

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



2708711

<https://www.phoenixcontact.com/us/products/2708711>

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FO converter with integrated optical diagnostics, coated PCB, alarm contact, for PROFIBUS up to 12 Mbps, T-coupler with two FO interfaces (BFOC), 850 nm, for PCF or fiberglass cable (multimode)

## Product description

The **PSI-MOS-PROFIB/FO...** devices convert copper-based PROFIBUS interfaces to fiber optics. The integrated optical diagnostics allow permanent monitoring of the FO paths during installation and also during operation. The floating switch contact is activated when the signal output on the fiber optic paths drops to a critical level. The **PSI-MOS-PROFIB/FO... E** terminal devices convert a PROFIBUS interface for a **FO cable**. They are ideal for point-to-point connections.

## Your advantages

- With coated PCB for increased resistance to salt-laden atmospheres
- Connections can be plugged in via a COMBICON screw terminal block
- Can be combined with the PSI copper repeater in a modular way using DIN rail connectors
- Supply voltage and data signals routed through the DIN rail connectors
- Automatic data rate detection or fixed data rate setting via DIP switches
- High-quality electrical isolation between all interfaces (PROFIBUS // fiber optic ports // power supply // DIN rail connector)
- Redundant power supply possible by means of optional system power supply unit
- Approved for use in zone 2
- Integrated optical diagnostics for continuous monitoring of FO paths
- Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1
- Floating switch contact for advance warning of critical FO paths
- Suitable for all data rates up to 12 Mbps
- Bit retiming for any cascading depth
- Shipbuilding approval in accordance with DNV GL

## Commercial data

Item number	2708711
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN06
Product key	DNC211
GTIN	4046356041461
Weight per piece (including packing)	252.6 g
Weight per piece (excluding packing)	186.98 g

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



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Customs tariff number	85176200
Country of origin	DE

## Technical data

### Notes

#### Utilization restriction

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

CCCex note	Use in potentially explosive areas is not permitted in China.
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### Product properties

Product type	Media converter
MTTF	247 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	200 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	130 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
MTBF	252 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	42 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))

### Electrical properties

Electrical isolation	VCC // RS-485
Maximum power dissipation for nominal condition	2.88 W
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)

#### Supply

Supply voltage range	18 V DC ... 30 V DC (via pluggable COMBICON screw terminal block)
Nominal supply voltage	24 V DC (in acc. with UL)
Typical current consumption	120 mA (24 V DC)
Max. current consumption	130 mA
	≤ 2 A (For operation in a joining station, via the DIN rail connector)

### Output data

#### Switching

Output name	Relay output
Output description	Alarm output
Number of outputs	1
Maximum switching voltage	60 V DC (Resistive Load, General Load)
	30 V AC (Resistive load)
	42 V AC (peak, resistive load)
Limiting continuous current	0.46 A

## Connection data

### Supply

Connection method	COMBICON plug-in screw terminal block
Stripping length	7.00 mm
Tightening torque	0.56 Nm ... 0.79 Nm

## Interfaces

Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Bit delay	< 1 bit (DIP 7 = OFF, standard operation)
	11 bit (DIP 7 = ON, redundancy operation)
Signal	PROFIBUS

### Data: optical FO

No. of channels	1
Transmit capacity, minimum	-4.2 dBm (200/230 µm)
	-17.8 dBm (50/125 µm)
	-14.6 dBm (62,5/125 µm)
Transmission length incl. 3 dB system reserve	2600 m (with F-G 50/125 2.5 dB/km)
	3300 m (with F-G 62,5/125 3.0 dB/km)
	800 m (F-K 200/230 10 dB/km with quick mounting connector)
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	B-FOC (ST®)
Wavelength	850 nm
Minimum receiver sensitivity	-30 dBm (50/125 µm)
Maximum receiver sensitivity	-3 dBm (200/230 µm)
Transmission medium	PCF fiber
	Multi-mode fiberglass

### Data: PROFIBUS acc. to IEC 61158, RS-485 2-wire, half duplex, automatic control

Serial transmission speed	≤ 12 Mbps
Connection method	D-SUB-9 female connector
Transmission length	≤ 1200 m (depending on the data rate, with shielded, twisted pair data cable)
Single conductor/terminal point, rigid	0.2 mm² ... 2.5 mm²
Single-wire/terminal point, flexible	0.2 mm² ... 2.5 mm²
Max. AWG conductor cross section, flexible	14
Min. AWG conductor cross section, flexible	24
Single-wire/terminal point, rigid AWG max.	14
Single-wire/terminal point, rigid AWG min.	24
Transmission medium	Copper
File format/coding	UART (11 Bit, NRZ)
Data direction switching	Automatic control
Output nominal voltage	5 V ±0.25 (50 mA)

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## Dimensions

Width	35 mm
Height	99 mm
Depth	105 mm

## Material specifications

Color (Housing)	green (RAL 6021)
Material Housing	PA 6.6-FR

## Cable/line

### FO cable

Fiber types	50/125 µm
	62.5/125 µm
	Fiberglass

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20
Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Altitude	≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation)
	≤ 2000 m (Hazardous locations)
Permissible humidity (operation)	30 % ... 95 % (non-condensing)

## Approvals

### CE

Certificate	CE-compliant
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### ATEX

Identification	⊕ II 3 G Ex nA nC IIC T4 Gc X
Note	Please follow the special installation instructions in the documentation!

