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

2313999

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

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CRA-READY



Fiber optic converter with integrated optical diagnostics, for DeviceNet™, CAN, CANopen® 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™ 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 | DN06 |
| Product key | DNC213 |
| GTIN | 4046356513807 |
| Weight per piece (including packing) | 245 g |
| Weight per piece (excluding packing) | 247.1 g |
| Customs tariff number | 85176200 |
| Country of origin | DE |

# Technical data

## Notes

| | |
|---|---|
| Note on application | Only for industrial use |
| Note on application | As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA. |

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 | 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)) |
| Special properties | The product is being prepared for compliance with the Cyber Resilience Act (CRA) |

## Electrical properties

| | |
|---|---|
| Electrical isolation | VCC // CAN |
| Maximum power dissipation for nominal condition | 3.12 W |
| Test voltage data interface/power supply | 1.5 $kV_{rms}$ (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 switching type | N/O contact |
| Minimum switching voltage | 11 V DC |
| Maximum switching voltage | 30 V DC |
| Limiting continuous current | 500 mA |

## Connection data

### Supply

| | |
|---|---|
| Tightening torque | 0.56 Nm ... 0.79 Nm |

## Interfaces

| | |
|---|---|
| Bit distortion, input | ± 35 % (permitted) |
| Bit distortion, output | < 6.25 % |
| Signal | CAN |
| | CANopen® |
| | DeviceNet™ |

### Data: optical FO

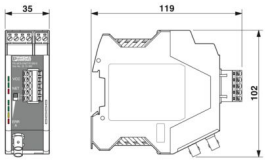
| | |
|---|---|
| No. of channels | 1 |
| Transmit capacity, minimum | -17.6 dBm (50/125 µm) |
| | -14.6 dBm (62,5/125 µm) |
| | -4 dBm (200/230 µm) |
| Transmission protocol | Protocol transparent for CAN interface |
| Connection method | B-FOC (ST®) |
| Wavelength | 850 nm |
| Minimum receiver sensitivity | -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 DeviceNet™, CAN, CANopen®

| | |
|---|---|
| Transmission speed | ≤ 1 Mbps (Configurable via DIP switches) |
| Connection method | COMBICON plug-in screw terminal block |
| No. of channels | 2 (CAN_High / CAN_Low) |
| Tightening torque | 0.56 Nm ... 0.79 Nm |
| 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®, can be addressed logically) |
| Termination resistor | 124 Ω (Integrated and ready to be switched) |
| 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 |
| Stripping length | 7 mm |
| Transmission medium | 2-wire twisted pair, shielded |
| Transmission method | CSMA/CA |
| File format/coding | Bit stuffing, NRZ |

## Dimensions

| | |
|---|---|
| Dimensional drawing |  |
| Width | 35 mm |
| Height | 102 mm |
| Depth | 119 mm |

## 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 | 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) |
| Permissible humidity (operation) | 30 % ... 95 % (non-condensing) |

## Approvals

CE

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

ATEX

| | |
|---|---|
| Identification | Ⓔx II 3 G Ex ec IIC T4 Gc |
| Certificate | PxCIF10ATEX2313986X |
| Note | Please follow the special installation instructions in the documentation! |

