

2708290

https://www.phoenixcontact.com/us/products/2708290

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

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

- · 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
- Connections can be plugged in via a COMBICON screw terminal block
- · Automatic data rate detection or fixed data rate setting via DIP switches
- · Redundant power supply
- · High-quality electrical isolation between all interfaces (PROFIBUS // fiber optic ports // power supply // DIN rail connector)
- 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	2708290
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN06
Product key	DNC211
GTIN	4017918973995
Weight per piece (including packing)	246.8 g
Weight per piece (excluding packing)	241.9 g
Customs tariff number	85176200



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Technical data

Notes

Note on application Note on application	Only for industrial use
Utilization restriction	

Product properties

Product type	Media converter
Product family	PSI-MOS
MTTF	243 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	178 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	110 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
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))

Electrical properties

Electrical isolation	VCC // RS-485
Maximum power dissipation for nominal condition	2.4 W
Test voltage data interface/power supply	1.5 kV _{rms} (50 Hz, 1 min.)
Supply	

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	100 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)



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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
nterfaces	
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	-3 dBm (980/1000 μm)
	-15.4 dBm (200/230 μm)
Transmission length incl. 3 dB system reserve	70 m (F-P 980/1000 230 dB/km with quick mounting connector)
	400 m (F-K 200/230 10 dB/km with quick mounting connector)
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	F-SMA
Wavelength	660 nm
Minimum receiver sensitivity	-30 dBm
Maximum receiver sensitivity	-3 dBm (980/1000 μm)
Transmission medium	Polymer fiber
	PCF fiber
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	106 mm

Material specifications

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

Cable/line

FO cable

Fiber types	980/1000 μm
	200/230 μm
	Polymer fiber
	PCF fiber

Mechanical tests

Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6	Vibration (operation): 5g, 10150 Hz, 2.5 h, in XYZ direction
Shock in accordance with EN 60068-2-27/IEC 60068-2-27	Shock (operation): 15g, 11 ms period, half-sine shock pulse
Free fall in accordance with IEC 60068-2-32	Free fall: 1 m

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

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Certificate	CE-compliant	
ATEX		
Identification		
Note	Please follow the special installation instructions in the documentation!	
ATEX, FO interface		
Identification		
	□ II (2) D [Ex op is Db] IIIC	



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Certificate	PTB 06 ATEX 2042 U
Note	Please follow the special installation instructions in the documentation!
JL, USA/Canada	
Identification	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
PROFIBUS interoperability	
Note	Tested by independent PNO test laboratory (PN059-485-01)
ABB certification	
Identification	Industrial ^{IT} enabled
Note	This certification is a trademark of ABB.
Corrosive gas test	
Identification	ISA-S71.04-1985 G3 Harsh Group A
Shipbuilding	
Identification	DNV GL
Shipbuilding data	
Temperature	В
Humidity	A
Vibration	A
EMC	В
Enclosure	Required protection according to the Rules shall be provided upon installation on board
MC data	
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise immunity	EN 61000-6-2:2005
Noise emission	
Standards/regulations	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



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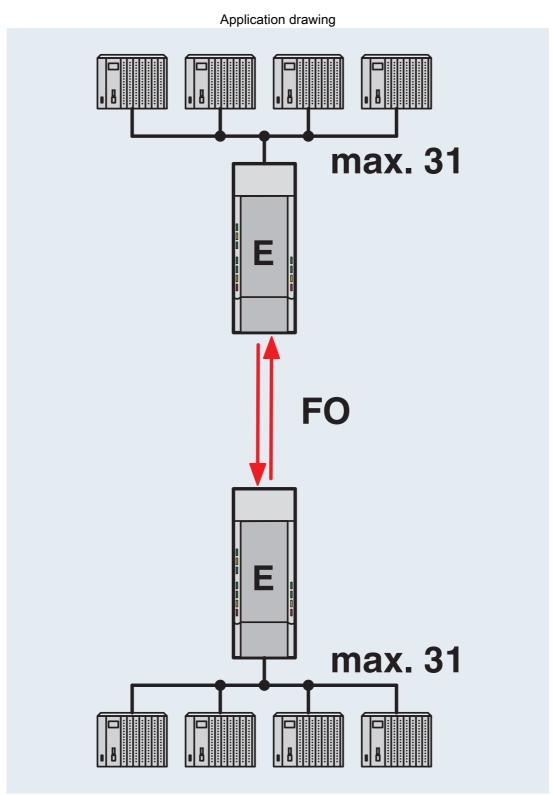
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	± 2 kV
Signal	± 2 kV
Comments	Criterion B
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
Surge current load (surge)	
Input	± 0.5 kV
Signal	± 1 kV
Comments	Criterion B
Conducted interference	
Standards/regulations	EN 61000-4-6
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.
andards and regulations	
Free from substances that could impair the application of coating	VDMA 24364:2018-05
Air clearances and creepage distances	
Standards/regulations	DIN EN 60664-1
	VDE 0110-1
	DIN EN 50178
	EN 60950
ounting	
-	DIM roll mounting
Mounting type	DIN rail mounting