### ATEX, FO interface

Identification	⊕ II (2) G [Ex op is Gb] IIC
	⊕ II (2) D [Ex op is Db] IIIC
Certificate	PTB 06 ATEX 2042 U
Note	Please follow the special installation instructions in the documentation!

### UL, USA/Canada

Identification	Class I, Zone 2, AEx nc IIC T5
	Class I, Zone 2, Ex nC nL IIC T5 X

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	Class I, Div. 2, Groups A, B, C, D
PROFIBUS interoperability	
Note	Tested by independent PNO test laboratory (PN059-485-01)
Corrosive gas test	
Identification	ISA-S71.04-1985 G3 Harsh Group A
Shipbuilding	
Identification	DNV GL
DNV GL data	
Temperature	B
Humidity	A
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board
EMC data	
Noise immunity	EN 61000-6-2:2005
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011
Electrostatic discharge	
Standards/regulations	EN 61000-4-2
Electrostatic discharge	
Contact discharge	± 6 kV
Discharge in air	± 8 kV
Comments	Criterion B
Electromagnetic HF field	
Standards/regulations	EN 61000-4-3
Electromagnetic HF field	
Field intensity	10 V/m
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	± 2 kV
Signal	± 2 kV
Comments	Criterion B
Surge current load (surge)	
Standards/regulations	EN 61000-4-5

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## Surge current load (surge)

Input	± 0.5 kV
Signal	± 1 kV
Comments	Criterion B

## Conducted interference

Standards/regulations	EN 61000-4-6
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## Conducted interference

Comments	Criterion A
Voltage	10 V

## Emitted interference

Standards/regulations	EN 55011
Comments	Class A, industrial applications

## Criteria

Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

## Standards and regulations

Free from substances that could impair the application of coating	in accordance with VW-AUDI-Seat central standard P-VW 3.10.7 57 65 0
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## Air clearances and creepage distances

Standards/regulations	DIN EN 60664-1
	VDE 0110-1
	DIN EN 50178
	EN 60950

## Mounting

Mounting type	DIN rail mounting
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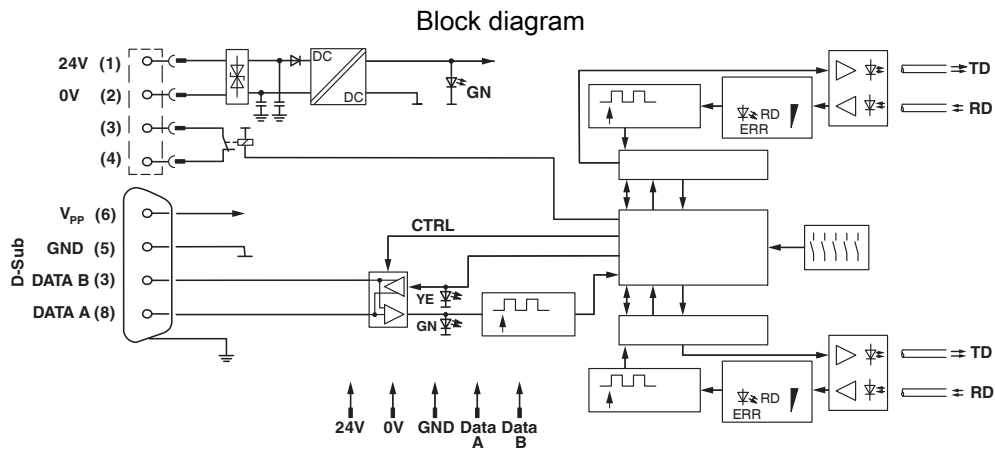
# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



