

2313999

https://www.phoenixcontact.com/in/products/2313999

Please be informed that the data shown in this PDF document is generated from our Online Catalog. Please find the complete data in the user documentation. Our General Terms of Use for Downloads are valid.



Fiber optic converter with integrated optical diagnostics, for DeviceNet<sup>™</sup>, CAN, CANopen<sup>®</sup> up to 1000 kbps, termination device, interfaces: 1 x CAN, 1 x Alarm, 1 x FO (B-FOC), 850 nm, for PCF/fiberglass (multi-mode)

#### **Product Description**

The PSI-MOS-DNET... fiber optic transmission system enables DeviceNet<sup>™</sup> 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. Thanks to extended functions, the modular devices in the PSI-MOS-DNET/FO... series support network expansion that is not dependent on the data rate.

### Your advantages

- · Data rates of up to 1 Mbps
- Supply voltage and data signals routed through the DIN rail connectors
- Can be combined with PSI-MOS FO converters in a modular way thanks to DIN rail connectors
- · Automatic data rate detection or fixed data rate setting via DIP switches
- · Integrated optical diagnostics for continuous monitoring of FO paths
- · High-quality electrical isolation between all interfaces (DeviceNet // fiber optic ports // power supply // DIN rail connector)
- Connections can be plugged in via a COMBICON screw terminal block
- · Redundant power supply possible by means of optional system power supply unit
- · Floating switch contact for advance warning of critical FO paths

#### Commercial Data

Item number	2313999
Packing unit	1 pc
Minimum order quantity	1 pc
Sales Key	DNC
Product Key	DNC213
Catalog Page	Page 433 (C-6-2019)
GTIN	4046356513807
Weight per Piece (including packing)	247.1 g
Weight per Piece (excluding packing)	247.1 g
Customs tariff number	85176200
Country of origin	DE



2313999

https://www.phoenixcontact.com/in/products/2313999

### **Technical Data**

#### Notes

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

### Product properties

Product type	Media converter
MTTF	831 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	378 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	155 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
MTBF	253 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	38 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	3.12 W
Test voltage data interface/power supply	1.5 kV <sub>rms</sub> (50 Hz, 1 min.)

### Supply

Supply voltage range	11 V DC 30 V DC (via pluggable COMBICON screw terminal block)
Nominal supply voltage	24 V DC
Typical current consumption	130 mA (24 V DC)
Max. current consumption	≤ 2 A (For operation in a joining station, via the DIN rail connector)

### Function

Status and diagnostic indicators	LEDs: VCC (supply voltage), NET (Mod/Net status), FO signal
	(fiber optic signal quality), ERR (broken fiber, fiber optic)

### Output data

#### Switching

Output name	Relay output
Number of outputs	1
Contact type	N/O contact
Minimum switching voltage	11 V DC
Maximum switching voltage	30 V DC



2313999

https://www.phoenixcontact.com/in/products/2313999

Limiting continuous current	500 mA
nnection data	
Supply	
Tightening torque	0.56 Nm 0.79 Nm
erfaces	
Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Signal	CAN
	CANopen <sup>®</sup>
	DeviceNet™
Data: optical FO	
No. of channels	1
Transmit capacity, minimum	-17.6 dBm (50/125 μm)
	-14.6 dBm (62,5/125 μm)
	-4 dBm (200/230 μm)
Transmission protocol	Protocol transparent for CAN interface
Connection method	B-FOC (ST <sup>®</sup> )
Wavelength	850 nm
Minimum receiver sensitivity	-29 dBm (50/125 μm)
	-29 dBm (62,5/125 μm)
	-28.1 dBm (200/230 μm)
Transmission medium	PCF fiber
	Multi-mode fiberglass
Data: CAN interface, in accordance with ISO/IS 11898 for De	eviceNet™, CAN, CANopen <sup>®</sup>
Transmission speed	≤ 1 Mbps (Configurable via DIP switches)
Connection method	COMBICON plug-in screw terminal block
No. of channels	2 (CAN_High / CAN_Low)
Transmission length	≤ 5000 m (Dependent on the data rate and the protocol used)
Number of bus devices	≤ 64 (per potential segment)
	≤ 63 (DeviceNet™, can be addressed logically)
	≤ 128 (CANopen <sup>®</sup> , can be addressed logically)
Termination resistor	124 $\Omega$ (Integrated and ready to be switched)
Conductor cross section flexible max.	2.5 mm <sup>2</sup>
Conductor cross section flexible min.	0.2 mm <sup>2</sup>
Conductor cross section, rigid max.	2.5 mm <sup>2</sup>
Conductor cross section, rigid min.	0.2 mm <sup>2</sup>
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	2-wire twisted pair, shielded



