

# FO converters - PSI-MOS-DNET CAN/FO 850/EM



2708096

<https://www.phoenixcontact.com/pc/products/2708096>

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FO converter with integrated optical diagnostics, for DeviceNet™, CAN, CANopen® up to 800 kbps, extension/redundancy module, interfaces: 1 x FO (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

## Product Description

The PSI-MOS-DNET... fiber optic transmission system enables DeviceNet™ and CANopen® users to benefit from simple and interference-free networking based on fiber optics. In addition, bus cable short circuits only affect the specific potential segment concerned. This increases overall availability, and improves flexibility when designing the bus topology. The use of fiber optic technology enables branch lines and star and tree structures to be created. The 22.5 mm space-saving devices from the **PSI-MOS-DNET CAN/FO...** series feature an internal backplane. The maximum network expansion that can be achieved (sum total of copper and fiber optic cables) essentially depends on the data rate used.

## Your advantages

- Data rates of up to 800 kbps, set via DIP switches
- Approved for use in zone 2
- Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1

## Commercial Data

Item number	2708096
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	DNC213
Catalog Page	Page 433 (C-6-2019)
GTIN	4017918943219
Weight per Piece (including packing)	191.4 g
Weight per Piece (excluding packing)	107.98 g
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
MTBF	323 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	49 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))

### Electrical properties

Electrical isolation	VCC // CAN
Maximum power dissipation for nominal condition	2 W
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)

#### Supply

Supply voltage range	10 V DC ... 30 V DC
Nominal supply voltage	24 V DC (in acc. with UL)
Typical current consumption	100 mA (24 V DC)
Max. current consumption	100 mA
Connection method	Pluggable COMBICON screw terminal block through basic module

### Connection data

#### Supply

Connection method	Pluggable COMBICON screw terminal block through basic module
Tightening torque	0.56 Nm ... 0.79 Nm

### Interfaces

Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Signal	CAN
	CANopen <sup>®</sup>
	DeviceNet <sup>™</sup>

#### Data: optical FO

Transmit capacity, minimum	-17.9 dBm (50/125 μm)
	-14.1 dBm (62,5/125 μm)

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	-5.1 dBm (200/230 µm)
Transmission length incl. 3 dB system reserve	2800 m (With F-K 200/230 10 dB/km with quick mounting connector)
	4800 m (with F-G 50/125 2.5 dB/km)
	4200 m (with F-G 62,5/125 3.0 dB/km)
Connection method	B-FOC (ST <sup>®</sup> )
Wavelength	850 nm
Minimum receiver sensitivity	-32.5 dBm (50/125 µm)
	-32.5 dBm (62,5/125 µm)
	-32.1 dBm (200/230 µm)
Transmission medium	PCF fiber
	Multi-mode fiberglass

Data: CAN interface, in accordance with ISO/IS 11898 for DeviceNet, CAN, CANopen

Serial transmission speed	≤ 800 kbps
Connection method	Pluggable screw connection
Transmission length	≤ 5000 m (Dependent on the data rate and the protocol used)
Transmission medium	Copper
File format/coding	Bit stuffing, NRZ

## Dimensions

Width	22.5 mm
Height	99 mm
Depth	114.5 mm

## Material specifications

Material	PA 6.6-FR (Housing)
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## Cable / line

### FO cable

Fiber types	200/230 µm
	50/125 µm
	62.5/125 µm
	PCF fiber
	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)
Permissible humidity (operation)	30 % ... 95 % (non-condensing)

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## Approval data

### CE

Certificate	CE-compliant
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### ATEX

Identification	<input type="checkbox"/> II 3 G Ex nA nC IIC T4 Gc X
Note	Please follow the special installation instructions in the documentation!

### ATEX, FO interface

Identification	<input type="checkbox"/> II (2) G [Ex op is Gb] IIC <input type="checkbox"/> II (2) D [Ex op is Db] IIC
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, Div. 2, Groups A, B, C, D
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### Corrosive gas test

Identification	ISA-S71.04-1985 G3 Harsh Group A
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## EMC data

Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011
Noise immunity	EN 61000-6-2:2005

### Electrostatic discharge

Standards/regulations	EN 61000-4-2
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### Electrostatic discharge

Contact discharge	± 6 kV
Discharge in air	± 8 kV
Comments	Criterion B

### Electromagnetic HF field

Standards/regulations	EN 61000-4-3
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### Electromagnetic HF field

Field intensity	10 V/m
Comments	Criterion A

### Fast transients (burst)

Standards/regulations	EN 61000-4-4
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### Fast transients (burst)

