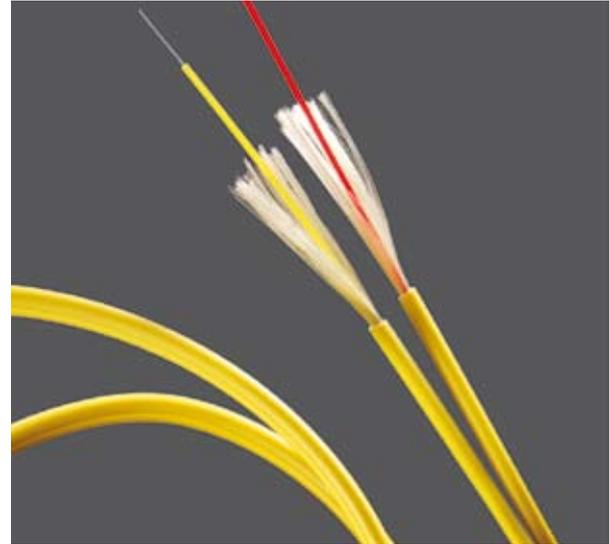


For communication technology

Fibre Optic Cables (FO) general	417
POF cables	418
PCF cables	428
GOF cables	429
HITRONIC® for special applications	435
HITRONIC® cable sets / trunk systems	436
Order form for trunk systems	437
Duplex Jumper and Pigtaills	438
Splice boxes, wall distributors and accessories	440

HITRONIC®

Optical transmission systems



For communication technology

POF cables

Fibre Optic Cables (FO) general	417
HITRONIC® POF SIMPLEX PE	418
HITRONIC® POF SIMPLEX PE-PUR	419
HITRONIC® POF SIMPLEX S PE-PUR / S PA-PUR	420
HITRONIC® POF SIMPLEX 105°C XPE	421
HITRONIC® POF FD PE-PUR	422
HITRONIC® POF SIMPLEX PVC	423
HITRONIC® POF DUPLEX PE	424
HITRONIC® POF DUPLEX	425
HITRONIC® POF MULTI FIBRE PE-PVC	426
HITRONIC® HYBRID FD P DESINA®	427

PCF cables

HITRONIC® BUS PCF DUPLEX indoor + outdoor	428
---	-----

GOF cables

HITRONIC® HQN Outdoor Cable	429
HITRONIC® HIH Indoor Cable	430

HITRONIC® HUN Universal Cable	431
HITRONIC® HRH Breakout Cable	432
HITRONIC® HDH Mini-Breakout Cable	433
HITRONIC® FD Mobile Cable	434
HITRONIC® for special applications	435
HITRONIC® cable sets / trunk systems	436
Order form for trunk systems	437
Duplex Jumper and Pigtails	
Duplex Jumper/Patchcord Multimode	438
Duplex Jumper/Patchcord Singlemode	439
Pigtails	439
Splice boxes, wall distributors and accessories	
19" Splice Box for ST	440
19" Splice Box for SC	440
Splice Box Compact	440
Mini Wall mounted Rack	440
Accessories for Splice Box and Wall mounted Rack	441
Adapters	441

APPENDIX | ACCESSORIES | FLEXIMARK® | SILVYN® | SKINTOP® | EPIC® | HITRONIC® | ETHERLINE® | UNITRONIC® | ÖLFLEX®

The optical transmission of messages in FOC operates according to the principle of „total internal reflection.“ The reflection is created by the fact that an optically thinner cladding is placed around the light conducting core on whose interface the light totally reflects and is thereby conducted through the FOC.

Although the principle of optical message transmission has been known for a long time, not until recent years was one able to develop, produce and commercially use low loss FOCs. In a time when the need for rapid and secure communications networks is continually growing we can neither imagine a world without the transmission medium FOC nor can it be replaced.

Advantages of fibre optics over copper-based transmission

- Protection against electromagnetic interferences, i.e. cable routing can be carried out without consideration of possibly occurring sources of electromagnetic interference
- rapid made-to-measure preparation of plastic FOC; simple on-site plug-in connector installation
- Potential separation, that is potential delays are not possible
- No crosstalk and high security against listening in
- Small dimensions and minimal weight (up to 2.2 mm outside diameter and/or 4g/m for plastic FOC in Simplex model)

Among fibre optic cables there is a difference based on the material used between plastic fibres (POF), fibres made of silica glass with optical plastic cladding (PCF) and fibres made of pure silica glass (glass fibre or GOF).

Mainly for use in the industrial area, Lapp Kabel offers FOCs made of glass or plastic and/or hybrid cables.

A portion of these cables is constructively laid for heavy deployment in the energy supply chain. The overall concept of your data transmission line determines whether glass or plastic fibre optic cables are used. We offer you suitable plug-in connectors, tools and pre-fabricated FOC patch cables that match the cables being used.

Typical deployment areas for POF and PCF FOCs:

- Bus systems in automation
- Machine construction and plant engineering
- Building technology

Because of their special characteristics POF-FOC are used

- high demands at data security
- for conditions where space is limited

Typical application areas for GOF FOCs:

Everywhere where large amounts of data must be transmitted at high speed over distances of approx. 60 m to several kilometres. For example in

- Local Area Networks (LAN)
- Metropolitan Area Networks (MAN)
- Wide Area Networks (WAN)

Treatment of HITRONIC® POF cables at Lapp Kabel

We use fast-reacting FOC winders, therefore the memory attraction (adherence) of our fibre optic cable, with only the smallest of bond surfaces, can be reduced to 1.7 N. During processing we take great care to ensure that the bending stresses, which can damage FOC, are kept to an absolute minimum. Through this careful handling the optical characteristics of the cables are preserved and the attenuation properties of the fibre remain unaffected.

Properties of Glass Fibres (PCF+GOF) and Polymer Optical Fibres (POF)							
Fibre	Fibre type	Core Diameter µm	Diameter core+cladding in µm	Diameter Fibre in µm	Attenuation coefficient in dB/km	Bandwidth for 1 km in MHz	Numerical aperture
POF 980/1000	Multimode Step Index	980	1000	2200	160 at 650 nm	10 at 650 nm (100 m)	0.5
PCF 200/230	Multimode Step Index	200	230	500	10 at 650 nm 8 at 850 nm	≥ 17 at 650 nm ≥ 20 at 850 nm	0.37
GOF G 50/125 - OM2	Multimode Gradient	50	125	250	≤ 2.7 at 850 nm ≤ 0.8 at 1300 nm	≥ 500 at 850 nm ≥ 800 at 1300 nm	0.2
GOF G 50/125 - OM3	Multimode Gradient	50	125	250	≤ 2.7 at 850 nm ≤ 0.9 at 1300 nm	≥ 1500 at 850 nm ≥ 500 at 1300nm ≥ 2000 at 850 nm (Laser)	0.2
GOF G 62.5 / 125 - OM1	Multimode Gradient Index	62.5	125	250	≤ 3.5 at 850 nm ≤ 1.0 at 1300 nm	≥ 200 at 850 nm ≥ 500 at 1300 nm	0.275
GOF E 9/125	Singlemode Step Index	9	125	250	≤ 0.36 at 1310 nm ≤ 0.25 at 1550 nm		0.1