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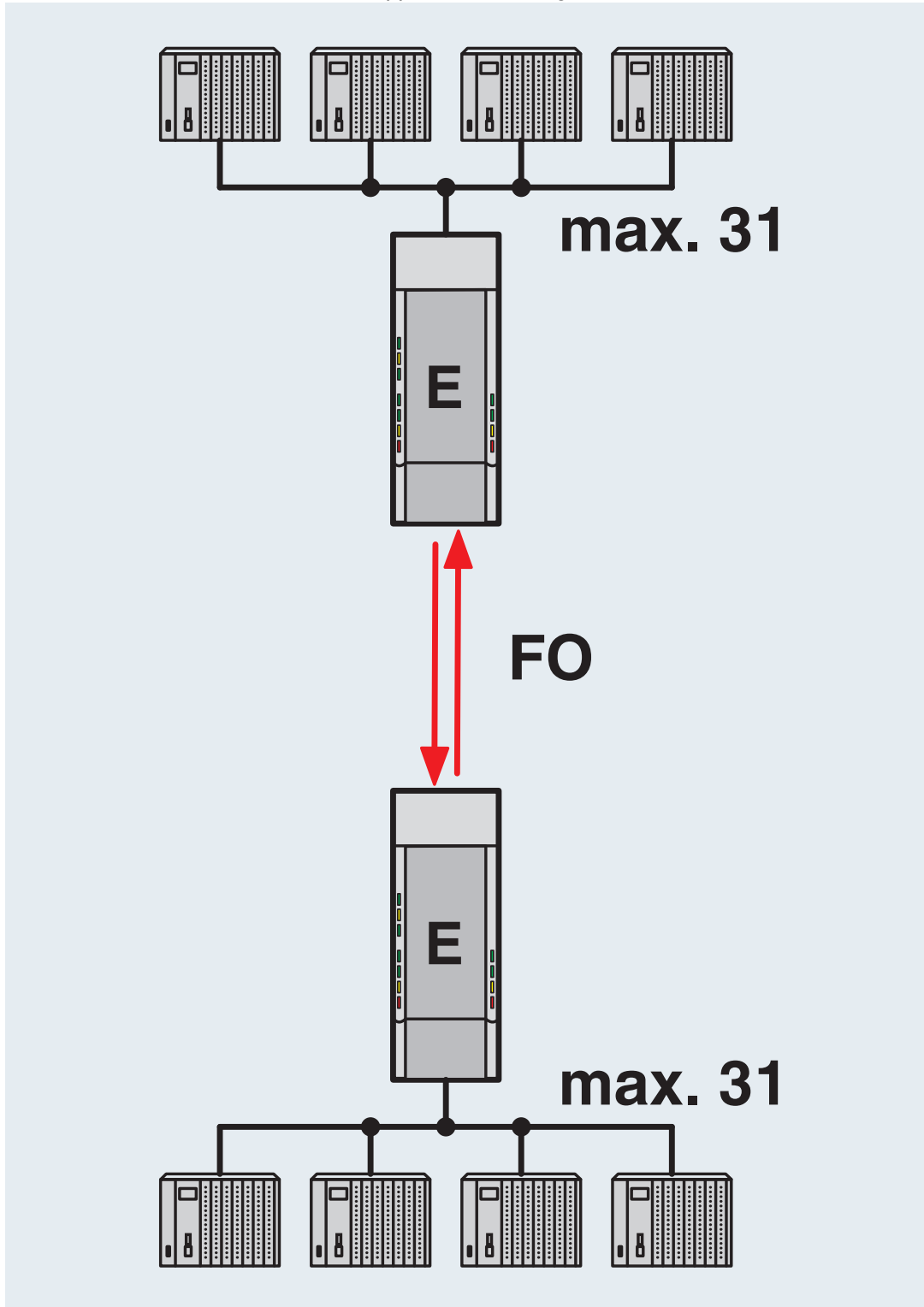
## Drawings