Input	2 kV (5 kHz)
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Signal	2 kV (5 kHz)
Comments	Criterion B

## Surge current load (surge)

Input	0.5 kV (42 $\Omega$ )
Signal	1 kV (2 $\Omega$ )
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

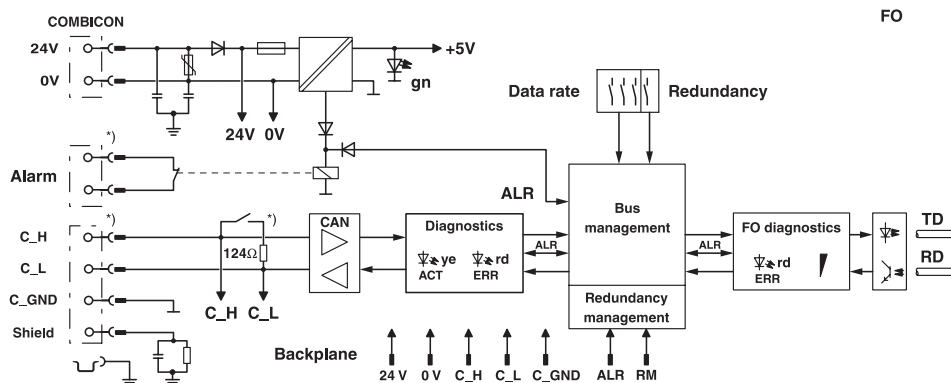
Standards/regulations	EN 55011
Comments	Class A, industrial applications
Criterion A	Normal operating behavior within the specified limits.
Criterion B	Temporary impairment to operational behavior that is corrected by the device itself.

## Mounting

Mounting type	DIN rail mounting
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## Drawings