HITRONIC® POF SIMPLEX PE



Info

- Transmission lengths up to 70 m

Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Direct connector assembly

Product features

- PE buffer tube is halogen-free
- In Simplex version

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- Without outer sheath
- Standard designation: J-V2Y 1P980/1000

Technical data



Dimensions
POF 980/1000/2200 µm

Fibre type
Step index fibre
Core material:
Polymethylmethacrylate (PMMA)
Cladding material:
Fluoropolymers

Optical values
Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05



Range of temperature
-40 °C to +70 °C



Permissible bending radius
Fixed installation: 25 mm



Permissible tensile force
Temporarily: max. 15 N
Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185001	HITRONIC® POF SIMPLEX PE	POF	1	2.2	4.2

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Comparable products

- HITRONIC® POF SIMPLEX 105°C XPE see page 421
- HITRONIC® POF SIMPLEX PVC see page 423
- HITRONIC® POF DUPLEX PE see page 424

Accessories

- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

ÖLFLEX®
UNITRONIC®
ETHERLINE®
HITRONIC®
EPIC®
SKINTOP®
SILVYN®
FLEXIMARK®
ACCESSORIES
APPENDIX

HITRONIC® POF SIMPLEX PE-PUR



Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress

Product features

- Transmission lengths up to 70 m
- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes

- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- This type of fibre also has a strain relief made of aramide fibres and an outer sheath of PUR (orange)
- Standard designation: J-V2Y(ZN)11Y 1P980/1000

Technical data

- Dimensions**
POF 980/1000/5500 µm
- Fibre type**
Step index fibre
Core material:
Polymethylmethacrylate (PMMA)
Cladding material:
Fluoropolymers
- Optical values**
Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05
- Range of temperature**
-40 °C to +70 °C
- Permissible bending radius**
Temporary: 30 mm
Fixed installation: 50 mm
- Permissible tensile force**
SIMPLEX PE-PUR
Temporary: max. 350 N
Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185030	HITRONIC® POF SIMPLEX PE-PUR	POF	1	5.5	25.0

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Comparable products

- HITRONIC® POF FD PE-PUR see page 422

Accessories

- SMARTSTRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF SIMPLEX S PE-PUR / S PA-PUR



Info

- **SERCOS - Serial Realtime Communication System**

Benefits

- Compatible with the international standardised SERCOS interface

Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress
- Compatible with the international standardised SERCOS interface IEC 61491 for communication between control and drives in digitally controlled machines
- Transmission lengths up to 70 m

Product features

- Polymer optical fibre (POF) in SIMPLEX version with outer sheath
- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes

- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- A type with **PE** protective cover and **PUR** sheath (red), strain relief: longitudinal Aramide fibres, outer diameter: 3.6 mm
- Standard designation (PE-PUR): J-V2Y(ZN)11Y 1P980/1000
- A type with polyamide (**PA**) protective cover and polyurethane (**PUR**) sheath (red), strain relief: longitudinal Aramide fibres, outer diameter: 6 mm
- Standard designation (PA-PUR): J-V4Y(ZN)11Y 1P980/1000

Technical data



Dimensions

POF 980/1000/... µm

Fibre type

Step index fibre
Core material:
Polymethylmethacrylate (PMMA)
Cladding material:
Fluoropolymers

Optical values

Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05



Range of temperature

SIMPLEX S PE-PUR
-40°C to +70°C

SIMPLEX S PA-PUR
-40°C to +80°C



Permissible bending radius

SIMPLEX S PE-PUR
Temporary: 30 mm
Fixed installation: 50 mm

SIMPLEX S PA-PUR
Temporary: 30 mm
Fixed installation: 50 mm



Permissible tensile force

SIMPLEX S PE-PUR
Temporary: max. 250 N
Fixed installation: max. 100 N

SIMPLEX S PA-PUR
Temporary: max. 400 N
Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185205	HITRONIC® POF SIMPLEX S PE-PUR	POF	1	3.6	11.2
2185204	HITRONIC® POF SIMPLEX S PA-PUR	POF	1	6.0	33.2

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- SMARTSTRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF SIMPLEX 105 °C XPE



Info

- Polymer optical fibre (POF) for use up to 105 °C

Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- These plastic fibre-optic cables for industrial application are used especially for optical signal transmission at elevated temperatures up to 105 °C.
- These conditions frequently occur in industrial environments, e.g. in cleaning and drying plants.
- For data transmission in steam or gas turbines for power generation or in brick works
- Direct connector assembly
- Transmission lengths up to 70 m

Product features

- XPE buffer tube is halogen-free
- In Simplex version

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- Without outer sheath
- Standard designation: J-V2X1P 980/1000 200A 10

Technical data



Dimensions
POF 980/1000/2200 µm

Fibre type
Step index fibre
Core material:
Polymethylmethacrylate (PMMA)
Cladding material:
Fluoropolymers

Optical values
Attenuation at 650 nm wavelength:
200 dB/km
Numerical aperture: 0.58



Range of temperature
-55 °C to +105 °C



Permissible bending radius
25 mm



Permissible tensile force
Temporarily: max. 15 N
Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185202	HITRONIC® POF SIMPLEX 105 °C XPE	POF	1	2.2	4.2

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF FD PE-PUR



Info

- For highly flexible industrial applications

Application range

- These plastic optical fibres for industrial application are used for optical signal transmission when the required space is limited or where high flexibility is required.
- This highly flexible cable can also be used in the local network (LAN), computer periphery, as well as in the audio field.
- Transmission lengths up to 70 m

Product features

- Outer sheath consists of a flame retardant polyurethane mixture and is resistance against oil, abrasion and microbes
- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- This fibre consists of 217 individual cores and is known as a Multicore-Stepindex-POF. This version offers high flexibility and very low bending attenuation.
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- This type of fibre also has a strain relief made of aramide fibres and an outer sheath of PUR (orange)
- Standard designation: J-V2Y(ZN)11Y 1P 980/1000 400A 10 (Simplex)

Technical data



Dimensions
POF 980/1000/... µm

Fibre type
Step index fibre made of polymethylmethacrylate (PMMA)



Minimum bending radius
SIMPLEX

Temporary: 15 mm
Fixed installation: 15 mm
DUPLEX
Temporary: 50 mm
Fixed installation: 75 mm

Optical values
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture:
SIMPLEX 0.47
DUPLEX 0.45



Range of temperature
-20 °C to +70 °C



Permissible tensile force
Temporarily: max. 400 N
Fixed installation: max. 100 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185207	HITRONIC® POF SIMPLEX FD PE-PUR	POF	1	6.0	33.2
2185213	HITRONIC® POF DUPLEX FD PE-PUR	POF	2	7.4	60.0

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

Accessories

- SILVYN® CHAIN
- SMARTSTRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF SIMPLEX PVC



Info

- Polymer optical fibre (POF) with UL approval
- Transmission lengths up to 70 m

Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Due to the UL approval, the fibre is suitable for applications in the USA and other countries where the approval is required.