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Drawings

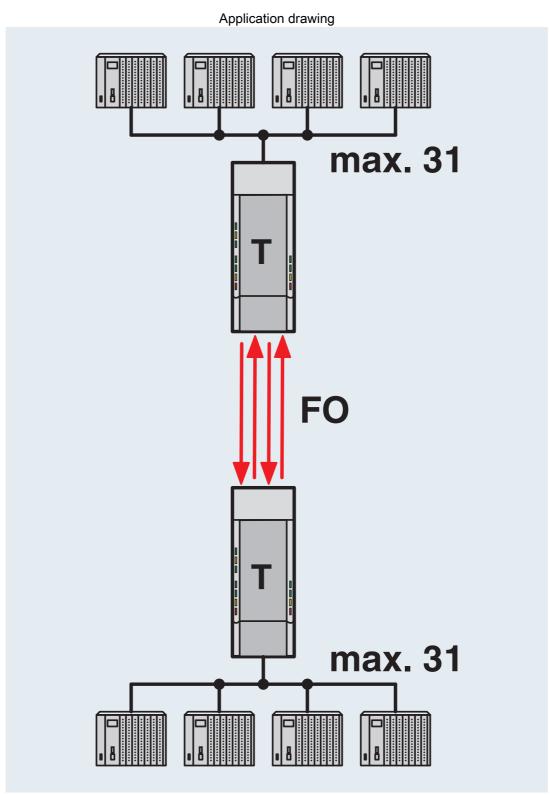


Point-to-point connection



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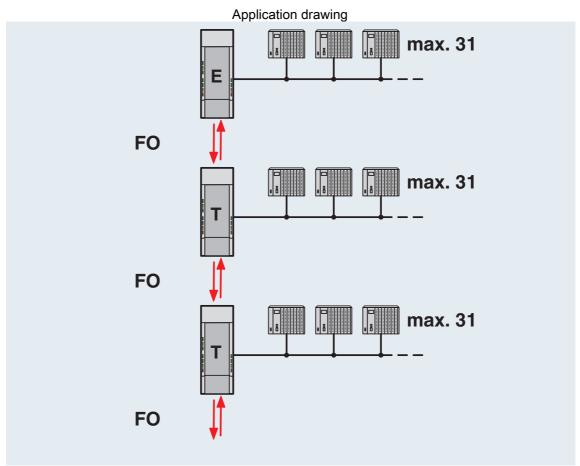


Redundant point-to-point connection



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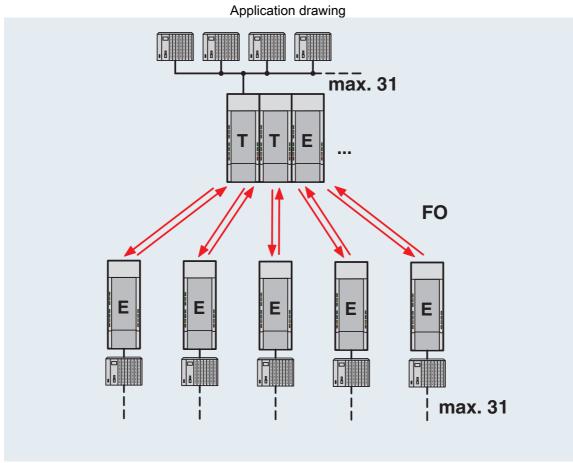


Line structure



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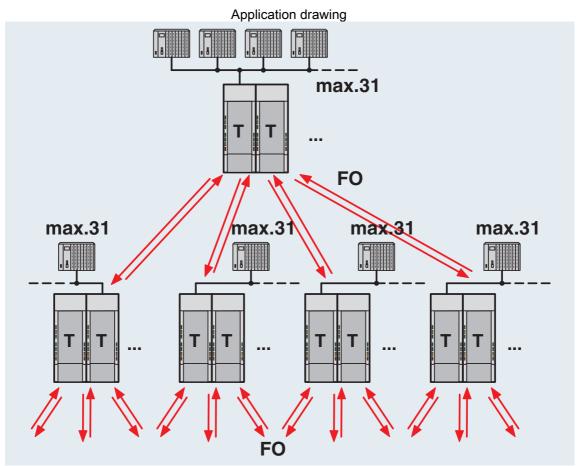


Star structure



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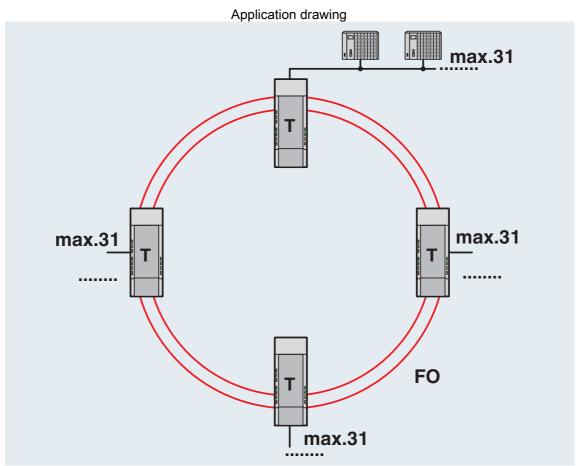


