V 1316 inner die-holder | V 1311             | 1           | 1  |
| 61795942       | V 1318 outer die-holder | V 1311             | 1           | 1  |

Component composition: First specify the pressing dies. Note that die holders are not needed for all pressing dies (depending on the cross section of the tube cable lugs to be pressed)  
Photographs are not to scale and do not represent detailed images of the respective products.

## Die holders for system 1311



## ■ Application range

- Pressing dies for copper branch terminals are available upon request
- The 1311 system allows tube cable lugs (KR/ KRT/ KRF), butt connectors (KS/ KST/ KSF) and copper branch terminals to be pressed. Inserts are supplied in pairs.

## ■ Included

- KS/ KST/ KSF butt connectors are available upon request. Press inserts are delivered in pairs.

| Article number           | Article designation | For KR/ KS mm <sup>2</sup> | For KRT/ KST mm <sup>2</sup> | For KRF/ KSF mm <sup>2</sup> | PU |
|--------------------------|---------------------|----------------------------|------------------------------|------------------------------|----|
| Pressing dies - in pairs |                     |                            |                              |                              |    |
| 61795950                 | B7                  | 10.0                       | 10.0                         |                              | 1  |
| 61795951                 | B8                  | 10.0                       |                              | 10.0                         | 1  |
| 61795960                 | B8,5                |                            | 16.0                         |                              | 1  |
| 61795970                 | B9                  |                            |                              | 16.0                         | 1  |
| 61795971                 | B10                 |                            | 25.0                         |                              | 1  |
| 61795972                 | B11                 |                            |                              | 25.0                         | 1  |
| 61795980                 | B12                 |                            | 35.0                         |                              | 1  |
| 61795981                 | B13                 |                            |                              | 35.0                         | 1  |
| 61795990                 | B14                 |                            | 50.0                         |                              | 1  |
| 61795991                 | B14,5               |                            |                              | 50.0                         | 1  |
| 61796000                 | B16                 |                            | 70.0                         |                              | 1  |
| 61796001                 | B17                 |                            |                              | 70.0                         | 1  |
| 61796010                 | B18                 |                            | 95.0                         |                              | 1  |
| 61796021                 | B20                 |                            |                              | 95.0                         | 1  |
| 61796020                 | B19                 |                            | 120.0                        |                              | 1  |
| 61796030                 | B22                 |                            | 150.0                        | 120.0                        | 1  |
| 61796032                 | B25                 |                            |                              | 150.0                        | 1  |
| 61796031                 | B24                 |                            | 185.0                        |                              | 1  |
| 61796042                 | 13B25               |                            |                              | 185.0                        | 1  |
| 61796043                 | 13B26               |                            | 240.0                        |                              | 1  |
| 61796044                 | 13B30               |                            | 300.0                        | 240.0                        | 1  |
| 61796045                 | 13B32               |                            | 400.0                        | 300.0                        | 1  |
| 61796046                 | 13B38               |                            |                              | 400.0                        | 1  |

Component composition: First specify the pressing dies. Note that die holders are not needed for all pressing dies (depending on the cross section of the tube cable lugs to be pressed)  
Photographs are not to scale and do not represent detailed images of the respective products.

For current information see: [www.lappkorea.com](http://www.lappkorea.com)

## Copper braid

### Technical data



#### General

Minor differences are possible depending on the production batch



#### Note

Degree of coverage: 85 % at maximum opening



#### Material

Tinned-copper



#### Temperature range

Max. temperature: +120°C (short-term)  
-30°C to +105°C

### Benefits

- EMC-compliant screening improves compatibility and protects the cable from interferences transmitted by other electric fields

### Application range

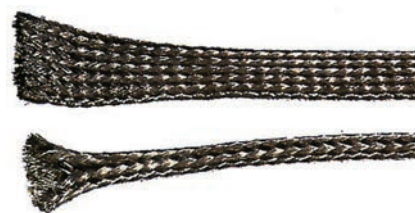
- EMC-compliant screening
- Can be used as earthing tape

### Approvals



### Design

- With these three available sizes, a diameter range from 1 to 20 mm can be covered.
- Variable diameter by tightening the braid.



### Suitable tools

- SILVYN® EMC AS-CU Main Catalogue Page 814

| Article number | Article designation | For mm <sup>2</sup> | Approx. Ø range in mm | Number of wires x Ø (mm) | Weight (g) | Contents (m) |
|----------------|---------------------|---------------------|-----------------------|--------------------------|------------|--------------|
| 61721370       | CU 14               | 1.32                | 1 - 4                 | 24 x 7 x 0,10            | 17.0       | 100.0        |
| 61721380       | CU 410              | 4.14                | 4 - 10                | 24 x 22 x 0,10           | 38.0       | 100.0        |
| 61721390       | CU 1020             | 8.29                | 10 - 20               | 48 x 22 x 0,10           | 75.0       | 100.0        |

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

## 3M Scotch™ 1183 screening tape

### Technical data



#### Caution

Adhesion (stripping force): 3.8 N/10 mm  
Tear strength: 44 N/10 mm



#### Approvals

UL-recognised



#### Note

Contact resistance (in acc. with MIL-STD-202):  
0.005 Ohms  
Data sheet is available upon request



#### Info

Storage: good stability when stored in a cool and dry location (room temperature and approx. 50% relative humidity)



#### Colour delivered

Silver grey (RAL 7001)



#### Material

The 3M screening tape consists of a smooth tin-plated copper film as a lining with a conductive acrylic adhesive.



#### Temperature range

-10 °C to +80 °C

### Benefits

- This electrically-conductive strip provides exceptional screening of electromagnetic fields.
- Uniform foil composition and its good conductivity to the substrate ensure low contact resistance, which is crucial for the degree of screening.
- Solderable and corrosion-resistant
- Acrylic adhesive that is resistant to solvents

### Application range

- EMC-compliant screening

### Product features

- This copper foil is plated with a thin layer of tin.
- This provides very good soldering characteristics and resistance to corrosion and oxidation.
- The tin-plating used is compatible with a wide range of base materials such as aluminium, lead and tin alloys, and galvanised steels.

### Approvals



### Design

- With these three available sizes, a diameter range from 1 to 20 mm can be covered.
- Variable diameter by tightening the braid.

| Article number | Article designation      | Width (mm) | Contents (m) |
|----------------|--------------------------|------------|--------------|
| 61721420       | 3M Scotch 1183 / 9x16,5  | 9          | 16.5         |
| 61721421       | 3M Scotch 1183 / 12x16,5 | 12         | 16.5         |
| 61721422       | 3M Scotch 1183 / 19x16,5 | 19         | 16.5         |
| 61721423       | 3M Scotch 1183 / 25x16,5 | 25         | 16.5         |

Scotch™ 1183 is a registered trademark of 3M

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

### Accessories

- SKINTOP® MS-SC-M refer to Main Catalogue page 668
- SKINTOP® MS-SC refer to Main Catalogue page 719

## Cable-Eater bunched cable conduit



Cable-Eater bunched cable conduit

### Benefits

- The cable eater offers the ideal solution for bundling cable/wires.

### Application range

- The main fields of application include the bundling and protection of cables in cable pre-assembly, the electrical industry and switch cabinet and plant construction.

