

# FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

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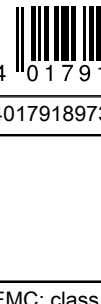
FO converter, for converting 10/100Base-T to polymer and PCF fiber, (660 nm), SC-RJ FO connection (PROFINET standard), rail-mountable, supply 24 V DC

## Your advantages

- Backplane bus contact, enabling alternative or redundant 24 V power supply
- Link through function for easy connection monitoring. The availability of the connected cable connection and devices is monitored and indicated.
- Choice between local or transparent auto negotiation function for maximum transmission capacity



## Key Commercial Data

Packing unit	1 pc
GTIN	
GTIN	4017918973957

## Technical data

### Note

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	22.5 mm
Height	99 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-30 °C ... 70 °C
Permissible humidity (operation)	10 % ... 95 % (non-condensing)
Altitude	≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation)
Degree of protection	IP20

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## Technical data

### Ambient conditions

Noise immunity	EN 61000-6-2:2005
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### General

Electrical isolation	VCC // Ethernet
Test voltage data interface/power supply	1500 V
	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 50081-2
Net weight	120.1 g
Housing material	PA V0
Color	green
MTBF	564 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	136 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
MTTF	885 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	446 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	202 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)

### Power supply

Nominal supply voltage	24 V DC
Supply voltage range	18 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
	23 V DC ... 25 V DC (as an alternative or redundant, via backplane bus contact and system current supply)
Typical current consumption	≤ 100 mA (24 V DC)
Protective circuit	Reverse polarity protection
Connection method	Plug-in screw terminal block (COMBICON), redundancy possible

### Interfaces

Interface 1	Ethernet interface, 10/100Base-T(X) in accordance with IEEE 802.3
No. of ports	1
Connection method	RJ45 jack, shielded
Transmission medium	Copper
Transmission length	100 m (shielded twisted pair)
Auto-negotiation modes	Optionally transparent via TP and FO (default) or locally on TP
Link through	Link down is automatically forwarded to the second connection
MDI-/MDI-X switchover	Built-in switch for line (1:1) and crossover connection
Signal LEDs	Activity (yellow), link status (green, UL flashing), 100 Mbps (green)

### Optical interface FO

Transmit capacity, minimum	min. -8 dBm ((980/1000 μm) static)
	min. -19 dBm ((200/230 μm) static)
Transmit capacity, maximum	max. -2 dBm ((980/1000 μm) static)

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## Technical data

### Optical interface FO

	max. -11 dBm ((200/230 µm) static)
Minimum receiver sensitivity	min. -23 dBm ((980/1000 µm) static)
	min. -26.8 dBm ((200/230 µm) static)
Wavelength	660 nm
Transmission length incl. 3 dB system reserve	70 m (Polymer fiber with F-P 980/1000 230 dB/km at 10 Mbps)
	300 m (PCF fiber with F-K 200/230 8 dB/km at 10 Mbps)
	50 m (Polymer fiber with F-P 980/1000 230 dB/km at 100 Mbps)
	100 m (PCF fiber with F-K 200/230 8 dB/km at 100 Mbps)
	300 m (HCS GI fiber with F-GK 200/230 at 100 Mbps)
	400 m (HCS GI fiber with F-GK 200/230 at 10 Mbps)
Transmission medium	Polymer fiber
	PCF fiber
Connection method	SC-RJ

### Function

Status and diagnostic indicators	UL (communications power, green)
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### Digital outputs

Output name	Relay output
Number of outputs	2
Contact type	N/O contact
Maximum switching voltage	60 V AC/DC
Max. switching current	1 A

### Standards and Regulations

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Type of test	Free fall in acc. with IEC 60068-2-32
Test result	1 m
Type of test	Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6
Test result	5g, 150 Hz, 1.5 h, in XYZ direction
Type of test	Shock in acc. with EN 60068-2-27/IEC 60068-2-27
Test result	15g, 11 ms period, half-sine shock pulse
Noise emission	EN 50081-2
Noise immunity	EN 61000-6-2:2005
Free from substances that could impair the application of coating	according to P-VW 3.10.7 57 65 0 VW-AUDI-Seat central standard
Connection in acc. with standard	CUL
Standards/regulations	EN 61000-4-2
Contact discharge	± 6 kV (Test Level 3)
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 3 GHz (Test Level 3)
Standards/regulations	EN 61000-4-4
Comments	Criterion B

