

# PSI-MOS-RS232/FO 850 E - FO converters



2708371

<https://www.phoenixcontact.com/au/products/2708371>

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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 (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

## 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                          | 2708371             |
| Packing unit                         | 1 pc                |
| Minimum order quantity               | 1 pc                |
| Sales key                            | DNC215              |
| Product key                          | DNC215              |
| Catalog page                         | Page 439 (C-6-2019) |
| GTIN                                 | 4017918974077       |
| Weight per piece (including packing) | 246.1 g             |
| Weight per piece (excluding packing) | 221.1 g             |
| Customs tariff number                | 85176200            |
| Country of origin                    | DE                  |

## Technical data

### Notes

#### Note on application

|                     |                         |
|---------------------|-------------------------|
| Note on application | Only for industrial use |
|---------------------|-------------------------|

#### 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                                                                                         |
| Product family | PSI-MOS                                                                                                 |
| MTTF           | 1092 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           | 320 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))    |
|                | 48 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 | 2.88 W                                |
| Test voltage data interface/power supply        | 1.5 kV <sub>rms</sub> (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 | 120 mA (24 V DC)          |
| Max. current consumption    | 120 mA                    |

### 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       |

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## Connection data

### 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), Rx/D, Tx/D, full duplex |

### Data: optical FO

|                                               |                                                            |
|-----------------------------------------------|------------------------------------------------------------|
| No. of channels                               | 1                                                          |
| Transmit capacity, minimum                    | -4.6 dBm (200/230 µm)                                      |
|                                               | -17.6 dBm (50/125 µm)                                      |
|                                               | -13.6 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)                         |
|                                               | 4800 m (with F-G 62,5/125 3.0 dB/km)                       |
| Transmission protocol                         | Transparent to protocol for RS-232 interface               |
| Connection method                             | B-FOC (ST®)                                                |
| Wavelength                                    | 850 nm                                                     |
| Minimum receiver sensitivity                  | -33.2 dBm                                                  |
| Transmission medium                           | PCF fiber                                                  |
|                                               | Multi-mode fiberglass                                      |

### 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                  |
| 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       |

## Dimensions

|        |        |
|--------|--------|
| Width  | 35 mm  |
| Height | 99 mm  |
| Depth  | 105 mm |

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## Material specifications

|                    |                  |
|--------------------|------------------|
| Color (Housing)    | green (RAL 6021) |
| 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  |

## Mechanical tests

|                                                                    |                                            |
|--------------------------------------------------------------------|--------------------------------------------|
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | : 5g, 10...150 Hz, 2.5 h, in XYZ direction |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27              | : 15g, 11 ms period, half-sine shock pulse |

## 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)                                                         |

## Approvals

### CE

|             |              |
|-------------|--------------|
| Certificate | CE-compliant |
|-------------|--------------|

### ATEX

|                |                                                                           |
|----------------|---------------------------------------------------------------------------|
| Identification | ⊕ II 3 G Ex nA nC IIC T4 Gc X                                             |
| Note           | Please follow the special installation instructions in the documentation! |

### ATEX, FO interface

|                |                                                                           |
|----------------|---------------------------------------------------------------------------|
| Identification | ⊕ II (2) G [Ex op is Gb] IIC                                              |
|                | ⊕ 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 |

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|  |                                    |
|--|------------------------------------|
|  | Class I, Div. 2, Groups A, B, C, D |
|--|------------------------------------|

## Corrosive gas test

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

## Shipbuilding

|                |        |
|----------------|--------|
| Identification | DNV GL |
|----------------|--------|

## Shipbuilding 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 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

|          |             |
|----------|-------------|
| Comments | Criterion A |
|----------|-------------|

## Fast transients (burst)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-4 |
|-----------------------|--------------|

## Fast transients (burst)

|          |             |
|----------|-------------|
| Comments | Criterion B |
|----------|-------------|

## Surge current load (surge)

|                       |              |
|-----------------------|--------------|
| Standards/regulations | EN 61000-4-5 |
|-----------------------|--------------|

## Surge current load (surge)

|          |             |
|----------|-------------|
| Comments | Criterion B |
|----------|-------------|