2313999

https://www.phoenixcontact.com/in/products/2313999

Transmission method	CSMA/CA
File format/coding	Bit stuffing, NRZ
mensions	
Dimensional drawing	35 119
Width	35 mm
Height	102 mm
Depth	119 mm
aterial specifications	
Material Housing	PA 6.6-FR
able/line FO cable	
Fiber types	200/230 μm
	50/125 μm
	62.5/125 μm
	PCF fiber
	Fiberglass
vironmental 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)

### Approvals

$\sim$	_
ι.	_
$\sim$	

Certificate	CE-compliant CE-compliant
EAC	
Identification	EAC
ATEX	
Identification	☐ II 3 G Ex nA IIC T4 Gc X
Note	Please follow the special installation instructions in the documentation!



2313999

https://www.phoenixcontact.com/in/products/2313999

L, USA/Canada	5001:4.4
Identification	508 Listed
Corrosive gas test	
Identification	ISA-S71.04-1985 G3 Harsh Group A
Shipbuilding	
Identification	DNV GL
DNV GL data	
Temperature	В
Humidity	A
Vibration	A
EMC	В
Enclosure	Required protection according to the Rules shall be provided upon installation on board
∕/C data	
Noise immunity	EN 61000-6-2
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



2313999

https://www.phoenixcontact.com/in/products/2313999

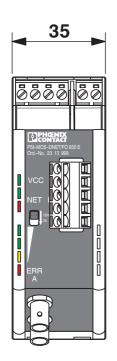
Input	± 0.5 kV
Signal	± 1 kV
Comments	Criterion B
Conducted interference	
Standards/regulations	EN 61000-4-6
Conducted interference	
Comments	Criterion A
Voltage	10 V
Emitted interference	
Standards/regulations	EN 55011
Comments	Class A, industrial applications
Criteria	
Criterion A	Normal operating 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	in accordance with VW-AUDI-Seat central standard P-VW 3.10.7 57 65 0
ounting	
Mounting type	DIN rail mounting
2	-