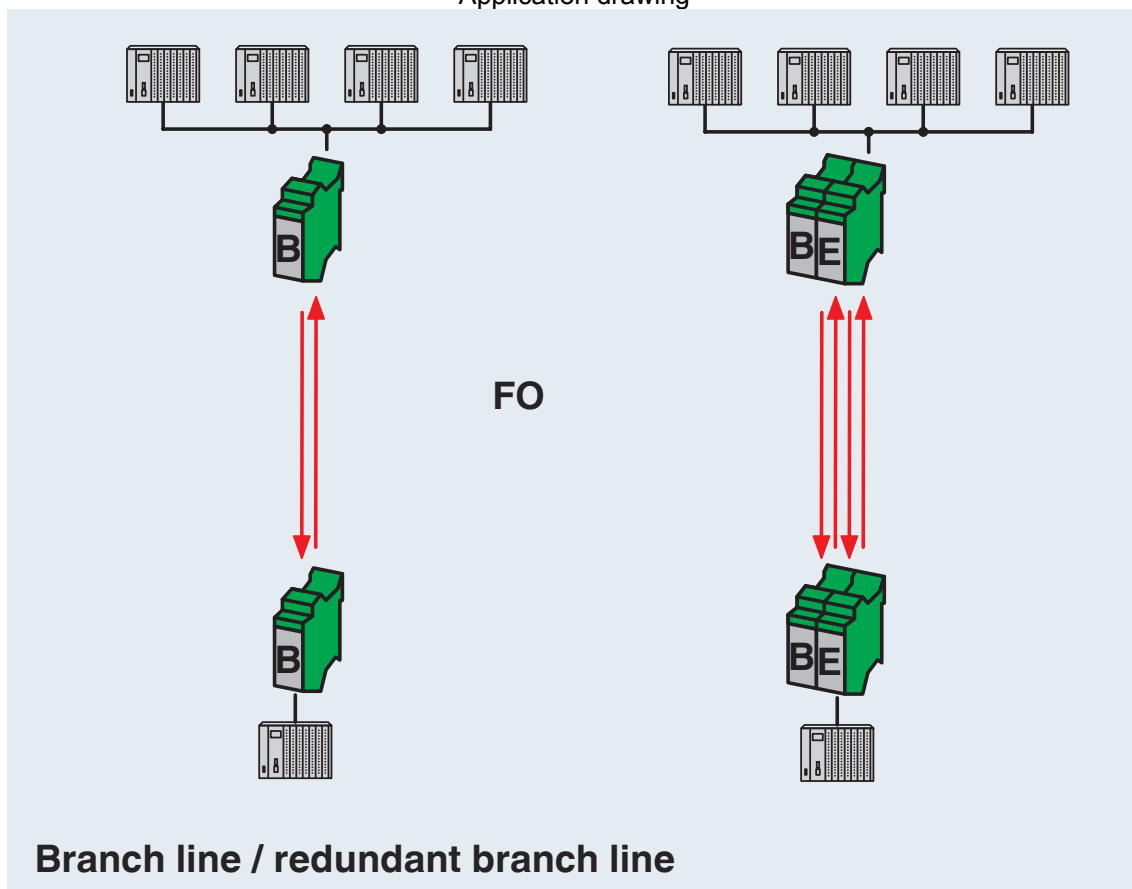
Block diagram



\*) Only for basic module

\*) Only in the basic module

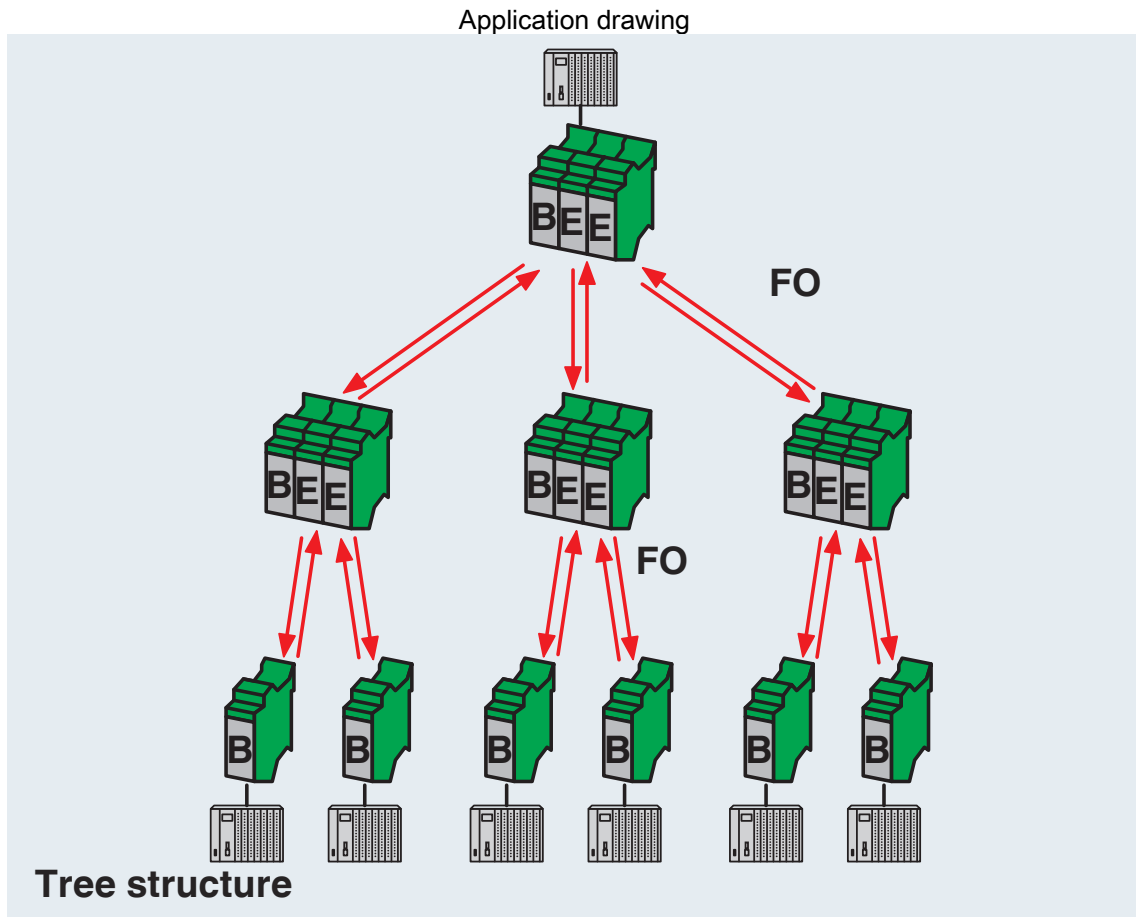