## Conducted interference

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|                       |              |
|-----------------------|--------------|
| 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. |

## Standards and regulations

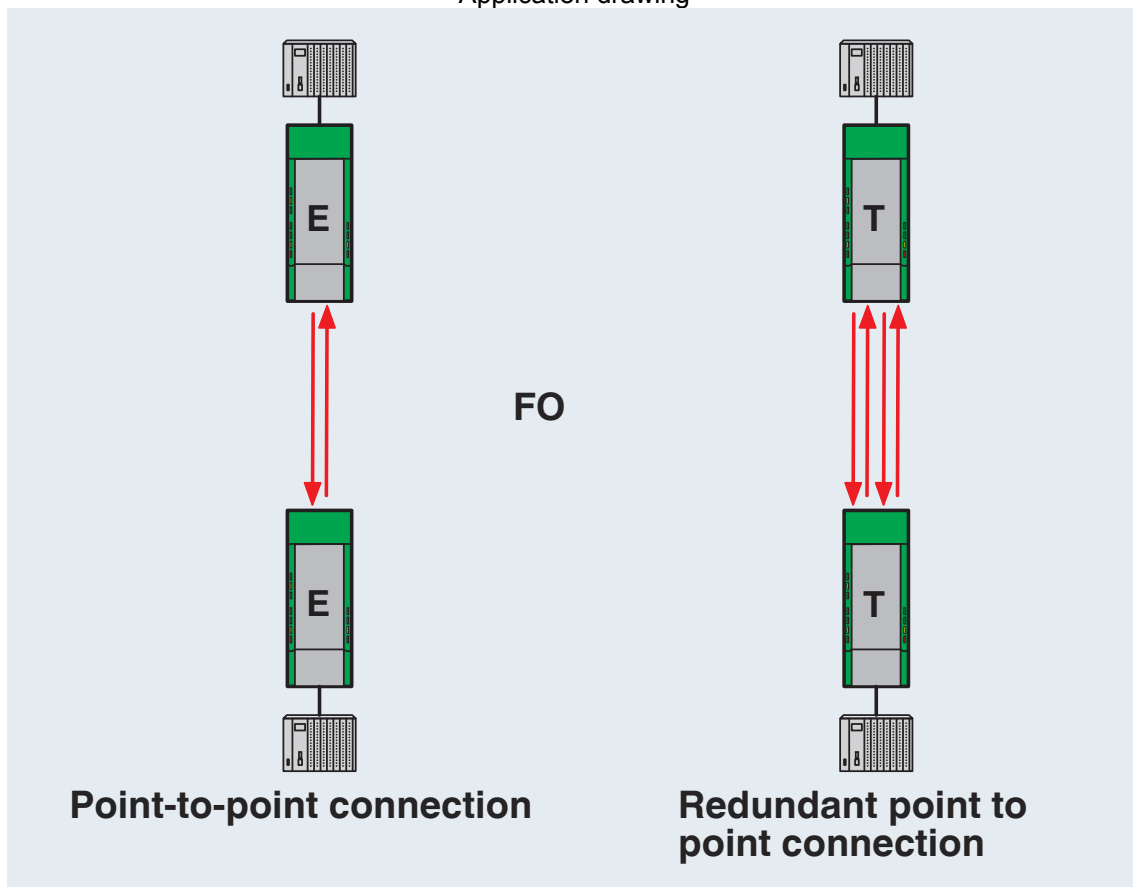
|                                                                   |                    |
|-------------------------------------------------------------------|--------------------|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05 |
|-------------------------------------------------------------------|--------------------|

## Mounting

|               |                   |
|---------------|-------------------|
| Mounting type | DIN rail mounting |
|---------------|-------------------|