- Transmission lengths up to 70 m
- Direct connector assembly

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is grey PVC
- Colour: pebble grey (RAL 7032)
- Standard designation: J-VY 1P980/1000

Technical data

- Dimensions**
POF 980/1000/2200 µm
- Approvals**
In accordance with UL 1581 - Style 5237
- Fibre type**
Step index fibre
Core material:
Polymethylmethacrylate (PMMA)
Cladding material:
Fluoropolymers
- Minimum bending radius**
25 mm
- Optical values**
Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05
- Range of temperature**
-20°C up to +80°C
- Permissible tensile force**
SIMPLEX PVC
Temporary: max. 15 N
Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185201	HITRONIC® POF SIMPLEX PVC	POF	1	2.2	4.2

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF DUPLEX PE



Info

- Polymer optical fibre (POF) in DUPLEX version without outer sheath
- Transmission lengths up to 70 m

Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

- PE buffer tube is halogen-free

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- The two fibres of the DUPLEX cable are connected with a strap
- Without outer sheath
- Standard designation: J-V2Y 2x1P980/1000

Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- Especially for fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- Direct connector assembly

Product features

- In Duplex version

Technical data



Dimensions

POF 980/1000/... µm

Fibre type

Step index fibre
Core material:
Polymethylmetacrylate (PMMA)
Cladding material:
Fluoropolymers



Minimum bending radius

DUPLEX PE
Briefly: min. 25 mm
Fixed installation: min. 25 mm

Optical values

Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05



Range of temperature

DUPLEX PE
-40 °C up to +70 °C



Permissible tensile force

DUPLEX PE
Temporarily: max. 30 N
Fixed installation: max. 10 N

Part number	Article designation	Fibre type	Number of fibres	Weight kg/km approx.
2185010	HITRONIC® POF DUPLEX PE	POF	2	7.6

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF DUPLEX



Info

- PE - 2Y
- PVC - Y
- PUR - 11Y



Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- Plastic optical fibres for industrial use in the optical signal transmission at higher mechanical stress
- Transmission lengths up to 70 m

Product features

- In Duplex version
- Versions PE-PVC, PVC-PVC, PE-PUR, HEAVY PE-PUR
- Outer sheath is resistant against acid, lye and water

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is black PVC or PE. The two fibres of the DUPLEX cable are connected with a strap. This type also has a strain relief made of aramide fibres and outer sheath of PVC or PUR.
- Standard designation (PE-PVC): J-V2Y(ZN)Y 2P980/1000
- Standard designation (PVC-PVC): J-VY(ZN)Y 2P980/1000
- Standard designation (PE-PUR): J-V2Y(ZN)11Y 2P980/1000

Technical data

- Dimensions**
POF 980/1000 µm
- Fibre type**
Every model:
Step index fibre
Core material:
Polymethylmetacrylate (PMMA)
Cladding material:
Fluoropolymers
- Optical values**
Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.005
- Range of temperature**
PE-PVC, PVC-PVC:
-30 °C to +70 °C
PE-PUR:
-40 °C to +70 °C
HEAVY PE-PUR:
-20 °C to +85 °C
- Permissible bending radius**
PE-PVC, PVC-PVC, PE-PUR: 50 mm
HEAVY PE-PUR: 80 mm
- Permissible tensile force**
PE-PVC, PVC-PVC, PE-PUR:
Temporarily: max. 400 N
Fixed installation: max. 100 N
HEAVY PE-PUR:
Temporarily: max. 400 N
Fixed installation: max. 130 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185209	HITRONIC® POF DUPLEX PE-PVC	POF	2	6.0	37.4
2185210	HITRONIC® POF DUPLEX PVC-PVC	POF	2	6.1	38.4
2185040	HITRONIC® POF DUPLEX PE-PUR	POF	2	5.5	28.0
2185211	HITRONIC® POF DUPLEX HEAVY PE-PUR	POF	2	8.0	28.0

Please find our standard lengths at: www.lappkabel.de/en/cable-standardlengths
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- SMARTSTRIP stripping tool see page 909
- DATA STRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® POF MULTI FIBRE PE-PVC



Info

- POF Multi fibre cable
- With 6 coloured coded fibers

Benefits

- EMC security
- Clear galvanit separation
- No crosstalk
- Low weight
- High flexibility
- Easy to handle

Application range

- Plastic optical fibres for industrial use in the optical signal transmission
- For fixed installation in control cabinets, cable ducts or pipes with simple mechanical stress
- The cable is only for static laying, not free hanging (approx. 10 m connecting between electric control box)

Approvals (Norm references)



Design

- The fibre material is made of polymethylmethacrylate (PMMA)
- The protective cover directly over the step index fibre is made of coloured polyethylene (PE)
- With 6 coloured coded fibers and tear strip
- Colour code fibres: black, white, red, green, grey and orange
- The type of fibres are stranded and with an outer sheath of PVC (black)

Technical data



Dimensions

POF 6 x 980/1000/2200 µm

Fibre type

Step index fibre
Core material: Polymethylmethacrylate (PMMA)
Cladding material: Fluoropolymers

Optical values

Attenuation at 650 nm wavelength: 160 dB/km
Bandwidth-length product: 120 MHz x 20 m at 650 nm
Numerical aperture: 0.5±0.05



Range of temperature

For installation: -5°C up to +50°C
After installation: -30°C up to +70°C



Permissible bending radius

Fixed installation: 7.5 x cable diameter



Permissible tensile force

MULTI FIBRE
400 N
SIMPLEX FIBRE
Temporary: max. 15 N
Fixed installation: max. 5 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
MULTI FIBRE					
3036010	HITRONIC® POF MULTI FIBRE 6 PE-PVC	POF	6	8.8	63.0
SIMPLEX FIBRE					
3035565	HITRONIC® POF SIMPLEX PE black	POF	1	2.2	4.2
3035566	HITRONIC® POF SIMPLEX PE white	POF	1	2.2	4.2
3035567	HITRONIC® POF SIMPLEX PE red	POF	1	2.2	4.2
3035568	HITRONIC® POF SIMPLEX PE green	POF	1	2.2	4.2
3035569	HITRONIC® POF SIMPLEX PE grey	POF	1	2.2	4.2
3035570	HITRONIC® POF SIMPLEX PE orange	POF	1	2.2	4.2

Also versions with more fibres available.

Accessories

- DATA STRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

HITRONIC® HYBRID FD P DESINA®



Info

- **DESINA® compliant highly-flexible hybrid cable**

Benefits

- Standardisation bodies (DESINA®, PNO=Profibus User Organisation) have defined a standard hybrid cable with copper conductors and POF for equipment and assemblies in distributed machine and system applications that guarantees the data transmission via a fibre-optic cable and the supply of power from a remote source via copper conductors.
- Combines the advantages of FD technology and optical fibre engineering

Product features

- For the application described, Lapp Kabel offers the HITRONIC® HYBRID FD P DESINA®, which maintains the cable specification.
- An increased resistance against oil, wear and tear and microbes is achieved by the polyurethane outer sheath
- The polyurethane outer sheath is also halogen free, adhesion free and resistant against hydrolysis.

