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

2708339

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

## 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... E termination devices convert an RS-485 interface to a fiber optic cable. They are ideal for point-to-point connections.

## 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 | 2708339 |
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN06 |
| Product key | DNC212 |
| GTIN | 4017918974039 |
| Weight per piece (including packing) | 235.8 g |
| Weight per piece (excluding packing) | 154.38 g |
| Customs tariff number | 85176200 |
| Country of origin | DE |

# Technical data

## Notes

Note on application

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

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 | 957 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 426 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 176 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |
| MTBF | 272 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day)) |
| | 44 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 |
| 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

| | |
|---|---|
| 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 |

## Connection data

Supply

| | |
|---|---|
| Connection method | COMBICON plug-in screw terminal block |
| Single conductor/terminal point, rigid | 0.2 mm² ... 2.5 mm² |
| Single-wire/terminal point, flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section, flexible [AWG] | 24 ... 14 |
| 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 | 1 |
| 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 |
| 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 |

## Mechanical tests

| | |
|---|---|
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | Operation: 5g, 10...150 Hz, 2.5 h, in XYZ direction |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | Operation: 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) |
| | ≤ 2000 m (Hazardous locations) |
| Permissible humidity (operation) | 30 % ... 95 % (non-condensing) |

## Approvals

CE

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

IECEx

| | |
|---|---|
| Identification | Ex ec [op is Gb] IIC T4 Gc |
| | [Ex op is Db] IIIC |
| Certificate | IECEx ULD 24.0009X |

ATEX

| | |
|---|---|
| Identification | II 3 (2) G Ex ec [op is Gb] IIC T4 Gc |
| | II (2) D [Ex op is Db] IIIC |
| Certificate | UL 24 ATEX 3197X |
| Note | Please follow the special installation instructions in the documentation! |

UL, 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 | KCC-REI-PCK-FOCVT2708339 |

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

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

## Standards and regulations

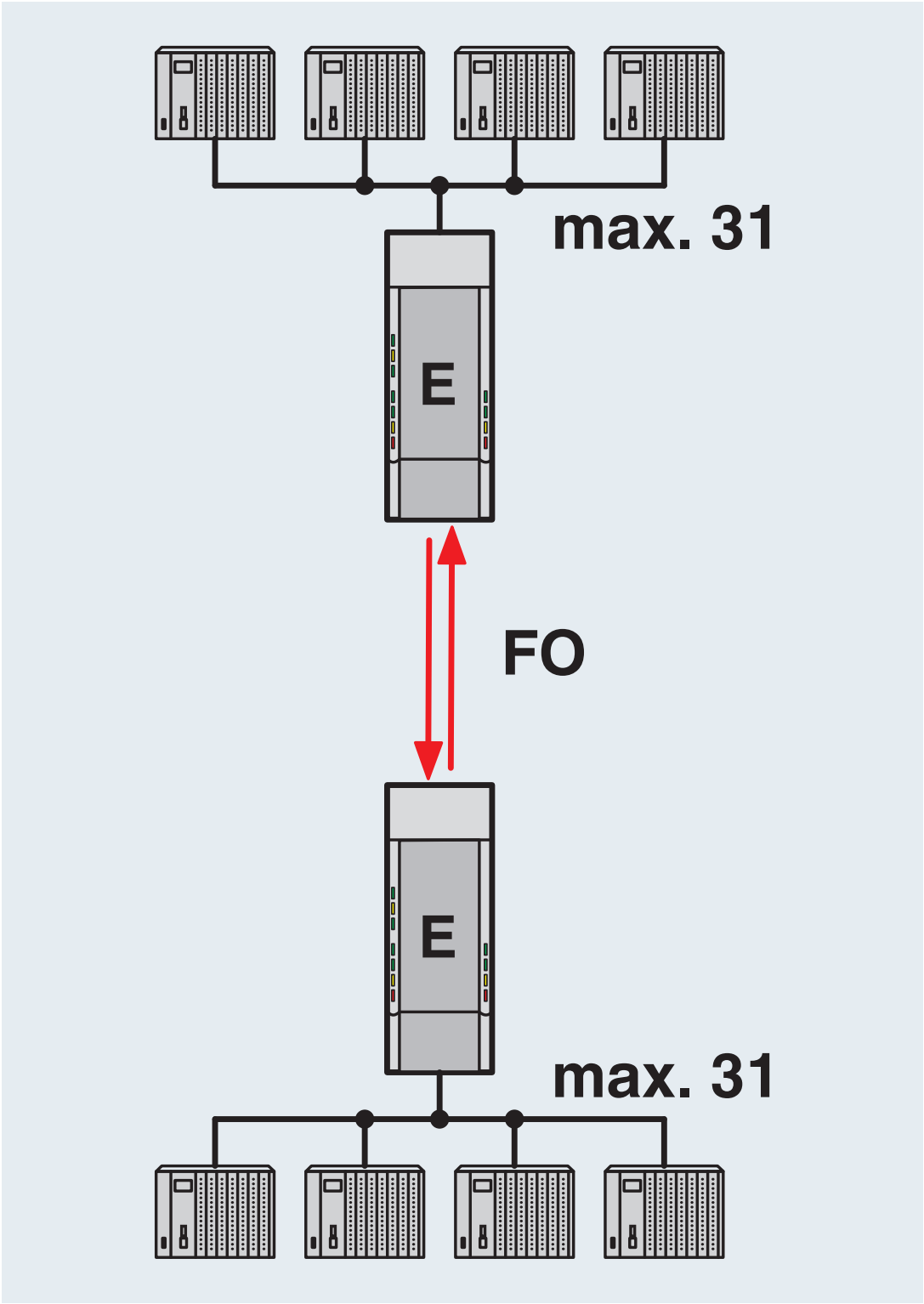
| | |
|---|---|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05 |

