

ÖLFLEX®

UNITRONIC®

HITRONIC®

SKINTOP®

SILVYN®

EPIC®

FLEXIMARK®

ETHERLINE®



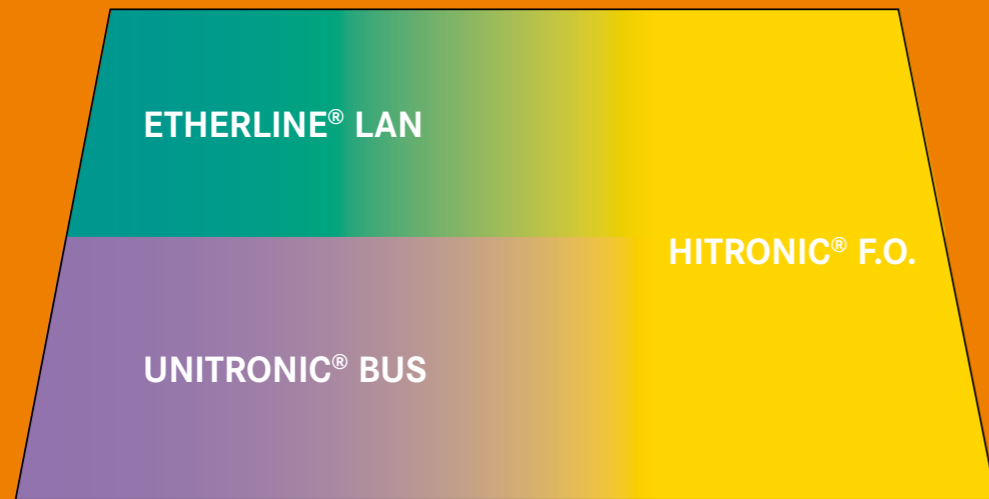
Find it quicker
The Lapp Data Cable Guide!

 **LAPP GROUP**

U.I. Lapp GmbH
Schulze-Delitzsch-Straße 25 • D-70565 Stuttgart
Phone: 0049 (0)711/7838 - 2670 • Fax: 0049 (0)711/7838 - 4920
www.lappkabel.de • info@lappkabel.de

 **LAPP GROUP**

Product and brand name



Legend

| | |
|--------------------|---|
| AS-i | AS-INTERFACE Fieldbus |
| AWG | American Wire Gauge (coding for wire diameter) |
| BK | black outer sheath |
| BU | blue outer sheath |
| CAN | Controller Area Network |
| COMBI IBS | Installation remote bus cable for INTERBUS |
| DUPLEX | two fibres |
| FC | Fast Connect (screwless) |
| FD | suitable for power chains |
| FIP | Factory Instrumentation Protocol Fieldbus |
| FRNC | Flame Retardant Non Corrosive |
| F/UTP (FTP) | Foiled Twisted Pair |
| G | rubber outer sheath (EPDM – Ethylene Propylene Dien Caoutchouc) |
| GOF | Glass Optical Fibre |
| H | halogen free material |
| IBS | Remote bus cable for INTERBUS |
| L2 | Abbreviation for SINEC® L2-DP PROFIBUS-DP Fieldbus |
| LD | low attenuation |
| MM | Multimode |
| ODTR | Optical Time Domain Reflectometry |
| P/PUR | Polyurethane |
| PA | Polyamide |
| PCF | Plastic Cladded Fibre |
| PE | Polyethylen |
| POF | Polymer Optical Fibre |
| PROFIBUS-DP | PROFIBUS for Decentralized Periphery |
| PROFIBUS-FMS | PROFIBUS for Fieldbus Message Specification |
| PROFIBUS-PA | PROFIBUS for Process Automation |
| SIMPLEX | one fibre |
| SM | Singlemode |
| SF/UTP (S-FTP) | Shielded-Foiled Twisted Pair |
| S/FTP (STP/S PiMF) | Shielded Twisted Pair / Shielded Pairs in Metal Foil |
| TPE | Thermo Plastic Elastomer |
| U/UTP (UTP) | Unshieled Twisted Pair |
| Y/PVC | Polyvinylchlorid |
| YE | yellow outer sheath |
| Yv | wire for outdoor use / direct burial with reinforced PVC outer sheath |
| YY | double outer sheath PVC |
| XPE | cross linked Polyethylen |