\*) only with PSI-MOS.../FO...T



Application drawing

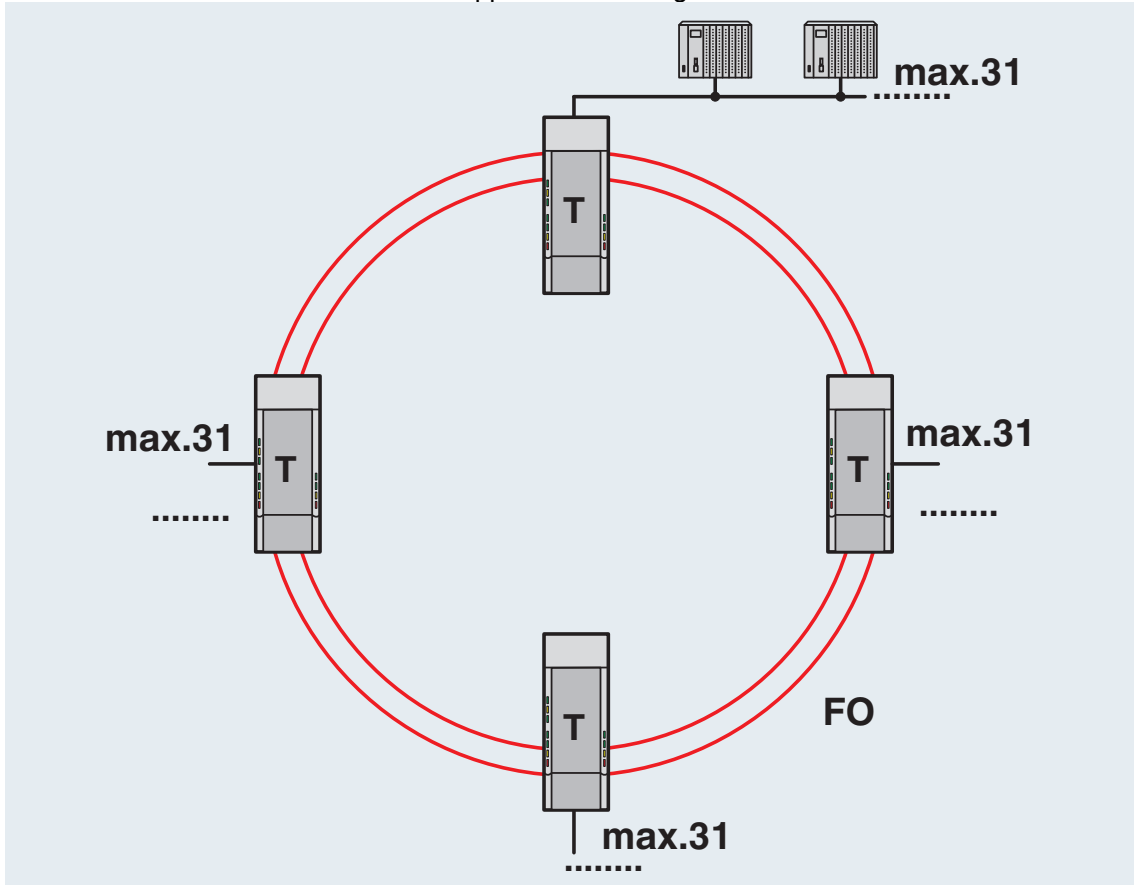


Point-to-point connection

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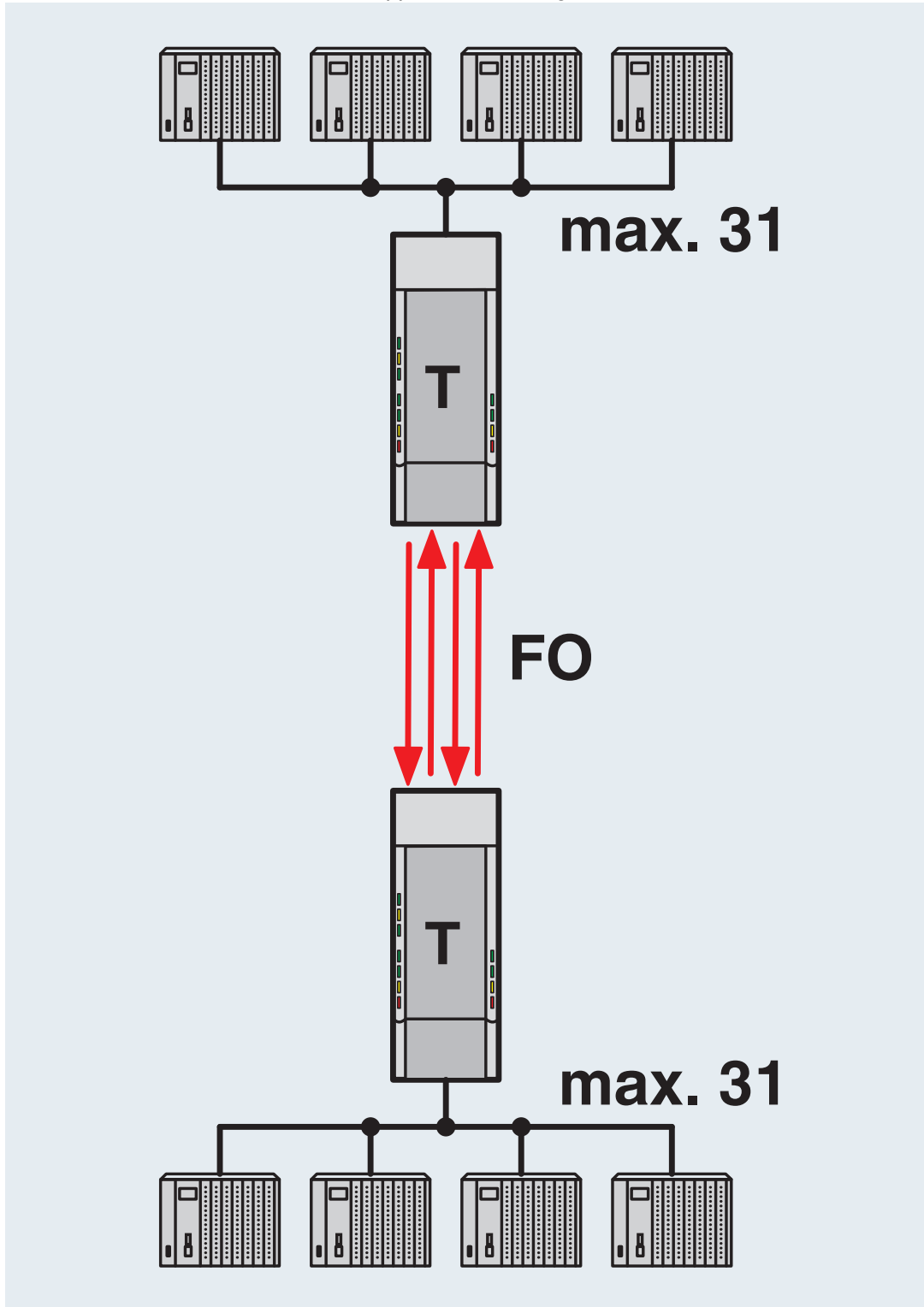
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Application drawing



