

# FO converters - PSI-MOS-PROFIB/FO 660 E - 2708290

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FO converter with integrated optical diagnostics, alarm contact, for PROFIBUS up to 12 Mbps, termination device with an FO interface (FSMA), 660 nm, for polymer/HCS fiber cable

## Why buy this product

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



## Key commercial data

Packing unit	1 pc
GTIN	 4 017918 973995
Weight per Piece (excluding packing)	241.9 g
Weight per piece (including packing)	250.0 g
Custom tariff number	85176200
Country of origin	Germany
Sales Key	M1 - Communication Techn.

## Technical data

Note:

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## Technical data

### Note:

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

Width	35 mm
Height	99 mm
Depth	106 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 60 °C
Ambient temperature (storage/transport)	-40 °C ... 85 °C
Permissible humidity (operation)	30 % ... 95 % (non-condensing)
Altitude	5000 m (For restrictions see manufacturer's declaration)
Degree of protection	IP20
Noise immunity	EN 61000-6-2:2005

### Serial interface

Interface 1	PROFIBUS acc. to IEC 61158, RS-485 2-wire, half duplex, automatic control
Interface	PROFIBUS
Operating mode	Semi-duplex
Connection method	D-SUB-9 female connector
File format/coding	UART (11 Bit, NRZ)
Data direction switching	Automatic control
Transmission medium	Copper
Transmission length	≤ 1200 m (depending on the data rate, with shielded, twisted pair data cable)
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
Serial transmission speed	≤ 12 Mbps

### Optical interface FO

Transmit capacity, minimum	-3 dBm (980/1000 μm)
	-15.4 dBm (200/230 μm)
Minimum receiver sensitivity	-30 dBm
Maximum receiver sensitivity	-3 dBm (980/1000 μm)
Wavelength	660 nm
Transmission length incl. 3 dB system reserve	70 m (With F-P 980/1000 230 dB/km with quick mounting connector)
	400 m (With F-K 200/230 10 dB/km with quick mounting connector)
Transmission medium	Polymer fiber

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## Technical data

### Optical interface FO

	HCS fiber
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	F-SMA

### Fault warning output

Maximum switching voltage	60 V DC
	42 V AC
Limiting continuous current	0.46 A

### Power supply

Nominal supply voltage	24 V DC
Supply voltage range	18 V DC ... 30 V DC
Max. current consumption	130 mA
Typical current consumption	100 mA (24 V DC)
Connection method	COMBICON plug-in screw terminal block

### General

Bit delay	≤ 1 Bit
Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Electrical isolation	(VCC // RS-485)
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2004/108/EC
Noise emission	EN 55011
Net weight	175 g
Housing material	PA 6.6-FR
Color	green
MTBF	324 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	70 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))
MTTF	243 Years (SN 29500 standard, temperature 25°C, operating cycle 21 % (5 days a week, 8 hours a day))
	178 Years (SN 29500 standard, temperature 40 °C, operating cycle 34.25 % (5 days a week, 12 hours a day))
	110 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 nAC IIC T4 X
	# II (2) GD [Ex op is] IIC (PTB 06 ATEX 2042 U)
UL, USA / Canada	Class I, Zone 2, AEx nc IIC T5
	Class I, zone 2, Ex nC nL IIC T5 X
	Class I, Div. 2, Groups A, B, C, D

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## 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	27143136

### ETIM

ETIM 2.0	EC001423
ETIM 3.0	EC001423
ETIM 4.0	EC001423
ETIM 5.0	EC001423

### UNSPSC

UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	43201553

## Approvals

### Approvals

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#### Approvals

UL Recognized / cUL Recognized / UL Recognized / cUL Recognized / DNV / cULus Recognized

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#### Ex Approvals

ATEX / UL Listed / cUL Listed / ATEX / UL Listed / cUL Listed / cULus Listed

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#### Approvals submitted


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### Approval details


UL Recognized
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## FO converters - PSI-MOS-PROFIB/FO 660 E - 2708290


### Approvals

cUL Recognized 

UL Recognized 

cUL Recognized 

DNV

cULus Recognized 

### Accessories

#### Accessories

##### Adapter

Fiber optic coupling - PSM-SET-FSMA-LINK/2 - 2799416



Coupling; set consisting of 2 couplings for connecting F-SMA plugs

Connection distributor - PSM PTK - 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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### Accessories

Connection distributor - PSM PTK-4 - 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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### Assembly tool

Assembly tool - PSM-POF-KONFTOOL - 2744131



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

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Assembly tool - PSM-HCS-KONFTOOL - 2799526



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

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Assembly tool - PSM-SET-FSMA-POLISH - 2799348



