

## FO converters - FL MC EF 660 SCRJ - 2702944

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FO converter, for converting 100Base-T to polymer and PCF fiber (660 nm), SC-RJ FO connection (PROFINET standard), can be mounted on a DIN rail, 24 V DC supply

### Product Description


Optical transmission with FO technology provides superior immunity to interference at maximum transmission ranges without restricting the transmission bandwidth.

### Your advantages

- ✓ Link fault pass through (LFPT) function for easy connection monitoring
- ✓ Very low delay times
- ✓ Mounting on a DIN rail
- ✓ Backplane bus contact, enabling alternative or redundant 24 V power supply



### Key Commercial Data

Packing unit	1 pc
GTIN	 4 0 5 5 6 2 6 4 3 1 2 6 0
GTIN	4055626431260

### Technical data

#### Note

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

Caption	Slim design
Width	22.5 mm
Height	99 mm
Depth	114.5 mm

#### Ambient conditions

Ambient temperature (operation)	-40 °C ... 60 °C
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## Technical data

### Ambient conditions

Ambient temperature (storage/transport)	-40 °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

### 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
Net weight	172.7 g
Housing material	PA V0
Color	green
MTTF	929 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	461 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	204 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)

### Power supply

Supply voltage range	18 V DC ... 32 V DC (via pluggable COMBICON screw terminal block)
	18 V DC ... 32 V DC (as an alternative or redundant, via backplane bus contact and system current supply)
Max. current consumption	100 mA (24 V DC)
Typical current consumption	≤ 85 mA (24 V DC)
Protective circuit	Reverse polarity protection
Connection method	Plug-in screw terminal block (COMBICON), redundancy possible

### Interfaces

Interface 1	Ethernet interface, 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)
Link through	Link fault pass through

### 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)
	max. -11 dBm ((200/230 μm) static)
Minimum receiver sensitivity	-23 dBm ((980/1000 μm) static)
	-26.8 dBm ((200/230 μm) static)

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## Technical data

### Optical interface FO

Wavelength	660 nm
Transmission length incl. 3 dB system reserve	50 m (Polymer fiber with F-P 980/1000 230 dB/km)
	100 m (PCF fiber with F-K 200/230 8 dB/km)
Transmission medium	Polymer fiber
	PCF fiber
Connection method	SC-RJ

### 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

### Conformance/approvals

Designation	CE
Identification	CE-compliant
Designation	Corrosive gas test
Identification	ISA-S71.04-1985 G3 Harsh Group 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
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
Standards/regulations	EN 61000-4-2
Contact discharge	± 6 kV (Test Level 3)
Indirect discharge	± 6 kV
Standards/regulations	EN 61000-4-3
Frequency range	80 MHz ... 3 GHz (Test Level 3)
Standards/regulations	EN 61000-4-4
Comments	Criterion B
Standards/regulations	EN 61000-4-5
Signal	± 1 kV (Shielded cable)
Standards/regulations	EN 61000-6-4
	EN 61000-4-6
Frequency range	0.15 MHz ... 80 MHz
Conducted noise emission	EN 61000-6-3 Class B, domain of use: residential and small commercial

