

FO converters - PSI-MOS-RS232/FO 660 E



2708368

<https://www.phoenixcontact.com/pc/products/2708368>

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FO converter with integrated optical diagnostics, alarm contact, for RS-232 interfaces up to 115.2 kbps, terminal device with one FO interface (FSMA), 660 nm, for polymer/PCF fiber cable

Your advantages

- Supply voltage and data signals routed through the DIN rail connectors
- Connections can be plugged in via a COMBICON screw terminal block
- Redundant power supply possible by means of optional system power supply unit
- High-quality electrical isolation between all interfaces (RS-232 // 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
- Integrated optical diagnostics for continuous monitoring of FO paths
- Floating switch contact for advance warning of critical FO paths
- Automatic data rate detection for all data rates up to 115.2 kbps
- Shipbuilding approval in accordance with DNV GL

Commercial Data

Item number	2708368
Packing unit	1 pc
Minimum order quantity	1 pc
Product Key	DNC215
Catalog Page	Page 439 (C-6-2019)
GTIN	4017918974060
Weight per Piece (including packing)	243.2 g
Weight per Piece (excluding packing)	233.3 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
MTTF	1093 Years (SN 29500 standard, temperature 25°C, operating cycle 21%)
	468 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%)
	194 Years (SN 29500 standard, temperature 40°C, operating cycle 100%)
MTBF	485 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
	91 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))

Electrical properties

Electrical isolation	VCC // V.24 (RS-232)
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 voltage range	18 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	120 mA
Connection method	COMBICON plug-in screw terminal block

Output data

Switching

Output name	Relay output
Output description	Alarm output
Number of outputs	1
Maximum switching voltage	60 V DC
	42 V AC
Limiting continuous current	0.46 A

Connection data

FO converters - PSI-MOS-RS232/FO 660 E



2708368

<https://www.phoenixcontact.com/pc/products/2708368>

Supply

Connection method	COMBICON plug-in screw terminal block
Tightening torque	0.56 Nm ... 0.79 Nm

Interfaces

Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Signal	Modbus
Transmission channels	2 (1/1), RxD, TxD, full duplex

Data: optical FO

No. of channels	1
Transmit capacity, minimum	-4.6 dBm (980/1000 µm) -16.6 dBm (200/230 µm)
Transmission length incl. 3 dB system reserve	100 m (With F-P 980/1000 230 dB/km with quick mounting connector) 800 m (With F-K 200/230 10 dB/km with quick mounting connector)
Transmission protocol	Transparent to protocol for RS-232 interface
Connection method	F-SMA
Wavelength	660 nm
Minimum receiver sensitivity	-31.2 dBm
Transmission medium	Polymer fiber PCF fiber

Data: V.24 (RS-232) interface in acc. with ITU-T V.28, EIA/TIA-232, DIN 66259-1

Serial transmission speed	4.8 Kbps ... 115.2 Kbps
Connection method	D-SUB 9 plug
Transmission length	≤ 15 m
Conductor cross section flexible max.	2.5 mm ²
Conductor cross section flexible min.	0.2 mm ²
Conductor cross section solid max.	2.5 mm ²
Conductor cross section solid min.	0.2 mm ²
Max. AWG conductor cross section, flexible	14
Min. AWG conductor cross section, flexible	24
Single-wire/terminal point, solid AWG max.	14
Single-wire/terminal point, solid AWG min.	24
Transmission medium	Copper
File format/coding	UART (11 Bit, NRZ)
Data direction switching	Automatic control

Dimensions

Width	35 mm
Height	99 mm
Depth	105 mm

Material specifications

Material	PA 6.6-FR (Housing)
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Cable / line

FO cable

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

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)

Approval data

CE

Certificate	CE-compliant
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EAC

Identification	EAC
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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] IIIC
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, Zone 2, Ex nC nL IIC T5 X
	Class I, Div. 2, Groups A, B, C, D

KC approval for South Korea

Certificate	KCC-REI-PCK-FL2708368
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Corrosive gas test

Identification	ISA-S71.04-1985 G3 Harsh Group A
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Shipbuilding

Identification	DNV GL
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DNV GL data

Temperature	B
Humidity	A
Vibration	A
EMC	B
Enclosure	Required protection according to the Rules shall be provided upon installation on board

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
Signal	± 2 kV
Comments	Criterion B

Surge current load (surge)

Standards/regulations	EN 61000-4-5
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Surge current load (surge)

Input	± 0.5 kV
Signal	± 1 kV

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Comments	Criterion B
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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.