Application drawing



Branch line / redundant branch line

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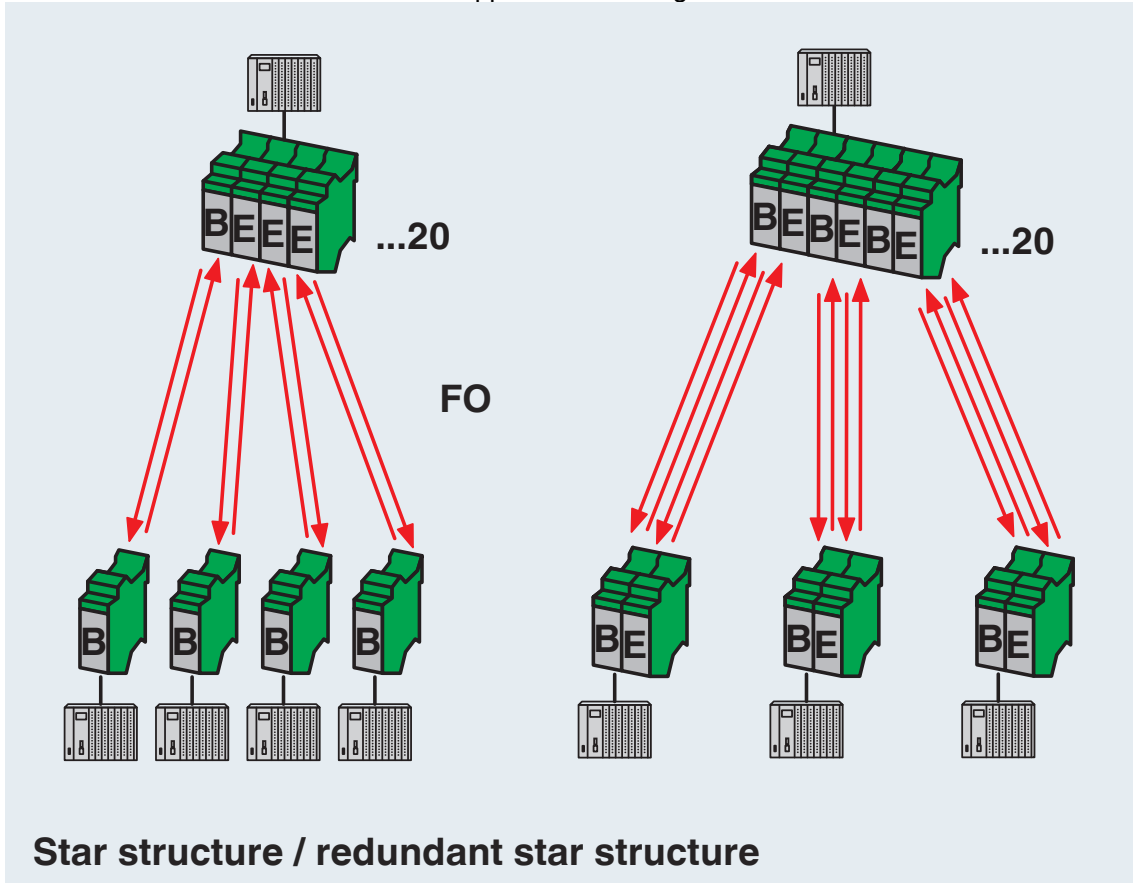