Redundant FO ring

Application drawing



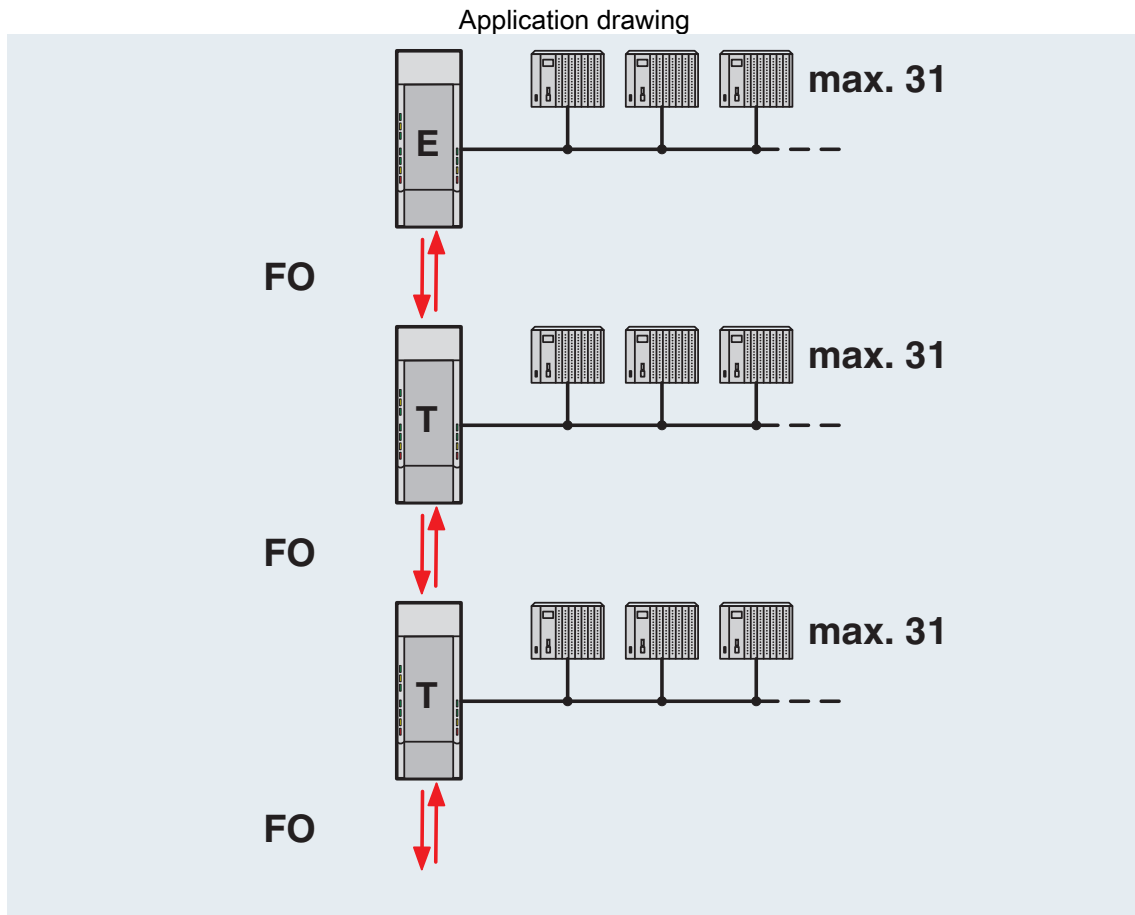
Redundant point-to-point connection

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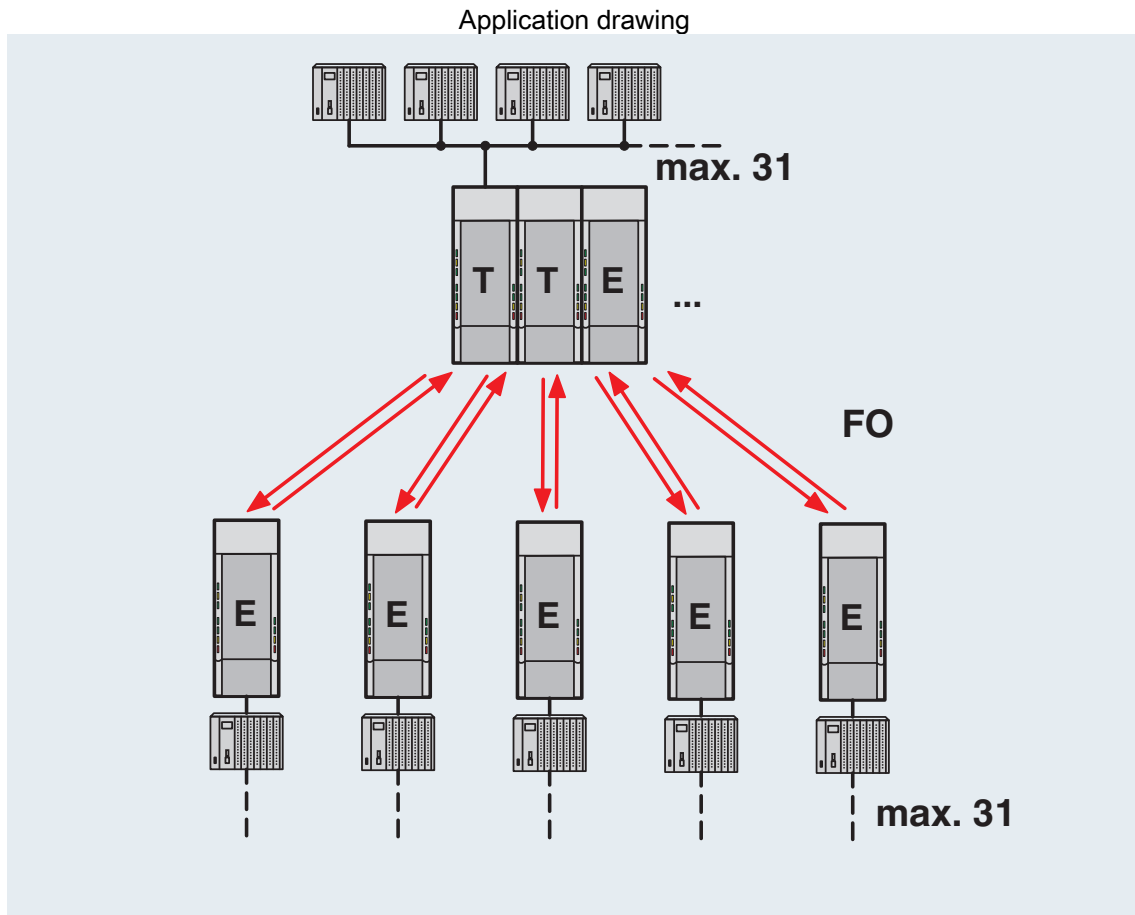