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## Technical data

### Standards and Regulations

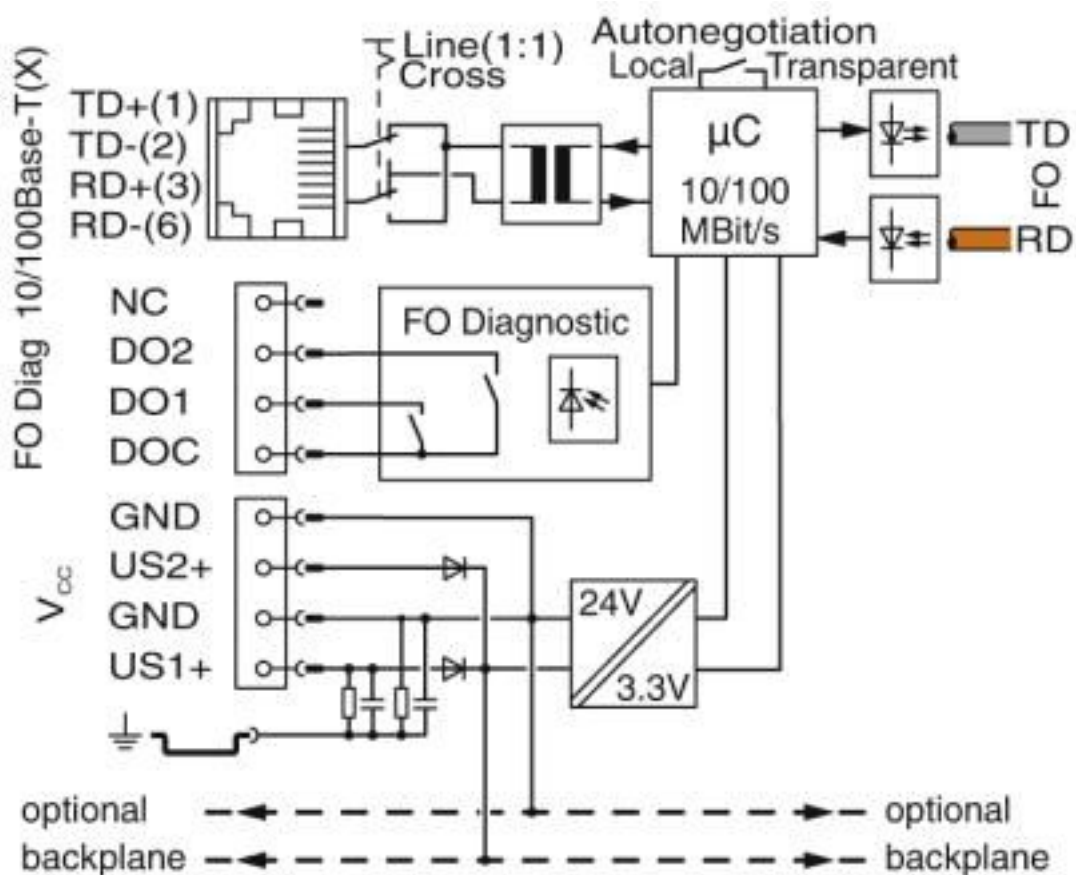
Standards/regulations	EN 61000-4-5
Signal	± 2 kV
Standards/regulations	EN 55011
	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz

### Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

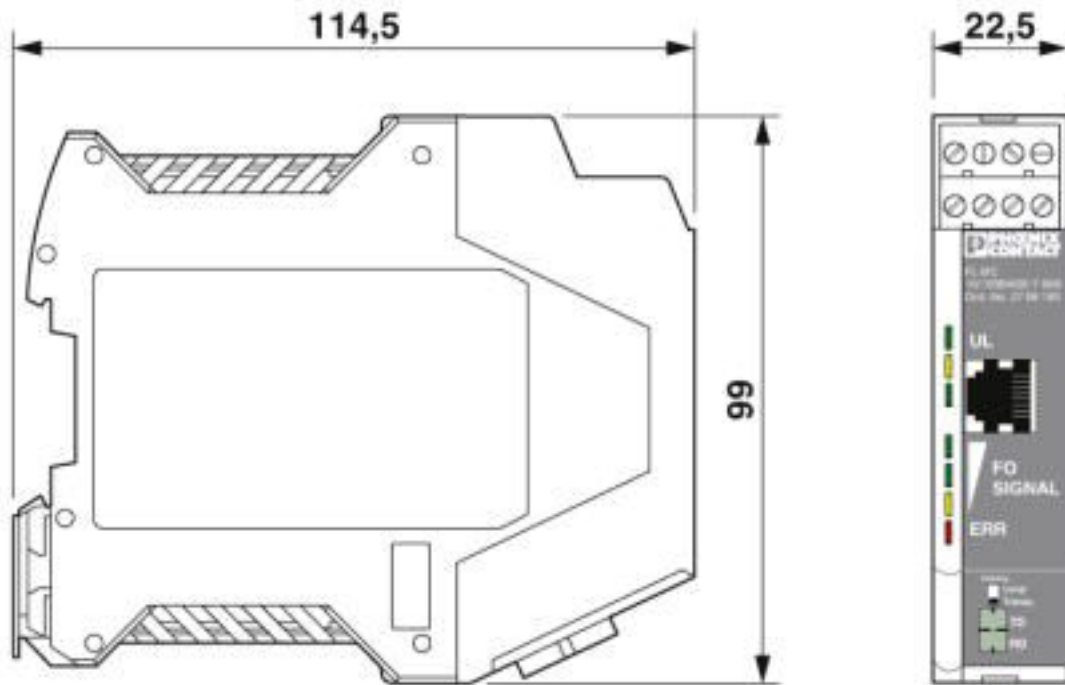
## Drawings

Block diagram



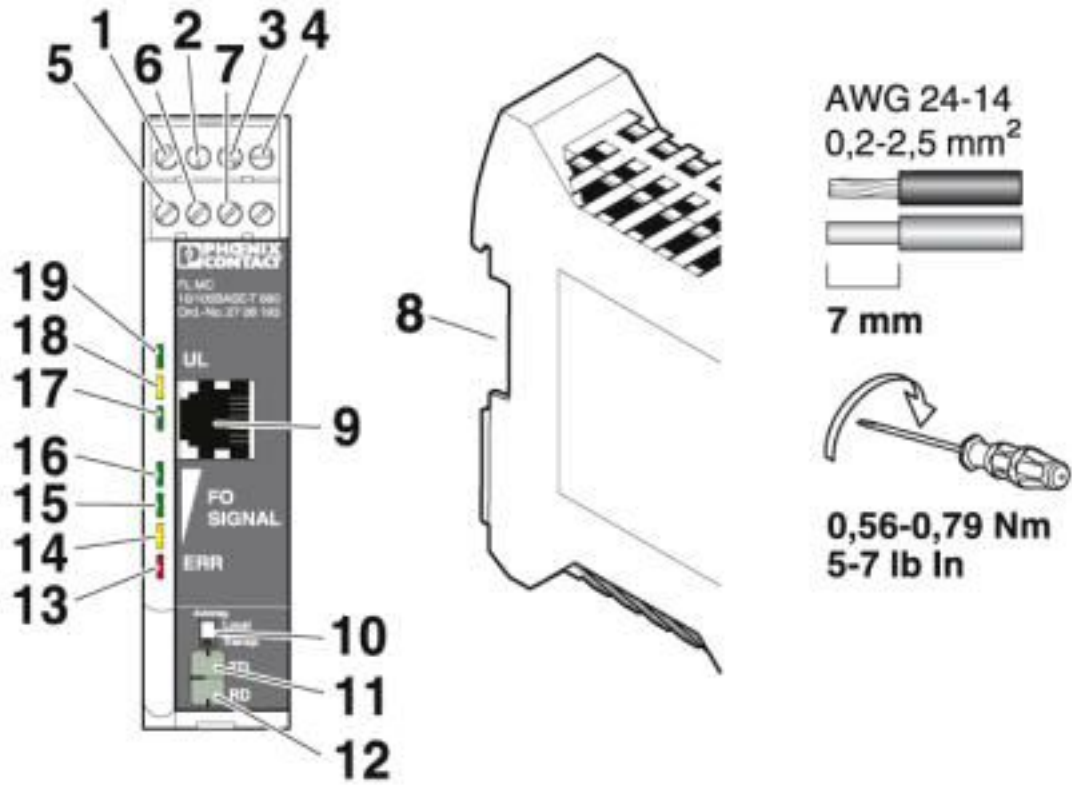
# FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