BUS Cables

| Bussystem | Installation area | Application/cabling | Approval | Type | Art. No. | Outer sheath material | Special feature | Connectors | |
|--|------------------------|---------------------------------|--|--|---|-----------------------|----------------------------|-------------------|-------------------|
| PROFIBUS-DP, PROFIBUS-FMS, FIP | indoor | static | UL/CSA (CMX) | UNITRONIC® BUS L2/FIP UL/CSA (CMX) | 2170219 | PVC | | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS L2/FIP PUR FC UL/CSA (CMX) | 2170330 | PUR | Fast Connect | 34-40,43,44 | |
| | | | UL/CSA (CM) | UNITRONIC® BUS L2/FIP-H FC UL/CSA (CM) | 2170326 | H | halogen free, Fast Connect | 34-40,43,44 | |
| | | | | UL/CSA (CMG) | UNITRONIC® BUS L2/FIP 7-wire UL/CSA (CMG) | 2170824 | PVC | | 26-33,41,42,45-51 |
| | | | UNITRONIC® BUS L2/FIP FC UL/CSA (CMG) | | 2170820 | PVC | Fast Connect | 34-40,43,44 | |
| | | | UNITRONIC® BUS L2/FIP 7-wire FC UL/CSA (CMG) | | 2170826 | PVC | Fast Connect | 26-33,41,42,45-51 | |
| | | | UNITRONIC® BUS HFFR L2/FIP FC UL/CSA (CMG) | | 2170853 | H | halogen free, Fast Connect | 34-40,43,44 | |
| | | | | UNITRONIC® BUS L2/FIP | 2170220 | PVC | | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS L2/FIP PE | 2170233 | PE | | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS L2/FIP 7-wire halogen free | 2170226 | H | halogen free | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS COMBI L2/FIP 7-wire | 2170225 | PVC | COMBI | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS L2/FIP 105 | 2170630 | PVC | | 26-33,41,42,45-51 | |
| | | UNITRONIC® BUS L2/FIP ROBUST FR | | 2170620 | TPE | | 26-33,41,42,45-51 | | |
| | | UNITRONIC® BUS L2/FIP PE FC | | 2170333 | PE | Fast Connect | 34-40,43,44 | | |
| | | high flexible | | UL/CSA (CMX) | UNITRONIC® BUS FD P L2/FIP UL/CSA (CMX) | 2170822 | PUR | power chain | 26-33,41,42,45-51 |
| | | | UNITRONIC® FD P L2/FIP FC UL/CSA (CMX) | | 2170322 | PUR | power chain, Fast Connect | 34-40,43,44 | |
| | | | UL/CSA (CMG) | UNITRONIC® FD Y PROFIBUS HYBRID UL/CSA (CMG) | 2170875 | PVC | hybrid | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS FD P L2/FIP | 2170222 | PUR | power chain | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® BUS FD P COMBI L2/FIP | 2170227 | PUR | COMBI/power chain | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® FD P PROFIBUS HYBRID | 2170495 | PUR | hybrid /power chain | 26-33,41,42,45-51 | |
| | | torsion | UL/CSA (CMX) | UNITRONIC® BUS L2/FIP TORSION UL/CSA (CMX) | 2170332 | PUR | torsion | 26-33,41,42,45-51 | |
| | | festoon | | UNITRONIC® BUS L2/FIP FESTOON UL/CSA (CMG) | 2170331 | PVC | festoon | 26-33,41,42,45-51 | |
| | | outdoor | static | | UNITRONIC® BUS Yv L2/FIP | 2170223 | PVC | | 26-33,41,42,45-51 |
| | | | | | UNITRONIC® BUS YY L2/FIP | 2170236 | PVC | | 26-33,41,42,45-51 |
| | | | | UNITRONIC® BUS L2/FIP ARM | 2170247 | PVC | arm | 26-33,41,42,45-51 | |
| | | | | UNITRONIC® L2/FIP BURIAL FC | 2170323 | PVC | Fast Connect | 34-40,43,44 | |
| | PROFIBUS-PA | outdoor | static | | UNITRONIC® BUS PA ARM (BU) | 2170248 | PVC | | |
| | | indoor | static | UL/CSA (CMG) | UNITRONIC® BUS PA (BU) UL/CSA (CMG) | 2170834 | PVC | | |
| | | | | | UNITRONIC® BUS PA (BK) UL/CSA (CMG) | 2170835 | PVC | | |
| | | | | | UNITRONIC® BUS PA (BU) FC UL/CSA (CMG) | 2170334 | PVC | Fast Connect | |
| UNITRONIC® BUS PA (BK) FC UL/CSA (CMG) | | | | | 2170335 | PVC | Fast Connect | | |
| | | | | UNITRONIC® BUS PA (BU) | 2170234 | PVC | | | |
| | UNITRONIC® BUS PA (BK) | 2170235 | PVC | | | | | | |
| FOUNDATION FIELDBUS (FF) | indoor | static | UL/CSA (CMG) | UNITRONIC® BUS FF 3 UL/CSA (CMG) | 2170350 | PVC | | | |
| | | | | UNITRONIC® BUS FF 3 ARM (YE) UL/CSA (CMG) | 2170351 | PVC | arm | | |
| | | | | UNITRONIC® BUS FF 3 ARM (BU) UL/CSA (CMG) | 2170353 | PVC | arm | | |
| | | | | UNITRONIC® BUS FF 2 UL/CSA (CMG) | 2170352 | PVC | | | |
| CC-Link (CCL) | indoor | static | UL/CSA (CM) | UNITRONIC® BUS CCL UL/CSA (CM) | 2170360 | PVC | CLPA-Test | | |

BUS Cables used in:

- Factory Automation (field buses like PROFIBUS, DeviceNet, CAN, INTERBUS etc.)
- Process Automation (chemical, petro-chemical industry etc.)
- Building Automation (building management)

Overview of the most common bus systems:

PROFIBUS

We distinguish between PROFIBUS-DP, PROFIBUS-FMS and PROFIBUS-PA. The DP variant dominates worldwide with a bit rate of mainly 1.5 Mbit/s, and a maximum of 12 Mbit/s, PROFIBUS-PA is the leader in Process Automation in Europe.

AS-INTERFACE

Developed to have an inexpensive alternative on the lowest level (sensor/ actuator level) of factory automation. Can often be found in connection with PROFIBUS, INTERBUS, CAN and DeviceNet.

CAN

Originally developed for cars. Today used in industry in an extremely broad range of applications.

DeviceNet

No. 1 in North America. Developed by Allen Bradley (Rockwell Automation). Based on CAN.

Foundation™ Fieldbus

Analogous to PROFIBUS-PA, dominates in North America.

SAFETY BUS

Bus systems developed especially for safety-relevant areas. Operate either completely independently (e.g. SafetyBUS p®) or are part of an overall system (e.g. PROFIsafe, INTERBUS Safety, DeviceNet Safety etc.).

INTERBUS

One of the first field bus systems. Influence in the automotive industry.

EIB and LON

Two bus systems for building automation. Operate primarily with low bit rate.

Bus systems according to own development

Companies that develop their own bus system named after them based on standardized systems find a contact for developing their own ideas in Lapp.

BUS Connectors

| Connectors | | |
|------------|----------|---|
| Nr. | Art. No. | Type |
| 26 | 21124064 | ERbic® PROFIBUS S Switch 90 |
| 27 | 21124063 | ERbic® PROFIBUS S Switch 90 PG |
| 28 | 21124060 | ERbic® PROFIBUS S Switch 30 |
| 29 | 21124061 | ERbic® PROFIBUS S Switch 30 PG |
| 30 | 21124067 | ERbic® PROFIBUS S Node 90 reversed |
| 31 | 21124071 | ERbic® PROFIBUS S Termination 90 reversed |
| 32 | 21124068 | ERbic® PROFIBUS S Node 180 |
| 33 | 21124070 | ERbic® PROFIBUS S Termination 180 |
| 34 | 21124050 | ERbic® PROFIBUS IDC Switch 90 |
| 35 | 21124051 | ERbic® PROFIBUS IDC Switch 90 PG |
| 36 | 21124055 | ERbic® PROFIBUS IDC Switch 30 |
| 37 | 21124056 | ERbic® PROFIBUS IDC Switch 30 PG |
| 38 | 21124052 | ERbic® PROFIBUS IDC Switch 90 reversed |
| 39 | 21124053 | ERbic® PROFIBUS IDC Switch 180 |
| 40 | 21124054 | ERbic® PROFIBUS IDC Switch 180 AX |
| 41 | 21124090 | ERbic® PROFIBUS FZ Switch 90 |
| 42 | 21124091 | ERbic® PROFIBUS FZ Switch 90 PG |
| 43 | 21700501 | EPIC® PROFIBUS 90° PG FC |
| 44 | 21700502 | EPIC® PROFIBUS 90° FC |
| 45 | 21700503 | EPIC® PROFIBUS 90° PG S |
| 46 | 21700504 | EPIC® PROFIBUS 90° S |
| 47 | 21700505 | EPIC® PROFIBUS Axial S |
| 48 | 21700506 | EPIC® PROFIBUS 35° PG S |
| 49 | 21700507 | EPIC® PROFIBUS 35° S |
| 50 | 21700508 | EPIC® PROFIBUS 90° PG FZ |
| 51 | 21700509 | EPIC® PROFIBUS 90° FZ |