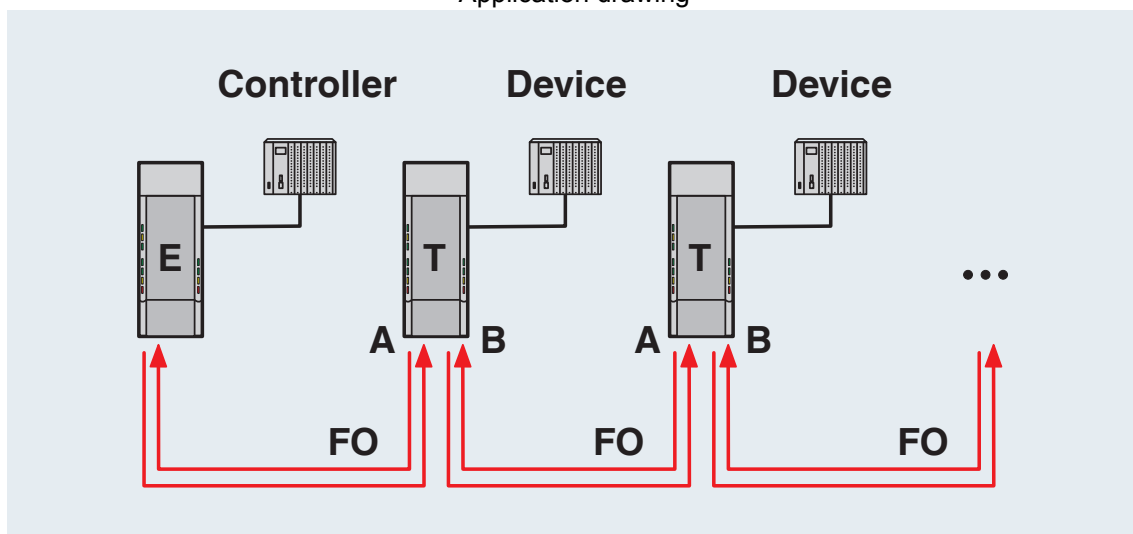
## Drawings

Application drawing



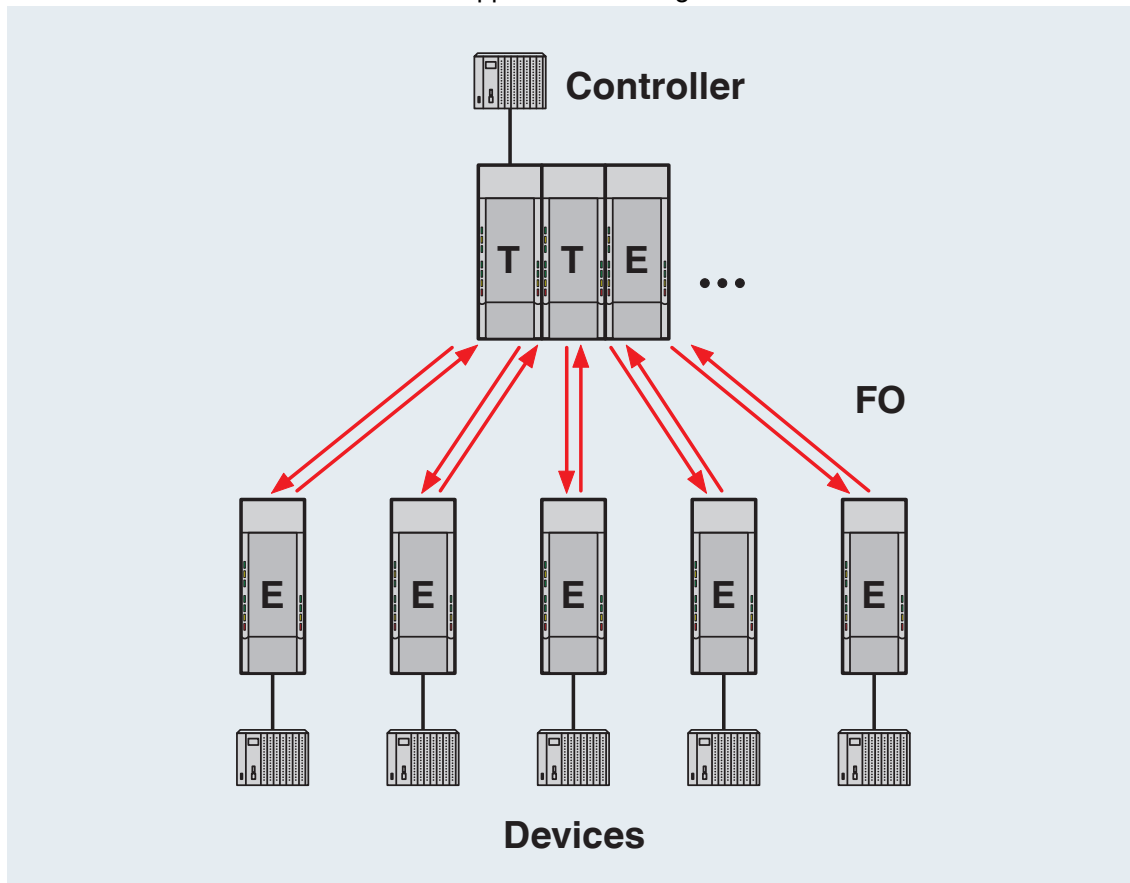
Redundant point-to-point connection

Application drawing



Controller-device line structure

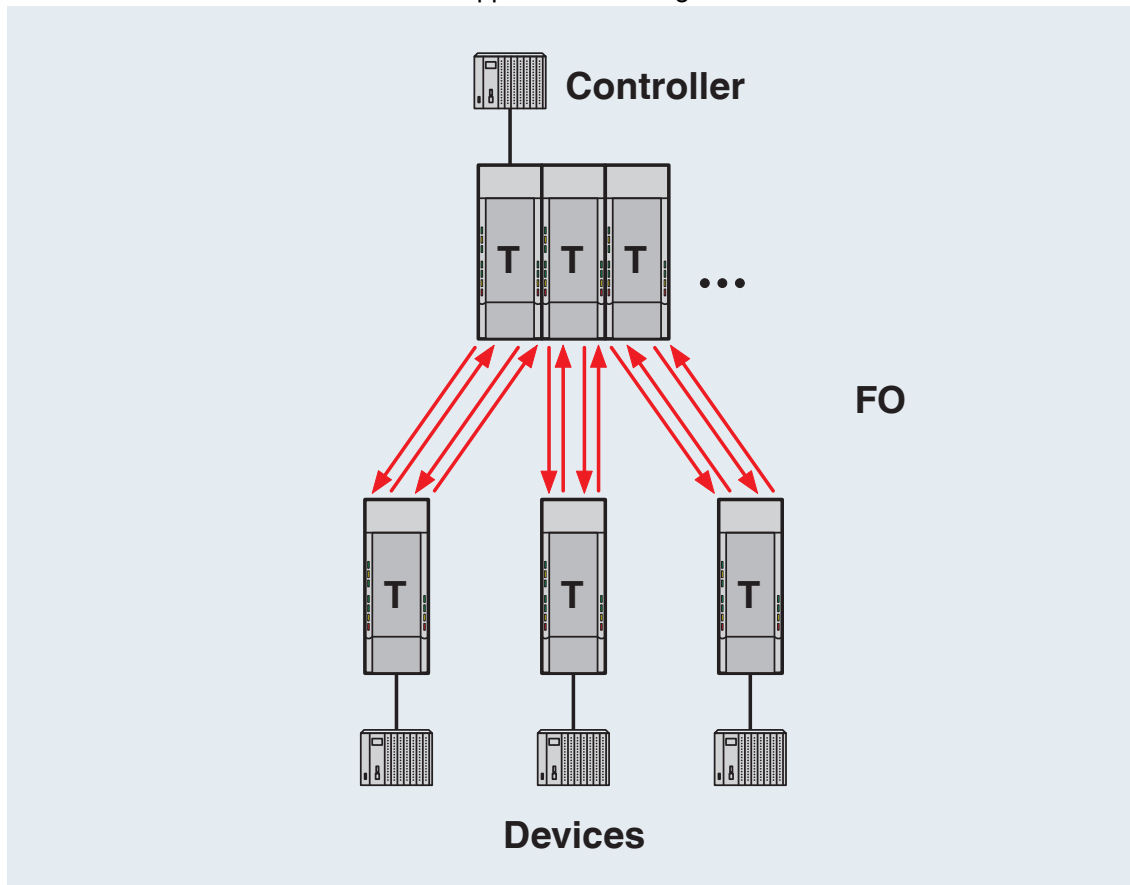
Application drawing



Star structure

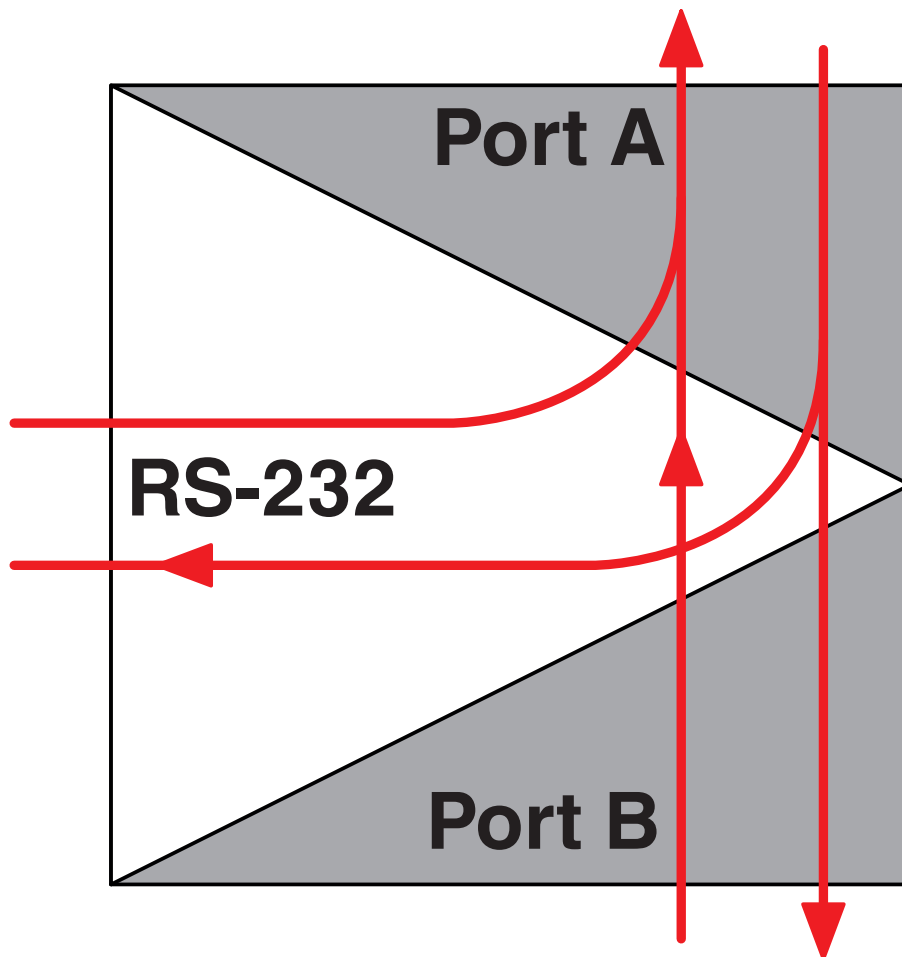


Application drawing



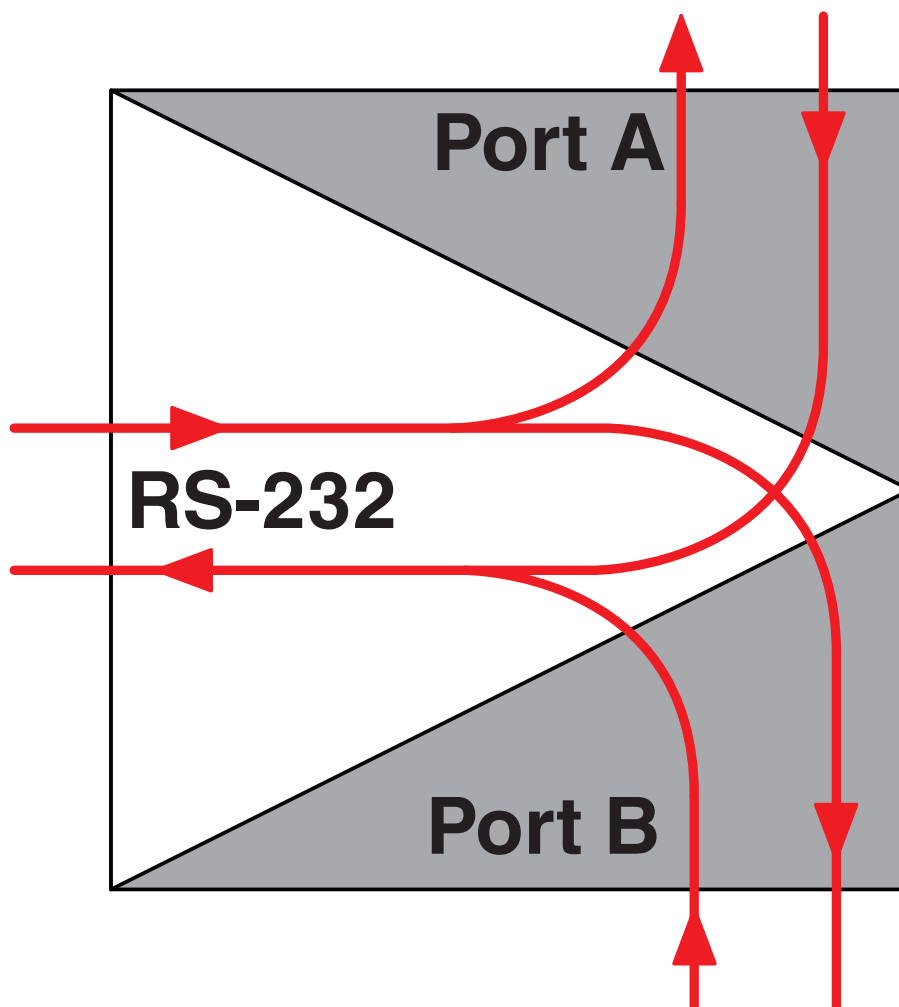
Redundant structure

Schematic diagram



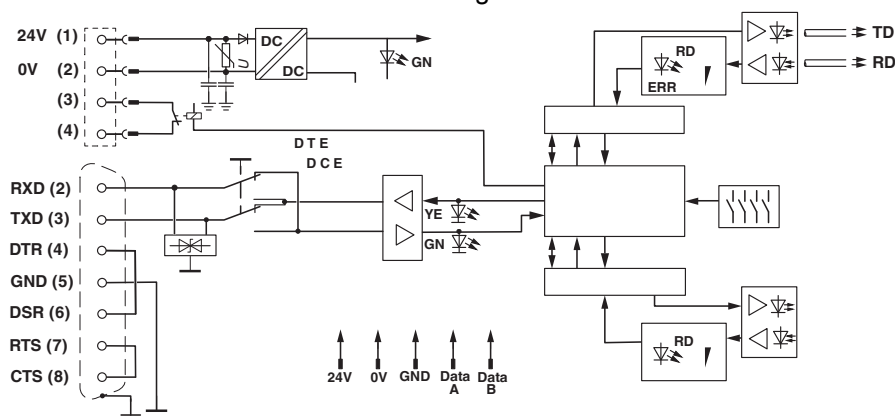
Port assignment in a line structure

Schematic diagram



Port assignment in star structures

Block diagram



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

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/au/products/2708371>



**DNV GL**

Approval ID: TAA00001KR



**cULus Recognized**

Approval ID: E238705



**ATEX**

Approval ID: PTB 06 ATEX 2042U



**cUL Listed**

Approval ID: E199827



**UL Listed**

Approval ID: E199827

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 19170411 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC001467 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 43201500 |
|-------------|----------|

Environmental product compliance

|                                         |                                                                                                                                                                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EU RoHS                                 |                                                                                                                                                                                                                                   |
| Fulfills EU RoHS substance requirements | Yes                                                                                                                                                                                                                               |
| Exemption                               | 6(c), 7(a), 7(c)-I                                                                                                                                                                                                                |
| 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                                    | c5763b83-d871-430b-bd59-b53cb3b35fbe                                                                                                                                                                                              |