Dimensional drawing



# FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

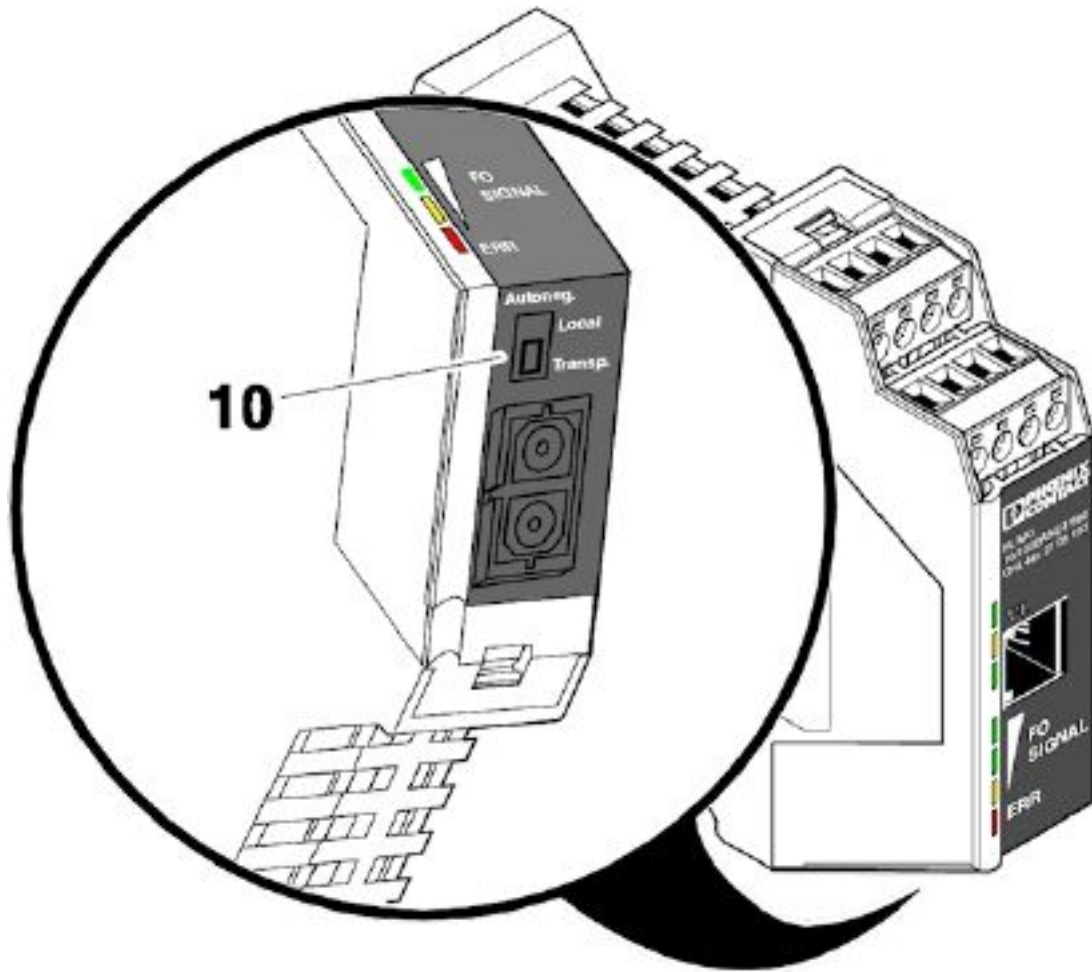
Schematic diagram



Front view

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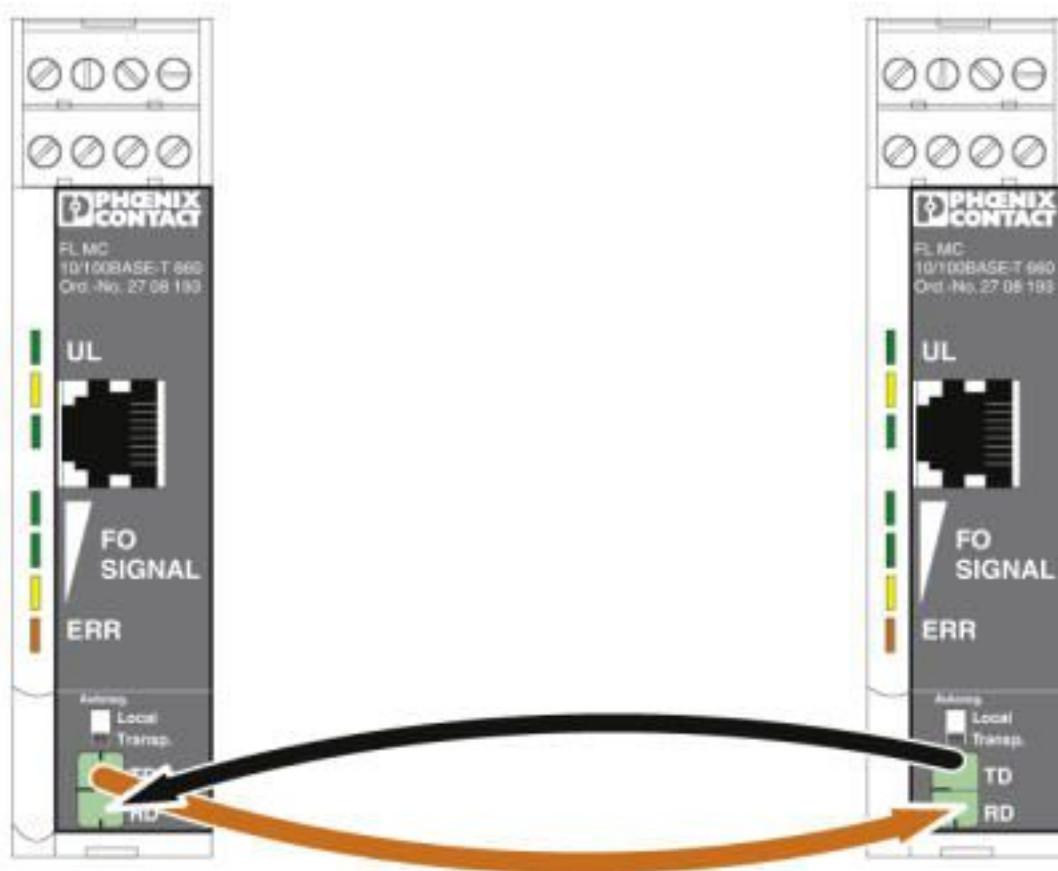
Schematic diagram



Mode selector switch

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Schematic diagram



Connection of the cables

## Classifications

### eCl@ss

eCl@ss 10.0.1	19170132
eCl@ss 4.0	27230200
eCl@ss 4.1	27230200
eCl@ss 5.0	27230200
eCl@ss 5.1	27230200
eCl@ss 6.0	27230200
eCl@ss 7.0	19170114
eCl@ss 8.0	19170114
eCl@ss 9.0	19170114

### ETIM

ETIM 2.0	EC000739
ETIM 3.0	EC000310
ETIM 4.0	EC000310



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## Classifications

### ETIM

ETIM 5.0	EC001467
ETIM 6.0	EC001467
ETIM 7.0	EC001467

### UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	39121008

## Accessories

### Accessories

#### Connector set

##### FO connectors - PSM-SET-SCRJ-DUP/2-HCS - 2313070



SC-RJ connector set for PCF fiber, for self-assembly, consisting of 2 duplex quick mounting connectors with bend protection, for a single wire diameter of 2.9 mm

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## Data cable by the meter

### Network cable - FL CAT5 HEAVY - 2744814



CAT5-SF/UTP cable (J-02YS(ST)C HP 2 x 2 x 24 AWG), heavy-duty installation cable, 2 x 2 x 0.22 mm<sup>2</sup>, solid conductor, shielded, outer sheath: 7.8 mm diameter, inner sheath: 5.75 mm ± 0.15 mm diameter

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### Installation cable - FL CAT5 FLEX - 2744830



By the meter, Installation cable, Ethernet CAT5 (100 Mbps), shielded, PUR halogen-free, water blue RAL 5021, 4-wire (2x2xAWG26/7; SF/UTP), color single wire: white/orange-orange, white/green-green, cable length: Free entry (1.0 ... 1000.0 m)