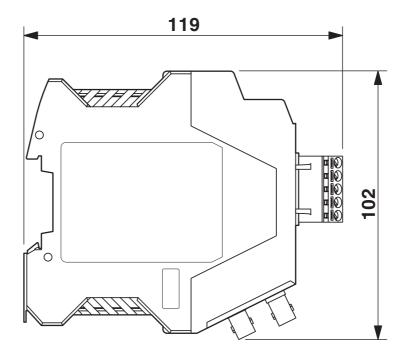
2313999

https://www.phoenixcontact.com/in/products/2313999

## Drawings



### Dimensional drawing

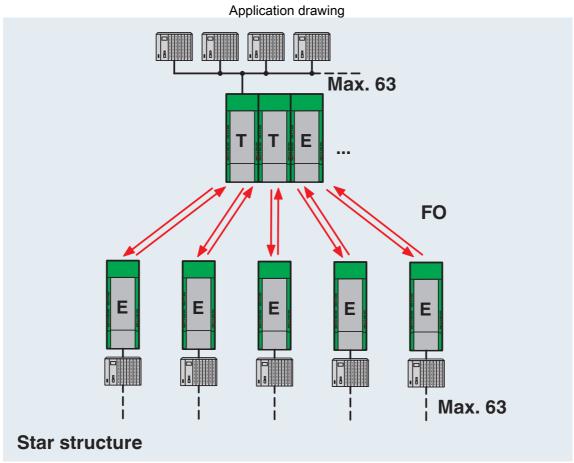


Housing dimensions



2313999

https://www.phoenixcontact.com/in/products/2313999

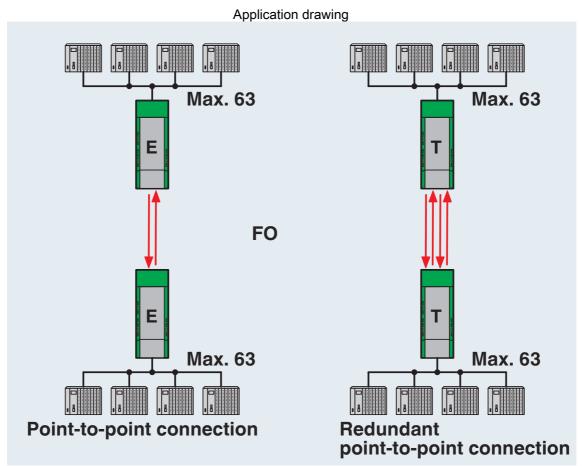


Star structure



2313999

https://www.phoenixcontact.com/in/products/2313999



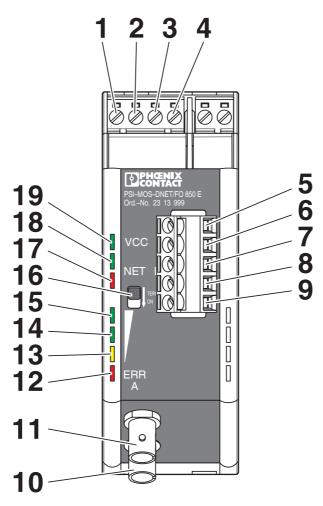
Point-to-point connection



2313999

https://www.phoenixcontact.com/in/products/2313999

# Schematic diagram

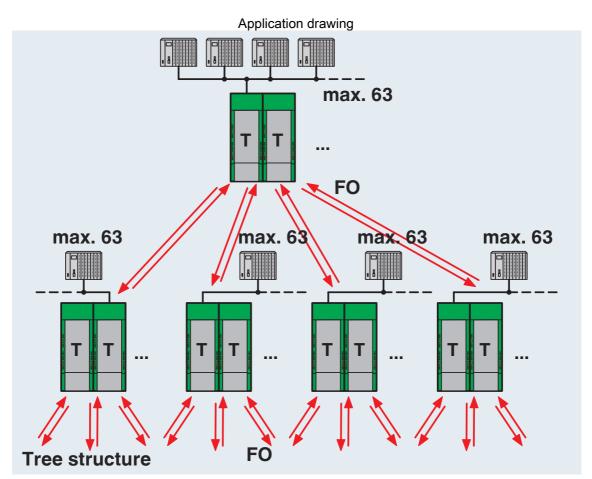


Front view

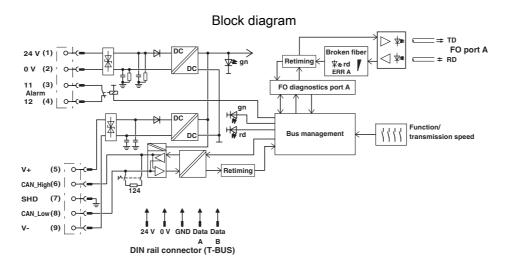


2313999

https://www.phoenixcontact.com/in/products/2313999



Tree structure

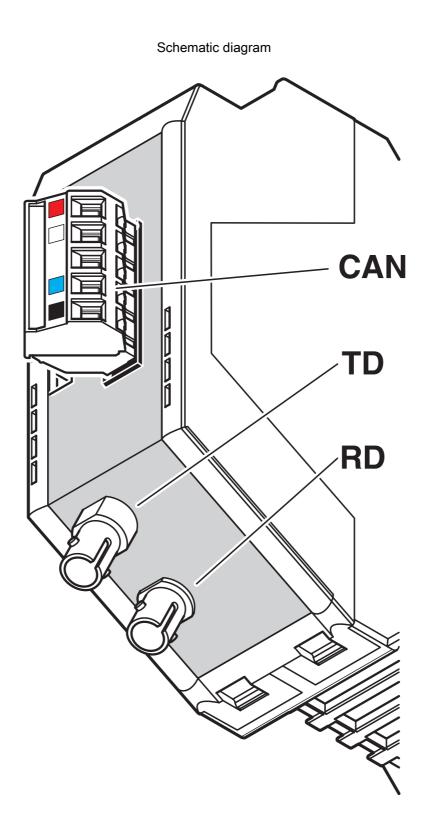


Basic circuit diagram



https://www.phoenixcontact.com/in/products/2313999



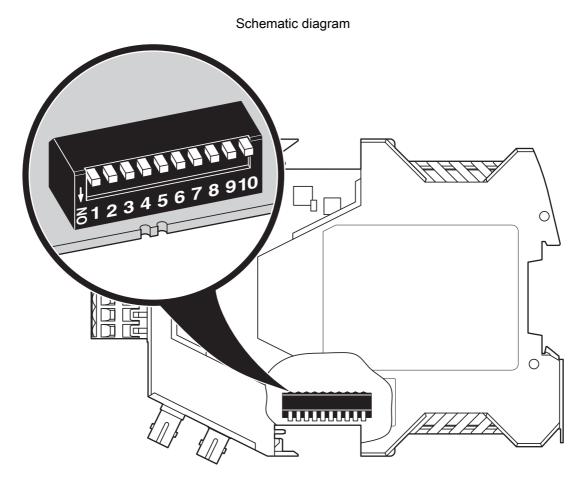


Device connections



2313999

https://www.phoenixcontact.com/in/products/2313999

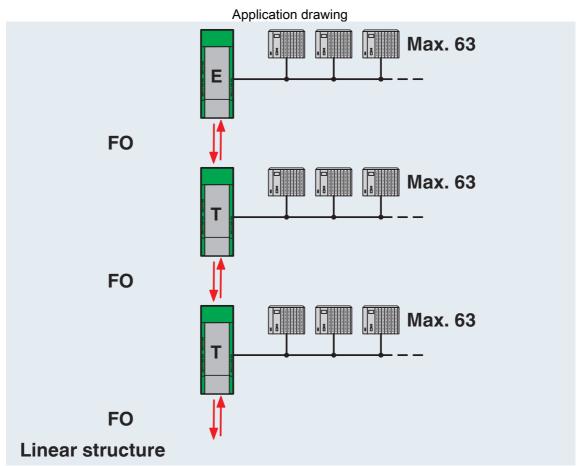


DIP switches



2313999

https://www.phoenixcontact.com/in/products/2313999



Line structure



2313999

https://www.phoenixcontact.com/in/products/2313999

### **Approvals**



EAC

Approval ID: RU \*-DE.A\*30.B.01735



**DNV GL** 

Approval ID: TAA00001KR



EAC

Approval ID: TR TS\_D\_01871-19



**UL Listed** 

Approval ID: FILE E 238705



cUL Listed

Approval ID: FILE E 238705



**ATEX** 

Approval ID: PxCIF10ATEX2313986X



2313999

https://www.phoenixcontact.com/in/products/2313999

### Classifications

UNSPSC 21.0

#### **ECLASS**

	ECLASS-11.0	19170411
	ECLASS-12.0	19170411
	ECLASS-13.0	19170411
ETIM		
	ETIM 8.0	EC001467
UN	ISPSC	

43201500



2313999

https://www.phoenixcontact.com/in/products/2313999

## **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"



2313999

https://www.phoenixcontact.com/in/products/2313999

#### Accessories

#### PSI-MOS-DNET/FO 850 T - FO converters

2313986

https://www.phoenixcontact.com/in/products/2313986



Fiber optic converter with integrated optical diagnostics, for DeviceNet<sup>™</sup>, CAN, CANopen<sup>®</sup> up to 1000 kbps, T-coupler, interfaces: 1 x CAN, 1 x Alarm, 2 x FO (B-FOC), 850 nm, for PCF/fiberglass (multi-mode)

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

2799885

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



PCF cable, duplex 200 µm/230 µm, by the meter without male connector, for installation in stationary systems and machines



2313999

https://www.phoenixcontact.com/in/products/2313999

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

#### 2799445

https://www.phoenixcontact.com/in/products/2799445



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

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

#### 2799322

https://www.phoenixcontact.com/in/products/2799322



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



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2799432

https://www.phoenixcontact.com/in/products/2799432



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

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

2708465

https://www.phoenixcontact.com/in/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



2313999

https://www.phoenixcontact.com/in/products/2313999

### PSM-FO-POWERMETER - Measuring instrument

2799539

https://www.phoenixcontact.com/in/products/2799539



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

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

2799429

https://www.phoenixcontact.com/in/products/2799429

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





2313999

https://www.phoenixcontact.com/in/products/2313999

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

1205037

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



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

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

2708481

https://www.phoenixcontact.com/in/products/2708481

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





2313999

https://www.phoenixcontact.com/in/products/2313999

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

#### 2904614

https://www.phoenixcontact.com/in/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