- Flame retardant according to IEC 60332-1-2

Approvals (Norm references)



Design

- Superfine strands of plain copper wires; PVC core insulation black with white printed numbers 1 - 4
- Twisted together with 2 polymer optical fibres 980/1000
- The protective cover /buffer tube directly over the step index fibre is made of black polyethylene (PE)
- PUR outer sheath, colour: violet according to RAL 4001
- Standard designation: J-2Y11Y2P 980/1000 220A 10 FFLiY 4x1,5 300/500V

Technical data

- Core identification code**
Black with printed white numbers
- Conductor stranding**
Extra fine wire
- Minimum bending radius**
7,5 x outer diameter
- Rated voltage**
U_o/U:
300/500 V
- Optical values**
Attenuation at 650 nm wavelength:
160 dB/km
Bandwidth-length product:
10 MHz x 100 m
Numerical aperture: 0.5±0.05
- Optical fibre type**
Step index fibre made of polymethylmethacrylate (PMMA)
Dimension: POF 980/1000 µm
- Range of temperature**
Flexible use: -5°C up to +70°C
Fixed installation: -40°C up to +80°C
- Tension load**
max. 100 N

Part number	Article designation	Number of cores and mm ² per conductor	Outer diameter mm	Copper index kg/km	Weight kg/km approx.
2186001	HITRONIC® HYBRID FD P DESINA®	4 x 1,5 + 2 x POF 980 / 1000	10.0 ± 0,4 mm	57.6	135.0

Copper price basis: EUR 150 / 100 kg; For utilization and definition of ‚Metal price basis‘ and ‚Metal index‘ see Appendix T17
Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- SILVYN® CHAIN
- Universal strip stripping and cutting tool see page 907
- SMARTSTRIP stripping tool see page 909
- Connectors, tools and further accessories on request

HITRONIC® BUS PCF DUPLEX indoor + outdoor



Info

- Polymer clad fibre (PCF)
- Data transmission up to approx. 500 m

Benefits

- To be used for direct connector assembly
- Easy to assemble
- PCF fibre » very robust
- EMC security
- High mechanical resistance

- PE-/PUR- outer sheath is halogen-free

Approvals (Norm references)



Design

- DUPLEX cable with fibre core of quartz glass and a fluorinated polymer (plastic, ETFE) sheath
- 2 step index fibres PCF 200/230 (Plastic Clad Fibre)
- Outer sheath of PUR (indoor) or PE (outdoor)
- Standard designation (indoor): J-V(ZN)H11Y 2K200/230
- Standard designation (outdoor): AT-VQ(ZN)HB2Y 2K200/230

Application range

- Application in industrial environments, in particular for data transmission in field bus systems, such as PROFIBUS, INTERBUS etc.

Product features

- Data transmission up to approx. 500 m
- Useable wavelengths: 650 nm and 850 nm
- In Duplex version
- Good resistance against oil, petrol and acids

Technical data

Dimensions
PCF 200/230 µm

Fibre type
Step index fibre

Minimum bending radius
(indoor) 120 mm
(outdoor) 200 mm

Optical values
Attenuation at 850 nm wavelength: 8 dB/km
Bandwidth-length product: 20 MHz x km (850 nm)
Numerical aperture: 0.37

Range of temperature
For installation: -5°C up to +50°C
Operation: -20 °C up to +70 °C

Permissible tensile force
Fixed installation (indoor): 400 N
Fixed installation (outdoor): 500 N

Part number	Article designation	Fibre type	Number of fibres	Outer diameter in mm max.	Weight kg/km approx.
2185311	HITRONIC® BUS PCF PUR DUPLEX indoor	PCF	2	8.0	55.0
2185302	HITRONIC® BUS PCF PE DUPLEX outdoor	PCF	2	10.5	90.0

Mille-Tie™ is a registered trademark of Millepede™ International Ltd.

Accessories

- SMARTSTRIP stripping tool see page 909
- DATA STRIP stripping tool see page 909
- Mille-Tie cable ties see page 968
- Damage free cable bundles through: Mille-Tie™
- Connectors, tools and further accessories on request

ÖLFLEX®
UNITRONIC®
ETHERLINE®
HITRONIC®
EPIC®
SKINTOP®
SILVYN®
FLEXIMARK®
ACCESSORIES
APPENDIX

HITRONIC® HQN Outdoor Cable



Info

- Outdoor cable with central buffer tube
- UV light resistant
- halogen-free

Benefits

- F.O. Glass Fibre Optical cable for outdoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: empty plastic pipes, ducts and trays
- Suitable for direct burial

Application range

- For outdoor use
- Campus backbone
- Direct burial
- WAN applications
- Industrial environment

Product features

- Central loose tube with up to 24 fibres
- Robust and halogen-free PE outer sheath
- Longitudinal watertight
- Protection against rodent
- High permissible tensile force

Approvals (Norm references)



Design

- Fibres with primary coating
- Gel-filled loose tube
- Glass yarns with water-blocking tape
- PE outer sheath
- Colour: black (similar to RAL 9005)

Technical data

- Standard designation**
A-DQ(ZN)B2Y
- Range of temperature**
Operation: -20°C up to +60°C
Installation: 0°C up to +50°C
Storage: -25°C up to +70°C (HQN1000)
-40°C up to +70°C (HQN1500, HQN2500)
- Permissible bending radius**
With tensile:
20 x cable diameter
Without tensile:
15 x cable diameter
- Permissible tensile force**
1.000 N to 2.500 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® HQN1000 Multimode G 50					
2760041	HITRONIC® HQN1000 4G 50/125	50/125	4	1,000	6.5
2760081	HITRONIC® HQN1000 8G 50/125	50/125	8	1,000	6.5
2760121	HITRONIC® HQN1000 12G 50/125	50/125	12	1,000	6.5
2760241	HITRONIC® HQN1000 24G 50/125	50/125	24	1,000	6.8
HITRONIC® HQN1000 Multimode G 62.5					
2761041	HITRONIC® HQN1000 4G 62.5/125	62,5/125	4	1,000	6.5
2761081	HITRONIC® HQN1000 8G 62.5/125	62,5/125	8	1,000	6.5
2761121	HITRONIC® HQN1000 12G 62.5/125	62,5/125	12	1,000	6.5
2761241	HITRONIC® HQN1000 24G 62.5/125	62,5/125	24	1,000	6.8
HITRONIC® HQN1000 Singlemode E 9					
2762041	HITRONIC® HQN1000 4E 9/125	9/125	4	1,000	6.5
2762081	HITRONIC® HQN1000 8E 9/125	9/125	8	1,000	6.5
2762121	HITRONIC® HQN1000 12E 9/125	9/125	12	1,000	6.5
2762241	HITRONIC® HQN1000 24E 9/125	9/125	24	1,000	6.8
HITRONIC® HQN1500 Multimode G 50					
276004	HITRONIC® HQN1500 4G 50/125	50/125	4	1,500	7.5
276008	HITRONIC® HQN1500 8G 50/125	50/125	8	1,500	7.5
276012	HITRONIC® HQN1500 12G 50/125	50/125	12	1,500	7.5
HITRONIC® HQN1500 Multimode G 62.5					
276104	HITRONIC® HQN1500 4G 62.5/125	62,5/125	4	1,500	7.5
276108	HITRONIC® HQN1500 8G 62.5/125	62,5/125	8	1,500	7.5
276112	HITRONIC® HQN1500 12G 62.5/125	62,5/125	12	1,500	7.5
276124	HITRONIC® HQN1500 24G 62.5/125	62,5/125	24	1,500	7.8
HITRONIC® HQN1500 Singlemode E 9					
276208	HITRONIC® HQN1500 8E 9/125	9/125	8	1,500	7.5
276212	HITRONIC® HQN1500 12E 9/125	9/125	12	1,500	7.5
276224	HITRONIC® HQN1500 24E 9/125	9/125	24	1,500	7.8
HITRONIC® HQN2500 Multimode G 50					
276304	HITRONIC® HQN2500 4G 50/125	50/125	4	2,500	9.6
276308	HITRONIC® HQN2500 8G 50/125	50/125	8	2,500	9.6
276312	HITRONIC® HQN2500 12G 50/125	50/125	12	2,500	9.6
276324	HITRONIC® HQN2500 24G 50/125	50/125	24	2,500	9.8
HITRONIC® HQN2500 Multimode G 62.5					
276404	HITRONIC® HQN2500 4G 62.5/125	62,5/125	4	2,500	9.6
276408	HITRONIC® HQN2500 8 G 62.5/125	62,5/125	8	2,500	9.6
276412	HITRONIC® HQN2500 12G 62.5/125	62,5/125	12	2,500	9.6
HITRONIC® HQN2500 Singlemode E 9					
276508	HITRONIC® HQN2500 8E 9/125	9/125	8	2,500	9.6
276512	HITRONIC® HQN2500 12E 9/125	9/125	12	2,500	9.6

The cables can also be supplied as cut-to-measure LWL trunks. Special multimode fibres (50/125 OM3) for 10 Gigabit Ethernet operation on request.