BUS Cables

| Bussystem | Installation area | Application/ cabling | Approval | Type | Art. No. | Outer sheath material | Special feature | Connectors |
|---------------------------------|-------------------|--|--------------|---|-------------|-----------------------|---------------------|------------|
| CAN (Controller Area Network) | indoor | static | UL/CSA (CMX) | UNITRONIC® BUS CAN UL/CSA (CMX) 1x2x0,22 | 2170260 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 2x2x0,22 | 2170261 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 1x2x0,34 | 2170263 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 2x2x0,34 | 2170264 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 1x2x0,5 | 2170266 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 2x2x0,5 | 2170267 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 1x2x0,75 | 2170269 | PVC | | 52-60 |
| | | | | UNITRONIC® BUS CAN UL/CSA (CMX) 2x2x0,75 | 2170270 | PVC | | 52-60 |
| | | high flexible | UL/CSA (CMX) | UNITRONIC® BUS FD P CAN UL/CSA (CMX) 1x2x0,25 | 2170272 | PUR | power chain | 52-60 |
| | | | | UNITRONIC® BUS FD P CAN UL/CSA (CMX) 2x2x0,25 | 2170273 | PUR | power chain | 52-60 |
| | | | | UNITRONIC® BUS FD P CAN UL/CSA (CMX) 1x2x0,34 | 2170275 | PUR | power chain | 52-60 |
| | | | | UNITRONIC® BUS FD P CAN UL/CSA (CMX) 2x2x0,34 | 2170276 | PUR | power chain | 52-60 |
| | | | | UNITRONIC® BUS FD P CAN UL/CSA (CMX) 1x2x0,5 | 2170278 | PUR | power chain | 52-60 |
| | | | | UNITRONIC® BUS FD Y CAN UL/CSA (CMX) 2x2x0,5 | 2170279 | PUR | power chain | 52-60 |
| AS-i (AS-INTERFACE) | indoor | static | UL/CSA (CMG) | UNITRONIC® BUS ASI (PVC) YE UL/CSA (CMG) | 2170842 | PVC | | |
| | | | | UNITRONIC® BUS ASI (PVC) BK UL/CSA (CMG) | 2170843 | PVC | | |
| | | | UL/CSA (AWM) | UNITRONIC® BUS ASI (TPE) YE UL/CSA (AWM) | 2170830 | TPE | | |
| | | | | UNITRONIC® BUS ASI (TPE) BK UL/CSA (AWM) | 2170831 | TPE | | |
| | | | | UNITRONIC® BUS ASI (G) YE | 2170228 | G | | |
| | | | | UNITRONIC® BUS ASI (G) BK | 2170229 | G | | |
| | | | | UNITRONIC® BUS ASI (TPE) YE | 2170230 | TPE | | |
| | | | | UNITRONIC® BUS ASI (TPE) BK | 2170231 | TPE | | |
| | | | | UNITRONIC® BUS ASI (PUR) YE | 2170201 | PUR | | |
| | | | | UNITRONIC® BUS ASI (PUR) BK | 2170202 | PUR | | |
| | | | | UNITRONIC® BUS ASI (PUR) MARINE YE | 2170401 | PUR | marine | |
| | | | | UNITRONIC® BUS ASI (PUR) MARINE BK | 2170402 | PUR | marine | |
| SAFETY BUS | indoor | static | UL (AWM) | UNITRONIC® BUS SAFETY PVC FC UL (AWM) | 2170895 | PVC | Fast Connect | 61 |
| | | | | UNITRONIC® BUS SAFETY | 2170295 | PVC | | 61 |
| | | high flexible | | UNITRONIC® BUS FD P SAFETY | 2170885 | PUR | power chain | 61 |
| DeviceNet | indoor | static | UL/CSA (CMG) | UNITRONIC® DeviceNet THICK FRNC UL/CSA (CMG) | 2170340 | H | halogen free | |
| | | | | UNITRONIC® DeviceNet THIN FRNC UL/CSA (CMG) | 2170341 | H | halogen free | |
| | | | | UNITRONIC® DeviceNet THICK PVC UL/CSA (CMG) | 2170342 | PVC | | |
| | | | | UNITRONIC® DeviceNet THIN PVC UL/CSA (CMG) | 2170343 | PVC | | |
| | | | | UNITRONIC® DeviceNet ECO THICK PVC UL/CSA (CMG) | 2170362 | PVC | | |
| | | | | UNITRONIC® DeviceNet ECO THIN PVC UL/CSA (CMG) | 2170363 | PVC | | |
| | | high flexible | UL/CSA (CMG) | UNITRONIC® FD Y DeviceNet THICK UL/CSA (CMG) | 2170346 | PVC | power chain | |
| | | | | UNITRONIC® FD Y DeviceNet THIN UL/CSA (CMG) | 2170347 | PVC | power chain | |
| | UL/CSA (CMX) | UNITRONIC® FD P DeviceNet THICK UL/CSA (CMX) | 2170344 | PVC | power chain | | | |
| | | UNITRONIC® FD P DeviceNet THIN UL/CSA (CMX) | 2170345 | PVC | power chain | | | |
| EIB (European Installation Bus) | indoor | static | | UNITRONIC® BUS EIB | 2170240 | PVC | | |
| | | | | UNITRONIC® BUS COMBI EIB | 2170242 | PVC | COMBI | |
| | | | | UNITRONIC® BUS EIB-H | 2170241 | H | halogen free | |
| | | | | UNITRONIC® BUS COMBI EIB-H | 2170243 | H | COMBI, halogen free | |

BUS Connectors

| Connectors | | |
|------------|----------|--|
| Nr. | Art. No. | Type |
| 52 | 21124082 | ERbic® CAN Bus S Switch 180 |
| 53 | 21124083 | ERbic® CAN Bus S Switch 180 AX |
| 54 | 21124075 | ERbic® CAN Bus S Knoten 90 |
| 55 | 21124078 | ERbic® CAN Bus S Termination 90 |
| 56 | 21124081 | ERbic® CAN Bus S Node 90 PG |
| 57 | 21124076 | ERbic® CAN Bus S Node 180 |
| 58 | 21124079 | ERbic® CAN Bus S Termination 180 |
| 59 | 21124077 | ERbic® CAN Bus S Node 90 reversed |
| 60 | 21124080 | ERbic® CAN Bus S Termination 90 reversed |
| 61 | 21124085 | ERbic® Safety Bus p S Node/Termination |