### Approvals



### Included

- Suitable insertion tool
- SHR protective cable conduit

### Technical data



#### Note

Halogen-free  
Flame-retardant according to UL 94 HB



#### Colour delivered

White  
Black



#### Material

Polypropylene (PP)  
UV-resistant

| Article number | Article description | Colour / bundle Ø (mm) | Inner Ø (mm) | Panel thickness (mm) | Processing tool/<br>installation tool | Contents (m) |
|----------------|---------------------|------------------------|--------------|----------------------|---------------------------------------|--------------|
| 61830300       | SHR-08-PPB          | black / 6 - 9          | 8.0          | 0.8                  | STKP 8                                | 100          |
| 61830310       | SHR-15-PPB          | black / 10 - 16        | 15.0         | 0.8                  | STKP15                                | 50           |
| 61830320       | SHR-20-PPB          | black / 17 - 21        | 20.0         | 0.9                  | STKP 20                               | 30           |
| 61830330       | SHR-25-PPB          | black / 21 - 28        | 25.0         | 1.0                  | STKP 25                               | 20           |
| 61830302       | SHR-08-PPW          | white / 6 - 9          | 8.0          | 0.8                  | STKP 8                                | 100          |
| 61830312       | SHR-15-PPW          | white / 10 - 16        | 15.0         | 0.8                  | STKP 15                               | 50           |
| 61830322       | SHR-20-PPW          | white / 17 - 21        | 20.0         | 0.9                  | STKP 20                               | 30           |
| 61830332       | SHR-25-PPW          | white / 21 - 28        | 25.0         | 1.0                  | STKP 25                               | 20           |

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

### Accessories

- Spare tool Cable - Eater refer to Main Catalogue page 952

## Spare tool Cable - Eater



### Application range

- Cable pull-in tool for SILVYN® RILL PA6 SINUS

### Suitable tools

- SILVYN® RILL PA6 SINUS Main Catalogue Page 811

| Article number          | Article description | Pieces / PU |
|-------------------------|---------------------|-------------|
| <b>Cable Eater tool</b> |                     |             |
| 61830340                | CAT - 08 - PP       | 1           |
| 61830350                | CAT - 15 - PP       | 1           |
| 61830360                | CAT - 20 - PP       | 1           |
| 61830370                | CAT - 25 - PP       | 1           |

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

### Benefits

- High resistance to bases, oils, greases, oil derivatives, solvents containing chlorine

### Application range

- Basic Tie is a multipurpose cable tie for many applications.

### Product features

- Flame retardancy:  
UL 94 class V2.
- Water absorption: 2.5 %  
(50 % relative humidity)

### Approvals



### Info

- The standard cable ties for many applications

### Technical data



**General**  
Dielectric strength:  
50,000 volts/mm  
For higher tensile strength



**Note**  
Melting point: +256 °C



**Material**  
Polyamide 6.6 - halogen-free



**Temperature range**  
-40 °C to +85 °C  
Max. temperature: +110 °C (short-term)



### Note

- Not resistant to phenols
- Limited resistance to acids

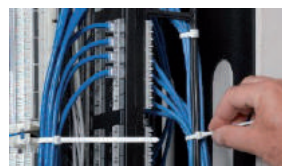
| Article number              | Article designation    | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | PU    |
|-----------------------------|------------------------|-------------|---------------------|-----------------|----------------------|-------|
| <b>Natural colour</b>       |                        |             |                     |                 |                      |       |
| 61831001                    | Basic Tie 98x2.5 nat.  | yes         | 98.0 x 2.5          | 1.0 - 21.0      | 80                   | 1,000 |
| 61831003                    | Basic Tie 160x2.6 nat. | yes         | 160.0 x 2.6         | 1.0 - 40.0      | 80                   | 1,000 |
| 61831004                    | Basic Tie 200x2.6 nat. | yes         | 200.0 x 2.6         | 1.0 - 52.0      | 80                   | 1,000 |
| 61831005                    | Basic Tie 140x3.6 nat. | yes         | 140.0 x 3.6         | 2.0 - 35.0      | 130                  | 1,000 |
| 61831006                    | Basic Tie 200x3.6 nat. | yes         | 200.0 x 3.6         | 2.0 - 50.0      | 130                  | 1,000 |
| 61831007                    | Basic Tie 290x3.6 nat. | yes         | 290.0 x 3.6         | 2.0 - 80.0      | 130                  | 500   |
| 61831013                    | Basic Tie 370x3.6 nat. | yes         | 370.0 x 3.6         | 2.0 - 103.0     | 130                  | 100   |
| 61831009                    | Basic Tie 160x4.5 nat. | yes         | 160.0 x 4.5         | 2.5 - 40.0      | 220                  | 1,000 |
| 61831011                    | Basic Tie 200x4.8 nat. | yes         | 200.0 x 4.8         | 3.0 - 50.0      | 220                  | 1,000 |
| 61831014                    | Basic Tie 290x4.8 nat. | yes         | 290.0 x 4.8         | 3.5 - 79.0      | 220                  | 100   |
| 61831016                    | Basic Tie 360x4.8 nat. | yes         | 360.0 x 4.8         | 3.5 - 103.0     | 220                  | 100   |
| 61831020                    | Basic Tie 240x7.8 nat. | yes         | 240.0 x 7.8         | 3.5 - 63.0      | 540                  | 100   |
| 61831021                    | Basic Tie 300x7.8 nat. | yes         | 300.0 x 7.8         | 4.0 - 80.0      | 540                  | 100   |
| 61831022                    | Basic Tie 365x7.8 nat. | yes         | 365.0 x 7.8         | 8.0 - 100.0     | 540                  | 100   |
| 61831023                    | Basic Tie 450x7.8 nat. | yes         | 450.0 x 7.8         | 35.0 - 130.0    | 540                  | 100   |
| 61831024                    | Basic Tie 540x7.8 nat. | yes         | 540.0 x 7.8         | 35.0 - 158.0    | 540                  | 100   |
| 61831025                    | Basic Tie 750x7.8 nat. | yes         | 750.0 x 7.8         | 35.0 - 200.0    | 540                  | 100   |
| 61831026                    | Basic Tie 780x9.0 nat. | yes         | 780.0 x 9.0         | 32.0 - 233.0    | 700                  | 100   |
| <b>UV-resistant - black</b> |                        |             |                     |                 |                      |       |
| 61831041                    | Basic Tie 98x2.5 bk    | yes         | 98.0 x 2.5          | 1.0 - 21.0      | 80                   | 1,000 |
| 61831043                    | Basic Tie 160x2.6 bk   | yes         | 160.0 x 2.6         | 1.0 - 40.0      | 80                   | 1,000 |
| 61831044                    | Basic Tie 200x2.6 bk   | yes         | 200.0 x 2.6         | 1.0 - 52.0      | 80                   | 1,000 |
| 61831045                    | Basic Tie 140x3.6 bk   | yes         | 140.0 x 3.6         | 2.0 - 35.0      | 130                  | 1,000 |
| 61831046                    | Basic Tie 200x3.6 bk   | yes         | 200.0 x 3.6         | 2.0 - 50.0      | 130                  | 1,000 |
| 61831047                    | Basic Tie 290x3.6 bk   | yes         | 290.0 x 3.6         | 2.0 - 80.0      | 130                  | 500   |
| 61831053                    | Basic Tie 370x3.6 bk   | yes         | 370.0 x 3.6         | 2.0 - 103.0     | 130                  | 100   |
| 61831049                    | Basic Tie 160x4.5 bk   | yes         | 160.0 x 4.5         | 2.5 - 40.0      | 220                  | 1,000 |
| 61831051                    | Basic Tie 200x4.8 bk   | yes         | 200.0 x 4.8         | 3.0 - 50.0      | 220                  | 1,000 |
| 61831054                    | Basic Tie 290x4.8 bk   | yes         | 290.0 x 4.8         | 3.5 - 79.0      | 220                  | 100   |
| 61831056                    | Basic Tie 360x4.8 bk   | yes         | 360.0 x 4.8         | 3.5 - 103.0     | 220                  | 100   |
| 61831060                    | Basic Tie 240x7.8 bk   | yes         | 240.0 x 7.8         | 3.5 - 63.0      | 540                  | 100   |
| 61831061                    | Basic Tie 300x7.8 bk   | yes         | 300.0 x 7.8         | 4.0 - 80.0      | 540                  | 100   |
| 61831062                    | Basic Tie 365x7.8 bk   | yes         | 365.0 x 7.8         | 8.0 - 100.0     | 540                  | 100   |
| 61831063                    | Basic Tie 450x7.8 bk   | yes         | 450.0 x 7.8         | 35.0 - 130.0    | 540                  | 100   |
| 61831064                    | Basic Tie 540x7.8 bk   | yes         | 540.0 x 7.8         | 35.0 - 158.0    | 540                  | 100   |
| 61831065                    | Basic Tie 750x7.8 bk   | yes         | 750.0 x 7.8         | 35.0 - 200.0    | 540                  | 100   |
| 61831066                    | Basic Tie 780x9.0 bk   | yes         | 780.0 x 9.0         | 32.0 - 233.0    | 700                  | 100   |