Accessories

- Pigtails see page 439
- DATA STRIP stripping tool see page 909

HITRONIC® HIH Indoor Cable



Info

- With central buffer tube and rodent protection
- Fire Security Cable with a flame-retardant, non-corrosive (halogen-free) sheath (FRNC)

Benefits

- F.O. Glass Fibre Optical cable for indoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: laying in trunking, ducts and trays, building riser, empty plastic pipes, raised floors and plenums

- Halogen-free and flame retardant FRNC outer sheath
- Longitudinal watertight
- Low protection against rodent
- High permissible tensile force

Approvals (Norm references)



Application range

- For indoor use
- Secondary and tertiary areas
- Premise cabling – backbone

Design

- Fibres with primary coating
- Gel-filled loose tube
- FRNC outer sheath
- Colour: orange

Product features

- Central loose tube with up to 24 fibres

Technical data

Standard designation
I-D(ZN)H



Range of temperature
Operation: -20°C up to +60°C
Installation: 0°C up to +50°C
Storage: -25°C up to +70°C



Permissible bending radius
With tensile:
140 mm
Without tensile:
100 mm



Permissible tensile force
1.000 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® HIH 1000 Multimode G 50					
270004	HITRONIC® HIH 1000 4G 50/125	50/125	4	1,000	5.9
270008	HITRONIC® HIH 1000 8G 50/125	50/125	8	1,000	5.9
270012	HITRONIC® HIH 1000 12G 50/125	50/125	12	1,000	5.9
270024	HITRONIC® HIH 1000 24G 50/125	50/125	24	1,000	6.3
HITRONIC® HIH 1000 Multimode G 62.5					
270104	HITRONIC® HIH 1000 4G 62.5/125	62,5/125	4	1,000	5.9
270108	HITRONIC® HIH 1000 8G 62.5/125	62,5/125	8	1,000	5.9
270112	HITRONIC® HIH 1000 12G 62.5/125	62,5/125	12	1,000	5.9
270124	HITRONIC® HIH 1000 24G 62.5/125	62,5/125	24	1,000	6.3
HITRONIC® HIH 1000 Singlemode E 9					
270204	HITRONIC® HIH 1000 4E 9/125	9/125	4	1,000	5.9
270208	HITRONIC® HIH 1000 8E 9/125	9/125	8	1,000	5.9
270212	HITRONIC® HIH 1000 12E 9/125	9/125	12	1,000	5.9
270224	HITRONIC® HIH 1000 24E 9/125	9/125	24	1,000	6.3

Accessories

- Pigtaills see page 439
- DATA STRIP stripping tool see page 909

ÖLFLEX® | UNITRONIC® | ETHERLINE® | HITRONIC® | EPIC® | SKINTOP® | SILVYN® | FLEXIMARK® | ACCESSORIES | APPENDIX

HITRONIC® HUN Universal Cable



Info

- F.O. Universal cable
- Fire Security Cable with a flame-retardant, non-corrosive (halogen-free) sheath (FRNC)

Benefits

- F.O. Glass Fibre Optical cable for outdoor and indoor with nonmetallic Glass yarn strength members
- Easy to install due to compact structure, high flexibility, robust sheath and small bending radius
- Methods of Deployment: laying in trunking, ducts and trays, building riser, plastic pipes, raised floors and plenums

Application range

- For indoor and outdoor use
- Secondary and tertiary areas
- Premise cabling – backbone
- Industrial environment

Product features

- Central loose tube with up to 24 fibres
- Halogen-free and flame retardant FRNC outer sheath
- Longitudinal watertight
- Protection against rodent
- High permissible tensile force

Approvals (Norm references)



Design

- Fibres with primary coating
- Gel-filled loose tube
- Glass yarns with water-blocking tape
- FRNC outer sheath
- Colour: green (similar to RAL 6018)

Technical data

- **Standard designation**
A/I-DQ(ZN)BH
- **Range of temperature**
Operation: -20°C up to +60°C
Installation: 0°C up to +50°C
Storage: -20°C up to +70°C
- **Permissible bending radius**
With tensile:
20 x cable diameter
Without tensile:
15 x cable diameter
- **Permissible tensile force**
1,000 N to 1,500 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® HUN1000 Multimode G 50					
2740041	HITRONIC® HUN1000 4G 50/125	50/125	4	1,000	6.5
2740081	HITRONIC® HUN1000 8G 50/125	50/125	8	1,000	6.5
2740121	HITRONIC® HUN1000 12G 50/125	50/125	12	1,000	6.5
2740241	HITRONIC® HUN1000 24G 50/125	50/125	24	1,000	6.8
HITRONIC® HUN1000 Multimode G 62.5					
2741041	HITRONIC® HUN1000 4G 62.5/125	62,5/125	4	1,000	6.5
2741081	HITRONIC® HUN1000 8G 62.5/125	62,5/125	8	1,000	6.5
2741121	HITRONIC® HUN1000 12G 62.5/125	62,5/125	12	1,000	6.5
HITRONIC® HUN1000 Singlemode E 9					
2742041	HITRONIC® HUN1000 4E 9/125	9/125	4	1,000	6.5
2742081	HITRONIC® HUN1000 8E 9/125	9/125	8	1,000	6.5
2742121	HITRONIC® HUN1000 12E 9/125	9/125	12	1,000	6.5
2742241	HITRONIC® HUN1000 24E 9/125	9/125	24	1,000	6.8
HITRONIC® HUN1500 Multimode G 50					
274004	HITRONIC® HUN1500 4G 50/125	50/125	4	1,500	8.5
274008	HITRONIC® HUN1500 8G 50/125	50/125	8	1,500	8.5
274012	HITRONIC® HUN1500 12G 50/125	50/125	12	1,500	8.5
HITRONIC® HUN1500 Multimode G 62.5					
274104	HITRONIC® HUN1500 4G 62.5/125	62,5/125	4	1,500	8.5
274112	HITRONIC® HUN1500 12G 62.5/125	62,5/125	12	1,500	8.5
274124	HITRONIC® HUN1500 24G 62.5/125	62,5/125	24	1,500	8.8
HITRONIC® HUN1500 Singlemode E 9					
274204	HITRONIC® HUN1500 4E 9/125	9/125	4	1,500	8.5
274208	HITRONIC® HUN1500 8E 9/125	9/125	8	1,500	8.5
274212	HITRONIC® HUN1500 12E 9/125	9/125	12	1,500	8.5
274224	HITRONIC® HUN1500 24E 9/125	9/125	24	1,500	8.8

The cables can also be supplied as cut-to-measure LWL trunks. Special multimode fibres (50/125 OM3) for 10 Gigabit Ethernet operation on request.