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

#### 2709561

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

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





2313999

https://www.phoenixcontact.com/in/products/2313999

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

2713645

https://www.phoenixcontact.com/in/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

#### FOC-ST:PA-SC:PA-OM2:D01/1 - FO patch cable

1115574

https://www.phoenixcontact.com/in/products/1115574

Multi-mode OM2 duplex jumper, ST-SC, UPC polishing, length 1 m





2313999

https://www.phoenixcontact.com/in/products/2313999

#### FOC-ST:PA-SC:PA-OM2:D01/2 - FO patch cable

1115573

https://www.phoenixcontact.com/in/products/1115573

Multi-mode OM2 duplex jumper, ST-SC, UPC polishing, length 2 m



#### FOC-ST:PA-ST:PA-OM2:D01/1 - FO patch cable

1115560

https://www.phoenixcontact.com/in/products/1115560

Multi-mode OM2 duplex jumper, ST-ST, UPC polishing, length 1 m





2313999

https://www.phoenixcontact.com/in/products/2313999

#### FOC-ST:PA-ST:PA-OM2:D01/2 - FO patch cable

1115557

https://www.phoenixcontact.com/in/products/1115557

Multi-mode OM2 duplex jumper, ST-ST, UPC polishing, length 2 m



#### FOC-LC:PA-ST:PA-OM2:D01/1 - Fiber optic cable

1115588

https://www.phoenixcontact.com/in/products/1115588

Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 1 m





2313999

https://www.phoenixcontact.com/in/products/2313999

#### FOC-LC:PA-ST:PA-OM2:D01/2 - Fiber optic cable

1115587

https://www.phoenixcontact.com/in/products/1115587

Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 2 m



#### FOC-LC:PA-ST:PA-OM1:D01/1 - FO patch cable

1146499

https://www.phoenixcontact.com/in/products/1146499

Multi-mode OM1 duplex jumper, LC-ST, UPC polishing, length 1 m





2313999

https://www.phoenixcontact.com/in/products/2313999

#### FOC-LC:PA-ST:PA-OM1:D01/2 - FO patch cable

1146508

https://www.phoenixcontact.com/in/products/1146508

Multi-mode OM1 duplex jumper, LC-ST, UPC polishing, length 2 m



#### FOC-ST:PA-ST:PA-OM1:D01/1 - FO patch cable

1146501

https://www.phoenixcontact.com/in/products/1146501

Multi-mode OM1 duplex jumper, ST-ST, UPC polishing, length 1 m





2313999

https://www.phoenixcontact.com/in/products/2313999

#### FOC-ST:PA-ST:PA-OM1:D01/2 - FO patch cable

1146509

https://www.phoenixcontact.com/in/products/1146509

Multi-mode OM1 duplex jumper, ST-ST, UPC polishing, length 2 m



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

1511504

https://www.phoenixcontact.com/in/products/1511504



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



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2902322

https://www.phoenixcontact.com/in/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 $^{\odot}$ . Termination resistor via separate M12 terminator.

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

2902323

https://www.phoenixcontact.com/in/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<sup>®</sup>. Termination resistor via separate M12 terminator. Long version; S7-compatible.



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2902324

https://www.phoenixcontact.com/in/products/2902324



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

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

2902325

https://www.phoenixcontact.com/in/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.



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2902326

https://www.phoenixcontact.com/in/products/2902326



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

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

2744694

https://www.phoenixcontact.com/in/products/2744694



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



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2708119

https://www.phoenixcontact.com/in/products/2708119



D-SUB connector, 9-pos. socket, 35° cable entry, bus system: CAN, CANopen<sup>®</sup>, 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

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

2306566

https://www.phoenixcontact.com/in/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



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2901555

https://www.phoenixcontact.com/in/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

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

2901557

https://www.phoenixcontact.com/in/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.



2313999

https://www.phoenixcontact.com/in/products/2313999

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

2901558

https://www.phoenixcontact.com/in/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

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

2901559

https://www.phoenixcontact.com/in/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.

Phoenix Contact 2023 © - all rights reserved https://www.phoenixcontact.com

PHOENIX CONTACT (I) Pvt. Ltd. A-58/2, Okhla Industrial Area, Phase - II, New Delhi-110 020

+91.1275.71420 info@phoenixcontact.co.in