BUS Cables

| Bussystem | Installation area | Application/ cabling | Approval | Type | Art. No. | Outer sheath material | Special feature | Connectors |
|---|--------------------------------------|-----------------------------|----------------------------|--|---|-----------------------|-------------------|------------|
| InterBus-S | indoor | static | UL/CSA (CMX) | UNITRONIC® BUS IBS UL/CSA (CMX) | 2170209 | PVC | | |
| | | | | UNITRONIC® BUS P COMBI IBS UL/CSA (CMX) | 2170808 | PUR | COMBI | |
| | | | | UNITRONIC® BUS IBS | 2170206 | PVC | | |
| | | | UNITRONIC® BUS P COMBI IBS | 2170208 | PUR | COMBI | | |
| | | high flexible | UL/CSA (CMX) | UNITRONIC® BUS FD P IBS UL/CSA (CMX) | 2170816 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P COMBI IBS UL/CSA (CMX) | 2170818 | PUR | COMBI/power chain | |
| | | | UNITRONIC® BUS FD P IBS | 2170216 | PUR | power chain | | |
| | outdoor | static | UL/CSA (CMX) | UNITRONIC® BUS Yv IBS UL/CSA (CMX) | 2170807 | PVC | | |
| | | | | UNITRONIC® BUS Yv COMBI IBS UL/CSA (CMX) | 2170817 | PVC | COMBI | |
| | | | | UNITRONIC® BUS Yv IBS | 2170207 | PVC | | |
| | | UNITRONIC® BUS Yv COMBI IBS | 2170217 | PVC | COMBI | | | |
| | Industrial Bussystems 100 - 120 Ω | indoor | static | UL/CSA (CMX) | UNITRONIC® BUS LD UL/CSA (CMX) 1x2x0,22 | 2170803 | PVC | |
| UNITRONIC® BUS LD UL/CSA (CMX) 2x2x0,22 | | | | | 2170804 | PVC | | |
| UNITRONIC® BUS LD UL/CSA (CMX) 3x2x0,22 | | | | | 2170805 | PVC | | |
| | | | | UNITRONIC® BUS LD 1x2x0,22 | 2170203 | PVC | | |
| | | | | UNITRONIC® BUS LD 2x2x0,22 | 2170204 | PVC | | |
| | | | | UNITRONIC® BUS LD 3x2x0,22 | 2170205 | PVC | | |
| high flexible | | | UL/CSA (CMX) | UNITRONIC® BUS FD P LD UL/CSA (CMX) 1x2x0,25 | 2170813 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P LD UL/CSA (CMX) 2x2x0,25 | 2170814 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P LD UL/CSA (CMX) 3x2x0,25 | 2170815 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P LD 1x2x0,25 | 2170213 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P LD 2x2x0,25 | 2170214 | PUR | power chain | |
| | | | | UNITRONIC® BUS FD P LD 3x2x0,25 | 2170215 | PUR | power chain | |

Ethernet in Automation

The Ethernet standard is a permanent fixture in corporate IT departments due to its simplicity. The reason for the acceptance and popularity not only lies in the integrated networking of a company, but rather in the fact that it forms the basic technology for the world's largest network – the Internet. The Ethernet is the world's most-used standard. The advantages of the Ethernet and the related networking are obvious:

- Simple, unlimited expansion possibilities
- Fast commissioning due to simple connection technology with RJ45 or M12
- Dynamic bandwidth adjustment with 10/100 Mbit/s, 1 Gbit/s up to a current 10 Gbit/s
- Networking of various applications areas (Industrial, Factory, Building, Automation, ...)

| | Medium | Cable | Installation length |
|----------------------------|------------------------|---|---------------------|
| ETHERNET | AUI | - | 50 m |
| | 10 Base2 | Thin ETHERNET | 185 m |
| | 10 Base5 | Thick ETHERNET | 500 m |
| | 10 Base-T | Twisted Pair | 100 m |
| | 10 Base-FL | 62.5 µm, 50 µm, Multimode F.O. | 2.000 m |
| Fast ETHERNET | 100 Base-TX | Twisted Pair | 100 m |
| | 100 Base-FX | 62.5 µm, 50 µm, Multimode F.O. FDX | 412 m |
| | | 62.5 µm, 50 µm, Multimode F.O. HDX | 2.000 m |
| Gigabit ETHERNET | 1000 Base-CX | Twinax STP (150 Ω) | 25 m |
| | 1000 Base-T | Twisted Pair | 100 m |
| | 1000 Base-SX 850 nm | 62.5 µm Multimode F.O. | 275 m |
| | | 50 µm Multimode F.O. | 550 m |
| | 1000 Base-LX 1300 nm | 62.5 µm Multimode F.O. | 550 m |
| | | 50 µm Multimode F.O. Singlemode F.O. | 550 m 5.000 m |
| 10 Gigabit ETHERNET | 10G Base-LX4 | Twisted Pair | 100 m |
| | 10G Base-LX4 WWDM | Singlemode F.O. | 10.000 m |
| | 10G Base-LX4 WWDM | Multimode F.O. | 300 m |
| | 10G Base-SR/SW 850 nm | 62.5 µm Multimode F.O. | 26 m |
| | | 50 µm Multimode F.O. | 82 m |
| | 10G Base-LR/LW 850 nm | Singlemode F.O. | 10.000 m |
| | 10G Base-ER/EW 1550 nm | Singlemode F.O. | 40.000 m |