## Mounting

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

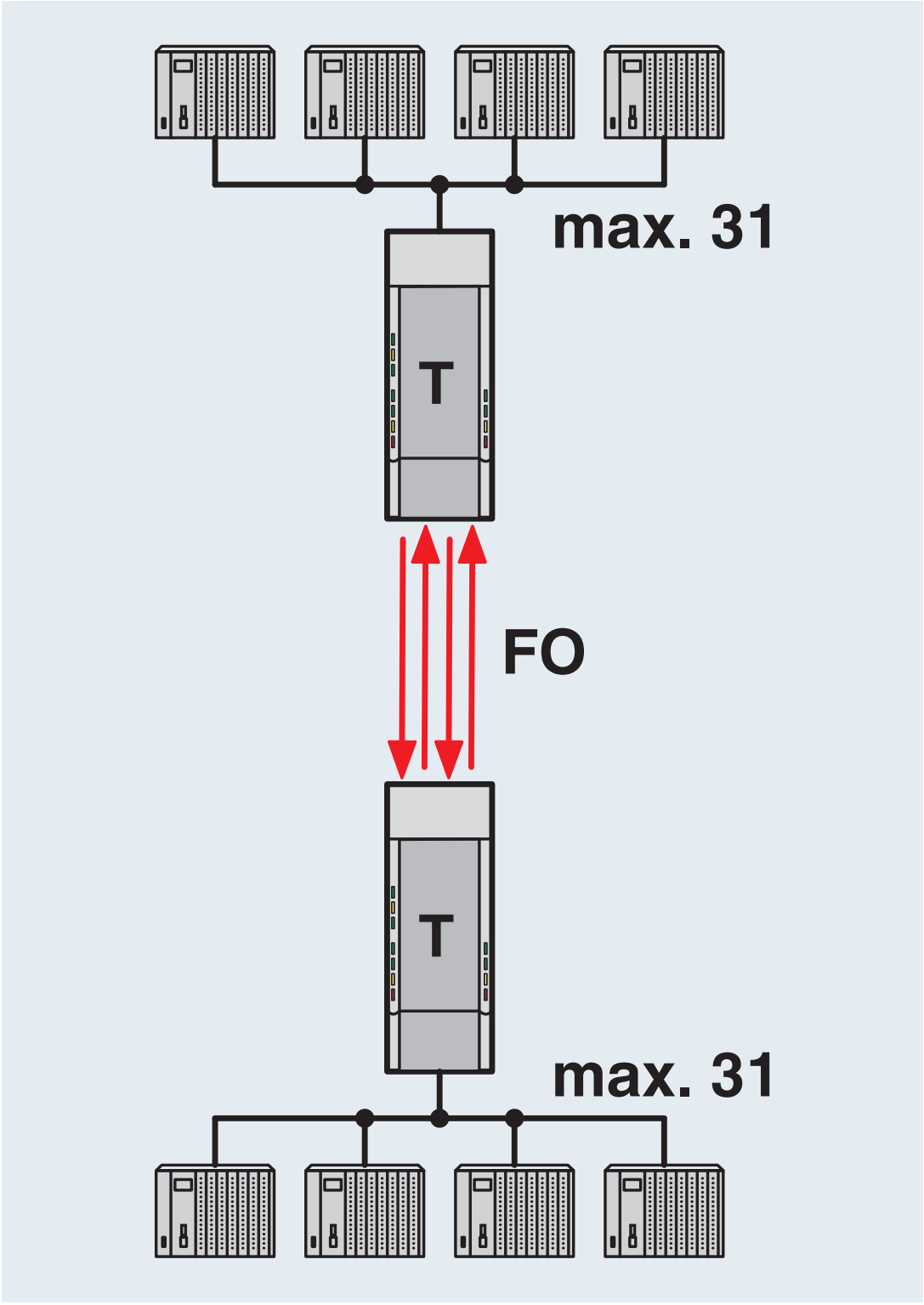
## Drawings

Application drawing



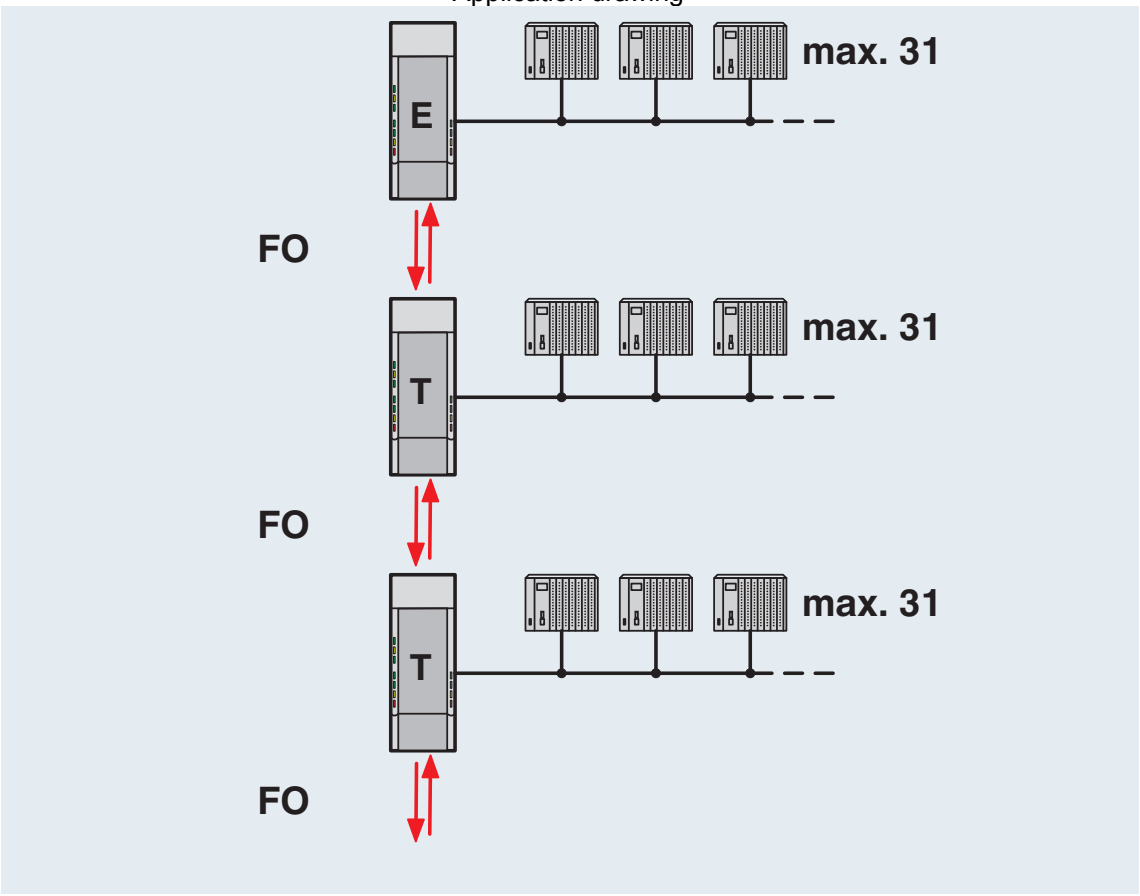

Point-to-point connection

Application drawing



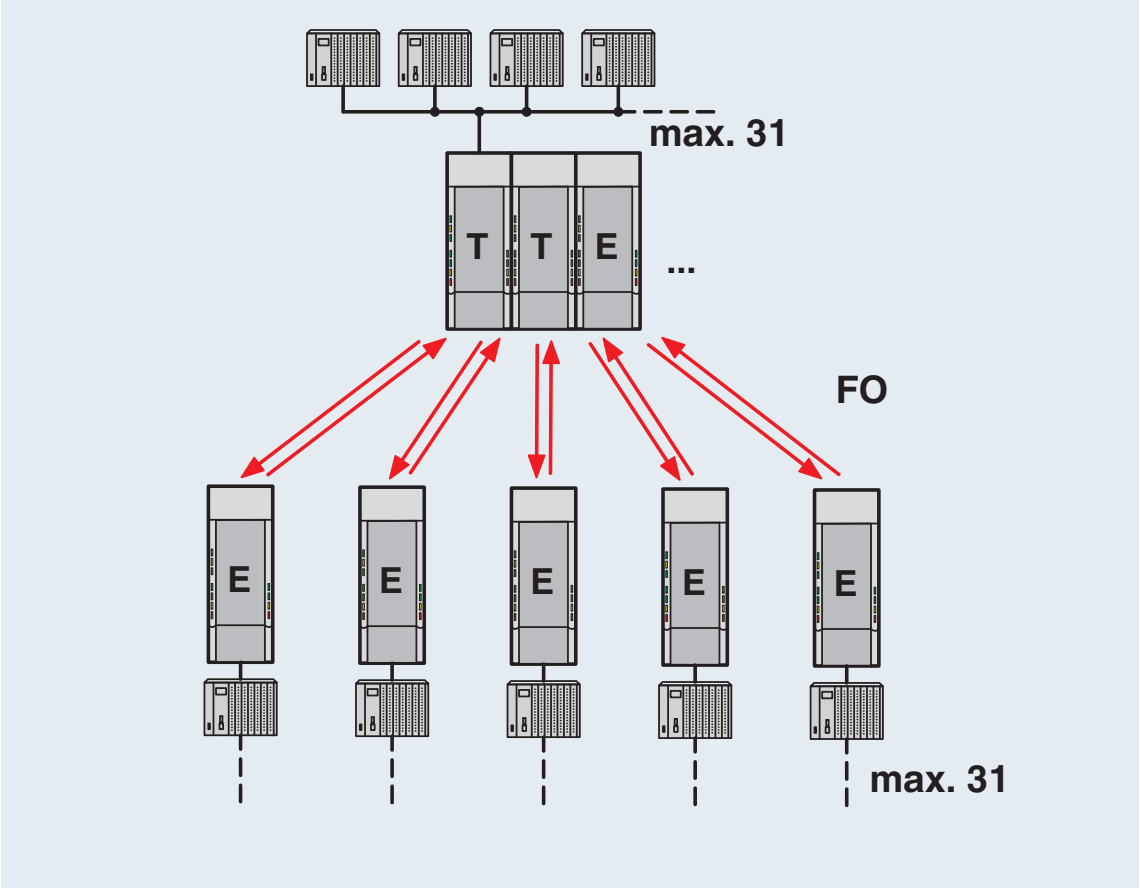

Redundant point-to-point connection

