

2708326

https://www.phoenixcontact.com/us/products/2708326

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FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, T-coupler with two FO interfaces (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

Product description

The PSI-MOS-RS485W2/FO... FO converters convert the electrical data signal into an optical one by protocol transparent means. 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-RS485W2/FO... T T-couplers allow the interface to be converted for two FO cables. They can be used to create linear structures and redundant structures for increased system availability.

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
- · High-quality electrical isolation between all interfaces (RS-485 // 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
- Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1
- Integrated optical diagnostics for continuous monitoring of FO paths
- · Floating switch contact for advance warning of critical FO paths
- Suitable for data rates up to 500 kbps
- · Bit retiming for any cascading depth
- · Shipbuilding approval in accordance with DNV GL

Commercial data

Item number	2708326
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	DN06
Product key	DNC212
Catalog page	Page 435 (C-6-2019)
GTIN	4017918974022
Weight per piece (including packing)	264.1 g



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Weight per piece (excluding packing)	210.08 g
Customs tariff number	85176200
Country of origin	DE



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Technical data

Notes

Utilization restriction	
EMC note	EMC: class A product, see manufacturer's declaration in the download area
Utilization restriction	
CCCex note	Use in potentially explosive areas is not permitted in China.

Product properties

Product type	Media converter
MTTF	652 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	286 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	118 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
MTBF	159 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	24 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 _{rms} (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

3	
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



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Single conductor/terminal point, rigid

С

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
Signal	Modbus
	S-BUS
	Suconet K
	J-BUS
	DATA HIGHWAY
Data: optical FO	
No. of channels	2
Transmit capacity, minimum	-4 dBm (200/230 μm)
	-17.6 dBm (50/125 μm)
	-14 dBm (62,5/125 μm)
Transmission length incl. 3 dB system reserve	2800 m (F-K 200/230 8 dB/km with quick mounting connector)
	4200 m (with F-G 50/125 2.5 dB/km)
	3300 m (with F-G 62,5/125 3.0 dB/km)
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	B-FOC (ST®)
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)
Maximum receiver sensitivity	-3 dBm (200/230 μm)
Transmission medium	PCF fiber
	Multi-mode fiberglass
Data: RS-485 interface, 2-wire	
Serial transmission speed	4.8/ 9.6/ 19.2/ 38.4/ 57.6/ 75/ 93.75/ 115.2/ 136/ 187.5/ 375/ 500 kbps
Connection method	Pluggable screw connection
Transmission length	≤ 1200 m (depending on the data rate, with shielded, twisted data cable)
Termination resistor	390 Ω (Can be connected)
	220 Ω

390 Ω

 $0.2~\text{mm}^2\dots2.5~\text{mm}^2$



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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 (11/10 bit switchable; NRZ), slip-tolerant
Data direction switching	Automatic control

Dimensions

Width	35 mm
Height	99 mm
Depth	105 mm

Material specifications

Color (Housing)	gray (RAL 7042)
Material (Housing)	PA 6.6-FR

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)
	≤ 2000 m (Hazardous locations)
Permissible humidity (operation)	30 % 95 % (non-condensing)

Approvals

CE

Certificate	CE-compliant CE-compliant
ATEX	
Identification	
Certificate	UL 21 ATEX 2550X
Note	Please follow the special installation instructions in the



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	documentation!
TEX, FO interface	
Identification	
Certificate	PTB 06 ATEX 2042 U
Note	Please follow the special installation instructions in the documentation!
ECEx	
Identification	Ex ec IIC T4 Gc
Certificate	IECEx ULD 21.00013X
JL, USA/Canada	
Identification	Class I, Zone 2, AEx ec IIC T4 Gc
	Ex ec IIC T4 Gc X
	Class I, Div. 2, Groups A, B, C, D
KC approval for South Korea	
Certificate	MSIP-REI-PCK-2708326
Corrective day test	
Corrosive gas test Identification	ISA S74 04 4005 C2 Harab Craus A
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
1C 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