Polymer fiber polishing set, for F-SMA quick mounting connectors

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### Connector set

FO connectors - PSM-SET-FSMA/4-KT - 2799720



F-SMA plug set for polymer fiber, for self assembly consisting of 4 quick mounting connectors with bend protection sleeve

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## FO converters - PSI-MOS-PROFIB/FO 660 E - 2708290

### Accessories

FO connectors - PSM-SET-FSMA/4-HCS - 2799487



F-SMA plug set for HCS fiber, for self assembly consisting of 4 quick mounting connectors with bend protection sleeve

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### Data cable by the meter

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



Polymer fiber cable, duplex 980/1000 µm, medium-weight version for permanent indoor installation, by the meter, without connector

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



Polymer fiber cable, duplex, 980 µm/1000 µm, heavy version for permanent indoor installation, sold by the meter without connectors

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

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



HCS cable, duplex 200/230 µm, by the meter, without connector, for indoor installation

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### Accessories

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



HCS cable, duplex 200/230 µm, by the meter, without connector, for outdoor installation

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Cable - PSM-CABLE-PROFIB/FC - 2744652



PROFIBUS cable, Fast Connect type, up to 12 Mbps (02YSY (ST)CY 1x2x22 AWG)

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### Data plug

D-SUB bus connector - SUBCON-PLUS-PROFIB/SC2 - 2708232



D-SUB connector, 9-pos., male connector, cable entry < 35°, 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

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D-SUB bus connector - SUBCON-PLUS-PROFIB/Pg/SC2 - 2708245



D-SUB connector, 9-pos., male connector, cable entry < 35°, 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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D-SUB bus connector - SUBCON-PLUS-PROFIB/AX/SC - 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

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## FO converters - PSI-MOS-PROFIB/FO 660 E - 2708290

### Accessories

#### D-SUB bus connector - SUBCON-PLUS-PROFIB/90/Pg/SC - 2313708



D-SUB connector, 9-pos., male connector, cable entry < 90°, 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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#### D-SUB bus connector - SUBCON-PLUS-PROFIB/90/Pg/IDC - 2313685



D-SUB connector, 9-pos., male connector, cable entry < 90°, 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; IDC terminal block connection

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#### DIN rail connector

##### 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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#### Interface converter

##### Repeater - PSI-REP-PROFIBUS/12MB - 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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##### Interface converter - PSM-ME-RS485/RS485-P - 2744429



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

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#### Measuring tools

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### Accessories

Measuring instrument - PSM-FO-POWERMETER - 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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### Power supply

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



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

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### Screwdriver tools

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

Stripping tool - PSM-STRIP-FC/PROFIB - 2744623



Quick stripping tool for PROFIBUS cable, type Fast Connect

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### Terminal resistor

Termination resistor - PSI-TERMINATOR-PB - 2313944



Active termination resistor with redundant voltage supply for PROFIBUS and RS-485 bus systems. Compact design. Electrical isolation between supply and data interface. Bus termination can be switched. Integrated programming interface.

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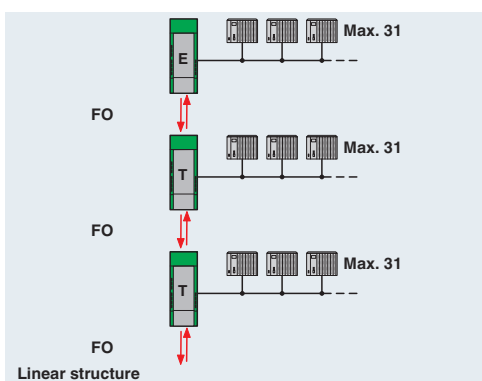
## Accessories

Electronic housing - ME 17,5 TBUS 1,5/PP000-3,81 BK - 2890014

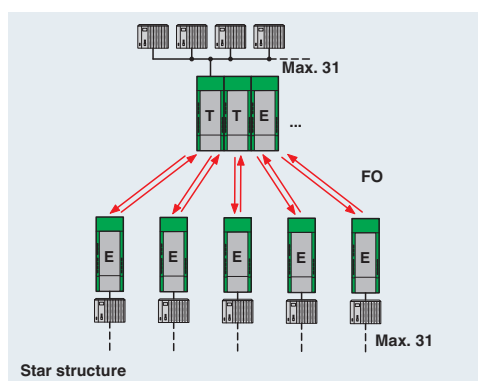
DIN rail connector for DIN rail mounting. Universal for TBUS housing. Gold-plated contacts, 2-pos.