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

## Twist Tail™ cable tie



Twist Tail™ cable tie



### Benefits

- The round, flat, edge-free tie-heads allow assembly without getting caught and protect against injury and damage at adjacent cables and components.
- The cable tie can be gripped securely for easy tightening.
- In addition, the safety-grip tab prevents the tie from slipping out during assembly, and secures it before tightening by hand.

### Application range

- Industrial cable ties for quick and secure assembly
- General purpose applications, indoors and outdoors

### Approvals



### Design

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



### Info

- No special tool needed
- Worked instantly

### Technical data



#### General

Tensile strength: 133 N



#### Approvals

Flammability class: UL 94 V-2/polyamide 6.6



#### Note

Halogen-free  
silicone-free

#### Colour delivered

Black (RAL 9005), UV-resistant  
white

#### Material

Polyamide 6.6



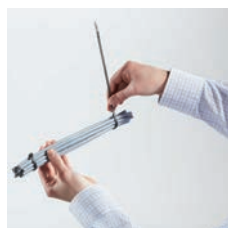
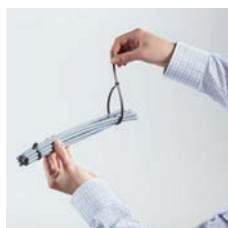
#### Temperature range

-40°C to +85°C

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

TWIST TAIL™ is a registered trademark of Thomas &amp; Betts

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





# TY - FAST®- UV-resistant cable ties / TY - FAST® standard cable ties



TY - FAST® standard cable ties

## Benefits

### TY - FAST® standard cable ties

- TY-FAST® cable ties have low threading and high tying forces due to their integrated lock.
- The round, flat, edge-free tie-heads allow assembly without getting caught and protect against injury and damage at adjacent cables and components.
- The raised tie end and the “SURE-GRIP” gripping profile on both sides of the tie end offer improved grip.
- The cable tie can be gripped securely for easy tightening.
- In addition, the safety-grip tab prevents the tie from slipping out during assembly, and secures it before tightening by hand or with a tool.

## Application range

### TY - FAST® standard cable ties

- Cable ties for industrial applications
- Industrial cable ties for quick and secure assembly

### TY - FAST®- UV-resistant cable ties

- Cable ties for industrial applications

## Approvals



### TY - FAST® standard cable ties

- File Number E49405, see table

## Design

### TY - FAST®- UV-resistant cable ties

- TY-FAST® cable ties are also available in UV-resistant and weather-resistant design, in black.
- The description for these cable ties are marked with “x”.

## Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to Main Catalogue page 962

## Technical data



### Approvals

#### TY - FAST® standard cable ties

Flammability class: UL 94 V-2/polyamide 6.6



### Info

#### TY - FAST®- UV-resistant cable ties

In black colour UV-resistant and weatherproofed  
Halogen-free  
Colour delivered



### Colour delivered

TY - FAST®- UV-resistant cable ties  
Black



### Material

#### TY - FAST® standard cable ties

Polyamide 6.6 - halogen-free

#### TY - FAST®- UV-resistant cable ties

Polyamide 6.6



### Temperature range

-40 °C to +80 °C

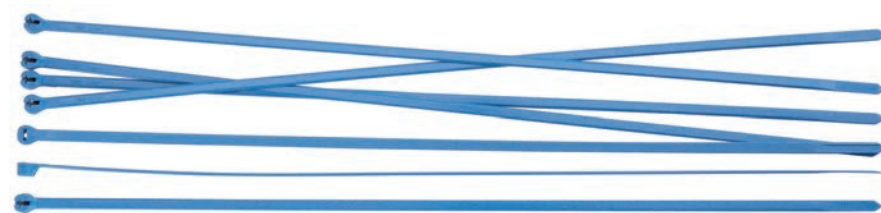
| Article number              | Article designation | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | PU    |
|-----------------------------|---------------------|-------------|---------------------|-----------------|----------------------|-------|
| <b>Natural colour</b>       |                     |             |                     |                 |                      |       |
| 61810350                    | TY100-18            | yes         | 111.0 x 2.4         | 25.0            | 80.0                 | 1,000 |
| 61810360                    | TY125-18            | yes         | 136.0 x 2.4         | 32.0            | 80.0                 | 1,000 |
| 61810370                    | TY200-18            | yes         | 197.0 x 2.4         | 50.0            | 80.0                 | 1,000 |
| 61810380                    | TY125-40            | yes         | 142.0 x 3.6         | 32.0            | 180.0                | 1,000 |
| 61810390                    | TY200-40            | yes         | 205.0 x 3.6         | 50.0            | 180.0                | 1,000 |
| 61810400                    | TY300-40            | yes         | 290.0 x 3.6         | 76.0            | 180.0                | 1,000 |
| 61810410                    | TY175-50            | yes         | 186.0 x 4.7         | 44.0            | 220.0                | 1,000 |
| 61810420                    | TY300-50            | yes         | 291.0 x 4.7         | 76.0            | 220.0                | 1,000 |
| 61810430                    | TY400-50            | yes         | 368.0 x 4.7         | 102.0           | 220.0                | 1,000 |
| 61810440                    | TY200-120           | no          | 219.0 x 7.6         | 50.0            | 540.0                | 500   |
| 61810450                    | TY400-120           | yes         | 365.0 x 7.6         | 102.0           | 540.0                | 500   |
| <b>UV-resistant - black</b> |                     |             |                     |                 |                      |       |
| 61810460                    | TY100-18x           | yes         | 111.0 x 2.4         | 25.0            | 80.0                 | 1,000 |
| 61810470                    | TY125-18x           | yes         | 136.0 x 2.4         | 32.0            | 80.0                 | 1,000 |
| 61810480                    | TY200-18x           | yes         | 197.0 x 2.4         | 50.0            | 80.0                 | 1,000 |
| 61810490                    | TY125-40x           | yes         | 142.0 x 3.6         | 32.0            | 180.0                | 1,000 |
| 61810500                    | TY200-40x           | yes         | 205.0 x 3.6         | 50.0            | 180.0                | 1,000 |
| 61810510                    | TY300-40x           | yes         | 290.0 x 3.6         | 76.0            | 180.0                | 1,000 |
| 61810520                    | TY175-50x           | yes         | 186.0 x 4.7         | 44.0            | 220.0                | 1,000 |
| 61810530                    | TY300-50x           | yes         | 291.0 x 4.7         | 76.0            | 220.0                | 1,000 |
| 61810540                    | TY400-50x           | yes         | 368.0 x 4.7         | 102.0           | 220.0                | 1,000 |
| 61810550                    | TY200-120x          | no          | 219.0 x 7.6         | 50.0            | 540.0                | 500   |
| 61810560                    | TY400-120x          | no          | 365.0 x 7.6         | 102.0           | 540.0                | 500   |