Standards and regulations

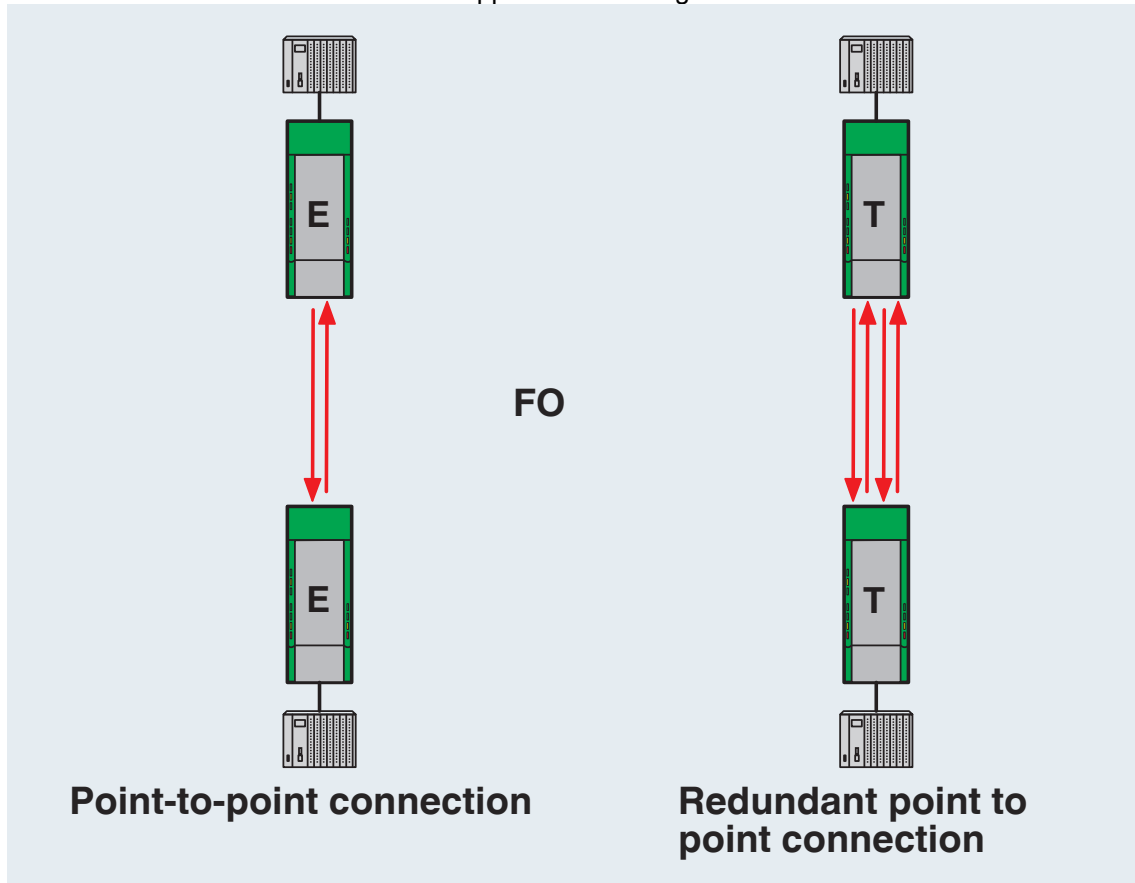
Free from substances that could impair the application of coating	in accordance with VW-AUDI-Seat central standard P-VW 3.10.7 57 65 0
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Mounting