UL, USA/Canada

| | |
|---|---|
| Identification | 508 Listed |

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 |

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

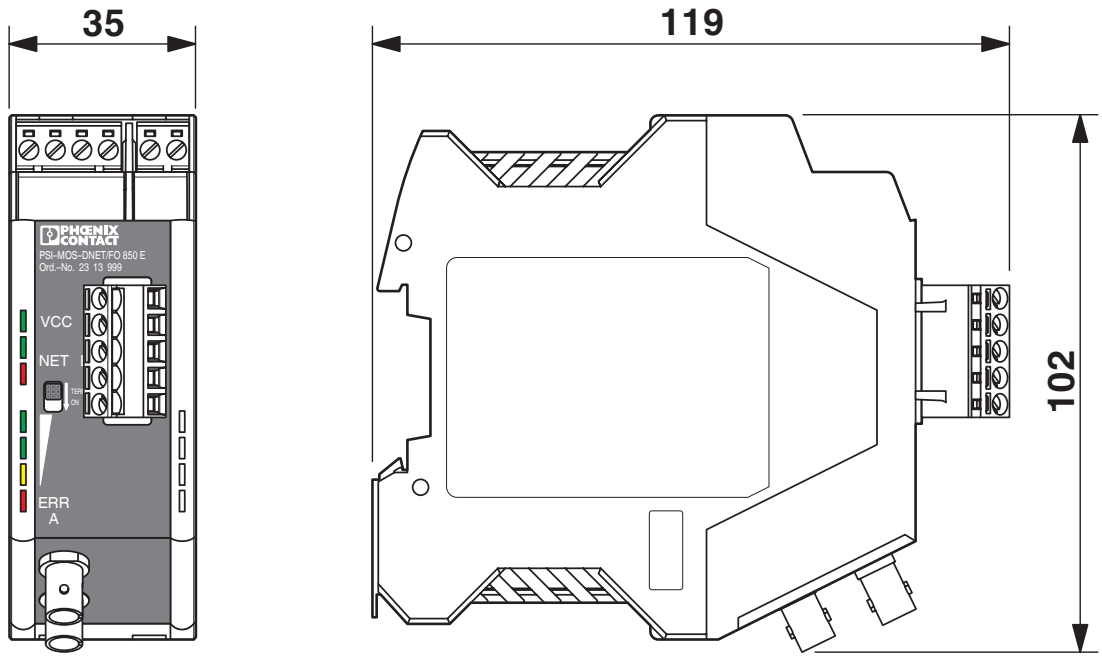
| | |
|---|---|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |
| Assembly note | The product can be snapped onto all 35 mm DIN rails in accordance with EN/IEC 60715. |
| Useable DIN rail type | DIN rail: 35 mm |

