

## FO converters - FL MC EF 1300 MM SC - 2902853

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FO converter with SC duplex fiber optic connection (1300 nm), for converting 10/100Base-T(X) to multi-mode fiberglass (50/125 µm). Auto negotiation and auto MDI(X) function. Comprehensive link diagnostics. DIN-rail mountable, 18 ... 30 V DC supply.

### Product Features

- Transmission ranges up to 10 km
- Auto negotiation
- Auto MDI/MDI-X switch-over
- Link fault pass through (LFP) and far end fault (FEF) functions for easy connection monitoring
- Data rates 10/100 Mbps



### Key commercial data

Packing unit	1 PCE
Weight per Piece (excluding packing)	180.0 GRM
Custom tariff number	85176200
Country of origin	Germany

### 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)	-40 °C ... 65 °C
	-25 °C ... 55 °C (With UL approval)

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## Technical data

### Ambient conditions

Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	30 % ... 95 % (no condensation)
Permissible humidity (storage/transport)	30 % ... 95 % (no condensation)
Altitude	5000 m (For restrictions see manufacturer's declaration)
	2000 m (With UL approval)
Degree of protection	IP20

### General

Electrical isolation	according to IEEE 802.3
	(VCC // FE // Ethernet)
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)
Standards/regulations	EN 60950-1
Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC
Net weight	120 g
Housing material	PA 6.6-FR
Color	green
MTBF	479 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	140 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
MTTF	1400 Years (SN 29500 standard, temperature 25°C, operating cycle 21% (5 days a week, 8 hours a day))
	599 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25% (5 days a week, 12 hours a day))
	101 Years (SN 29500 standard, temperature 40°C, operating cycle 100% (7 days a week, 24 hours a day))
Conformance	CE-compliant
ATEX	# II 3 G Ex nA IIC T4 Gc X
	# II (2) D [Ex op is Db] IIIC (PTB 06 ATEX 2042 U)
	# II (2) G [Ex op is Gb] IIC (PTB 06 ATEX 2042 U)
UL, USA / Canada	cULus listed UL 508
	Class I, Zone 2, AEx nA IIC T4
	Class I, Zone 2, Ex nA IIC T4 Gc X
	Class I, Div. 2, Groups A, B, C, D

### Power supply

Supply voltage range	18 V DC ... 30 V DC (Screw connection)
	18 V DC ... 30 V DC (as an alternative or redundant, via backplane bus contact and system current supply)
Typical current consumption	< 100 mA (24 V DC)

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### Technical data

#### Power supply

Protective circuit	Protection against polarity reversal
Connection method	Plug-in screw terminal block (COMBICON), redundancy possible
Conductor cross section stranded max.	2.50 mm <sup>2</sup>
Conductor cross section stranded min.	0.20 mm <sup>2</sup>
Conductor cross section solid max.	2.50 mm <sup>2</sup>
Conductor cross section solid min.	0.20 mm <sup>2</sup>
Max. AWG conductor cross section, stranded	14
Min. AWG conductor cross section, stranded	24
Conductor cross section AWG/kcmil max	14
Conductor cross section AWG/kcmil min.	24

#### Serial interface

Interface 1	Ethernet interface, 10/100BASE-T(X) in acc. with IEEE 802.3u
Connection method	RJ45 socket, shielded
Transmission medium	Copper
Transmission length	100 m (twisted pair, shielded)
Conductor cross section solid min.	0.2 mm <sup>2</sup>
Conductor cross section solid max.	2.5 mm <sup>2</sup>
Conductor cross section stranded min.	0.2 mm <sup>2</sup>
Conductor cross section stranded max.	2.5 mm <sup>2</sup>
Conductor cross section AWG/kcmil min.	24
Conductor cross section AWG/kcmil max	14
Auto-negotiation modes	Auto
Link through	Link fault pass through
Basic functions	Store-and-forward media converter
MDI-/MDI-X switchover	Auto-MDI(X)
Signal LEDs	Activity, link status, 10/100 Mbps

#### Optical interface FO

Transmit capacity, minimum	≥ -23.5 dBm ((50/125 μm) dynamic in link mode (average))
	≥ -20 dBm ((62,5/125 μm) dynamic in link mode (average))
Transmit capacity, maximum	≤ -14 dBm ((50/125 μm) dynamic in link mode (average))
	≤ -14 dBm ((62,5/125 μm) dynamic in link mode (average))
Minimum receiver sensitivity	-31 dBm (dynamic in link mode (average))
Maximum receiver sensitivity	-14 dBm (dynamic in link mode (average))
Wavelength	1300 nm
Transmission length incl. 3 dB system reserve	6.4 km (with F-G 50/125 0,7 dB/km F 1000)
	2.8 km (with F-G 50/125 1,6 dB/km F 800)