Mounting type	DIN rail mounting
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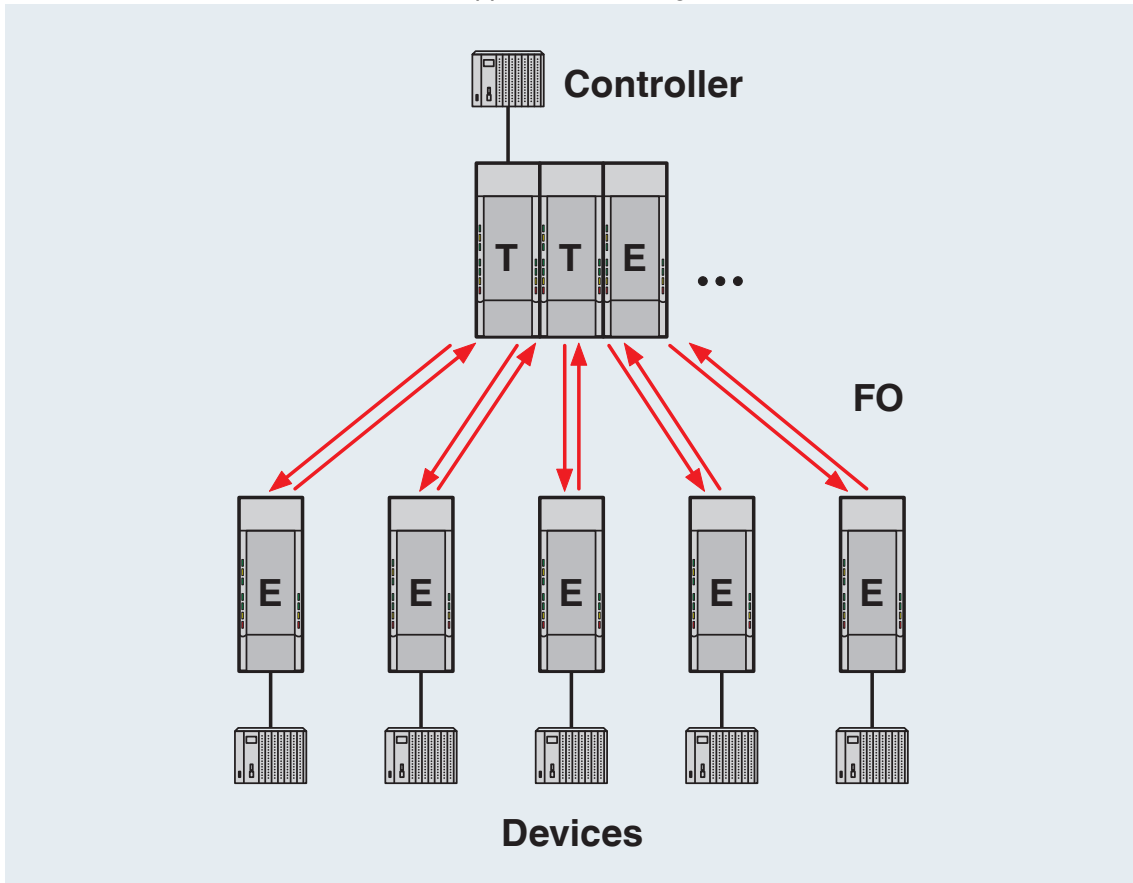
Drawings