Accessories

- Pigtaills see page 439
- DATA STRIP stripping tool see page 909

HITRONIC® HRH Breakout Cable



Info

- To be used for direct connector assembly

Benefits

- F.O. Glass Fibre Optical Breakout Cable for indoor with up to 24 simplex units with central strength member
- Very easy to install due to compact structure, high flexibility, small bending radius and suitable for field assembly
- Methods of Deployment: laying in trunking, ducts and trays, building riser, empty plastic pipes, raised floors and plenums for short distances
- Suitable for field assembly

Application range

- Breakout cable
- Universal cable for cabling of buildings
- Connection cable
- Tertiary cabling
- Premise cabling – backbone

Product features

- Installation cable with up to 24 simplex units with central strength member
- Halogen-free and flame retardant FRNC outer and inner sheath
- Mechanical robust
- Suitable for field assembly
- High flexibility

Approvals (Norm references)



Design

- FRNC 2,1 mm Simplex units
- GFK central strength member
- FRNC outer sheath
- Colour: orange (similar to RAL 2003)

Technical data

Standard designation

AT-V(ZN)HH



Range of temperature

Operation: -10°C up to +60°C

Installation: 0°C up to +50°C

Storage: -25°C up to +70°C



Permissible bending radius

With tensile:

20 x cable diameter

Without tensile:

15 x cable diameter



Permissible tensile force

Short term: 2000 N

Long term: 1500 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® HRH Multimode G 50					
21806879	HITRONIC® HRH1500 2G 50/125	50/125	2	1,500	7.2
21807090	HITRONIC® HRH1500 4G 50/125	50/125	4	1,500	7.2
21807093	HITRONIC® HRH1500 8G 50/125	50/125	8	1,500	10.2
21807094	HITRONIC® HRH1500 12G 50/125	50/125	12	1,500	13.2
HITRONIC® HRH Multimode G 62.5					
21806878	HITRONIC® HRH1500 2G 62.5/125	62,5/125	2	1,500	7.2
21807096	HITRONIC® HRH1500 4G 62.5/125	62,5/125	4	1,500	7.2
21807098	HITRONIC® HRH1500 8G 62.5/125	62,5/125	8	1,500	10.2

The cables can also be supplied as cut-to-measure LWL trunks.

Accessories

- DATA STRIP stripping tool see page 909

ÖLFLEX®
UNITRONIC®
ETHERLINE®
HITRONIC®
EPIC®
SKINTOP®
SILVYN®
FLEXIMARK®
ACCESSORIES
APPENDIX

HITRONIC® HDH Mini-Breakout Cable



Info

- To be used for direct connector assembly

Benefits

- F.O. Glass Fibre Optical Mini-Breakout Cable for indoor with up to 12 fibres
- Very easy to install due to small dimensions, high flexibility, small bending radius and suitable for field assembly
- Methods of Deployment: laying in trunking, ducts and trays, building riser, empty plastic pipes, raised floors and plenums for short distances
- Suitable for field assembly

Application range

- Universal cable for cabling of buildings (mini breakout)
- Connection cable
- Mini-Breakout cable
- Tertiary cabling
- Premise cabling - backbone

Product features

- Installation cable with up to 12 semi tight buffered fibres
- Halogen-free and flame retardant FRNC outer sheath
- Mechanical robust
- Suitable for field assembly
- High flexibility

Approvals (Norm references)



Design

- Fibres (900 µm)
- Glass yarns (non-metallic strain relief element)
- FRNC outer sheath
- Colour: orange (similar to RAL 2003)

Technical data

- Standard designation**
I-V(ZN)H
- Range of temperature**
 Operation: -10°C up to +60°C
 Installation: 0°C up to +50°C
 Storage: -25°C up to +70°C
- Permissible bending radius**
 **With tensile:**
 20 x cable diameter
Without tensile:
 15 x cable diameter
- Permissible tensile force**
 Short term: 1500 N
 Long term: 1000 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® HDH Multimode G 50					
267004	HITRONIC® HDH1000 4G 50/125	50/125	4	1,000	6.3
267008	HITRONIC® HDH1000 8G 50/125	50/125	8	1,000	6.9
267012	HITRONIC® HDH1000 12G 50/125	50/125	12	1,000	7.2
HITRONIC® HDH Multimode G 62.5					
267104	HITRONIC® HDH1000 4G 62.5/125	62,5/125	4	1,000	6.3
267108	HITRONIC® HDH1000 8G 62.5/125	62,5/125	8	1,000	6.9

Accessories

- GOF Toolbox for use with Multimode (SC, ST, LC)
- DATA STRIP stripping tool see page 909

HITRONIC® FD Mobile Cable



■ Benefits

- F.O. Glass Fibre Optical cable for mobile applications outdoor and indoor with nonmetallic Glass yarn strength members
- Very easy to install due to small dimensions, very high flexibility, very small bending radius and suitable for field assembly
- Suitable for field assembly
- Designed for despooling and respooling repeatedly

■ Application range

- Connection cable
- Mini-Breakout cable
- Industrial environment
- High flexibility environment (power chain)
- Premise cabling – backbone

■ Product features

- Robust and flame retardant PUR outer sheath
- Longitudinal watertight
- Suitable for field assembly
- Very high flexibility

■ Approvals (Norm references)



■ Design

- Tight buffered fibres
- Mobile installation cable with up to 8 tight buffered fibres
- Glass yarns with water-blocking tape
- PUR outer sheath

■ Technical data

Standard designation
AT-VQ(ZN)11Y

Range of temperature
Operation: -30 °C up to +70 °C
Laying: -5 °C up to +50 °C

Permissible bending radius
15 x cable diameter

Permissible tensile force
800 N, 950 N

Part number	Article designation	Fibre type	Number of fibres	Tension load capacity in N	Outer diameter in mm max.
HITRONIC® FD Multimode G 50					
21807048	HITRONIC® FD800 4G 50/125	50/125	4	800	5.8
21807047	HITRONIC® FD950 6G 50/125	50/125	6	950	6.3
HITRONIC® FD Multimode G 62.5					
21807045	HITRONIC® FD800 4G 62.5/125	62.5/125	4	800	5.8
21807050	HITRONIC® FD950 6G 62.5/125	62.5/125	6	950	6.3

The cables can also be supplied as cut-to-measure LWL trunks. Also with 8 fibers available.

■ Accessories

- Pigtails see page 439
- SILVYN® CHAIN
- SMARTSTRIP stripping tool see page 909

ÖLFLEX® | UNITRONIC® | ETHERLINE® | HITRONIC® | EPIC® | SKINTOP® | SILVYN® | FLEXIMARK® | ACCESSORIES | APPENDIX



HYBRID cable



Corrugated steel tape cables



Aerial cable

HITRONIC® HQH

HYBRID cable

A-DQS(ZN)B2Y

This cable can accommodate up to 264 glass fibres. The co-stranded copper quads (maximum of 6) can be used for signal transmission or for locating the cable. Longitudinal water tightness and the abrasion-resistant PE outer sheath make this cable highly suitable for drawing into empty pipes and cable ducts. The glass fibre yarns are introduced through the cable core assembly, guaranteeing strain relief and protection against rodent attack.