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### Accessories

FO cable - PSM-LWL-KDHEAVY-980/1000 - 2744319



Polymer fiber cable, duplex 980  $\mu\text{m}$ /1000  $\mu\text{m}$ , medium-weight version for installation in stationary systems and machines, by the meter without male connector

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FO cable - PSM-LWL-HCS-RUGGED-200/230 - 2799885



PCF cable, duplex 200  $\mu\text{m}$ /230  $\mu\text{m}$ , by the meter without male connector, for installation in stationary systems and machines

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FO cable - PSM-LWL-RUGGED-980/1000 - 2744322



Polymer fiber cable, duplex 980 $\mu\text{m}$ /1000 $\mu\text{m}$ , heavy-weight version for installation in stationary systems and machines, by the meter without male connector

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FO cable - PSM-LWL-RUGGED-FLEX-980/1000 - 2744335



Polymer fiber cable, duplex 980/1000  $\mu\text{m}$ , heavy-weight, highly flexible version for flexible conduit applications, by the meter, without connector

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FO cable - PSM-LWL-HCSO-200/230 - 2799445



PCF cable, duplex 200/230  $\mu\text{m}$ , by the meter, without connector, for outdoor installation

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## FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

### Accessories

FO cable - FL FOC PN-B-980/1000 - 2313397



PROFINET polymer fiber cable, duplex 980 µm/1000 µm, heavy-weight design, for installation in stationary systems and machines, by the meter, without male connector

FO cable - FL FOC PN-C-FLEX-980/1000 - 2313407



PROFINET polymer fiber cable, duplex, 980/1000 µm, heavy-weight highly flexible design, for flexible cable conduit applications, by the meter, without connector

### Data plug

Assembly tool - FL CRIMPTOOL - 2744869



Crimping pliers, for assembling the RJ45 plugs FL PLUG RJ45..., for assembly on site

FO connectors - PSM-SET-SCRJ-DUP/2-POF - 2708656



SC-RJ connector set for polymer fiber, for self assembly, consisting of 2 duplex quick mounting connectors with bending protection

Assembly tool - PSM-HCS-KONFTOOL/SC-RJ - 2708876



HCS assembly kit for SC-RJ quick mounting connectors, including stripping blade, stripping pliers, aramide yarn scissors, fiber stripper, microscope, fiber cleaving tool for standard HCS and HCS GI fibers, two SC-RJ connectors for standard HCS fiber, and documentation

## FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

### Accessories

Assembly tool - PSM-POF-KONFTOOL - 2744131



Polymer fiber DIY case, consisting of: Stripping knife, stripping pliers, polishing wheels for F-SMA and SC-RJ quick mounting connectors, polishing pad and emery paper

RJ45 connector - VS-08-RJ45-5-Q/IP20 - 1656725



RJ45 connector, degree of protection: IP20, number of positions: 8, 1 Gbps, CAT5 (IEC 11801:2002), material: PA, connection method: IDC fast connection, connection cross section: AWG 26- 23, cable outlet: straight, color: traffic grey A RAL 7042

### DIN rail connector

DIN rail bus connectors - ME 22,5 TBUS 1,5/ 5-ST-3,81 GN - 2707437



DIN rail connector, nominal current: 8 A, rated voltage (III/2): 125 V, number of positions: 5, pitch: 3.81 mm, color: green, mounting: DIN rail, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

### Plug

RJ45 connector - FL PLUG RJ45 GR/2 - 2744856



RJ45 connector, shielded, with bend protection sleeve, 2 pieces, gray for straight cables, for assembly on site. For connections that are not crossed, it is recommended that you use the connector set with gray bend protection sleeve.

RJ45 connector - FL PLUG RJ45 GN/2 - 2744571



RJ45 connector, shielded, with bend protection sleeve, 2 pieces, green for crossed cables, for assembly on site. For connections that are crossed, it is recommended that the connector set with green bend protection sleeves is used.

### Power supply

## FO converters - FL MC 10/100BASE-T/FO-660 - 2708193

### Accessories

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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FO accessories - VS-SCRJ-POF-POLISH - 1656673



Refilling set for VS-SC-RJ-POF-KONFTOOL-POLISH, consisting of two polishing discs and a polisher

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