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## Technical data

### Optical interface FO

	10 km (with F-G 62,5/125 0,7 dB/km F 1000)
	3 km (with F-G 62.5/125 2.6 dB/km F 600)
	2 km (with 2GK200/230 GI-HCS)
Transmission medium	Multi-mode fiberglass
	GI-HCS fiber
Connection method	SC duplex

## Classifications

### eCl@ss

eCl@ss 4.0	27230207
eCl@ss 4.1	27230207
eCl@ss 5.0	27230207
eCl@ss 5.1	27230207
eCl@ss 6.0	27230207
eCl@ss 7.0	27230207
eCl@ss 8.0	27230207

### ETIM

ETIM 3.0	EC000310
ETIM 4.0	EC000310
ETIM 5.0	EC001467

### UNSPSC

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

## Approvals

### Approvals

Approvals

UL Listed / cUL Listed / cULus Listed

# FO converters - FL MC EF 1300 MM SC - 2902853

## Approvals

Ex Approvals


ATEX / UL Listed / cUL Listed / cULus Listed

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Approvals submitted

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### Approval details

UL Listed 

cUL Listed 

cULus Listed 

## Accessories

Accessories

Connector set

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.

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### Accessories

FO connectors - PSM-SET-SC-DUPLEX/2-HCS/PN - 2313779



SC duplex connector set for standard PROFINET HCS fiber cables with 2.2 mm diameter of the individual elements. Consisting of 2 duplex quick mounting connectors with bend protection for self-assembly.

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### Data cable by the meter

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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Network cable - FL CAT5 FLEX - 2744830



CAT5-SF/UTP cable (J-LI02YS(ST)C H 2 x 2 x 26 AWG), light-duty, flexible installation cable 2 x 2 x 0.14 mm<sup>2</sup>, stranded, shielded, outer sheath: 5.75 mm ± 0.15 mm diameter

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FO cable - PSM-LWL-GDO- 50/125 - 2799432



Fiberglass cable, duplex 50/125 µm, by the meter, without connector, for outdoor installation

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FO cable - PSM-LWL-GDM-RUGGED- 50/125 - 2799322



Fiberglass cable, duplex 50/125 µm, by the meter, without connector, for indoor installation

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### Accessories

FO cable - FL FOC PN-C-HCS-GI-200/230 - 2313410



PROFINET HCS GI fiber cables, duplex 200/230  $\mu\text{m}$ , increased bandwidth for Ethernet applications in particular. Robust PUR outer sheath. Heavy version suitable for drag chains and indoor installation, sold by the meter without plugs

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### Data cable preassembled

FO patch cable - FL MM PATCH 1,0 LC-SC - 2989161



Assembled fiber optic cable, break-out cable, fiberglass multi-mode 50/125  $\mu\text{m}$ , connector: LC/SC duplex, degree of protection: IP20, for installation in cable ducts or control cabinets, length: 1 m

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FO patch cable - FL MM PATCH 2,0 LC-SC - 2989268



Assembled fiber optic cable, break-out cable, fiberglass multi-mode 50/125  $\mu\text{m}$ , connector: LC/SC duplex, degree of protection: IP20, for installation in cable ducts or control cabinets, length: 2 m

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FO patch cable - FL MM PATCH 5,0 LC-SC - 2901800



Assembled FO cable, break out cable, multi-mode fiberglass 50/125  $\mu\text{m}$ , plug: LC / SC-Duplex, protection type: IP20, for installation in cable ducts or control cabinets, length: 5 m

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FO patch cable - FL MM PATCH 1,0 SC-SC - 2901805



Assembled FO cable, break out cable, multi-mode fiberglass 50/125  $\mu\text{m}$ , connector: SC Duplex / SC-Duplex, protection type: IP20, for installation in cable ducts or control cabinets, length: 1 m

## FO converters - FL MC EF 1300 MM SC - 2902853

### Accessories

#### FO patch cable - FL MM PATCH 2,0 SC-SC - 2901807



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / SC-Duplex, protection type: IP20, for installation in cable ducts or control cabinets, length: 2 m

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#### FO patch cable - FL MM PATCH 5,0 SC-SC - 2901808



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / SC-Duplex, protection type: IP20, for installation in cable ducts or control cabinets, length: 5 m

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#### FO patch cable - FL MM PATCH 1,0 SC-ST - 2901809



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / B-FOC, protection type: IP20, for installation in cable ducts or control cabinets, length: 1 m

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#### FO patch cable - FL MM PATCH 2,0 SC-ST - 2901810