LAN Cables ETHERNET

| Automation area | Installation area | Category | Application/cabling | halogen free | Type | Art. No. | Shielding/Outer sheath material | AWG | Special feature | Approval | Connectors | Female (SnapIn) | |
|----------------------|-------------------|--------------|--|---|---|--|--|----------------------|---------------------------|--------------|------------|-----------------|---|
| Building | indoor | CAT.5e | static | halogen free | UNITRONIC® LAN FTP-H 200 MHz CAT.5e | 2170136 | FTP | 24 | | | 25 | 1 | |
| | | | | | UNITRONIC® LAN S-FTP-H 200 MHz CAT.5e | 2170138 | S-FTP | 24 | | | 25 | 1 | |
| | | | | | UNITRONIC® LAN S-FTP-H 200 MHz CAT.5e DUPLEX | 2170140 | S-FTP | 24 | DUPLEX | | 25 | 1 | |
| | | | | non halogen free | UNITRONIC® LAN UTP 200 MHz CAT.5e | 2170125 | UTP | 24 | | | 25 | 1 | |
| | | | | | UNITRONIC® LAN FTP 200 MHz CAT.5e | 2170126 | FTP | 24 | | | 25 | 1 | |
| | | | | UNITRONIC® LAN S-FTP 200 MHz CAT.5e | 2170128 | S-FTP | 24 | | | 25 | 1 | | |
| | | | | UNITRONIC® LAN S-FTP 200 MHz CAT.5e DUPLEX | 2170130 | S-FTP | 24 | DUPLEX | | 25 | 1 | | |
| | | | flexible | non halogen free | UNITRONIC® LAN FTP FLEX 200 MHz CAT.5e | 2170127 | FTP | 26 | | | 25 | 2 | |
| | | | | | UNITRONIC® LAN S-FTP FLEX 200 MHz CAT.5e | 2170129 | S-FTP | 26 | | | 25 | 2 | |
| | | | | halogen free | UNITRONIC® LAN FTP-H FLEX 200 MHz CAT.5e | 2170137 | FTP | 26 | | | 25 | 2 | |
| | | | | UNITRONIC® LAN S-FTP-H FLEX 200 MHz CAT.5e | 2170139 | S-FTP | 26 | | | 25 | 2 | | |
| | | CAT.6a | | static | non halogen free | UNITRONIC® LAN STP/S PiMF 500 MHz CAT.6a | 2170143 | STP/S PiMF | 23 | | | 5 | |
| | | | | | UNITRONIC® LAN STP/S PiMF 500 MHz CAT.6a DUPLEX | 2170145 | STP/S PiMF | 23 | DUPLEX | | 5 | | |
| | | | halogen free | | UNITRONIC® LAN STP/S-H PiMF 500 MHz CAT.6a | 2170147 | STP/S PiMF | 23 | | | 5 | | |
| | | | | | UNITRONIC® LAN STP/S-H PiMF 500 MHz CAT.6a DUPLEX | 2170149 | STP/S PiMF | 23 | DUPLEX | | 5 | | |
| | | | flexible | non halogen free | UNITRONIC® LAN STP/S PiMF FLEX 500 MHz CAT.6a | 2170144 | STP/S PiMF | 26 | | | | | |
| | | | | halogen free | UNITRONIC® LAN STP/S-H PiMF FLEX 500 MHz CAT.6a | 2170148 | STP/S PiMF | 26 | | | | | |
| | | | | CAT.7 | static | halogen free | UNITRONIC® LAN STP/S-H PiMF 600 MHz CAT.7 | 2170614 | STP/S PiMF | 23 | | | 6 |
| | | | | | | | UNITRONIC® LAN STP/S-H PiMF 600 MHz CAT.7 DUPLEX | 2170634 | STP/S PiMF | 23 | DUPLEX | | 6 |
| | | static | halogen free | UNITRONIC® LAN STP/S-H PiMF 1,2 GHz | 2170615 | STP/S PiMF | 22 | | | | | | |
| Industrial – 2 pairs | indoor | CAT.5 | static | non halogen free | ETHERLINE® Y FC UL/CSA (CMG) CAT.5 | 2170893 | PVC | 22 | Fast Connect | UL/CSA (CMG) | 25 | 1 | |
| | | | flexible | halogen free | ETHERLINE® H FLEX CAT.5 | 2170283 | H | 26 | | | 25 | 2 | |
| | | | | non halogen free | ETHERLINE® P FLEX CAT.5 | 2170284 | PUR | 26 | | | 25 | 2 | |
| | | | high flexible | non halogen free | ETHERLINE® FD P CAT.5 | 2170289 | PUR | 26 | power chain | | 25 | 2 | |
| | | | | | ETHERLINE® FD P FC UL/CSA (CMX) CAT.5 | 2170894 | PUR | 22 | power chain, Fast Connect | | 25 | 1 | |
| | | torsion | non halogen free | ETHERLINE® TORSION CAT.5 | 2170888 | PUR | 22 | torsion | UL/CSA (AWM) | 25 | 1 | | |
| | | CAT.5e | static | halogen free | ETHERLINE® H CAT.5e | 2170280 | H | 24 | | | 25 | 1 | |
| | | | | non halogen free | ETHERLINE® P CAT.5e | 2170281 | PUR | 24 | | | 25 | 1 | |
| | | | | | ETHERLINE® Y UL/CSA CAT.5e | 2170891 | PVC | 22 | | UL/CSA | 25 | 1 | |
| | | | flexible | non halogen free | ETHERLINE® Y FLEX FC UL/CSA (CMG) .5e | 2170886 | PVC | 22 | Fast Connect | UL/CSA (CMG) | 25 | 1 | |
| | halogen free | | | ETHERLINE® FRNC HYBRID FLEX UL (AWM) CAT.5e | 2170887 | H | 22 | hybrid | UL (AWM) | 25 | 1 | | |
| | | halogen free | ETHERLINE® MARINE FRNC UL/CSA (CMG) CAT.5e | 2170889 | H | 22 | for marine | UL/CSA (CMG), MARINE | 25 | 1 | | | |
| | outdoor | CAT.5 | static | non halogen free | ETHERLINE® Y2Y ARM Type A CAT.5 | 2170496 | PVC | 22 | arm | | 25 | 1 | |
| CAT.5e | | static | non halogen free | ETHERLINE® YY CAT.5e | 2170494 | PVC | 22 | double sheath | | 25 | 1 | | |
| Industrial – 4 pairs | indoor | CAT.5 | flexible | halogen free | ETHERLINE® H FLEX CAT.5 | 2170299 | H | 26 | | | 25 | 2 | |
| | | | | non halogen free | ETHERLINE® P FLEX CAT.5 | 2170300 | PUR | 26 | | | 25 | 2 | |
| | | | high flexible | non halogen free | ETHERLINE® FD P CAT.5 | 2170489 | PUR | 26 | power chain | | 25 | 2 | |
| | | CAT.5e | static | halogen free | ETHERLINE® H CAT.5e | 2170296 | H | 24 | | | 25 | 1 | |
| | | | | | ETHERLINE® H-H CAT.5e | 2170298 | H | 24 | double sheath | | 25 | 1 | |
| | | | | non halogen free | ETHERLINE® P CAT.5e | 2170297 | PUR | 24 | | | 25 | 1 | |
| | | CAT.6a | static | non halogen free | ETHERLINE® Y PiMF CAT.6a | 2170464 | PVC | 22 | PROFINET conform | | 5 | | |
| | | | | | ETHERLINE® P PiMF CAT.6a | 2170465 | PUR | 22 | PROFINET conform | | 5 | | |
| | | | | halogen free | ETHERLINE® H PiMF CAT.6a | 2170466 | H | 22 | PROFINET conform | | 5 | | |
| | | CAT.7 | static | non halogen free | ETHERLINE® Y PiMF CAT.7 | 2170474 | PVC | 22 | PROFINET conform | | 6 | | |
| | | | | | ETHERLINE® P PiMF CAT.7 | 2170475 | PUR | 22 | PROFINET conform | | 6 | | |
| | | | | halogen free | ETHERLINE® H PiMF CAT.7 | 2170476 | H | 22 | PROFINET conform | | 6 | | |