■ Applications

- Feeding into occupied cable conduits
- Blowing into suitable pipe installations
- Laying in cable ducts and on cable racks at risk of rodent attack
- Laying in industrial environments

■ Technical data

Max. number of fibres
264 + 6 copper quads
Max. number of bundle cores
11
Operating temperature
-40 °C to +70 °C
Max. tensile force
9000 N
Max. transverse pressure
300 N/cm



HITRONIC® HQW HITRONIC® HQWplus

Corrugated steel tape cables

A-DQ(ZN)BW2Y /

A-DQ(ZN)B2YW2Y

This cable can accommodate up to 144 glass fibres. Thanks to its tensile strength, longitudinal water tightness (with swell strips), corrugated steel tape and abrasion-resistant PE outer sheath, this cable is highly suitable for drawing into empty plastic pipes, laying in cable ducts and laying directly in the earth. It is especially suitable for use in mechanically and chemically challenging environments. The corrugated steel tape guarantees not only high tensile strength but also protection against rodent attack.

■ Applications

- Feeding into cable conduits
- Laying directly in the earth
- Laying in cable ducts and on cable racks at risk of rodent attack
- Laying in industrial environments
- Chemical industry applications

■ Technical data

Max. number of fibres
144
Max. number of bundle cores
12
Operating temperature
-40 °C to +70 °C
Max. tensile force
5700 N
Max. transverse pressure
450 N/cm



HITRONIC® HQA

Aerial cable

A-DQ(ZN)B2Y (ADSS)

This cable has been specially developed as a dielectric aerial cable. The longitudinally watertight design with gel-filled bundle cores and swell strips protects the fibres against penetrating water and moisture. The special glass-fibre yarn strain relief withstands the heaviest vibration and oscillation. The UV-resistant sheath in high density polyethylene protects the cable against extreme environmental influences. The cable can be fixed using conventional tension rods and armour rods.

■ Applications

- Dielectric self-supporting aerial cable ADSS for free-hanging applications
- Resistant to environmental influences such as wind, rain, snow, ice and sunlight
- In electrical fields with field strengths < 12 kV/m

■ Technical data

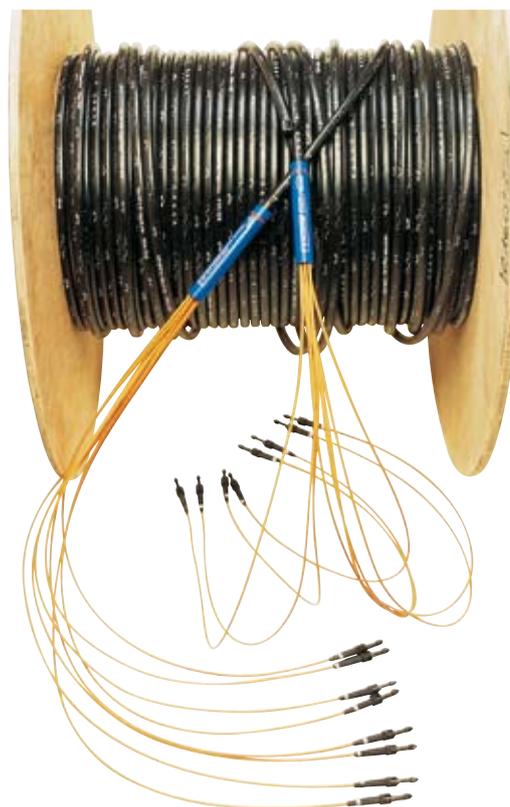
Max. number of fibres
144
Max. number of bundle cores
12
Operating temperature
-40 °C to +75 °C
Max. tensile force
13.800-25.000 N depending on number of fibres
Max. transverse pressure
400 N/cm



Two different connection types are used with fibre optic cables:

1. Detachable connections realised with plug connectors. In this case it is necessary to attach a plug to a glass fibre. This calls for trained personnel and expensive special tools.
2. Non-detachable connections created by directly splicing two glass fibres together. To do this requires highly trained personnel and very expensive equipment. If the necessary resources are used only occasionally, the investment is very unlikely to pay for itself.

The answer: The Lapp fibre trunk system.



Advantages

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, 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:

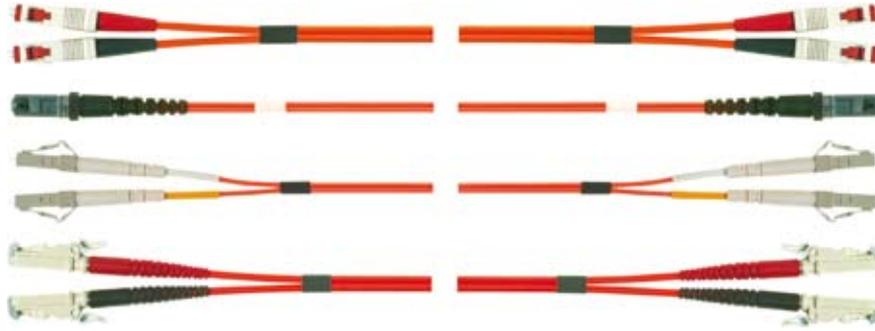
- Length of cable run (effective run +3 to 5 metres reserve on either side)
- Fibre type (SM 9 µm, MM 50 µm or 62.5 µm)
- Number of fibres (2, 4, 6, 8 ... to 48 fibres)
- Plug type (ST, SC, DIN, E-2000 including mixed)
- Cable type (indoor, outdoor, rodent protection etc.)
- Special type on request

Lapp Systems GmbH, Boevingen 127, DE- 53804 Much, Tel.: +49(0)2245/9166-0, info@lappsystems.de

Customer no.:	
Company:	
Street:	Delivery address:
City:	
Country:	
Contact:	
Tel.:	Delivery date:
E-Mail:	

1. Number of trunks:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Cable length [m] :	—	—	—	—
3. Fibre optical cable: (please checkmark cable type)				
HITRONIC® HQN Outdoor cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HITRONIC® HUN Universal Cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HITRONIC® HRH Breakout Cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HITRONIC® FD Mobile Cable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Fibre type:				
Singlemode 9/ 125 µm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multimode 50/ 125 µm (OM2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multimode 50/ 125 µm (OM3)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multimode 62,5/ 125 µm (OM1)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Number of connectors at each side:				
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Connector type:				
ST / ST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ST / SC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SC / SC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LC / LC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Special version – please enter the required connector type on each side (A/B):	A	—	—	—
	B	—	—	—

Duplex Jumper/Patchcord Multimode



Product features

- Jumper cables are used to make the connection between the workplace PC and the FOC socket. In the data cabinet jumper cables are used to make the connections between the FOC splice box and the active component.

Media converters are also connected with jumper cables. Direct connections between two active components in the in-house area are frequently made with special lengths.

- In our glass fiber assembly we produce individual jumper cables with different plug variations at the customer's request.