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / B-FOC (ST), protection type: IP20, for installation in cable ducts or control cabinets, length: 2 m

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#### FO patch cable - FL MM PATCH 5,0 SC-ST - 2901811



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / B-FOC (ST), protection type: IP20, for installation in cable ducts or control cabinets, length: 5 m



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### Accessories

#### FO patch cable - FL MM PATCH 1,0 SC-SCRJ - 2901812



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / B-FOC (ST), protection type: IP20, for installation in cable ducts or control cabinets, length: 1 m

#### FO patch cable - FL MM PATCH 2,0 SC-SCRJ - 2901813



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / SCRJ, protection type: IP20, for installation in cable ducts or control cabinets, length: 2 m<sup>^</sup>

#### FO patch cable - FL MM PATCH 5,0 SC-SCRJ - 2901814



Assembled FO cable, break out cable, multi-mode fiberglass 50/125 µm, connector: SC Duplex / B-FOC (ST), protection type: IP20, for installation in cable ducts or control cabinets, length: 5 m

#### FO patch cable - FOC-GDM-RUGGED-1016/IP20/... - 2901558



rugged GOF installation cable (IP20 heads only) for inner areas with highly tear-proof aramid strain-relief elements. Individual elements consist of highly flexible FRNC material. The cable is halogen-free, ozone and UV resistant and has a rugged polyurethane (PUR) outer sheath.

#### FO patch cable - FOC-GDM-RUGGED-1016/... - 1402193



rugged GOF installation cable for inner areas with highly tear-proof aramid strain-relief elements. Individual elements consist of highly flexible FRNC material. The cable is halogen-free, ozone and UV resistant and has a rugged polyurethane (PUR) outer sheath.

## FO converters - FL MC EF 1300 MM SC - 2902853

### Accessories

FO patch cable - FOC-GDO-1017/IP20/... - 2901559



Highly rugged GOF round cable (IP20 heads only) for assembly and for outdoor installation with integrated moisture barrier as well as rodent-proof scrim. Individual elements made from highly flexible FRNC material. The wire is ozone and UV resistant with a very rugged polyethylene outer sheath.

FO patch cable - FOC-GDO-1017/... - 1402194



Highly rugged GOF round cable for assembly and for outdoor installation with integrated moisture barrier as well as rodent-proof scrim. Individual elements made from highly flexible FRNC material. The wire is ozone and UV resistant with a very rugged polyethylene outer sheath.

FO patch cable - FOC-PN-HCS-GI-1005/IP20/... - 2901554



PROFINET HCS-GI installation cable (IP20 heads only) for fixed installation in the inner area. Gradient index fiber. Individual elements made from highly flexible FRNC material. Halogen-free, ozone and UV resistant with a polyurethane (PUR) outer sheath.

FO patch cable - FOC-PN-HCS-GI-1005/... - 1402189



HCS-GI installation cable for assembly for fixed installation in the inner area, with gradient index fibers for the highest performance requirements, as well as individual elements made of highly flexible FRNC material. The cable is halogen-free, ozone and UV resistant and has a rugged polyurethane (PUR) outer sheath.

### Data plug

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



RJ45 connector, IP20, CAT5e, 8-pos., with QUICKON fast connection technology, for 26 ... 23 AWG 1-wire and 7-wire conductors, for 4.5 mm ... 8.0 mm cable diameter, labeling: TIA 568 B, color: gray

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### Accessories

#### DIN rail connector

Cable - ME 22,5 TBUS 1,5/ 5-ST-3,81 GN - 2707437



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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Electronic housing - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561



DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 5-pos.

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#### Power supply

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



DIN rail power supply unit, primary-switched mode, narrow design, output: 24 V DC / 1.5 A

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#### Universal tools

Assembly tool - FL CRIMPTOOL - 2744869



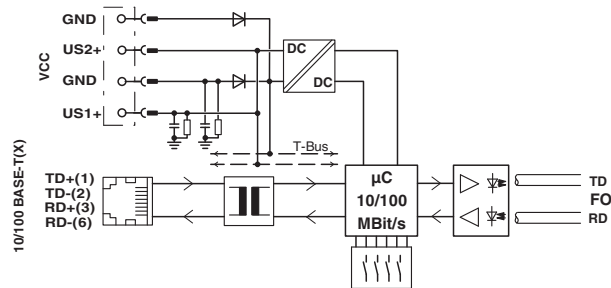
Crimping pliers, for assembling the RJ45 plugs FL PLUG RJ45..., for assembly on site

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#### Drawings

# FO converters - FL MC EF 1300 MM SC - 2902853

Block diagram



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- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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