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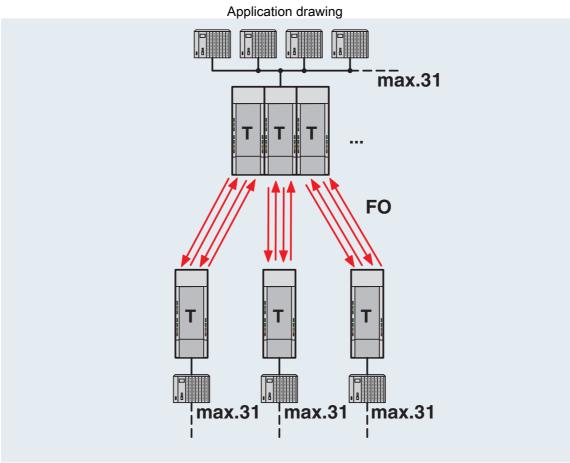
Standards/regulations	EN 61000-4-3
Electromagnetic HF field	
Field intensity	10 V/m
Comments	Criterion A
Fast transients (burst)	
Standards/regulations	EN 61000-4-4
Fast transients (burst)	
Input	± 2 kV
Signal	± 2 kV
Comments	Criterion B
Surge current load (surge)	
Standards/regulations	EN 61000-4-5
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	in accordance with VW-AUDI-Seat central standard P-VW 3.10.7 57 65 0
ounting	
Mounting type	DIN rail mounting
modified type	Dire fail flouring



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Drawings

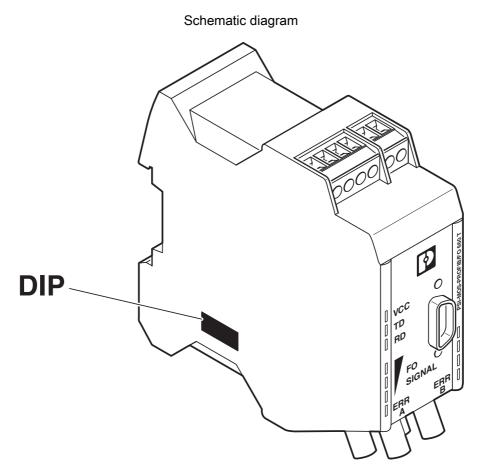


Redundant structure



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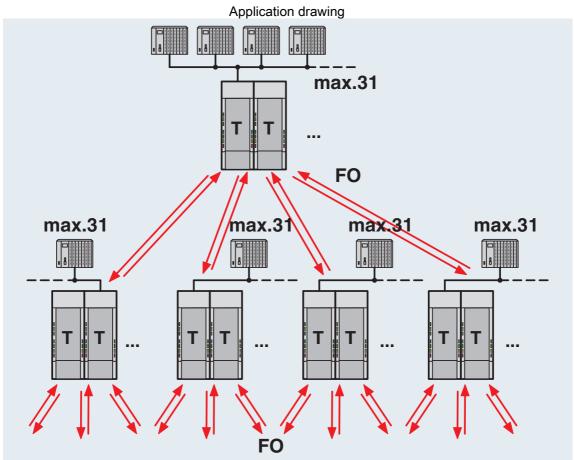


Position of DIP switches



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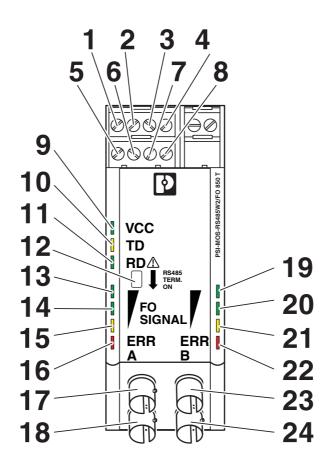
Tree structure



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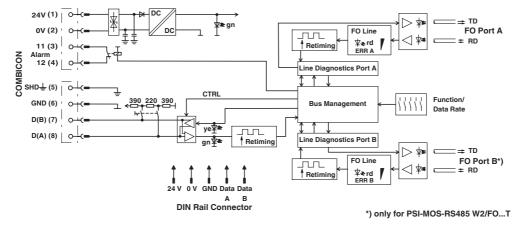
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Schematic diagram