Application drawing



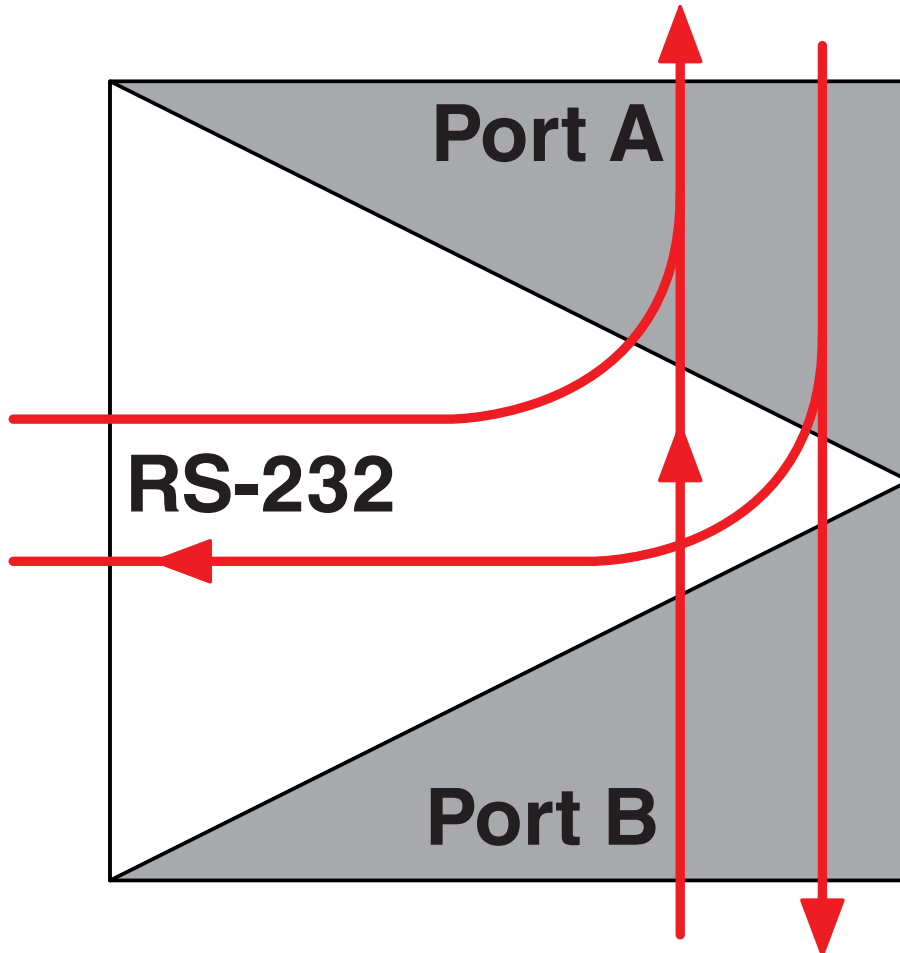
Redundant point-to-point connection

Application drawing



Star structure

Schematic diagram

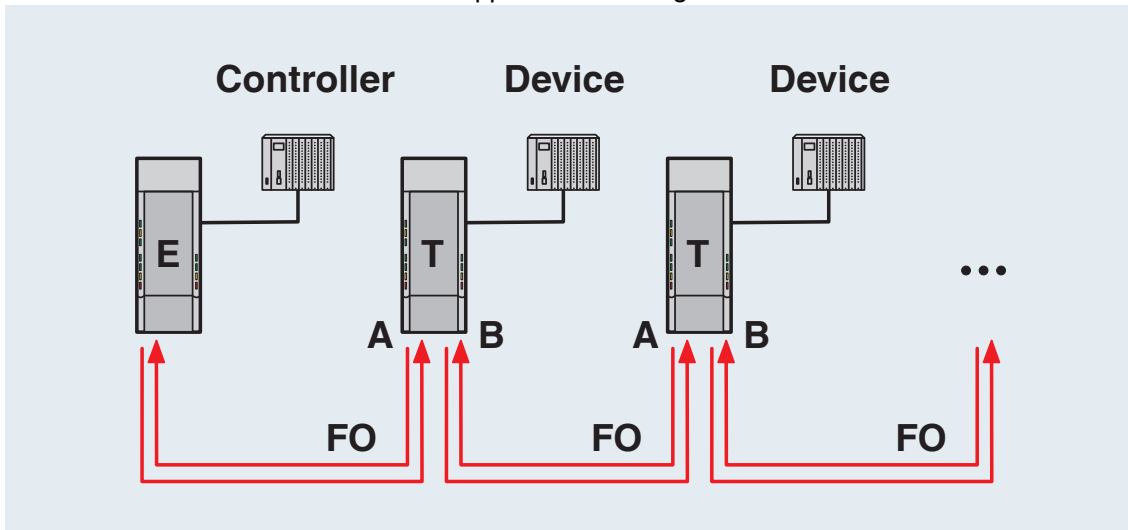