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

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

New

## TY-RAP® detectable cable ties



TY-RAP® Detectable cable ties

## ■ Benefits

- Detectable cable ties with international FDA and HACCP hygiene monitoring regulations
- The round, flat, edge-free tie-heads allow assembly without getting caught and protect against injury and damage at adjacent cables and components.
- The cable tie can be gripped securely for easy tightening.
- In addition, the safety-grip tab prevents the tie from slipping out during assembly, and secures it before tightening by hand or with a tool.

## ■ Application range

- Food and beverage industry, especially for production and processing equipment of milk and meat products
- Applications with strong chemical influences
- Pharmaceutical production

## ■ Product features

- The new Ty-Rap® cable ties are designed with a unique compound that activate metal detectors, X-ray and visual recognition systems.

## ■ Approvals



## ■ Note

- Storage requirements: nylon (polyamide) is, by its nature, susceptible to external influences. Cable ties are mechanically moistened in order to ensure optimal use. As such, they must be stored in a cool, dry location and must not be exposed to direct sunlight. Cable ties are packed in plastic bags to retain moisture; these should remain closed until the cable ties are used.

## ■ Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to Main Catalogue page 962

## ■ Technical data



## Approvals

Flammability class: UL 94 HB/polypropylene  
Flammability class: UL 94 V-2/polyamide 6.6



## Colour delivered

Blue



## Material

Polyamide 6.6 or polypropylene  
Halogen-free and silicone-free



## Temperature range

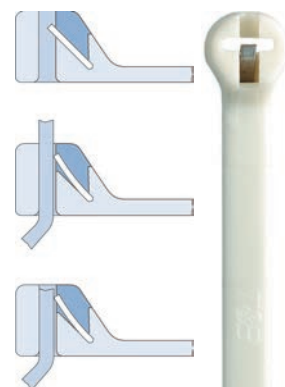
-40°C up to +85°C

| Article number                  | Article description         | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | Pieces / PU |
|---------------------------------|-----------------------------|-------------|---------------------|-----------------|----------------------|-------------|
| <b>Detectable polyamide 6.6</b> |                             |             |                     |                 |                      |             |
| 61723351                        | Cable tie TY-RAP TY523M-NDT | no          | 92 x 2              | 2.0 - 6.0       | 80                   | 100         |
| 61723352                        | Cable tie TY-RAP TY525M-NDT | no          | 186 x 4             | 3.5 - 45.0      | 220                  | 100         |
| 61723353                        | Cable tie TY-RAP TY528M-NDT | no          | 360 x 4             | 3.5 - 102.0     | 220                  | 100         |
| 61723354                        | Cable tie TY-RAP TY527M-NDT | no          | 340 x 7             | 6.0 - 90.0      | 540                  | 50          |
| <b>Detectable polypropylene</b> |                             |             |                     |                 |                      |             |
| 61723355                        | Cable tie TY-RAP TY523M-PDT | no          | 92 x 2              | 2.0 - 16.0      | 50                   | 100         |
| 61723356                        | Cable tie TY-RAP TY525M-PDT | no          | 186 x 4             | 3.5 - 45.0      | 130                  | 100         |
| 61723357                        | Cable tie TY-RAP TY528M-PDT | no          | 360 x 4             | 3.5 - 102.0     | 130                  | 100         |
| 61723358                        | Cable tie TY-RAP TY527M-PDT | no          | 340 x 7             | 6.0 - 90.0      | 270                  | 50          |

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

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

## TY- RAP® standard cable ties



TY- RAP® standard cable ties

### Benefits

- The blade ensures secure and durable binding
- The high strength is constant even under harsh conditions: extreme temperature ranges, humidity and extreme cold.
- The lock is also resistant to shocks and vibrations.

### Application range

- Good quality cable ties with steel blade

### Product features

- The steel blade is fixed to the tie head and is made from corrosion-resistant, anti-magnetic steel (type 316).

### Approvals



- File Number E49405, see table

### Design

- Cable ties with steel blade
- Standard colour: natural

### Included

- Items provided with the add-in "B" are supplied in a handy workbox, where the cable ties are arranged properly.
- The TY-RAP® is packed in a recyclable plastic bag.

### Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to Main Catalogue page 962

### Technical data

- Note**  
Steel blade: anti-magnetic steel 316
- Material**  
Polyamide 6.6  
Halogen-free
- Temperature range**  
-40 °C to +80 °C

| Article number          | Article description | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | Pieces / PU |
|-------------------------|---------------------|-------------|---------------------|-----------------|----------------------|-------------|
| <b>TY-RAP® Standard</b> |                     |             |                     |                 |                      |             |
| 61715000                | TYB* 23 M           | no          | 92.0 x 2.4          | 2.0 - 16.0      | 80.0                 | 1,000       |
| 61716250                | TY 232 M            | yes         | 200.0 x 2.4         | 2.0 - 50.0      | 80.0                 | 1,000       |
| 61716310                | TY 234 M            | yes         | 356.0 x 2.4         | 2.0 - 102.0     | 80.0                 | 1,000       |
| 61715060                | TYB* 24 M           | no          | 140.0 x 3.6         | 2.0 - 29.0      | 180.0                | 1,000       |
| 61716370                | TY 242 M            | yes         | 208.0 x 3.6         | 2.0 - 50.0      | 180.0                | 1,000       |
| 61715180                | TY 26 M             | yes         | 281.0 x 3.6         | 2.0 - 76.0      | 180.0                | 1,000       |
| 61716430                | TY 244 M            | yes         | 368.0 x 3.6         | 2.0 - 103.0     | 180.0                | 1,000       |
| 61715120                | TYB* 25 M           | no          | 186.0 x 4.8         | 3.5 - 45.0      | 220.0                | 1,000       |
| 61716490                | TY 253 M            | yes         | 293.0 x 4.8         | 3.5 - 78.0      | 220.0                | 1,000       |
| 61715300                | TY 28 M             | yes         | 360.0 x 4.8         | 3.5 - 102.0     | 220.0                | 1,000       |
| 61716550                | TY 272 M            | yes         | 223.0 x 7.6         | 6.0 - 50.0      | 540.0                | 500         |
| 61715240                | TY 27 M             | yes         | 340.0 x 7.0         | 6.0 - 90.0      | 540.0                | 500         |
| 61715360                | TY 29 M             | yes         | 762.0 x 7.6         | 6.0 - 229.0     | 540.0                | 500         |

B = box, otherwise plastic bag

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TY-RAP® Standard in other colours are available upon request (see description).