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## Technical data

### Standards and Regulations

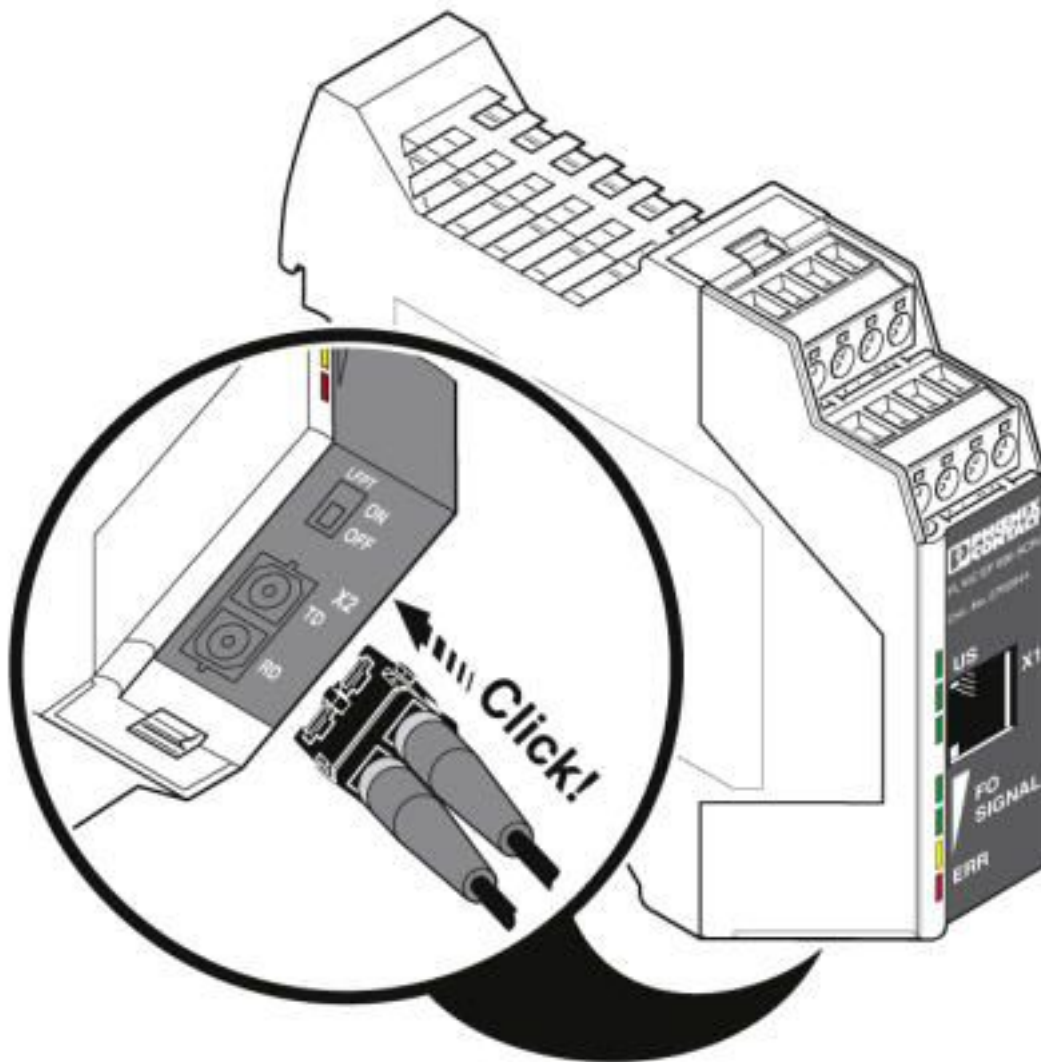
Designation	Air clearances and creepage distances
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### Environmental Product Compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration"