Port assignment in a line structure

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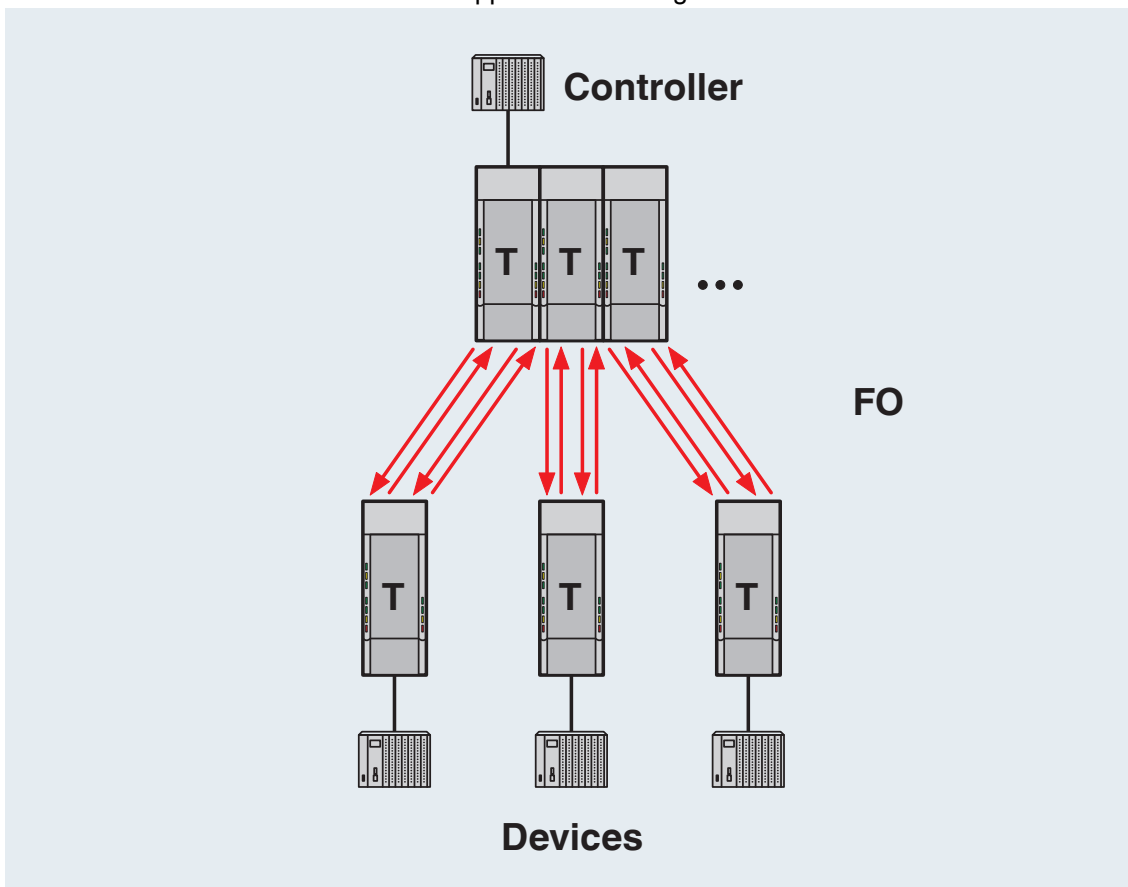
<https://www.phoenixcontact.com/pc/products/2708368>