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

## TY- RAP® heat-resistant cable ties



## ■ Benefits

- Contains all the advantages of TY-RAP®, with higher heat-resistance

## ■ Application range

- This temperature-resistant cable tie can be used in areas exposed to high temperatures such as electrical heating devices or heating installations.

## ■ Approvals



- File Number E49405, see table

## ■ Design

- Without pressing dies and die holders

## ■ Technical data



## ■ Approvals

Flammability class: UL 94 V-2/polyamide 6.6



## ■ Info

Halogen-free and silicone-free



## ■ Material

Heat-resistant polyamide 6.6



## ■ Temperature range

-40°C to +100°C

## ■ Suitable tools

- TY-GUN ERG 50 / TY-GUN ERG 120 cable tie pliers refer to Main Catalogue page 962

| Article number                | Article description | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | N) Pieces / PU |
|-------------------------------|---------------------|-------------|---------------------|-----------------|----------------------|----------------|
| <b>TY-RAP® heat-resistant</b> |                     |             |                     |                 |                      |                |
| 61723470                      | TYH 23 M            | yes         | 92.0 x 2.4          | 2.0 - 16.0      | 80.0                 | 1,000          |
| 61723460                      | TYH 232 M           | yes         | 200.0 x 2.4         | 2.0 - 50.0      | 80.0                 | 1,000          |
| 61723440                      | TYH 24 M            | yes         | 140.0 x 3.6         | 2.0 - 29.0      | 180.0                | 1,000          |
| 61723430                      | TYH 242 M           | no          | 208.0 x 3.6         | 2.0 - 50.0      | 180.0                | 1,000          |
| 61723410                      | TYH 26 M            | yes         | 281.0 x 3.6         | 2.0 - 76.0      | 180.0                | 1,000          |
| 61723420                      | TYH 25 M            | yes         | 186.0 x 4.8         | 3.5 - 45.0      | 220.0                | 1,000          |
| 61723380                      | TYH 28 M            | yes         | 360.0 x 4.8         | 3.5 - 102.0     | 220.0                | 1,000          |
| 61723390                      | TYH 272 M           | no          | 223.0 x 7.6         | 6.0 - 50.0      | 540.0                | 500            |
| 61723400                      | TYH 27 M            | yes         | 340.0 x 7.0         | 6.0 - 90.0      | 540.0                | 500            |
| 61723350                      | TYH 29 M            | no          | 762.0 x 7.6         | 6.0 - 229.0     | 540.0                | 500            |

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## TY- RAP® weather-proof, UV-stabilised



## ■ Benefits

- Weather-resistant for harsh environmental conditions

## ■ Application range

- The TY-RAP® weather-resistant product is used outdoors for installation and maintenance of power plants.

## ■ Product features

- Heat and UV-resistant TY- RAP®

## ■ Approvals



- File Number E49405, see table



## ■ Info

- Good quality cable ties with steel blade

## ■ Technical data



## ■ Colour delivered

UV-resistant - black



## ■ Material

Polyamide 6.6 - halogen-free



## ■ Temperature range

-40°C to +85°C

| Article number                   | Article description | UL approval | Length x width (mm) | Bundling Ø (mm) | Tensile strength (N) | N) Pieces / PU |
|----------------------------------|---------------------|-------------|---------------------|-----------------|----------------------|----------------|
| <b>TY-RAP® weather-resistant</b> |                     |             |                     |                 |                      |                |
| 61723010                         | TYB* 23 MX          | no          | 92.0 x 2.4          | 2.0 - 16.0      | 80.0                 | 1,000          |
| 61723110                         | TY 232 MX           | no          | 200.0 x 2.4         | 2.0 - 50.0      | 80.0                 | 1,000          |
| 61723120                         | TY 234 MX           | no          | 356.0 x 2.4         | 2.0 - 102.0     | 80.0                 | 1,000          |
| 61723020                         | TYB* 24 MX          | no          | 140.0 x 3.6         | 2.0 - 29.0      | 180.0                | 1,000          |
| 61723130                         | TY 242 MX           | yes         | 208.0 x 3.6         | 2.0 - 50.0      | 180.0                | 1,000          |
| 61723040                         | TY 26 MX            | yes         | 281.0 x 3.6         | 2.0 - 76.0      | 180.0                | 1,000          |
| 61723140                         | TY 244 MX           | no          | 368.0 x 3.6         | 2.0 - 103.0     | 180.0                | 1,000          |
| 61723030                         | TYB* 25 MX          | no          | 186.0 x 4.8         | 3.5 - 45.0      | 220.0                | 1,000          |
| 61723150                         | TY 253 MX           | no          | 293.0 x 4.8         | 3.5 - 78.0      | 220.0                | 1,000          |
| 61723060                         | TY 28 MX            | yes         | 360.0 x 4.8         | 3.5 - 102.0     | 220.0                | 1,000          |
| 61723160                         | TY 272 MX           | no          | 223.0 x 7.6         | 6.0 - 50.0      | 540.0                | 500            |
| 61723050                         | TY 27 MX            | yes         | 340.0 x 7.0         | 6.0 - 90.0      | 540.0                | 500            |
| 61723070                         | TY 29 MX            | no          | 762.0 x 7.6         | 6.0 - 229.0     | 540.0                | 500            |

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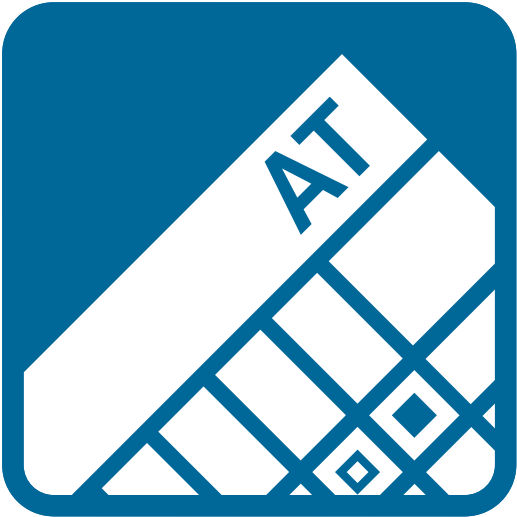
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Appendix