## Drawings

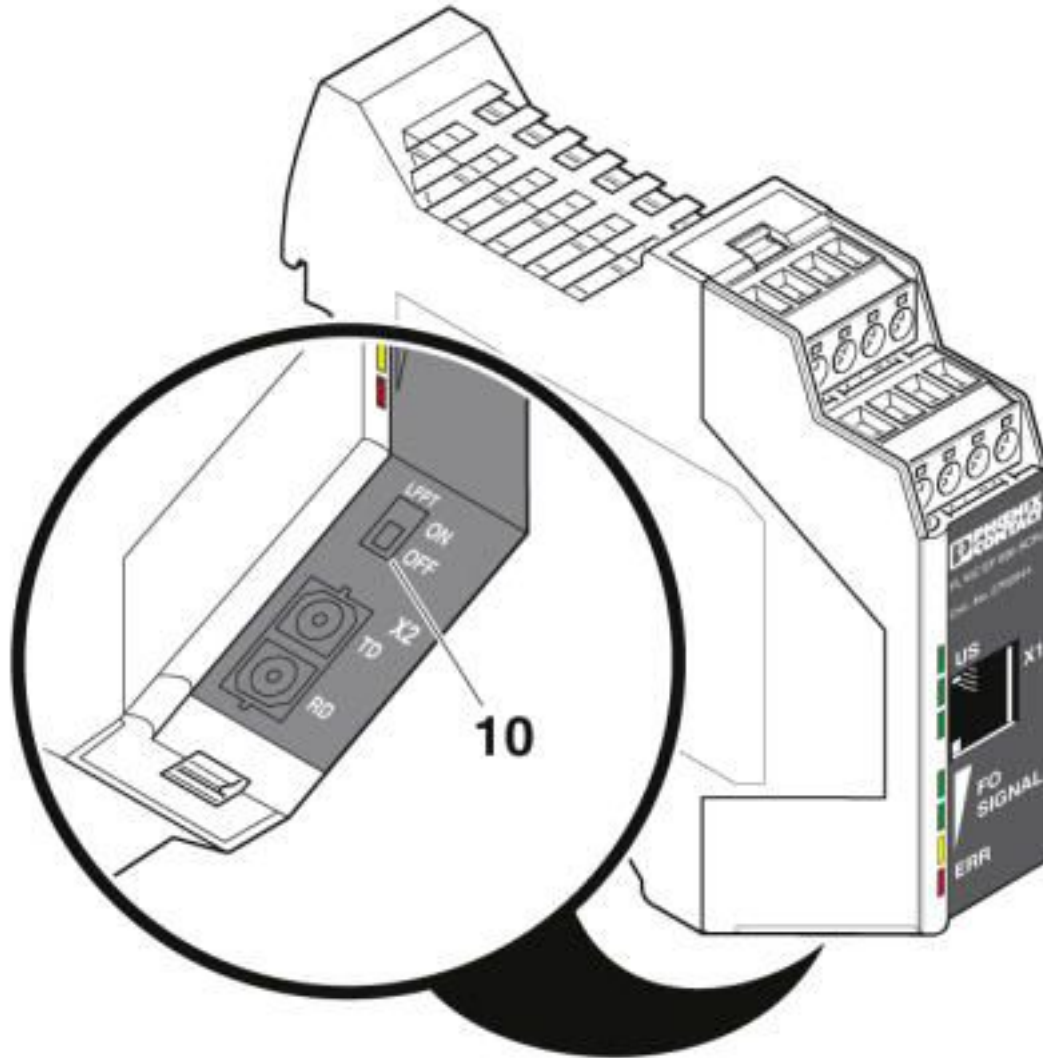
Schematic diagram



Connect the SC-RJ plug

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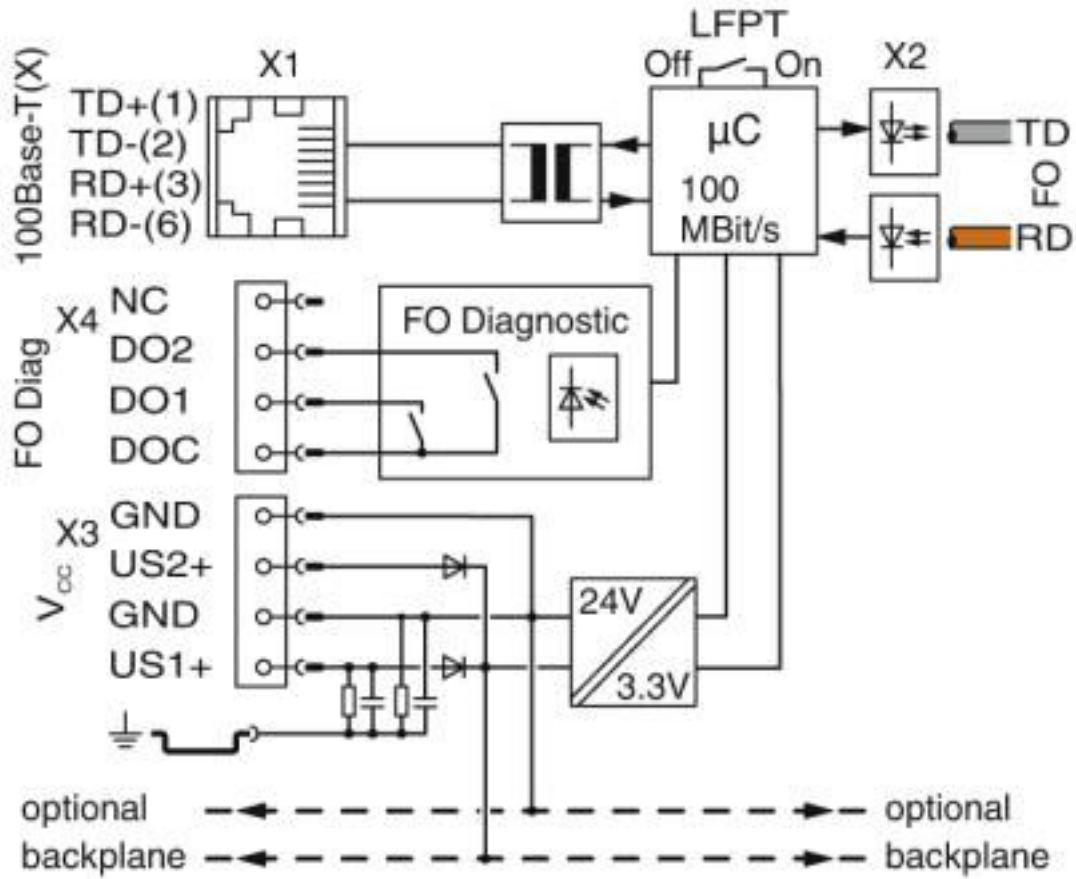
Schematic diagram