Application drawing



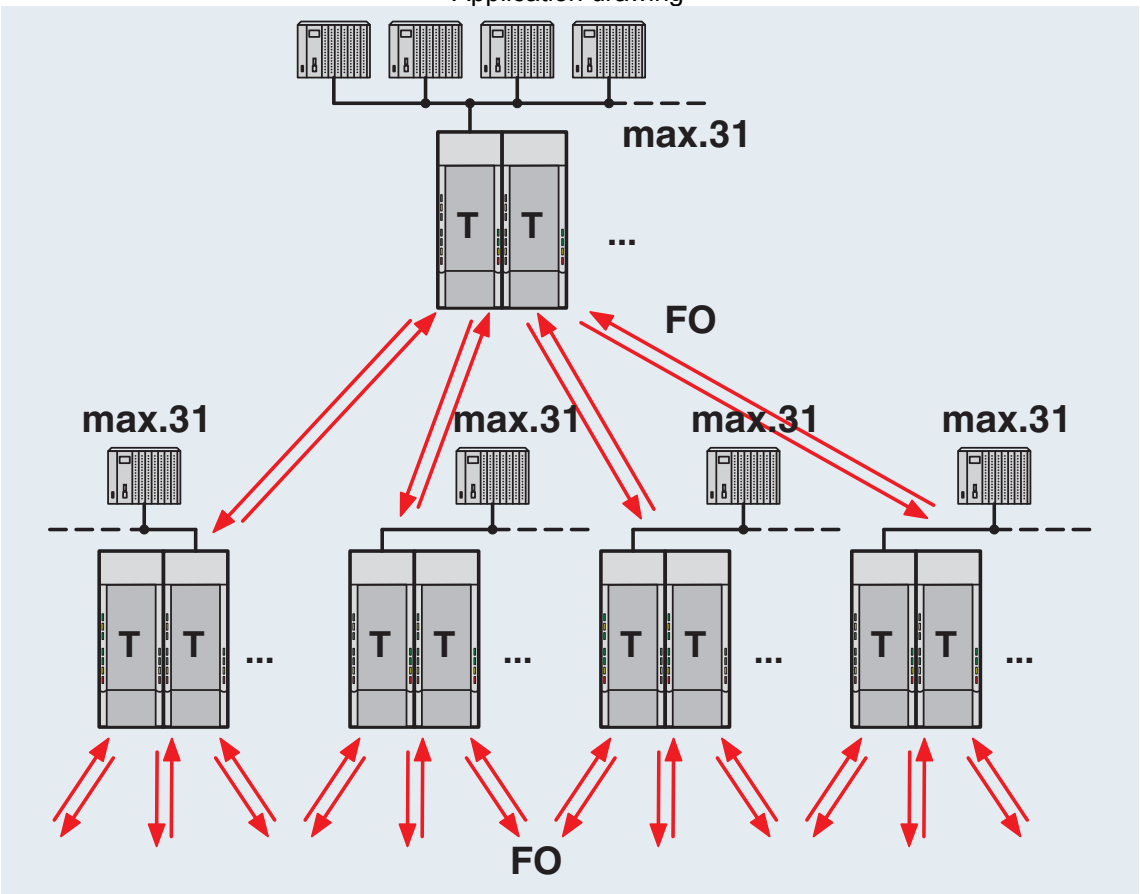

Line structure

Application drawing



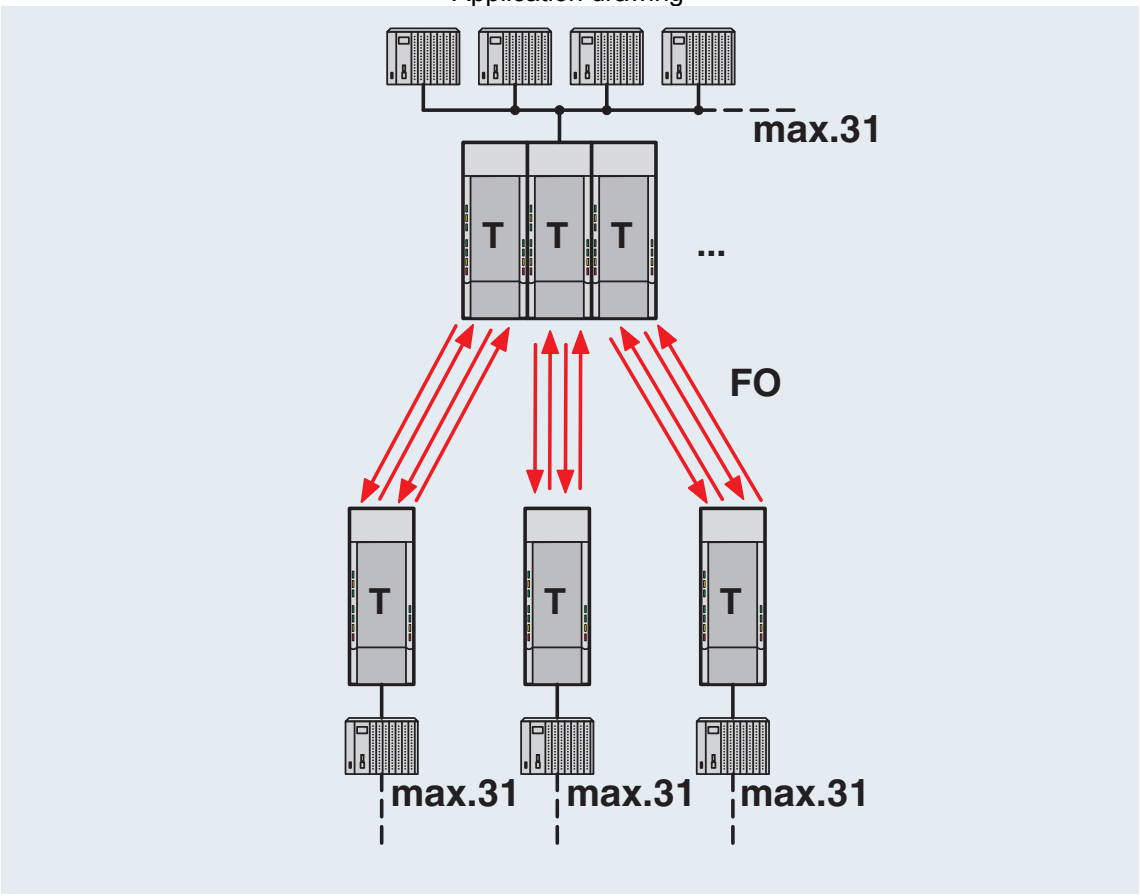

Star structure

Application drawing



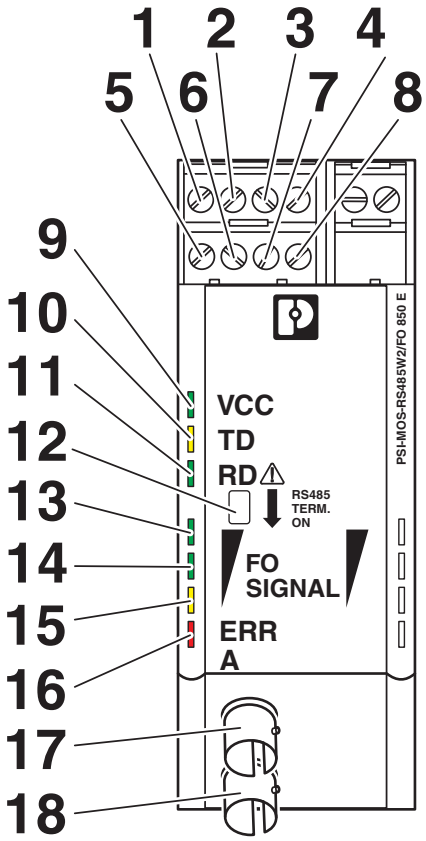

Tree structure

Application drawing



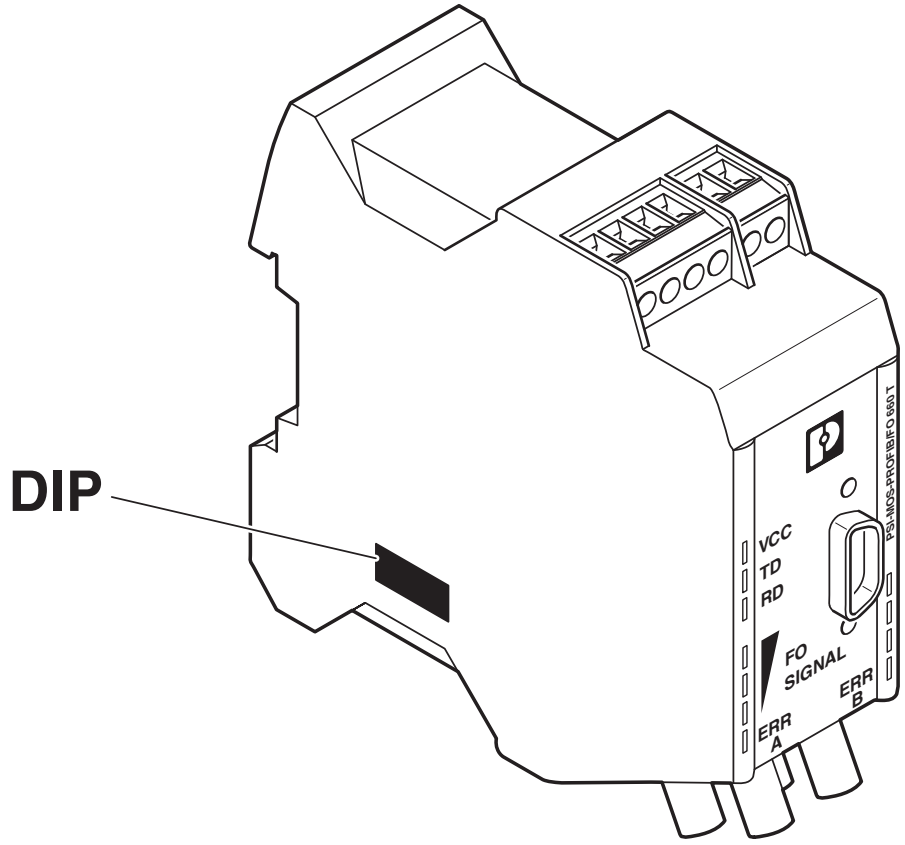

Redundant structure