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Line structure

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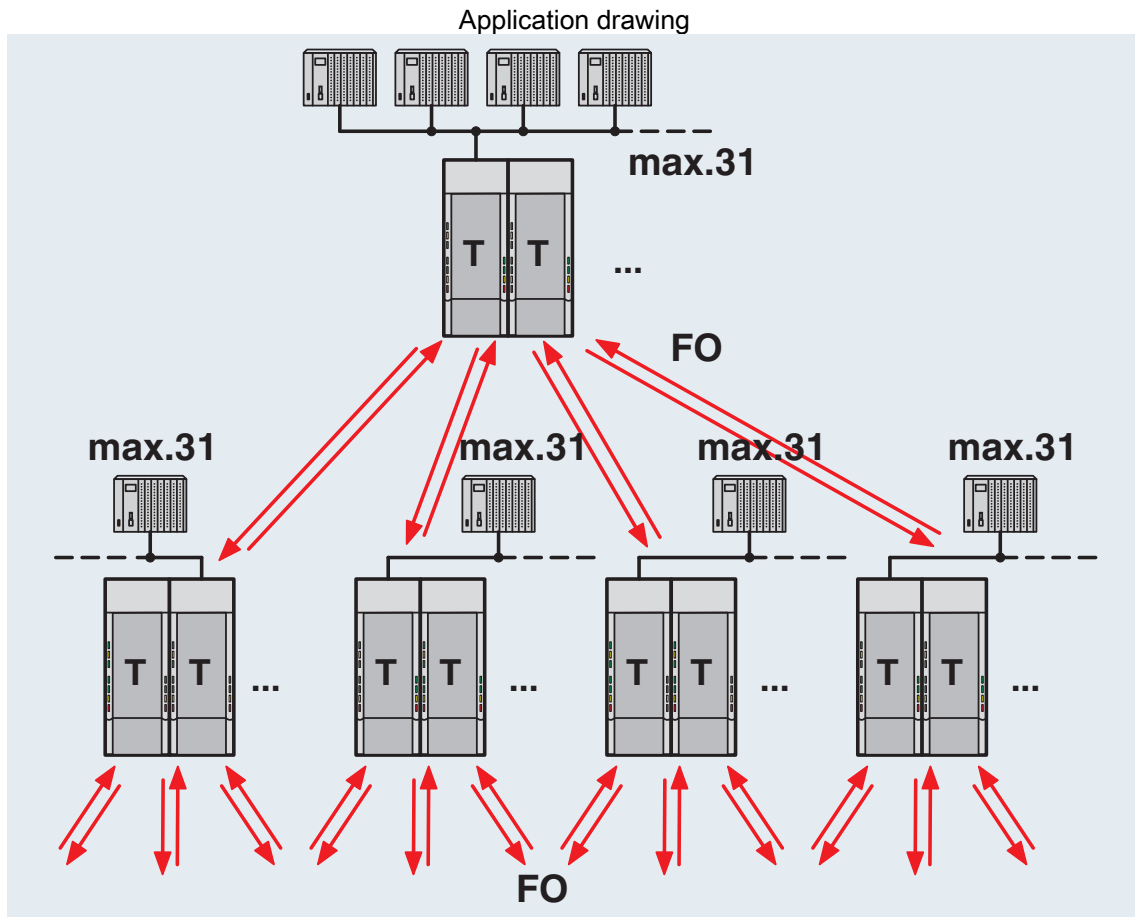
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Star structure