Tree structure

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Application drawing



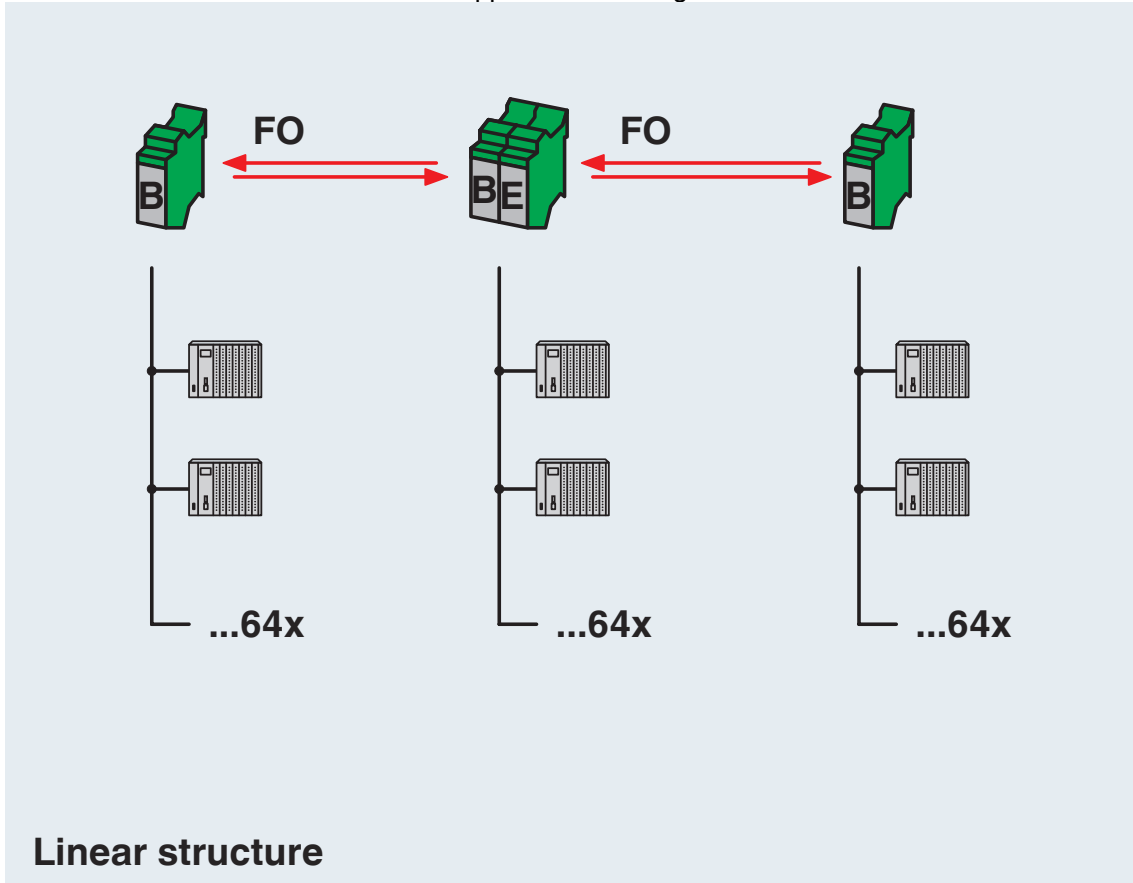
Star structure / redundant star structure



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Application drawing



Line structure

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<https://www.phoenixcontact.com/pc/products/2708096>

## Approvals



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



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



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

Nominal Voltage  $U_N$

Nominal Current  $I_N$

Cross Section AWG

Cross Section  $\text{mm}^2$

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**ATEX**  
Approval ID: PxCIF06ATEX2708261X



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

**cULus Recognized**

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## Classifications

### ECLASS

ECLASS-9.0	19170114
ECLASS-10.0.1	19170132
ECLASS-11.0	19170411

### ETIM

ETIM 8.0	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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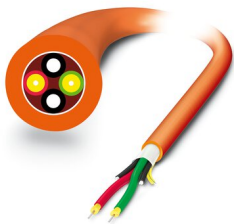
<https://www.phoenixcontact.com/pc/products/2708096>

## Accessories

### FO cable

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

<https://www.phoenixcontact.com/pc/products/2799885>



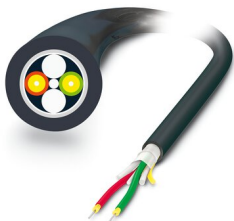
PCF cable, duplex 200  $\mu\text{m}$ /230  $\mu\text{m}$ , by the meter without male connector, for installation in stationary systems and machines

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### FO cable

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

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



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

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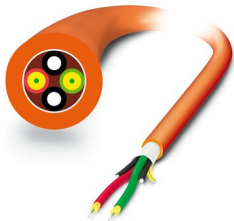
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<https://www.phoenixcontact.com/pc/products/2708096>

## FO cable

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

<https://www.phoenixcontact.com/pc/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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## FO cable

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

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

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## Assembly tool

Assembly tool - PSM-HCS-KONFTOOL/B-FOC - 2708465

<https://www.phoenixcontact.com/pc/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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## Measuring instrument

Measuring instrument - PSM-FO-POWERMETER - 2799539

<https://www.phoenixcontact.com/pc/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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## Fiber optic coupling

Fiber optic coupling - PSM-SET-BFOC-LINK/2 - 2799429

<https://www.phoenixcontact.com/pc/products/2799429>

Coupling; set consisting of 2 couplings for connecting B-FOC plugs

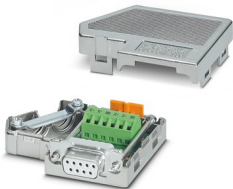


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## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN - 2744694

<https://www.phoenixcontact.com/pc/products/2744694>



D-SUB connector, 9-pos. female connector, two 35° cable entries to one terminal block row, bus system: CAN, CANopen<sup>®</sup>, SafetyBUS p up to 1 Mbps, termination resistor can be switched on via slide switch, pin assignment: 2, 3, 7; screw connection terminal blocks