Schematic diagram



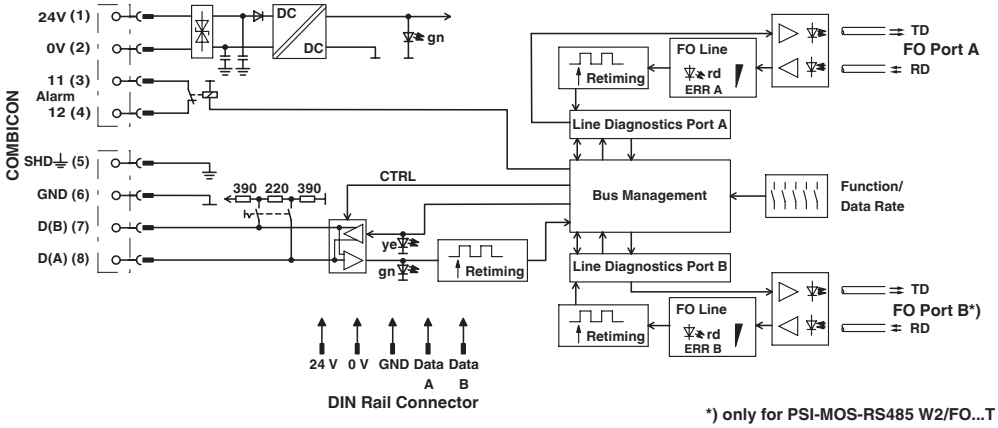

Front view

Schematic diagram




Position of DIP switches

Block diagram




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

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2708339

**KC**
Approval ID: KCC-REI-PCK-FOCVT270

**cULus Listed**
Approval ID: E238705

**cULus Recognized**
Approval ID: E238705

**DNV GL**
Approval ID: TAA00001KR

**cULus Recognized**
Approval ID: E238705

**DNV GL**
Approval ID: TAA00001KR

**cULus Listed**
Approval ID: E238705

**KC**
Approval ID: KCC-REI-PCK-FOCVT270

**cUL Listed**
Approval ID: E199827

**UL Listed**
Approval ID: E199827

**IECEx**
Approval ID: IECEx ULD 24.0009X

**UL Listed**
Approval ID: E199827

**cUL Listed**
Approval ID: E199827

**ATEX**
Approval ID: UL 24 ATEX 3197X

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 19170411 |
| ECLASS-15.0 | 19170411 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001467 |

### UNSPSC

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

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 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) |
| | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1) |
| SCIP | cfbb7376-5c56-42bf-b4b8-cf50b51dd798 |



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