- Standard length: 2 m
- Cable colour multimode: orange

Approvals (Norm references)



Part number	Article designation	PU
Duplex Jumper Multimode 50 µm		
93681	Duplex Jumper ST / ST 50 µm, 2,0 m	1 piece
93561	Duplex Jumper SC / SC 50 µm, 2,0 m	1 piece
94641	Duplex Jumper ST / SC 50 µm, 2,0 m	1 piece
9510	Duplex Jumper MTRJ / MTRJ 50 µm, 2,0 m	1 piece
9511	Duplex Jumper MTRJ / SC 50 µm, 2,0 m	1 piece
9513	Duplex Jumper MTRJ / ST 50 µm, 2,0 m	1 piece
9509	Duplex Jumper LC / LC 50 µm, 2,0 m	1 piece
9508	Duplex Jumper LC / SC 50 µm, 2,0 m	1 piece
9501	Duplex Jumper LC / ST 50 µm, 2,0 m	1 piece
9457	Duplex Jumper E2000 / E2000 50 µm, 2,0 m	1 piece
Duplex Jumper Multimode 62.5 µm		
93781	Duplex Jumper ST / ST 62.5 µm, 2,0 m	1 piece
93581	Duplex Jumper SC / SC 62.5 µm, 2,0 m	1 piece
94651	Duplex Jumper ST / SC 62.5 µm, 2,0 m	1 piece
9521	Duplex Jumper MTRJ / SC 62.5 µm, 2,0 m	1 piece
9523	Duplex Jumper MTRJ / ST 62.5 µm, 2,0 m	1 piece
9519	Duplex Jumper LC / LC 62.5 µm, 2,0 m	1 piece
9528	Duplex Jumper LC / SC 62.5 µm, 2,0 m	1 piece
9531	Duplex Jumper LC / ST 62.5 µm, 2,0 m	1 piece

Further lengths and connector types on request.

Duplex Jumper/Patchcord Singlemode



Product features

- Jumper cables are used to make the connection between the workplace PC and the FOC socket. In the data cabinet jumper cables are used to make the connections between the FOC splice box and the active component. Media converters are also connected with

- jumper cables. Direct connections between two active components in the in-house area are frequency made with special lengths.
- In our glass fiber assembly we produce individual jumper cables with different plug variations at the customer's request.

- Standard length: 2 m
- Cable colour singlemode: yellow

Approvals (Norm references)



Part number	Article designation	PU
Duplex Jumper Singlemode 9 µm		
94841	Duplex Jumper ST / ST 9 µm, 2.0 m	1 piece
94891	Duplex Jumper SC / SC 9 µm, 2.0 m	1 piece
94931	Duplex Jumper ST / SC 9 µm, 2.0 m	1 piece
9498	Duplex Jumper E2000-HRL / LC 9 µm, 2.0 m	1 piece
9495	Duplex Jumper E2000-HRL / SC 9 µm, 2.0 m	1 piece
9477	Duplex Jumper E2000-HRL / E2000-HRL 9 µm, 2.0 m	1 piece

Further lengths and connector types on request.

Pigtails



Product features

- The plug connection to our HQN, HIH or HUN cable series is made by manufacturing a splice connection (fiber to fiber) between cable and pigtail.

- Fibre diameter: 900 µm
- Standard length: 2 m
- Colour: multimode green, singlemode yellow

Approvals (Norm references)



Part number	Article designation	PU
Pigtail Multimode 50 µm		
93911	ST-Pigtail simplex 50 µm, 2.0 m	12 piece
93411	SC-Pigtail simplex 50 µm, 2.0 m	12 piece
Pigtail Multimode 62.5 µm		
93931	ST-Pigtail simplex 62.5 µm, 2.0 m	12 piece
93441	SC-Pigtail simplex 62.5 µm, 2.0 m	12 piece
Pigtail Singlemode 9 µm		
93471	ST-Pigtail simplex 9 µm, 2.0 m	12 piece
93401	SC-Pigtail simplex 9 µm, 2.0 m	12 piece
9396	E2000-HRL-Pigtail simplex 9 µm, 2.0 m	12 piece

Further connector types on request (e.g. LC, MTRJ, E2000).

19" Splice Box for ST



Product features

- To hold up to 12 or 24 fibres
- Including front panel with 12 or 24 "ST" holes
- Can be pulled out
- Unpopulated
- For max. 4 splicing cartridges
- Height: 1 RU

- Dimensions (WxHxD): 483 x 44.5 x 244 mm
- Material: Steel plate 1.5 mm
- Colour: light grey (RAL 7035)

Approvals (Norm references)



Part number	Article designation	PU
CE9138	19" Splice Box for 12 ST	1 piece
CE9139	19" Splice Box for 24 ST	1 piece

Splice boxes for higher fibre cables with further connector types on request (e.g. LC/MTRJ/E2000). Also as pre-assembled version including couplings and pigtails.

19" Splice Box for SC



Product features

- To hold up to 24 fibres
- Including front panel with 12 or 24 "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 (Norm references)



Part number	Article designation	PU
CE9135	19" Splice Box für SC	1 piece

Splice boxes for higher fibre cables with further connector types on request (e.g. LC/MTRJ/E2000). Also as pre-assembled version including couplings and pigtails.

Splice Box Compact



Product features

- Panel mounting
- Lockable
- Max. capacity of 4 splicing cartridges or 2 splicing cartridges and one distribution plate
- Distribution plate for 8 x ST couplings
- Distribution plate for 4 x SC-duplex couplings

- Dimensions (WxHxD): 265 x 150 x 55 mm
- Colour: light grey (RAL 7035)

Approvals (Norm references)



Part number	Article designation	PU
Splice Box Compact		
CE9147	Splice Box Compact	1 piece

Mini Wall mounted Rack



Product features

- Panel mounting
- Lockable
- Max. capacity of 8 splicing cartridges or 4 splicing cartridges and one distribution plate
- Dimensions (WxHxD): 320 x 280 x 54 mm
- Colour: light grey (RAL 7035)
- Accessories for Mini Wall mounted Rack
- Distribution plate for 24 x ST couplings

- Distribution plate for 24 x SC-simplex couplings
- Distribution plate for 12 x SC-duplex couplings
- Colour: light grey (RAL 7035)

Approvals (Norm references)



Part number	Article designation	PU
Mini Wall mounted Rack		
CE9150	Mini Wall mounted Rack	1 piece
Accessories for Mini Wall mounted Rack		
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

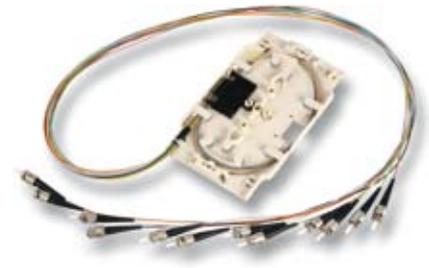
Accessories for Splice Box and Wall mounted Rack

Product features

- Splicing cassette for up to 2 splicing protection holders
- Cover for splicing cartridge
- Splicing protection holder 12-fold
- Splicing protection sleeve for ANT splicing device

- Blind cap instead of E2000 coupling
- Blind cap instead of ST coupling
- Blind cap instead of SC duplex coupling

Approvals (Norm references)



Part number	Article designation	PU
Accessories for Splice Box and Wall mounted Rack		
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

Adapters

Product features

- Adapters are used to connect glass fiber connectors with identical or different connector types.

Approvals (Norm references)



Part number	Article designation	PU
Multimode		
CE93191	ST / ST Simplex-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
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

Further connector types on request (e.g. LC, MTRJ, E2000).