Technical tables

|                                             |     |
|---------------------------------------------|-----|
| T6: type designations                       | 134 |
| T16: Anglo-American dimensions              | 135 |
| T19: laying guidelines for cables and wires | 136 |
| Power rating                                | 137 |

Appendix





## Type designations for telecommunications cables and fibre-optic cables

## Fibre-optic cables



## 1. Basic type

|          |                                       |
|----------|---------------------------------------|
| A        | Outdoor cable                         |
| AT       | Outdoor cable, divisible              |
| J        | Indoor cable                          |
| J/A or U | Indoor/outdoor cable, universal cable |

## 2. Fibres

|   |                       |
|---|-----------------------|
| B | Loose tube, unfilled  |
| D | Loose tube, filled    |
| V | Tight-buffered fibres |

## 3. Design elements

|   |                         |
|---|-------------------------|
| F | Petroleum jelly filling |
| Q | Swelling tape           |

## 4. Further design elements

|   |                             |
|---|-----------------------------|
| S | Metal element in cable core |
|---|-----------------------------|

## 5. Sheath

|        |                                                    |
|--------|----------------------------------------------------|
| 2Y     | PE sheath                                          |
| 11Y    | PUR sheath                                         |
| H      | Halogen-free sheath                                |
| (ZM)   | With metallic strain relief elements               |
| (ZN)   | With non-metallic strain relief elements           |
| (ZN)2Y | PE sheath with non-metallic strain relief elements |

## 6. Armouring

|        |                                        |
|--------|----------------------------------------|
| B      | Armouring                              |
| B2Y    | Armouring with PE casing               |
| (BN)   | Glass yarn armouring                   |
| (SG)   | Steel sheath                           |
| (SR)   | Corrugated steel sheath                |
| (SR)2Y | Corrugated steel sheath with PE casing |

## 7. Number of fibres

Number of fibres

## 8. Fibre type

|   |                                     |
|---|-------------------------------------|
| E | Monomode fibre glass/glass (SM GOF) |
| G | Gradient fibre glass/glass (MM GOF) |
| K | Stepped fibre glass/plastic (PCF)   |
| P | Polymer optical fibre/plastic (POF) |

## 9. Core diameter/fibre sheath diameter

|          |                            |
|----------|----------------------------|
| 50/125   | Multimode glass fibre      |
| 62,5/125 | Multimode glass fibre      |
| 9/125    | Monomode glass fibre       |
| 200/230  | Plastic-coated glass fibre |
| 980/1000 | Polymer optical fibre      |

## 10. Category: fibre quality

|     |                                        |
|-----|----------------------------------------|
| OM3 | For 50/125 OM3 multimode fibres        |
| OM2 | For 50/125 OM2 multimode fibres        |
| OM1 | For 62.5/125 OM1 multimode fibres      |
| OS2 | For 9/125 OS2 monomode fibres (G 652D) |

## EXAMPLE 1: A-DQ(ZN)(SR)2Y 12G 50/125 OM3

Outdoor cable with corrugated steel sheath, central loose tube, non-metallic strain relief made of glass yarn, 12 fibres, 50/125 µm OM3 multimode fibres

## EXAMPLE 2: J-V2Y(ZN)11Y 2P 980/1000

Plastic fibre-optic cable, two-fibre (duplex), indoor cable with PE inner sheath, non-metallic strain relief, PUR outer sheath

## Type designations for UNITRONIC® field bus



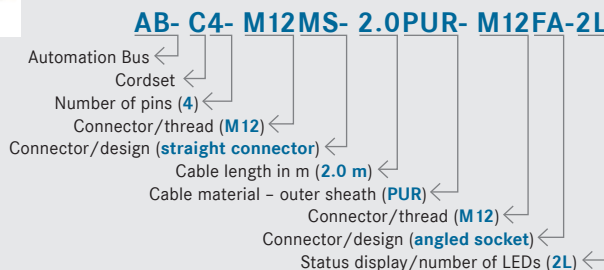
## S/A cables

e.g. item no. 22260339

Connection on left

Cable

Connection on right



MS – straight connector

MA – angled connector

FS – straight socket

FA – angled socket

M8, M12, M16, M23 – thread

L – status display/LEDs

SH – screened version

VA – stainless steel knurl

M12Y – M12 Y connector

B – bridged

3-, 4-, 5-, 8-, .. number of pins

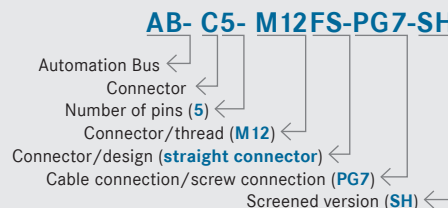
A, AD, B, BI, C, CI – valve connector type

S – valve connector with Z diode

SV – valve connector with varistor



## Ready-made connector e.g. item no. 22260127



MS – straight connector

MA – angled connector

FS – straight socket

FA – angled socket

P – piercing connection

SH – screened version

M8, M12, M16, M23 – thread

3-, 4-, 5-, 8-, .. number of pins

PG7, PG9, PG11, PG13 – cable connection

F0.34 (fast connection, max. 0.34 mm² cond. cross-sec.)

F0.75 (fast connection, max. 0.75 mm² cond. cross-sec.)

M16-0.5 (M16 flush-type conn. with 0.5 m PUR strand)

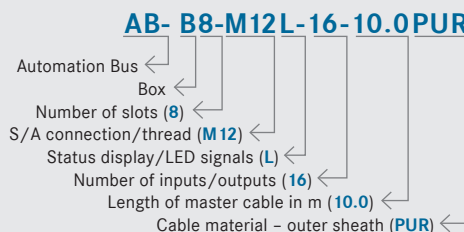
PG9-0.5 (PG9 flush-type conn. with 0.5 m PUR strand)

DSI – flush-type connector (rear wall mounting)

PO – flush-type connector (can be positioned)



## S/A passive distributor box e.g. item no. 22260025



INFO: S/A box with double assignment →  $\frac{(\text{number of inputs/outputs})}{(\text{number of slots})} = 2$

PUR – distributor box with perm. connected master cable (PUR)

C – distributor box with master cable conn. (pluggable screw connection)

M8L – distributor box with M8 slots and LED signals

M16 – distributor box with M16 master cable conn.

M12 – distributor box with M12 master cable conn.

Further abbreviations:

AB-PC – Automation Bus Power Cable

AB-PB – Automation Bus PROFIBUS

AB-DN – Automation Bus DeviceNet

AB-CAN – Automation Bus CAN

AB-ASI – Automation Bus AS-Interface

AB-ASI-J – AS-Interface distributor

DI – Digital Inputs

DO – Digital Outputs

R – Relay outputs





## US dimension units for cables – comparison with metric dimensions

In North American markets, cable cross-sections are usually stated as AWG (American Wire Gauge) sizes or, for large cable cross-sections (above AWG 4/0), using the unit “kcmil”. You will find these units in the relevant standards for designing cables by current rating.

Multi-standard cables must comply with both the specifications of the metric system (in which the cross-section in mm<sup>2</sup> is stated as the nominal size) as well the requirements of the AWG system.

For this reason, both systems are compared below based on the nominal size.