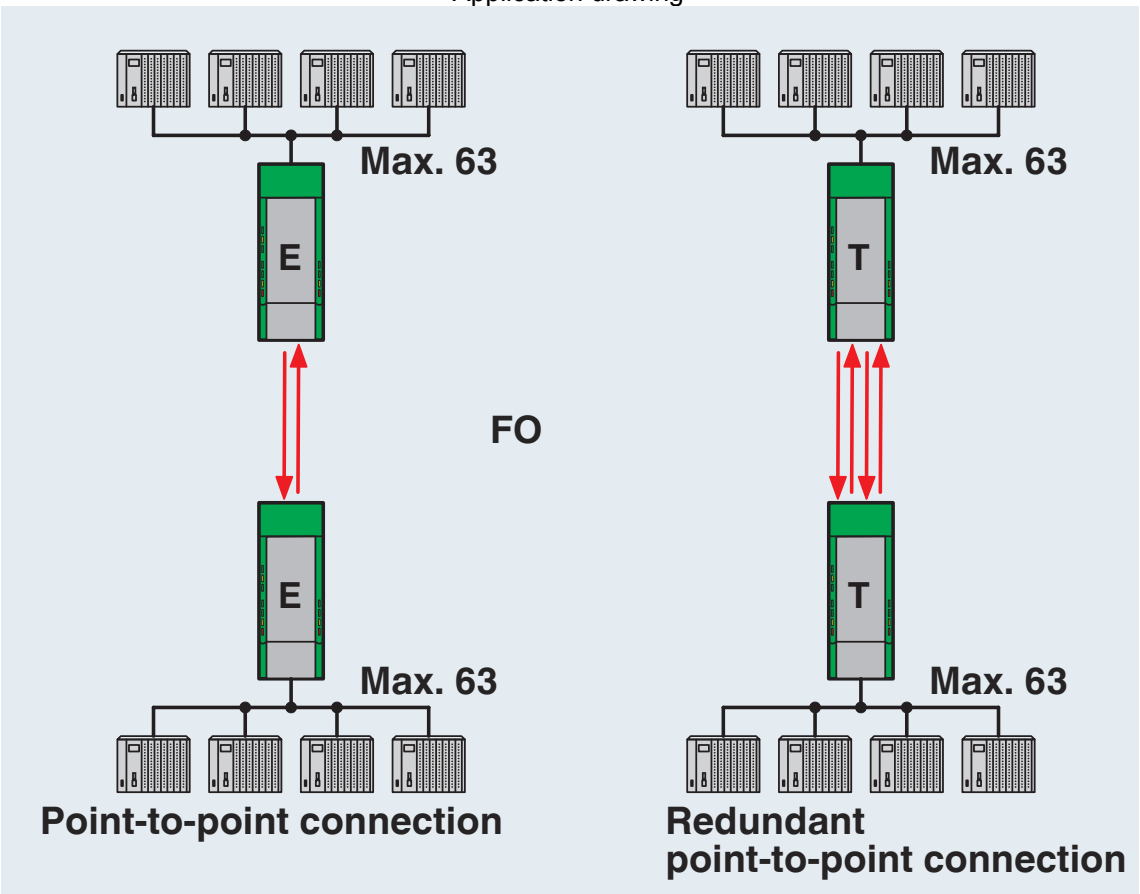
## Drawings

Dimensional drawing



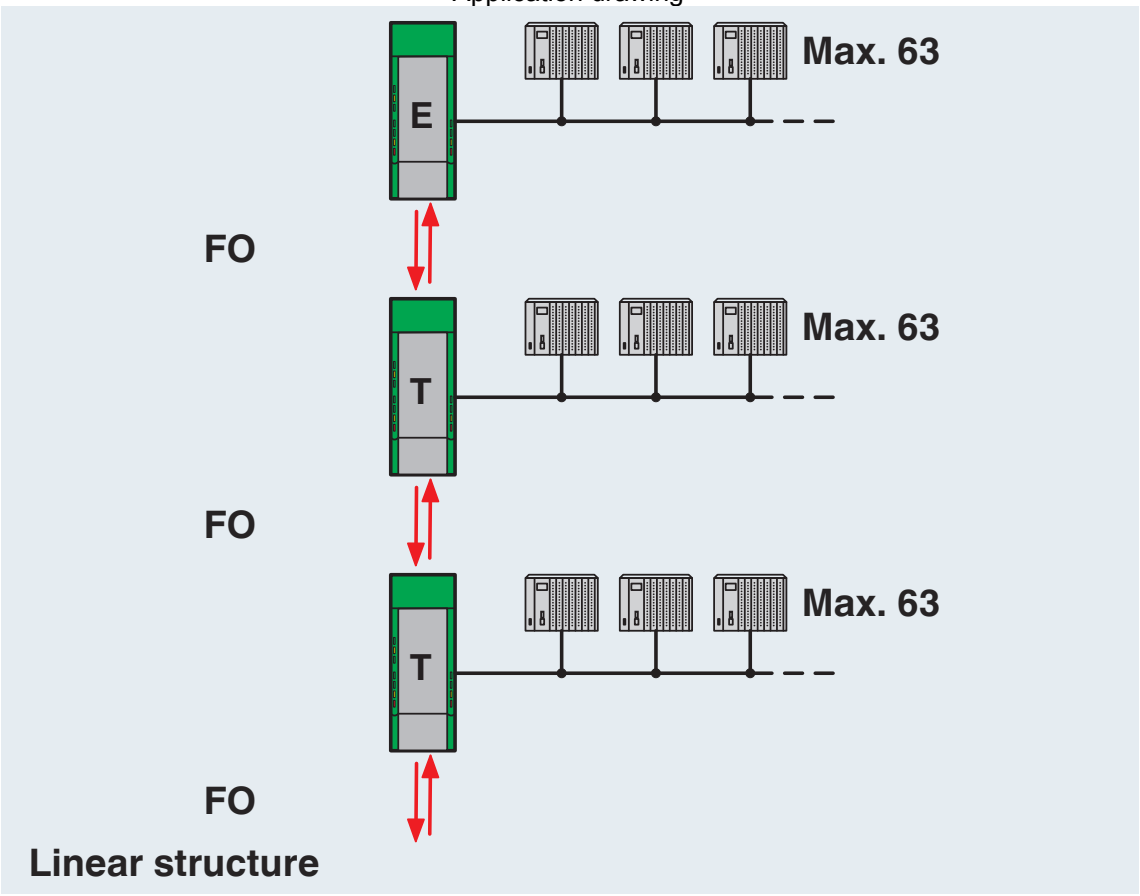