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2708711>



**cUL Recognized**  
Approval ID: FILE E 238705



**UL Recognized**  
Approval ID: FILE E 238705



**DNV GL**  
Approval ID: TAA00001KR

### UAE-RoHS

Approval ID: 23-02-63194



**ATEX**  
Approval ID: PTB 06 ATEX 2042U



**ATEX**  
Approval ID: PxCIF06ATEX2708261X



**cUL Listed**  
Approval ID: FILE E 199827



**UL Listed**  
Approval ID: FILE E 199827

**cULus Recognized**

**cULus Listed**

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



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## Classifications

### ECLASS

ECLASS-11.0	19170411
ECLASS-12.0	19170411
ECLASS-13.0	19170411

### ETIM

ETIM 9.0	EC001467
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### UNSPSC

UNSPSC 21.0	43201500
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## Environmental product compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"

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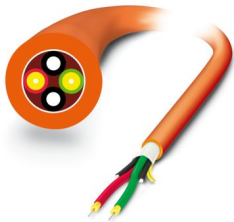
<https://www.phoenixcontact.com/us/products/2708711>

## Accessories

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

2799885

<https://www.phoenixcontact.com/us/products/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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### PSM-LWL-HCSO-200/230 - FO cable

2799445

<https://www.phoenixcontact.com/us/products/2799445>



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

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters

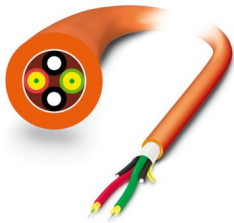
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## PSM-LWL-GDM-RUGGED- 50/125 - FO cable

2799322

<https://www.phoenixcontact.com/us/products/2799322>



Fiber glass cable, duplex 50  $\mu\text{m}$ /125  $\mu\text{m}$ , by the meter, without male connector, for installation in stationary systems and machines

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

2799432

<https://www.phoenixcontact.com/us/products/2799432>



Fiberglass cable, duplex 50/125  $\mu\text{m}$ , by the meter, without connector, for outdoor installation

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## QUINT4-SYS-PS/1AC/24DC/2.5/SC - Power supply unit

2904614

<https://www.phoenixcontact.com/us/products/2904614>



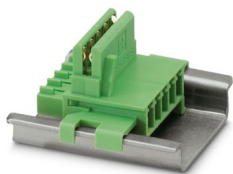
Primary-switched power supply, QUINT POWER, screw connection, DIN rail mounting, supply of devices possible via the TBUS DIN rail connector, protective coating, input: single-phase, output: 24 V DC/2.5 A

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## ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - DIN rail bus connectors

2709561

<https://www.phoenixcontact.com/us/products/2709561>



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

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



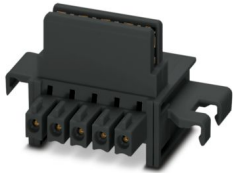
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<https://www.phoenixcontact.com/us/products/2708711>

## ME 17,5 TBUS 1,5/PP000-3,81 BK - DIN rail bus connectors

2890014

<https://www.phoenixcontact.com/us/products/2890014>



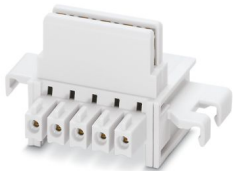
DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 2-pos.

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## ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - DIN rail bus connectors

2713645

<https://www.phoenixcontact.com/us/products/2713645>



DIN rail connector, color: light grey, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

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## PSM-HCS-KONFTOOL/B-FOC - Assembly tool

2708465

<https://www.phoenixcontact.com/us/products/2708465>



HCS assembly kit for B-FOC(ST) quick mounting connectors, including stripping blade, stripping pliers, aramide yarn scissors, fiber stripper, microscope, fiber cleaving tool for standard HCS and HCS GI fibers, four B-FOC(ST) connectors for standard HCS fiber, and documentation

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## PSM-FO-POWERMETER - Measuring instrument

2799539

<https://www.phoenixcontact.com/us/products/2799539>



Fiber optic measuring case, consisting of an optical power meter, F-SMA, B-FOC adapters, reference fibers and operating instructions