| | Building Automation | Industrial Automation |
|--------------|--|---|
| Installation | <ul style="list-style-type: none"> - Fixed installation in the building - Variable connection of equipment at standard workstations - Mainly radial cabling | <ul style="list-style-type: none"> - Cabling and cable runs dependent on plant - Connections may be assembled on site, up to IP67 - Redundant cabling, often in ring structures |
| Data | <ul style="list-style-type: none"> - Large data packages - Moderate network availability - Mainly acyclic transmission - No real-time necessary | <ul style="list-style-type: none"> - Small data packages - Very high network availability, no down time - Mainly cyclic transmission - Real-time necessary |
| Environment | <ul style="list-style-type: none"> - Normal temperature range - Little dust, moisture and vibration - Little mechanical or chemical exposure - Low EMC reliability | <ul style="list-style-type: none"> - Extended temperature range - Dust, dirt, moisture and vibration possible - Danger of mechanical damage or exposure to chemicals - High EMC reliability |

New Designations **Product Designations**


| | | |
|--------|------------|---|
| U/UTP | UTP | Unshielded Twisted Pair |
| F/UTP | FTP | Foiled Twisted Pair |
| SF/UTP | S-FTP | Shielded-Foiled Twisted Pair |
| S/FTP | STP/S PiMF | Shielded Twisted Pair / Shielded Pairs in Metal Foil |

According to the type of cable, cables intended for fixed installation have solid conductors (AWG24/1 or AWG23/1 or WG22/1). Flexible cables have 7-wire stranded conductors (Patch cable AWG26/7). DUPLEX cables consist of two individual 4-pair single cables which can be separated as necessary at the installation site. The outer sheaths of the LAN cables are made of PVC, PUR, halogen-free materials, as well as flame retardant according to IEC 60332-1-2.

Application classes for copper cabling (100 Ω)

| Application class | Category | Frequency | Service |
|-------------------|-----------------------|-----------|-----------------------------|
| Class A | - | 100 kHz | Telephone, ISDN |
| Class B | - | 16 MHz | Telephone, ISDN |
| Class C | CAT.3 | 26 MHz | Tel,ISDN,TokenRing,Ethernet |
| Class D | CAT.5 | 100 MHz | 10/100 Base-T |
| Class D | CAT.5e | 125 MHz | 10/100/1000 Base-T |
| Class E | CAT.6 | 250 MHz | 10/100/1000 Base-T |
| Class F | CAT.6e (Draft CAT.6a) | 500 MHz | 10/100/1000/10G Base-T |
| Class F | CAT.7 | 600 MHz | 10/100/1000/10G Base-T |
| Class G | CAT.7a | 1 GHz | 10/100/1000/10G Base-T |
| - | - | 1.2 GHz | 10/100/1000/10G Base-T |

Connector & Female LAN ETHERNET

| Nr. | Art. No. | Type | |
|--------------------------|----------|--|--|
| SnapIn (Female) | | | |
| 1 | 61103 | LANmark-5 EVO SnapIn CAT.5e |  |
| 2 | 61102 | LANmark-5 EVO SnapIn CAT.5e AWG26 | |
| 5 | 62106 | LANmark-6 EVO SnapIn CAT.6 10G |  |
| 6 | 63103 | LANmark-7 GG45 SnapIn CAT.7 |  |
| 7 | 60795 | SnapIn rail mount adapter incl. SnapIn CAT.6 |  |
| Connectors (Male) | | | |
| 25 | 21700540 | Field-Terminable Connector RJ45 CAT.5e FM45 |  |