**Please note that exact correspondences between the two systems do not exist** as the specifications of the two systems differ in terms of the cross-section and conductor resistance. The following table can be used to help you when selecting the correct nominal cross-section.

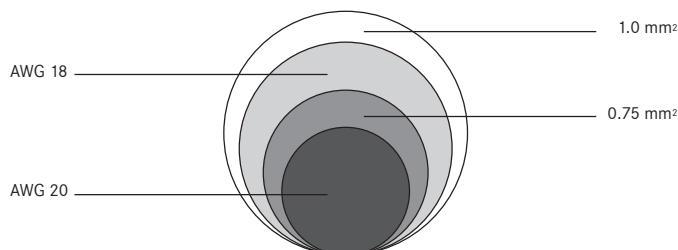
Standards required as part of project planning, such as UL1581 or IEC 60228 (VDE 0295), must be applied accordingly.

Please note that when selecting appropriate connecting elements such as conductor end sleeves, the **actual** conductor cross-section is decisive. This is stated on the relevant product page.

| Column 1a                             | Column 1b  | Column 2             | Column 3                                                            | Column 4                              | Column 5a                                                  | Column 5b |
|---------------------------------------|------------|----------------------|---------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------|-----------|
| North American cross-section required |            | Geometric conversion | Metric nominal cross-section that meets the electrical requirements | Metric nominal cross-section required | North American size that meets the electrical requirements |           |
| AWG                                   | kcmil      | mm <sup>2</sup>      | mm <sup>2</sup>                                                     | mm <sup>2</sup>                       | AWG                                                        | kcmil     |
|                                       | <b>750</b> | 380.03               | <b>400</b>                                                          | 400                                   |                                                            | 800       |
|                                       | <b>500</b> | 253.35               | <b>300</b>                                                          | 300                                   |                                                            | 750       |
|                                       | 450        | 228.02               | <b>240</b>                                                          | 240                                   |                                                            | 500       |
|                                       | <b>400</b> | 202.68               |                                                                     |                                       |                                                            | 450       |
|                                       | 350        | 177.35               | <b>185</b>                                                          | 185                                   |                                                            | 400       |
|                                       | <b>300</b> | 152.01               |                                                                     |                                       |                                                            | 350       |
|                                       | <b>250</b> | 126.68               | <b>150</b>                                                          | 150                                   |                                                            | 300       |
| <b>4/0</b>                            |            | 107.22               | <b>120</b>                                                          | 120                                   |                                                            | 250       |
| <b>3/0</b>                            |            | 85.01                | <b>95</b>                                                           | 95                                    | <b>4/0</b>                                                 |           |
| <b>2/0</b>                            |            | 67.43                | <b>70</b>                                                           | 70                                    | <b>3/0</b>                                                 |           |
| <b>1/0</b>                            |            | 53.49                |                                                                     |                                       | <b>2/0</b>                                                 |           |
| <b>1</b>                              |            | 42.41                | <b>50</b>                                                           | 50                                    | <b>1/0</b>                                                 |           |
| <b>2</b>                              |            | 33.62                | <b>35</b>                                                           | 35                                    | <b>1</b>                                                   |           |
| <b>3</b>                              |            | 26.67                |                                                                     |                                       | <b>2</b>                                                   |           |
| <b>4</b>                              |            | 21.15                | <b>25</b>                                                           | 25                                    | <b>3</b>                                                   |           |
| <b>5</b>                              |            | 16.77                |                                                                     |                                       | <b>4</b>                                                   |           |
| <b>6</b>                              |            | 13.30                | <b>16</b>                                                           | 16                                    | <b>5</b>                                                   |           |
| <b>7</b>                              |            | 10.55                |                                                                     |                                       | <b>6</b>                                                   |           |
| <b>8</b>                              |            | 8.37                 | <b>10</b>                                                           | 10                                    | <b>7</b>                                                   |           |

| Column 1a                             | Column 1b | Column 2             | Column 3                                                            | Column 4                              | Column 5a                                                  | Column 5b |
|---------------------------------------|-----------|----------------------|---------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------|-----------|
| North American cross-section required |           | Geometric conversion | Metric nominal cross-section that meets the electrical requirements | Metric nominal cross-section required | North American size that meets the electrical requirements |           |
| AWG                                   | kcmil     | mm <sup>2</sup>      | mm <sup>2</sup>                                                     | mm <sup>2</sup>                       | AWG                                                        | kcmil     |
| <b>9</b>                              |           | 6.63                 |                                                                     |                                       | <b>8</b>                                                   |           |
| <b>10</b>                             |           | 5.26                 | <b>6</b>                                                            | 6                                     | <b>9</b>                                                   |           |
| <b>11</b>                             |           | 4.17                 |                                                                     |                                       | <b>10</b>                                                  |           |
| <b>12</b>                             |           | 3.31                 | <b>4</b>                                                            | 4                                     | <b>11</b>                                                  |           |
| <b>13</b>                             |           | 2.62                 |                                                                     |                                       | <b>12</b>                                                  |           |
| <b>14</b>                             |           | 2.08                 | <b>2.5</b>                                                          | 2.5                                   | <b>13</b>                                                  |           |
| <b>15</b>                             |           | 1.65                 |                                                                     |                                       | <b>14</b>                                                  |           |
| <b>16</b>                             |           | 1.31                 | <b>1.5</b>                                                          | 1.5                                   | <b>15</b>                                                  |           |
| <b>17</b>                             |           | 1.04                 |                                                                     |                                       | <b>16</b>                                                  |           |
| <b>18</b>                             |           | 0.82                 | <b>1</b>                                                            | 1                                     | <b>17</b>                                                  |           |
| <b>19</b>                             |           | 0.65                 | <b>0.75</b>                                                         | 0.75                                  | <b>18</b>                                                  |           |
| <b>20</b>                             |           | 0.52                 |                                                                     |                                       | <b>19</b>                                                  |           |
| <b>21</b>                             |           | 0.41                 | <b>0.5</b>                                                          | 0.5                                   | <b>20</b>                                                  |           |
| <b>22</b>                             |           | 0.33                 | <b>0.34</b>                                                         | 0.34                                  | <b>21</b>                                                  |           |
| <b>23</b>                             |           | 0.26                 |                                                                     |                                       | <b>22</b>                                                  |           |
| <b>24</b>                             |           | 0.20                 | <b>0.25</b>                                                         | 0.25                                  | <b>23</b>                                                  |           |
| <b>25</b>                             |           | 0.16                 |                                                                     |                                       | <b>24</b>                                                  |           |
| <b>26</b>                             |           | 0.13                 | <b>0.14</b>                                                         | 0.14                                  | <b>25</b>                                                  |           |

### Principle of cross-section figures



#### EXAMPLE 1:

**The electro-technical project planning requirements as per North-American standards stipulate that you require a cable of AWG 20.**

The relevant product page in the catalogue does not list any cables with this AWG size. A size of AWG 20 is listed in the above table in column 1a. Column 3 lists the metric nominal cross-section that, as a minimum, meets the electrical requirements of size AWG 20. Thus, you will require a cable with a nominal cross-section of 0.75 mm<sup>2</sup>.