Application drawing



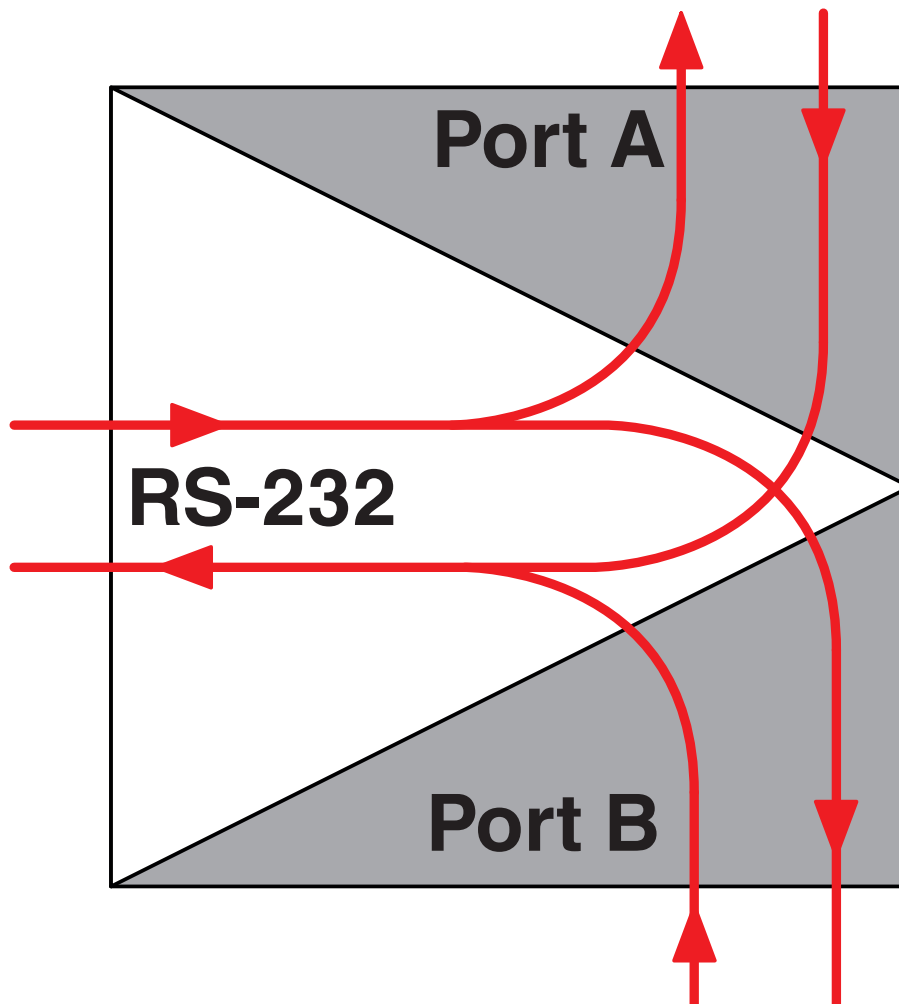
Controller-device line structure

Application drawing



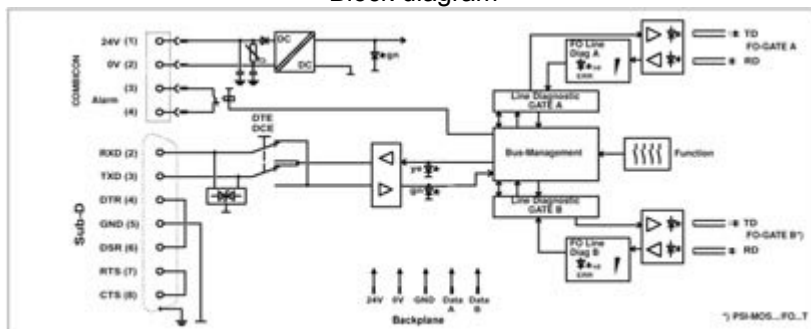
Redundant structure

Schematic diagram



Port assignment in star structures

Block diagram



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

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Approvals



cUL Recognized
Approval ID: FILE E 238705



UL Recognized
Approval ID: FILE E 238705



EAC
Approval ID: TR TS_D_01871-19



DNV GL
Approval ID: TAA00001KR

Nominal Voltage U_N	Nominal Current I_N	Cross Section AWG	Cross Section mm^2
		-	-



KC
Approval ID: KCC-REI-PCK-FL270836



ATEX
Approval ID: PTB 06 ATEX 2042U

Nominal Voltage U_N	Nominal Current I_N	Cross Section AWG	Cross Section mm^2
		-	-



ATEX
Approval ID: PxCIF06ATEX2708261X



cUL Listed
Approval ID: FILE E 199827



UL Listed
Approval ID: FILE E 199827

cULus Recognized

cULus Listed

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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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Accessories

FO connectors

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

<https://www.phoenixcontact.com/pc/products/2799720>

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



FO connectors

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

<https://www.phoenixcontact.com/pc/products/2799487>

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



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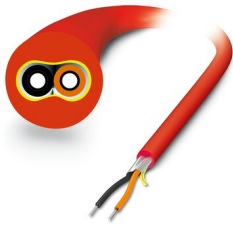
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FO cable

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

<https://www.phoenixcontact.com/pc/products/2744319>



Polymer fiber cable, duplex 980 μm /1000 μm , medium-weight version for installation in stationary systems and machines, by the meter without male connector

FO cable

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

<https://www.phoenixcontact.com/pc/products/2744322>



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

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<https://www.phoenixcontact.com/pc/products/2708368>

FO cable

FO cable - PSM-LWL-RUGGED-FLEX-980/1000 - 2744335

<https://www.phoenixcontact.com/pc/products/2744335>



Polymer fiber cable, duplex 980/1000 μm , heavy-weight, highly flexible version for flexible conduit applications, by the meter, without connector