Fibre Optical Cables

| Fibretype | Automation area | Installation area | Application/cablings | Fibre | Type | Art. No. | halogen free | Outer sheath material | Special feature | Connectors |
|-----------------------------|-----------------------------------|--------------------------------|----------------------|-----------------------------|---------------------------------|--------------|--------------|-----------------------|-----------------|------------|
| GOF - Glass Optical Fibre | Industrial & Building | outdoor | static | Multimode | HITRONIC® HQN1500 4 G 50/125 | 276004 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 8 G 50/125 | 276008 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 12 G 50/125 | 276012 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 24 G 50/125 | 276024 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 4 G 62,5/125 | 276104 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 8 G 62,5/125 | 276108 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 12 G 62,5/125 | 276112 | halogen free | PE | | 1,2 |
| | | | | | HITRONIC® HQN1500 24 G 62,5/125 | 276124 | halogen free | PE | | 1,2 |
| | | | | Singlemode | HITRONIC® HQN1500 8 E 9/125 | 276208 | halogen free | PE | | |
| | | | | | HITRONIC® HQN1500 12 E 9/125 | 276212 | halogen free | PE | | |
| | HITRONIC® HQN1500 24 E 9/125 | 276224 | halogen free | | PE | | | | | |
| | Building | indoor | static | Multimode | HITRONIC® HIH1000 4 G 50/125 | 270004 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 8 G 50/125 | 270008 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 12 G 50/125 | 270012 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 24 G 50/125 | 270024 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 4 G 62,5/125 | 270104 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 8 G 62,5/125 | 270108 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 12 G 62,5/125 | 270112 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HIH1000 24 G 62,5/125 | 270124 | halogen free | FRNC | | 1,2 |
| | | | | Singlemode | HITRONIC® HIH1000 4 E 9/125 | 270204 | halogen free | FRNC | | |
| | | | | | HITRONIC® HIH1000 8 E 9/125 | 270208 | halogen free | FRNC | | |
| | HITRONIC® HIH1000 12 E 9/125 | 270212 | halogen free | | FRNC | | | | | |
| | HITRONIC® HIH1000 24 E 9/125 | 270224 | halogen free | | FRNC | | | | | |
| | Industrial & Building | universal (indoor and outdoor) | static | Multimode | HITRONIC® HUN1500 4 G 50/125 | 274004 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 8 G 50/125 | 274008 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 12 G 50/125 | 274012 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 24 G 50/125 | 274024 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 4 G 62,5/125 | 274104 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 8 G 62,5/125 | 274108 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 12 G 62,5/125 | 274112 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HUN1500 24 G 62,5/125 | 274124 | halogen free | FRNC | | 1,2 |
| | | | | Singlemode | HITRONIC® HUN1500 4 E 9/125 | 274204 | halogen free | FRNC | | |
| | | | | | HITRONIC® HUN1500 8 E 9/125 | 274208 | halogen free | FRNC | | |
| | HITRONIC® HUN1500 12 E 9/125 | 274212 | halogen free | | FRNC | | | | | |
| | HITRONIC® HUN1500 24 E 9/125 | 274224 | halogen free | | FRNC | | | | | |
| | Building | Breakout cable (indoor) | static | Multimode | HITRONIC® HRH 2 G 50/125 | 21806879 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 4 G 50/125 | 21807090 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 8 G 50/125 | 21807093 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 12 G 50/125 | 21807094 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 24 G 50/125 | 21807041 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 2 G 62,5/125 | 21806878 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 4 G 62,5/125 | 21807096 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 8 G 62,5/125 | 21807098 | halogen free | FRNC | | 1,2 |
| | | | | | HITRONIC® HRH 12 G 62,5/125 | 21807099 | halogen free | FRNC | | 1,2 |
| HITRONIC® HRH 24 G 62,5/125 | | | | | 21807043 | halogen free | FRNC | | 1,2 | |
| Building | Mini-Break-out cable (indoor) | flexible | Multimode | HITRONIC® HDH 4 G 50/125 | 267004 | halogen free | FRNC | | 1,2 | |
| | | | | HITRONIC® HDH 8 G 50/125 | 267008 | halogen free | FRNC | | 1,2 | |
| | | | | HITRONIC® HDH 12 G 50/125 | 267012 | halogen free | FRNC | | 1,2 | |
| | | | | HITRONIC® HDH 4 G 62,5/125 | 267104 | halogen free | FRNC | | 1,2 | |
| | | | | HITRONIC® HDH 8 G 62,5/125 | 267108 | halogen free | FRNC | | 1,2 | |
| | | | | HITRONIC® HDH 12 G 62,5/125 | 267112 | halogen free | FRNC | | 1,2 | |
| Industrial & Building | Mobile cable (indoor and outdoor) | high flexible | Multimode | HITRONIC® FD 4 G 50/125 | 21807048 | halogen free | PUR | power chain | 1,2 | |
| | | | | HITRONIC® FD 6 G 50/125 | 21807047 | halogen free | PUR | power chain | 1,2 | |
| | | | | HITRONIC® FD 4 G 62,5/125 | 21807045 | halogen free | PUR | power chain | 1,2 | |
| | | | | HITRONIC® FD 6 G 62,5/125 | 21807050 | halogen free | PUR | power chain | 1,2 | |

GOF – Glass Optical Fibre

The Glass Optical Fibre (GOF) consists of a core of the basic material glass. Due to the very low attenuation, GOF is suitable for long distances of up to 80 km depending on the type of fibre used. LEDs are used as transmitters for multimode fibers, while lasers are used for singlemode fibres. GOF cables are mainly used for wiring buildings. They are mainly required in primary and secondary wiring. Termination is complex. With the glass fibres a distinction is made between multimode fibres and singlemode fibres. In addition, a distinction is also made for the multimode fibres between the 50 µm and the 62.5 µm fibres.

POF – Polymer Optical Fibre

A Polymer Optical Fibre (POF) consists of the core and the cladding of plastic. A POF cable is only suitable for very short distances up to approx. 100 m, as the cable has a high attenuation. The cables are frequently used in the automotive sector (MOST 2), in automation (SERCOS, PROFIBUS etc.) and in lighting technology (information signs).

PCF – Plastic Cladded Fibre

Plastic Cladded Fibre (PCF) is a mixture of quartz glass and plastic. The core consists of glass and the cladding of plastic. With a total distance of up to 500 m, it is clearly superior to the POF cable. As with POF, a diode acts as a transmitter. POF and PCF are also very similar with regard to termination, which is extremely simple in both cases.



Overview of the advantages of Fibre Optical cables:

- high resistance to tapping
- no EMC interference
- high data transfer rate
- long range
- no potential transfer
- no EMC testing required
- little space required
- low cable weight
- can be installed in a potentially explosive environment

| Fibre type | max. attenuation [dB/km] | | | | max. transfer size [m] | | | | Numerical aperture |
|------------------|--------------------------|--------|---------|---------|------------------------|--|--|---|--------------------|
| | 660 nm | 850 nm | 1300 nm | 1550 nm | 660 nm | 850 nm | 1300 nm | 1550 nm | |
| POF | 160 | | | | 100 Mbit/s: 60 | | | | 0.47 |
| PCF | 10 | 8 | | | 100 Mbit/s: 550 | | | | 0.37 |
| GOF MM 50 µm OM2 | | 2.7 | 0.9 | | | 100 Mbit/s: 2.000 1 Gbit/s: 550 | 100 Mbit/s: 2.000 1 Gbit/s: 550 | | 0.2 |
| GOF MM 50 µm OM3 | | 2.7 | 0.9 | | | 10 Gbit/s: 300 | 10 Gbit/s: 300 | | 0.2 |
| GOF MM 62.5 µm | | 3.2 | 0.9 | | | 100 Mbit/s: 2000 1 Gbit/s: 275 | 100 Mbit/s: 2000 1 Gbit/s: 550 | | 0.27 |
| GOF SM | | | 0.36 | 0.2 | | | 1 Gbit/s: 5.000 | 1 Gbit/s: 80.000 10 Gbit/s: 40.000 | 0.1 |

MM = Multimode, SM = Singlemode

F.O. Connectors

| Nr. | Art. No. | Type | |
|-------------------|----------|-----------------------------|---|
| Connectors | | | |
| 1 | 9307 | GOF ST Connector 50/62.5 µm |  |
| 2 | 9407 | GOF SC Connector 50/62.5 µm |  |