#### EXAMPLE 2:

**The electro-technical project planning requirements as per European standards stipulate that you require a cable of 0.75 mm<sup>2</sup>.**

The product page in the catalogue lists only AWG figures or large metric cross-sections. Nominal cross-section 0.75 mm<sup>2</sup> is listed in the above table in column 4. Column 5a lists the AWG size that, at a minimum, meets the electrical requirements of a nominal cross-section of 0.75 mm<sup>2</sup>. Thus, you will require a cable with size AWG 18.



## Laying guidelines for cables and wires

Cables must be selected in accordance with the laying and operating conditions. They must be protected against mechanical, thermal and chemical effects as well against moisture penetrating through the cable ends.

Insulated power cables must not be laid underground. Temporary covering of NSSHÖU rubber-sheathed cables or trailing cables with soil, sand or a similar material, e.g. on building sites, does not constitute underground installation.

Fasteners and fixtures must not cause any damage to fixed wires and cables. Where cables or wires running horizontally along walls or ceilings are fixed using clips, the following guidelines regarding clip spacing must be observed:

For non-reinforced cables and wires, 20 x outside diameter.

These spacing guidelines also apply when laying cables in conduits and racks. When laying cables vertically, the spacing between clips can be increased depending on the type of cable or clip.

When connecting flexible cables (e.g. ÖLFLEX® cables, UNITRONIC® cables) to portable power consumers, there must be no strain or thrust at the insertion points and the cables must be secured against twisting and kinking. Outer cable sheaths must not be damaged at the insertion points or by the strain relief devices. Standard version flexible PVC cables are not designed for outdoor use.

Flexible rubber-sheathed cables (e.g. ÖLFLEX® CRANE cables) are only suitable for permanent outdoor use if their outer sheath is made of a compound, generally based on polychloroprene (NEOPRENE®). Special cables must be deployed for permanent underwater use.

### Thermal stress

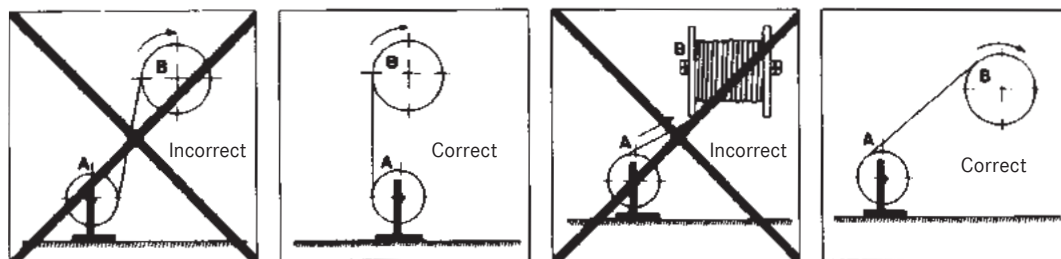
The temperature limits for the respective cable designs can be found in the technical data. The upper temperature limits must not be exceeded as a result of the cable heating up due to current heat and thermal environmental factors. The lower temperature limits denote the lowest permitted ambient temperature.

### Tensile strain

Tensile strain on the conductor should be as low as possible. The following tensile strains for conductors must not be exceeded for cables.

- When laying and operating cables for portable equipment: 15 N per mm<sup>2</sup> conductor cross-section; this does not include screening, concentric conductors and divided protective conductors. In the case of cables that are subjected to dynamic stresses, e.g. in crane systems with high acceleration or power chains subject to frequent movement, appropriate measures must be taken, e.g. enlargement of the bending radius in individual cases. A shorter service life may be expected.
- Cables for static installation. When laying permanent cables, 50 N per mm<sup>2</sup> conductor cross-section.
- For fibre optic cables, BUS, LAN, industrial and Ethernet cables, the respective permitted strain must be observed. These values can be found in the product data sheets or are available on request.

For more information on this subject, see tables T3, T4 and T5.



Winding and unwinding cables



## Power rating

**Table A1. Current rating**

| Conductor cross-section area mm <sup>2</sup> | Current rating single cable A |
|----------------------------------------------|-------------------------------|
| 1.0                                          | 26                            |
| 1.5                                          | 32                            |
| 2.5                                          | 43                            |
| 4                                            | 59                            |
| 6                                            | 77                            |
| 10                                           | 110                           |
| 16                                           | 142                           |
| 25                                           | 194                           |
| 35                                           | 245                           |
| 50                                           | 310                           |
| 70                                           | 387                           |
| 95                                           | 464                           |
| 120                                          | 548                           |
| 150                                          | 632                           |
| 185                                          | 722                           |
| 240                                          | 871                           |
| 300                                          | 1000                          |
| 400                                          | 1226                          |

These rating are applicable to a single cable install in 'free air' with unrestricted ventilation.

They are based upon a 45°C ambient air temperature with a maximum conductor operating temperature of 120°C.

**Table A2. Derating factors for other ambient temperature**

| Temperature °C | Factor K1 |
|----------------|-----------|
| 30             | 1.15      |
| 35             | 1.10      |
| 40             | 1.05      |
| 45             | 1.00      |
| 50             | 0.94      |
| 55             | 0.88      |
| 60             | 0.81      |
| 65             | 0.74      |
| 70             | 0.66      |
| 75             | 0.57      |
| 80             | 0.47      |
| 85             | 0.33      |

**Table A3. Correction factors for other ambient temperatures**

| Temperature °C | Factor K1 |
|----------------|-----------|
| 90             | 0.78      |
| 105            | 0.89      |
| 120            | 1.00      |
| 140            | 1.12      |
| 150            | 1.18      |

**Table A4. Multi conductors**

| No. of conductor | Factor K1 |
|------------------|-----------|
| 2~4              | 0.85      |
| 5~8              | 0.8       |
| 9~13             | 0.75      |
| 14~20            | 0.7       |



## Short current

Table 1. Recommended short-circuit current ratings

| Conductor cross-section area<br>mm <sup>2</sup> | Current<br>A |
|-------------------------------------------------|--------------|
| 1.0                                             | 122          |
| 1.5                                             | 183          |
| 2.5                                             | 305          |
| 4                                               | 488          |
| 6                                               | 732          |
| 10                                              | 1220         |
| 16                                              | 1950         |
| 25                                              | 3050         |
| 35                                              | 4270         |
| 50                                              | 6100         |
| 70                                              | 8540         |
| 95                                              | 11590        |
| 120                                             | 14640        |
| 150                                             | 18300        |
| 185                                             | 22570        |
| 240                                             | 29280        |
| 300                                             | 36600        |
| 400                                             | 48800        |

The tabulated values of short circuit current are applicable to standard wall cables to EN 50264 and are based upon a duration of current flow of 1 s.

It is assumed the cable has an initial conductor of 90°C and that the final conductor temperature will be limited to 200°C.

The currents for short-circuits of different durations can be calculated using the following formula:

$$I = \frac{K \times S}{t^{0.5}}$$

where

$I$  = maximum permissible short circuit current (r.m.s.);

$K$  = constant ( = 122);

$S$  = nominal cross sectional area of the conductor (mm<sup>2</sup>);

$t$  = duration of short circuit (seconds) with a maximum of 5 s.

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

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

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