FO cable

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

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



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

Power supply unit

Power supply unit - QUINT4-SYS-PS/1AC/24DC/2.5/SC - 2904614

<https://www.phoenixcontact.com/pc/products/2904614>



Primary-switched power supply unit, QUINT POWER, Screw connection, DIN rail mounting, input: 1-phase, output: 24 V DC / 2.5 A

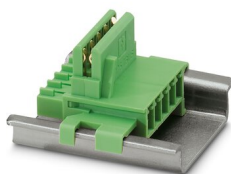
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DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 GN - 2709561

<https://www.phoenixcontact.com/pc/products/2709561>



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

DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/PP000-3,81 BK - 2890014

<https://www.phoenixcontact.com/pc/products/2890014>



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

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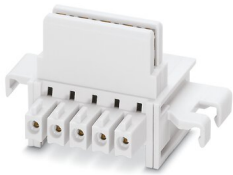
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<https://www.phoenixcontact.com/pc/products/2708368>

DIN rail bus connectors

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - 2713645

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

Assembly tool

Assembly tool - PSM-POF-KONFTOOL - 2744131

<https://www.phoenixcontact.com/pc/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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<https://www.phoenixcontact.com/pc/products/2708368>

Assembly tool

Assembly tool - PSM-HCS-KONFTOOL - 2799526

<https://www.phoenixcontact.com/pc/products/2799526>



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

Assembly tool

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

<https://www.phoenixcontact.com/pc/products/2799348>



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

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<https://www.phoenixcontact.com/pc/products/2708368>

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

Fiber optic coupling

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

<https://www.phoenixcontact.com/pc/products/2799416>



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

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D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS 9/F - 2744241

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

D-SUB bus connector

D-SUB bus connector - SUBCON-PLUS 9/M - 2744018

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

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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

Data cable

Data cable - PSM-KA9SUB9/BB/2METER - 2799474

<https://www.phoenixcontact.com/pc/products/2799474>



RS-232 cable, 9-pos. D-SUB socket on 9-pos. D-SUB socket, 9-wire, 1:1

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Interface converter

Interface converter - PSM-ME-RS232/RS485-P - 2744416

<https://www.phoenixcontact.com/pc/products/2744416>

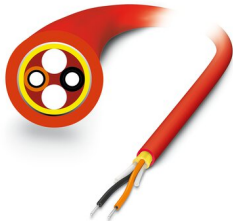


Interface converter, for converting RS-232 (V.24) to RS-422 (V.11) and RS-485, with electrical isolation, 2 channels, rail-mountable

FO patch cable

FO patch cable - FOC-RUGGED-1012/IP20/... - 2901548

<https://www.phoenixcontact.com/pc/products/2901548>



Robust POF installation cable for assembly (IP20 heads only) for installation in stationary systems and machines with individual elements made of polyamide (PA), halogen-free, ozone and UV resistant, with reinforced polyurethane (PUR) outer sheath

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FO patch cable

FO patch cable - FOC-RUGGED-FLEX-1013/IP20/... - 2901549

<https://www.phoenixcontact.com/pc/products/2901549>

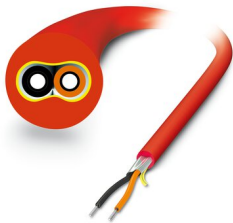


Highly flexible POF round cable (IP20 heads only) for use in drag chains. Individual elements made from extremely wear-resistant polyamide (PA). The cable is halogen-free, ozone and UV resistant, and has a rugged polyurethane (PUR) outer sheath.

FO patch cable

FO patch cable - FOC-KDHEAVY-1011/IP20/... - 2901553

<https://www.phoenixcontact.com/pc/products/2901553>



POF installation cable for assembly (IP20 heads only) for installation in stationary systems and machines with individual elements made of polyamide (PA), halogen-free, ozone and UV resistant, with a polyurethane (PUR) outer sheath

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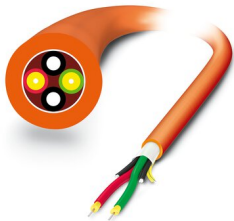
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FO patch cable

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

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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