Switch for disabling LFPT

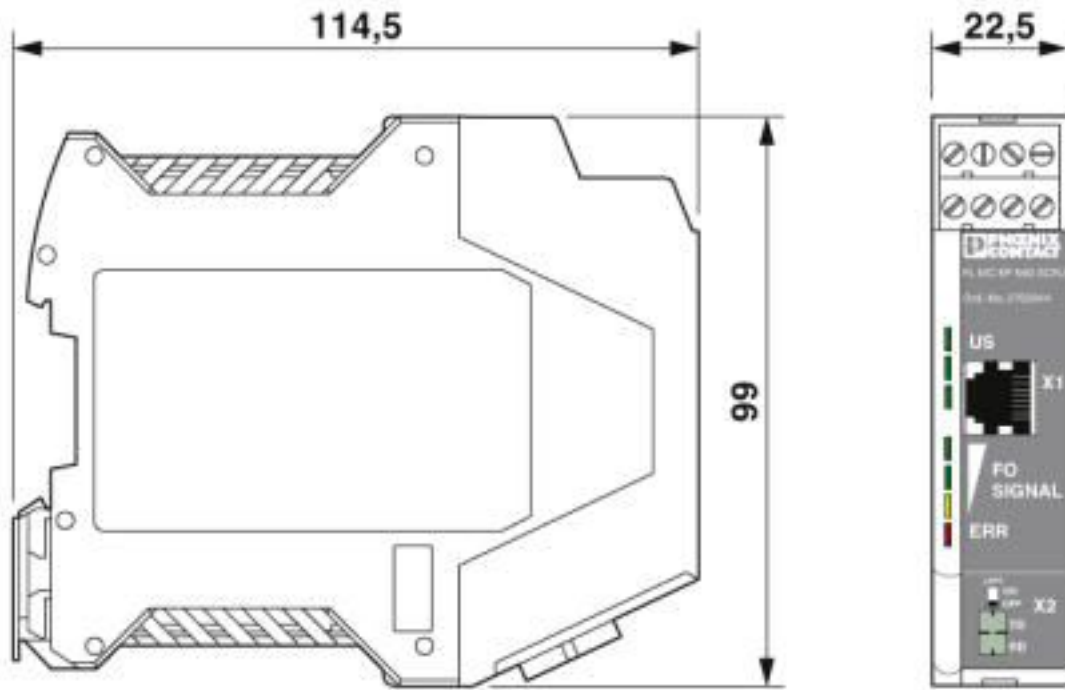
# FO converters - FL MC EF 660 SCRJ - 2702944