Fibre Optical Cables

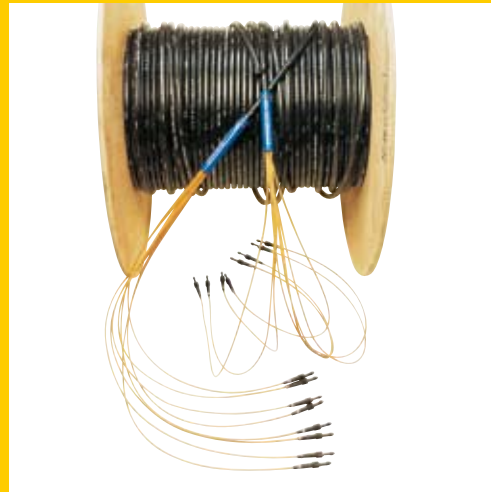
| Fibre type | Automation area | Installation area | Application/ cabling | Fibre | Type | Art. No. | halogen free | Outer sheath material | Special feature | Connectors |
|-----------------------------|--------------------------------|-------------------|-------------------------|-------------------------------|-------------------------------------|--------------|----------------------|-----------------------|----------------------------|----------------------|
| POF – Polymer Optical Fibre | Industrial & Building | indoor | flexible | Simplex | HITRONIC® POF SIMPLEX PE | 2185001 | halogen free | PE | | 3,6,9,12-17,20-22 |
| | | | | | HITRONIC® POF SIMPLEX PVC UL | 2185201 | non halogen free | PVC | UL | 3,6,9,12-17,20-22 |
| | | | | | HITRONIC® POF SIMPLEX 105 °C XPE | 2185202 | halogen free | XPE | Temp. range up to 105°C | 3,6,9,12-17,20-22 |
| | | | | | HITRONIC® POF SIMPLEX PE-PUR | 2182030 | halogen free | PUR | | 3,6,9,12-17,20-22 |
| | | | | | HITRONIC® POF SIMPLEX S PE-PUR | 2185205 | halogen free | PUR | for Sercos Systems | 4,7,10 |
| | | | | | HITRONIC® POF SIMPLEX S PA-PUR | 2185204 | halogen free | PUR | for Sercos Systems | 5,8,11 |
| | | | | Duplex | HITRONIC® POF DUPLEX PE | 2185010 | halogen free | PE | | 3,6,9,12,13,18,19,22 |
| | | | | | HITRONIC® POF DUPLEX PE-PUR | 2185040 | halogen free | PUR | | 3,6,9,12,13,18,19,22 |
| | | | | | HITRONIC® POF DUPLEX PE-PVC | 2185209 | non halogen free | PVC | | 3,6,9,12,13,18,19,22 |
| | | | | | HITRONIC® POF DUPLEX PVC-PVC | 2185210 | non halogen free | PVC | | 3,6,9,12,13,18,19,22 |
| | | | | | HITRONIC® POF DUPLEX HEAVY PE-PUR | 2185211 | halogen free | PUR | highly robust | 3,6,9,12,13,18,19,22 |
| | | | | Multi Fibre | HITRONIC® POF MULTI FIBRE PE-PVC | 3036010 | non halogen free | PVC | 6 fibres with color coding | 3,6,9,12-22 |
| | | | Hybrid | HITRONIC® HYBRID FD P DESINA® | 2186001 | halogen free | PUR | hybrid | 3,6,9,12,13,18,19,22 | |
| | | | high flexible | Simplex | HITRONIC® POF SIMPLEX FD PE-PUR | 2185207 | halogen free | PUR | power chain | 3,6,9,12-22 |
| Duplex | HITRONIC® POF DUPLEX FD PE-PUR | 2185213 | | halogen free | PUR | power chain | 3,6,9,12,13,18,19,22 | | | |
| PCF – Plastic Cladded Fibre | Industrial & Building | indoor | flexible | Duplex | HITRONIC® BUS PCF PUR DUPLEX indoor | 2185311 | halogen free | PUR | | 23,24 |
| | | outdoor | static | Duplex | HITRONIC® BUS PCF PE DUPLEX outdoor | 2185302 | halogen free | PE | | 23,24 |

Trunk systems – tested harnessed fibre optical with connectors.

Benefits

Using a trunk system offers you the following advantages:

- No costs of special equipment
- No need for highly trained personnel
- Uniform quality thanks to manufacture under laboratory conditions
- Installation is quick, thereby saving costs
- No need to carry out measurements on the cable run, each system comes with OTDR test certificate
- Fan-out elements also available in IP67



Requirements

The following data are needed to produce your tailor-made trunk system:

- Length of cable run (effective run +3 ... 5 m reserve on each side)
- Fibre type (9 μ, 50 μ or 62.5 μ)
- Number of fibres (2, 4, 6, 8 ... to 48 fibres)
- Plug type (ST, SC, DIN, E-2000 including mixed)
- Cable type (indoor, outdoor, rodent protection etc.)

F.O. Connectors

| Nr. | Art. No. | Type | |
|-------------------|----------|--|--|
| Connectors | | | |
| 3 | 21900178 | POF 2.2 F-SMA Crimp-SMA-R metal with spout (knurled nut) | |
| 4 | 21900040 | POF 3.6 F-SMA Crimp-SMA-R metal with spout and crimping ring (knurled nut) | |
| 5 | 21900070 | POF 6.0 F-SMA Crimp-SMA-R metal with spout and crimping ring (knurled nut) | |
| 6 | 21900174 | POF 2.2 F-SMA Crimp-SMA-S metal with spout (hexagonal nut) | |
| 7 | 21900050 | POF 3.6 F-SMA Crimp-SMA-S metal with spout and crimping ring (hexagonal nut) | |
| 8 | 21900080 | POF 6.0 F-SMA Crimp-SMA-S metal with spout and crimping ring (hexagonal nut) | |
| 9 | 21900179 | POF 2.2 F-SMA Clamp-SMA with spout (knurled nut) | |
| 10 | 21900180 | POF 3.6 F-SMA Clamp-SMA with spout (knurled nut) | |
| 11 | 21900181 | POF 6.0 F-SMA Clamp-SMA with spout (knurled nut) | |
| 12 | 21900172 | POF 2.2 B-FOC (ST) Crimp-ST with spout (knurled nut) | |
| 13 | 21900170 | POF 2.2 B-FOC (ST) Clamp-ST with spout (knurled nut) | |
| 14 | 21900100 | POF HFBR-4501-GR Simplex | |
| 15 | 21900110 | POF HFBR-4511-BL Simplex | |
| 16 | 21900115 | POF HFBR-4503-GR Simplex/latch | |
| 17 | 21900125 | POF HFBR-4513-BL Simplex/latch | |
| 18 | 21900130 | POF HFBR-4506-GR Duplex | |
| 19 | 21900140 | POF HFBR-4516-GR Duplex/latch | |
| 20 | 21900150 | POF HFBR-4531-SW Simplex | |
| 21 | 21900155 | POF HFBR-4523-SW Simplex/latch | |
| 22 | 21900305 | POF F-05 | |
| 23 | 21900250 | PCF 3.0 Clamp-SMA with spout (knurled nut) | |
| 24 | 21900260 | PCF 3.0 ClampB-FOC (ST) with spout (knurled nut) | |