Front view

Block diagram

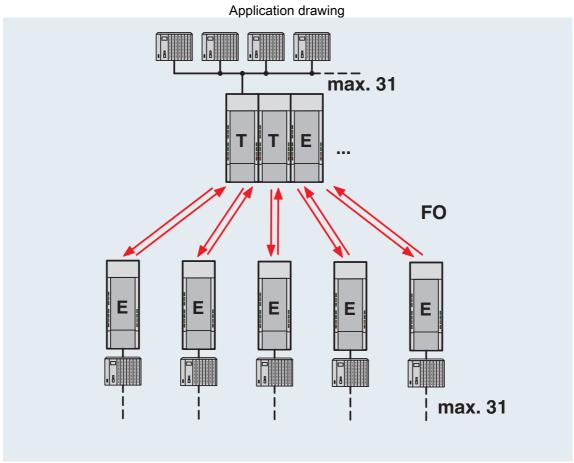


*) only with PSI-MOS.../FO...T



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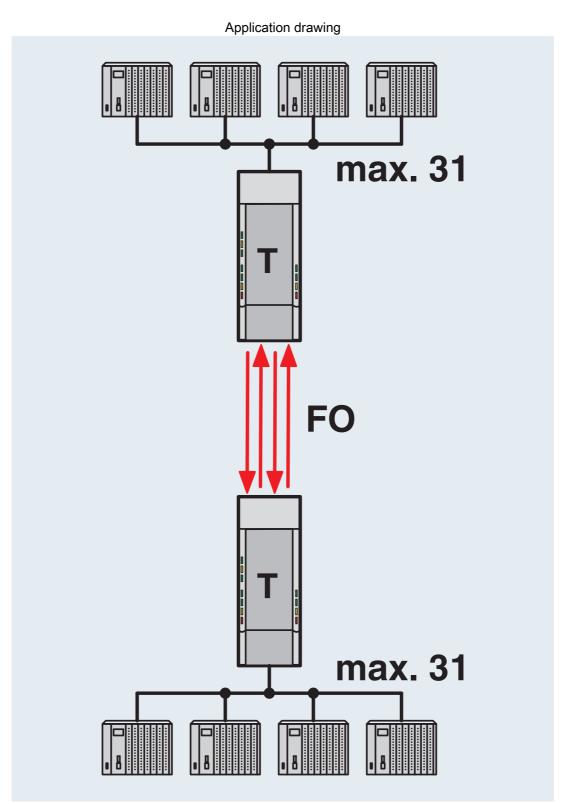


Star structure



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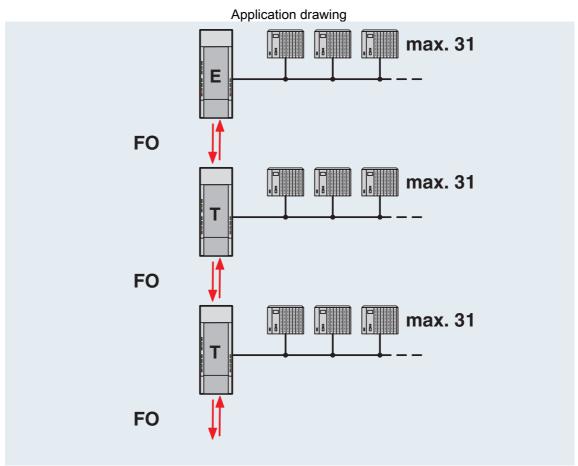


Redundant point-to-point connection



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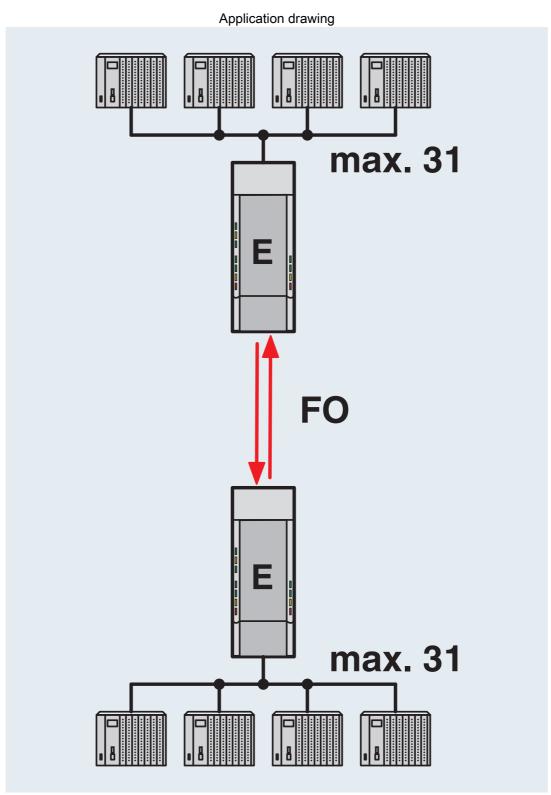