Block diagram



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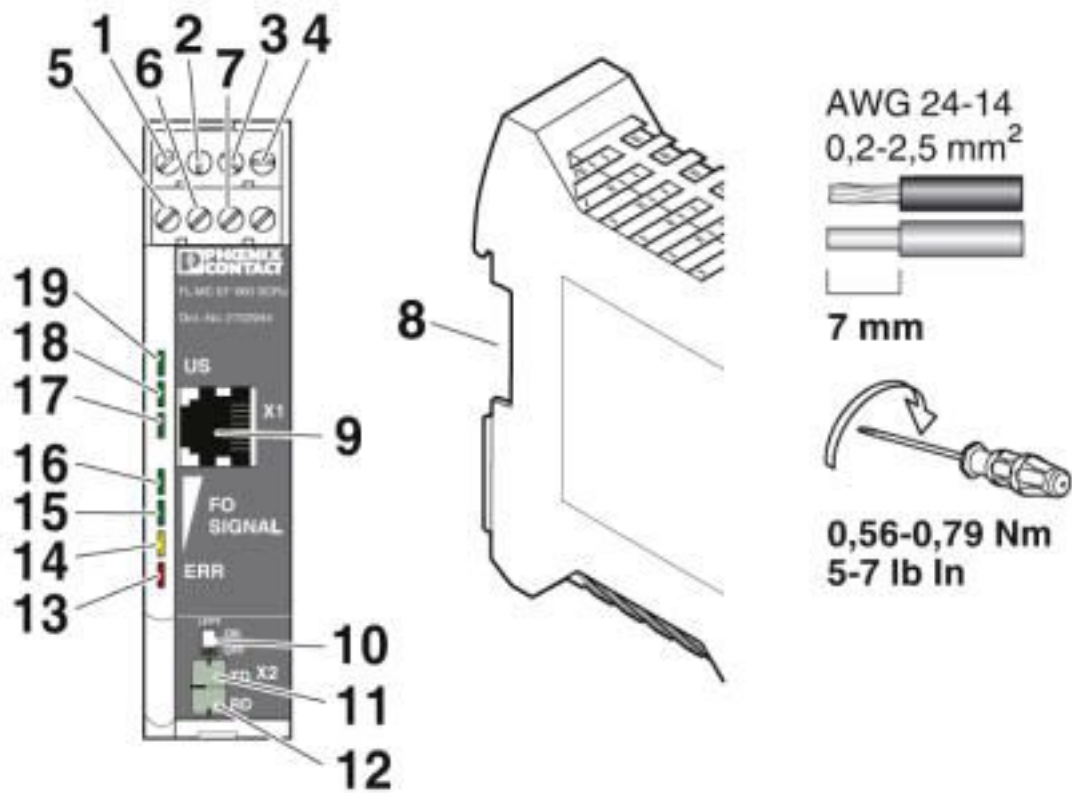
Dimensional drawing