## Drawings

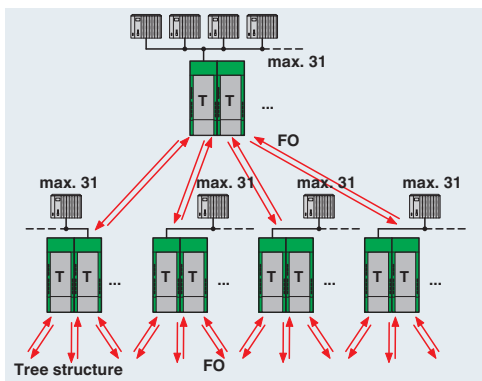
Application drawing



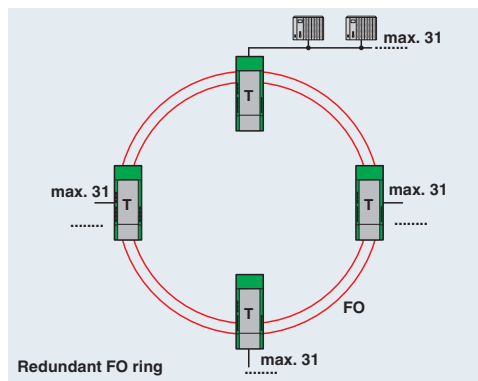
Application drawing



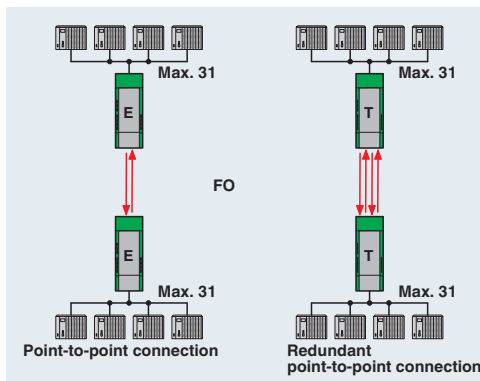
Application drawing



Application drawing

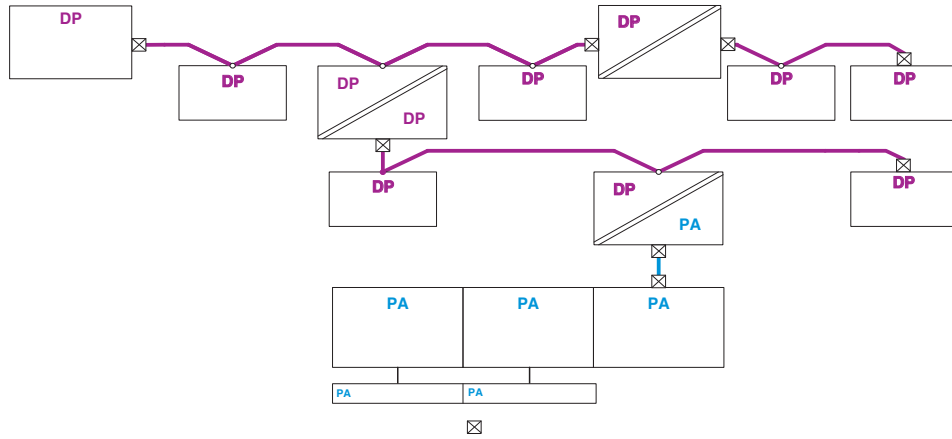


Application drawing

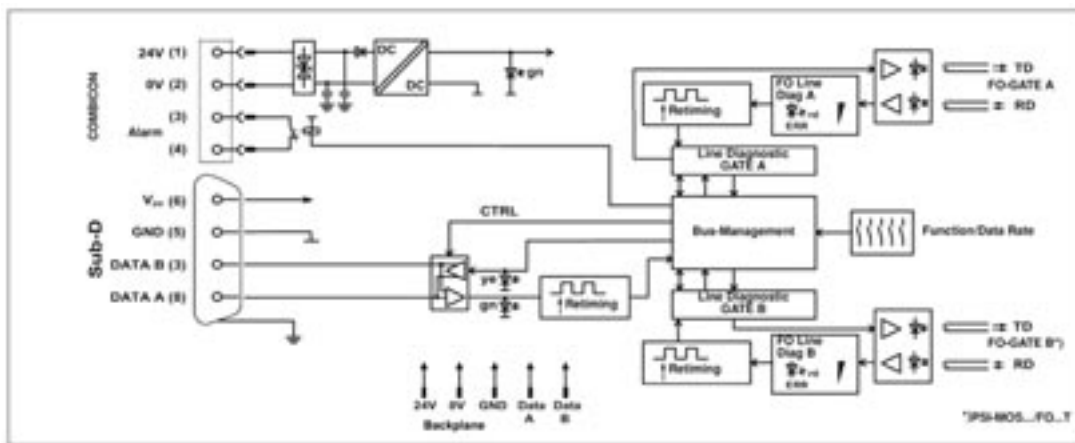


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Application drawing



Block diagram



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