Line structure



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Point-to-point connection



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Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2708326



EAC

Approval ID: TR TS_D_01871-19



DNV GL

Approval ID: TAA00001KR



KC

Approval ID: MSIP-REI-PCK-2708326

UAE-RoHS

Approval ID: 23-02-63194



cULus Listed

Approval ID: E238705



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



IECEx

Approval ID: IECEx ULD 21.0013X



ATEX

Approval ID: UL 21 ATEX 2550X



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cULus Listed



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Classifications

UNSPSC 21.0

ECLASS

ECLASS-11.0	19170411
ECLASS-12.0	19170411
ECLASS-13.0	19170411
ETIM	
ETIM 9.0	EC001467
UNSPSC	

43201500



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Environmental product compliance

EU RoHS

Fulfills EU RoHS substance requirements	Yes
Exemption	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.)	No substance above 0.1 wt%



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Accessories

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

2708481

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

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



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

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

2799322

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



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

2799432

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



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

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 KMGY - DIN rail bus connectors

2713645

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DIN rail connector, color: light grey, 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: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

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

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-RS485W2 - Repeater

2313096

https://www.phoenixcontact.com/us/products/2313096



Modular repeater for electrical isolation and range increase in RS-485 2-wire bus systems up to 500 kbps, 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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SUBCON-PLUS M1 - D-SUB bus connector

2761826

https://www.phoenixcontact.com/us/products/2761826



D-SUB connector, 9-pos., male connector, two 35° cable entries, bus system: Modbus, Modbus Plus, BITBUS, ARCNET, MULT/MININET (B&R), SYSTEM 2003 (B&R), P-NET, pin assignment: 1, 2, 3, 5, 6, 8 to two screw connection terminal blocks

SUBCON-PLUS F1 - D-SUB bus connector

2744267

https://www.phoenixcontact.com/us/products/2744267



D-SUB connector, 9-pos. female connector, two 35° cable entries, bus system: Modbus, Modbus Plus, BITBUS, ARCNET, MULT/MININET (B&R), SYSTEM 2003 (B&R), P-NET, pin assignment: 1, 2, 3, 5, 6, 8; screw connection terminal blocks



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SUBCON-PLUS M2 - D-SUB bus connector

2761839

https://www.phoenixcontact.com/us/products/2761839



D-SUB connector, 9-pos., male connector, two 35° cable entries, bus system: CAN, SUCONET K1, K2 (MOELLER), S-BUS (Saia), J-BUS (Merlin Gerin), pin assignment: 2, 3, 4, 5, 7, 9 to two screw connection terminal blocks

SUBCON-PLUS F2 - D-SUB bus connector

2799490

https://www.phoenixcontact.com/us/products/2799490



D-SUB connector, 9-pos. female connector, two 35° cable entries, bus system: CAN, SUCONET K1, K2 (MOELLER), S-BUS (Saia), J-BUS (Merlin Gerin), pin assignment: 2, 3, 4, 5, 7, 9 to two screw connection terminal blocks



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SUBCON-PLUS 9/M - D-SUB bus connector

2744018

https://www.phoenixcontact.com/us/products/2744018



D-SUB connector, 9-pos., male connector, two 35° cable entries, universal type for all systems, pin assignment: 1, 2, 3, 4, 5, 6, 7, 8, 9 to one screw connection terminal block

SUBCON-PLUS 9/F - D-SUB bus connector

2744241

https://www.phoenixcontact.com/us/products/2744241



D-SUB connector, 9-pos. female connector, two 35° cable entries, universal type for all systems, pin assignment: 1, 2, 3, 4, 5, 6, 7, 8, 9 to one screw connection terminal block



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

1115574

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

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



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

1115573

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

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





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

1115560

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

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



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

1115557

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





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

1115588

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

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



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

1115587

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





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

1146499

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

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



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

1146508

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

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





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

1146501

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

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



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

1146509

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

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

PSI-MOS-RS485W2/FO 850 E - FO converters

2708339

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FO converter with integrated optical diagnostics, alarm contact, for RS-485 2-wire bus systems (SUCONET K, Modbus ...) up to 500 kbps, NRZ coding, terminal device with one FO interface (BFOC), 850 nm, for PCF/fiberglass cable (multimode)



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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 strainrelief 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.

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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