Slim design

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Schematic diagram

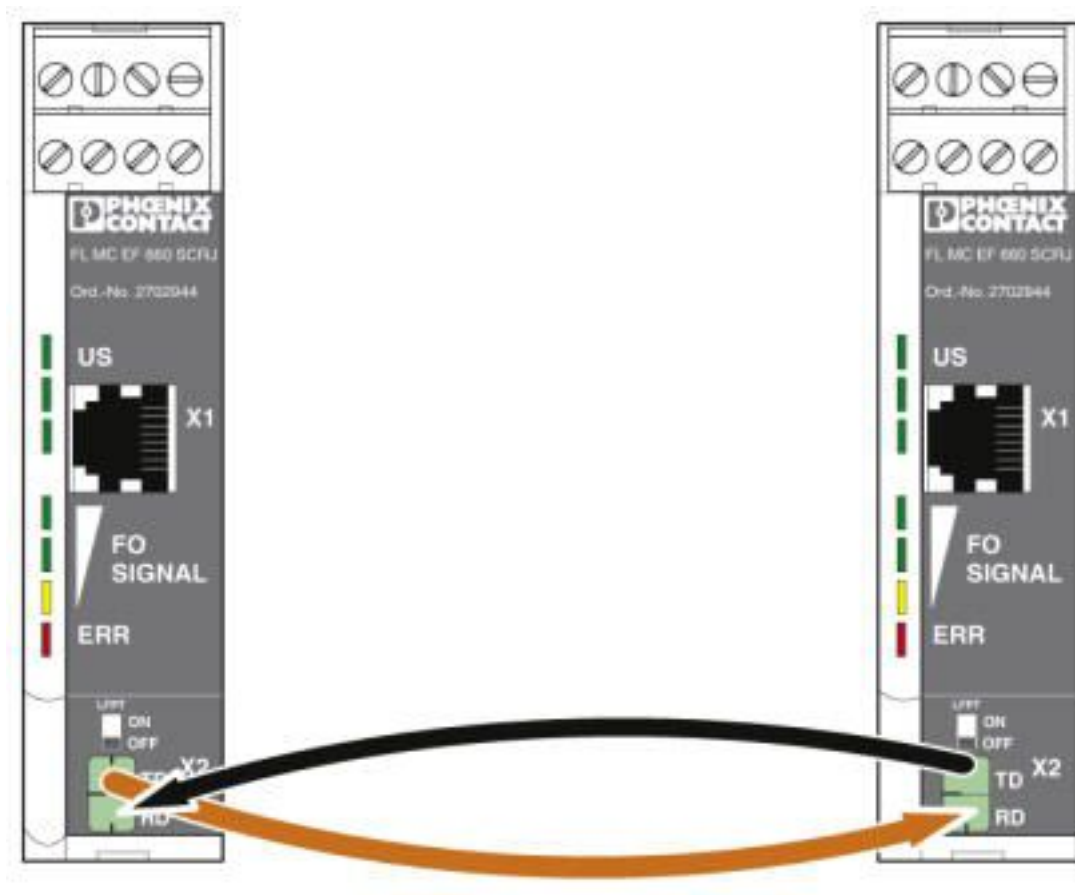


Function elements



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Schematic diagram



Signal direction for the fiber connection

## Classifications

eCl@ss

eCl@ss 10.0.1	19170132
eCl@ss 7.0	19170114
eCl@ss 9.0	19170114

ETIM

ETIM 5.0	EC001467
ETIM 6.0	EC001467
ETIM 7.0	EC001467

## Accessories

Accessories

Connector set

## FO converters - FL MC EF 660 SCRJ - 2702944

### Accessories

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



Polymer fiber cable, duplex 980 µm/1000 µm, 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 µm/230 µm, by the meter without male connector, for installation in stationary systems and machines

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### Accessories

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



Polymer fiber cable, duplex 980µm/1000µm, 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 µm, 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 µm, by the meter, without connector, for outdoor installation

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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

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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

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### Data cable preassembled

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### Accessories

Patch cable - NBC-R4AC-R4AC-IE8A/.../... - 1411854



Patch cable, degree of protection: IP20, number of positions: 8, 10 Gbps, CAT6<sub>A</sub>, cable outlet: straight

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Patch cable - NBC-R4AC/10G-R4AC/10G-94F/2,0 - 1408360



Patch cable, CAT6<sub>A</sub>, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 2.0 m

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Patch cable - NBC-R4AC/10G-R4AC/10G-94F/3,0 - 1408365



Patch cable, CAT6<sub>A</sub>, 4-pair, shielded, connection not crossed (line), assembled at both ends with RJ45/IP20 connectors, outer sheath material: PUR, length: 3.0 m

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### Data plug

Assembly tool - FL CRIMPTOOL - 2744869



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

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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

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## FO converters - FL MC EF 660 SCRJ - 2702944

### Accessories

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

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

RJ45 connector - VS-08-RJ45-5-Q/IP20 BK - 1658008



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: black

RJ45 connector - VS-08-RJ45-10G/Q - 1419001



RJ45 connector, IP20, CAT6<sub>A</sub>, 8-pos., with QUICKON fast connection technology, for 26 ... 24 AWG 1-wire and 7-wire conductors, color: black

DIN rail connector

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### Accessories

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

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### Patch cable

Patch cable - FL CAT5 PATCH 0,5 - 2832263



Patch cable, CAT5, assembled, 0.5 m

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Patch cable - FL CAT5 PATCH 1,0 - 2832276



Patch cable, CAT5, assembled, 1 m

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Patch cable - FL CAT5 PATCH 2,0 - 2832289



Patch cable, CAT5, assembled, 2 m

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### 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.

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### Accessories

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.

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### Power supply

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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