Tree structure

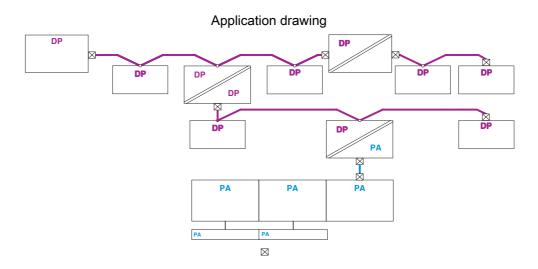


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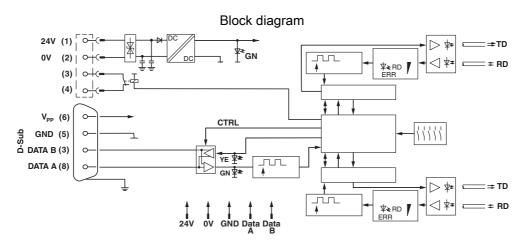
Redundant FO ring





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



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Approvals

🌣 To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2708290



DNV GL

Approval ID: TAA00001KR



cULus Recognized

Approval ID: E238705



ATEX

Approval ID: PxCIF06ATEX2708261X



cUL Listed

Approval ID: E199827



UL Listed

Approval ID: E199827



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Classifications

ECLASS

	ECLASS-13.0	19170411	
	ECLASS-15.0	19170411	
ΕT	ETIM		
	ETIM 9.0	EC001467	
UNSPSC			

UNSPSC 21.0 43201500



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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes		
Exemption	6(c), 7(a), 7(c)-l		
China RoHS			
Environment friendly use period (EFUP)	EFUP-50		
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.		
EU REACH SVHC			
REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)		
SCIP	8a9a1cf4-ab8f-4cfa-98c8-809798590fcd		



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Accessories

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

2799720

https://www.phoenixcontact.com/us/products/2799720

FO connectors, degree of protection: IP20, number of positions: 2, MM, material: Metal, cable outlet: straight



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

2799487

https://www.phoenixcontact.com/us/products/2799487

FO connectors, degree of protection: IP20, number of positions: 4, MM, material: Metal, connection method: Cable connection, cable outlet: straight





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

2313397

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

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

2744322

https://www.phoenixcontact.com/us/products/2744322



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



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

2313407

https://www.phoenixcontact.com/us/products/2313407



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

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

2799885

https://www.phoenixcontact.com/us/products/2799885



PCF cable, duplex 200 $\mu m/230~\mu m,$ 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

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

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 connector

2709561

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



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

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

2890014

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



DIN rail bus 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 connector

2713645

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



DIN rail bus connector, color: light gray, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, number of positions: 5, product range: TBUS5-17,5.., pitch: 3.81 mm, mounting: DIN rail mounting, locking: without, mounting method: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

PSM-POF-KONFTOOL - Assembly tool

2744131

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



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PSM-HCS-KONFTOOL - Assembly tool

2799526

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PCF 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, four F-SMA connectors for standard PCF fibers, and documentation

PSM-SET-FSMA-POLISH - Assembly tool

2799348

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



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PSM-FO-POWERMETER - Measuring device

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

PSM-SET-FSMA-LINK/2 - FO coupling

2799416

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





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

2708232

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D-SUB connector, 9-pos., pin, 35° cable outlet, 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

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

2708245

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



D-SUB connector, 9-pos., pin, 35° cable outlet, 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

SZS 0,4X2,5 VDE - Screwdriver

1205037

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



Screwdriver, slot-headed, VDE insulated, size: $0.4 \times 2.5 \times 80$ 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



PSM PTK - Connection distributor

2760623

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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

PSI-REP-PROFIBUS/12MB - Repeater

2708863

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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

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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PSI-TERMINATOR-PB-TBUS - Termination resistor

2702636

https://www.phoenixcontact.com/us/products/2702636



Active termination resistor for PROFIBUS and RS-485 bus systems, redundant power supply, routing of the supply voltage via DIN rail connector, electrical isolation, switchable termination, integrated programming interface

SUBCON-PLUS-PROFIB/90/PG/SC - D-SUB bus connector

2313708

https://www.phoenixcontact.com/us/products/2313708



D-SUB connector, 9-pos., pin, 90° cable outlet, 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/90/PG/IDC - D-SUB bus connector

2313685

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D-SUB connector, 9-pos., pin, 90° cable outlet, 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

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

2902321

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D-SUB connector, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable entries (B-coded), 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

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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.



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

2902318

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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.

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.

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