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<https://www.phoenixcontact.com/pc/products/2708096>

## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/PG - 2708119

<https://www.phoenixcontact.com/pc/products/2708119>



D-SUB connector, 9-pos. socket, 35° cable entry, bus system: CAN, CANopen®, SafetyBUS p up to 1 Mbps, with PG D-SUB socket for connecting a programming device, termination resistor can be switched on via slide switch, pin assignment: 2, 3, 7, 9; screw terminal blocks

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## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/AX - 2306566

<https://www.phoenixcontact.com/pc/products/2306566>



D-SUB connector, 9-pos. female connector, axial version with two cable entries, bus system: CAN, CANopen, SafetyBUS p; pin assignment: 2, 3, 7; screw connection terminal blocks

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## Screwdriver

Screwdriver - SZS 0,4X2,5 VDE - 1205037

<https://www.phoenixcontact.com/pc/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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## FO connectors

FO connectors - PSM-SET-B-FOC/4-HCS - 2708481

<https://www.phoenixcontact.com/pc/products/2708481>



B-FOC (ST) connector set for PCF fiber, for self assembly consisting of 4 quick mounting connectors with bend protection sleeve

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## Bus system cable

Bus system cable - SAC-5P-920/... - 1511504

<https://www.phoenixcontact.com/pc/products/1511504>



Bus system cable, CANopen<sup>®</sup>, DeviceNet<sup>™</sup>, 4-position halogen-free, shielded, cable length: Free entry (0.5 ... 400 m)

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## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/90/PG/M12 - 2902322

<https://www.phoenixcontact.com/pc/products/2902322>



D-SUB plug, 9-pos., socket, with PG-D-SUB pin, assignment: 2, 3, 5, 6, 7, 9; two 90° cable entries M12 (A-coded). Bus system: CAN, CANopen<sup>®</sup>. Termination resistor via separate M12 terminator.

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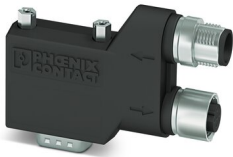
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<https://www.phoenixcontact.com/pc/products/2708096>

## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/90/M12 - 2902323

<https://www.phoenixcontact.com/pc/products/2902323>



D-SUB plug, 9-pos., socket, assignment: 2, 3, 5, 6, 7, 9; two 90° cable entries M12 (A-coded). Bus system: CAN, CANopen®. Termination resistor via separate M12 terminator. Long version; S7-compatible.

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## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/35/PG/M12 - 2902324

<https://www.phoenixcontact.com/pc/products/2902324>



D-SUB plug, 9-pos., socket, with PG-D-SUB pin, assignment: 2, 3, 5, 6, 7, 9; two 35° cable entries M12 (A-coded). Bus system: CAN, CANopen®. Termination resistor via separate M12 terminator.

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<https://www.phoenixcontact.com/pc/products/2708096>

## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/35/M12 - 2902325

<https://www.phoenixcontact.com/pc/products/2902325>



D-SUB plug, 9-pos., socket, assignment: 2, 3, 5, 6, 7, 9; two 35° cable entries M12 (A-coded). Bus system: CAN, CANopen®. Termination resistor via separate M12 terminator.

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## D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS-CAN/AX/M12 - 2902326

<https://www.phoenixcontact.com/pc/products/2902326>



D-SUB plug, 9-pos., socket, assignment: 2, 3, 5, 6, 7, 9; two M12 cable glands (A-coded) under 180° (axial). Bus system: CAN, CANopen®. Termination resistor via separate M12 terminator.

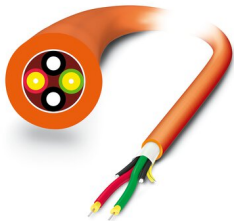
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## FO patch cable

FO patch cable - FOC-HCS-RUGGED-1014/IP20/... - 2901555

<https://www.phoenixcontact.com/pc/products/2901555>



Robust PCF 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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## FO patch cable

FO patch cable - FOC-HCS-RUGGED-1014/... - 1402191

<https://www.phoenixcontact.com/pc/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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## FO patch cable

FO patch cable - FOC-HCSO-1015/IP20/... - 2901557

<https://www.phoenixcontact.com/pc/products/2901557>



Highly rugged PCF 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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## FO patch cable

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

<https://www.phoenixcontact.com/pc/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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## FO patch cable

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

<https://www.phoenixcontact.com/pc/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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