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## FOC-ADAPTER:ST/ST-MM - Fiber optic coupling

1208099

<https://www.phoenixcontact.com/us/products/1208099>



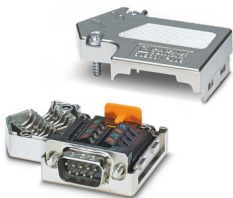
Fiber optic coupling, degree of protection: IP20, number of positions: 1, material: Metal, connection method: Coupling, cable outlet: straight, color: silver/matt, Ethernet

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## SUBCON-PLUS-PROFIB/SC2 - D-SUB bus connector

2708232

<https://www.phoenixcontact.com/us/products/2708232>



D-SUB connector, 9-pos., male connector, 35° cable entry, bus system: PROFIBUS DP up to 12 Mbps, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



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## SUBCON-PLUS-PROFIB/PG/SC2 - D-SUB bus connector

2708245

<https://www.phoenixcontact.com/us/products/2708245>



D-SUB connector, 9-pos., male connector, 35° cable entry, bus system: PROFIBUS DP up to 12 Mbps with PG D-SUB socket for connecting a programming device, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks

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## SUBCON-PLUS-PROFIB/AX/SC - D-SUB bus connector

2744380

<https://www.phoenixcontact.com/us/products/2744380>



D-SUB connector, 9-pos., male connector, axial version with two cable entries, bus system: PROFIBUS DP up to 12 Mbps, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks



# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



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## SZS 0,4X2,5 VDE - Screwdriver

1205037

<https://www.phoenixcontact.com/us/products/1205037>



Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip

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## PSM-STRIP-FC/PROFIB - Stripping tool

2744623

<https://www.phoenixcontact.com/us/products/2744623>

Quick stripping tool for PROFIBUS cable, type Fast Connect



# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



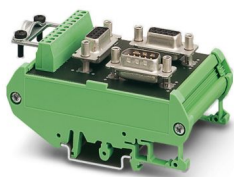
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<https://www.phoenixcontact.com/us/products/2708711>

## PSM PTK - Connection distributor

2760623

<https://www.phoenixcontact.com/us/products/2760623>



Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and two 9-pin D-SUB socket strips

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## PSM PTK-4 - Connection distributor

2799364

<https://www.phoenixcontact.com/us/products/2799364>



Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and five 9-pin D-SUB socket strips

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## PSI-REP-PROFIBUS/12MB - Repeater

2708863

<https://www.phoenixcontact.com/us/products/2708863>



Modular repeater for electrical isolation and range increase for PROFIBUS up to 12 Mbps, 4-way isolation, rail-mountable, supply 24 V DC

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## PSM-ME-RS485/RS485-P - Repeater

2744429

<https://www.phoenixcontact.com/us/products/2744429>



Repeater, for potential separation and range increase in RS-485 2-wire bus systems, 3-way isolation, rail-mountable

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## PSM-CABLE-PROFIB/FC - Bus system cable

2744652

<https://www.phoenixcontact.com/us/products/2744652>



By the meter, Bus system cable, PROFIBUS (12 Mbps), shielded, PVC FR VI/PVC, violet, 2-wire (1x2xAWG22/1), color single wire: red, green, cable length: Free entry (1.0 ... 1000.0 m)

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## SUBCON-PLUS-PROFIB/AX/M12 - D-SUB bus connector

2902321

<https://www.phoenixcontact.com/us/products/2902321>



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable glands (B-coded) under 180° (axial). Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.

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## SUBCON-PLUS-PROFIB/90X/M12 - D-SUB bus connector

2902729

<https://www.phoenixcontact.com/us/products/2902729>

D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two 90° cable entries M12 (B-coded). Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator. Long version; S7-compatible.



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## SUBCON-PLUS-PROFIB/90/M12 - D-SUB bus connector

2902318

<https://www.phoenixcontact.com/us/products/2902318>

D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two 90° M12 cable glands (B-coded). Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.



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## SUBCON-PLUS-PROFIB/35/M12 - D-SUB bus connector

2902320

<https://www.phoenixcontact.com/us/products/2902320>



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two 35° cable entries M12 (B-coded). Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.

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## FOC-HCS-RUGGED-1014/... - FO patch cable

1402191

<https://www.phoenixcontact.com/us/products/1402191>



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

# PSI-MOS-PROFIB/FO 850 E-SO - FO converters



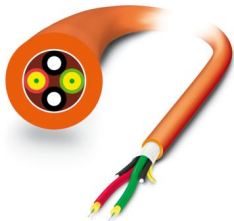
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## FOC-GDM-RUGGED-1016/IP20/... - FO patch cable

2901558

<https://www.phoenixcontact.com/us/products/2901558>



Robust GOF installation cable for assembly (IP20 heads only) for installation in stationary systems and machines, aramid strain-relief elements, with individual elements made from FRNC material, halogen-free, ozone and UV resistant, with a polyurethane (PUR) outer sheath

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

2901559

<https://www.phoenixcontact.com/us/products/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.

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