Housing dimensions

Application drawing



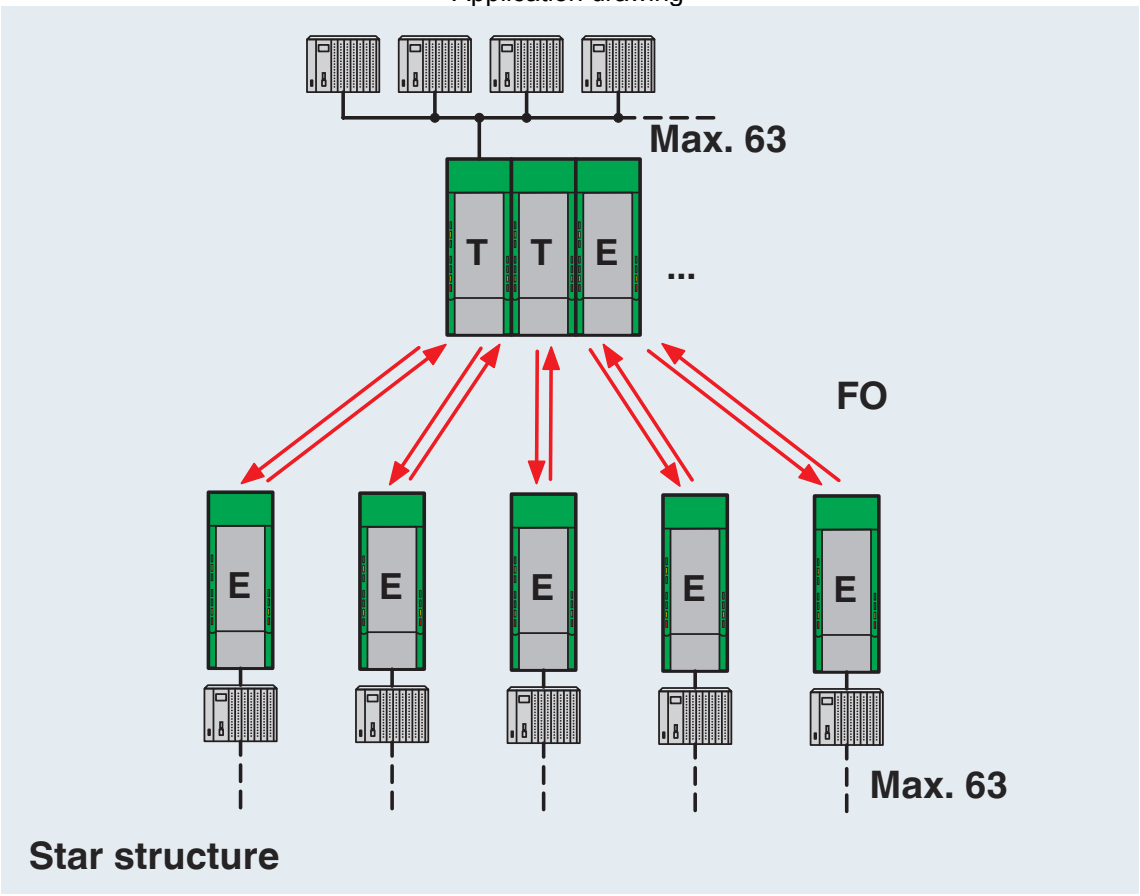

Point-to-point connection

Application drawing



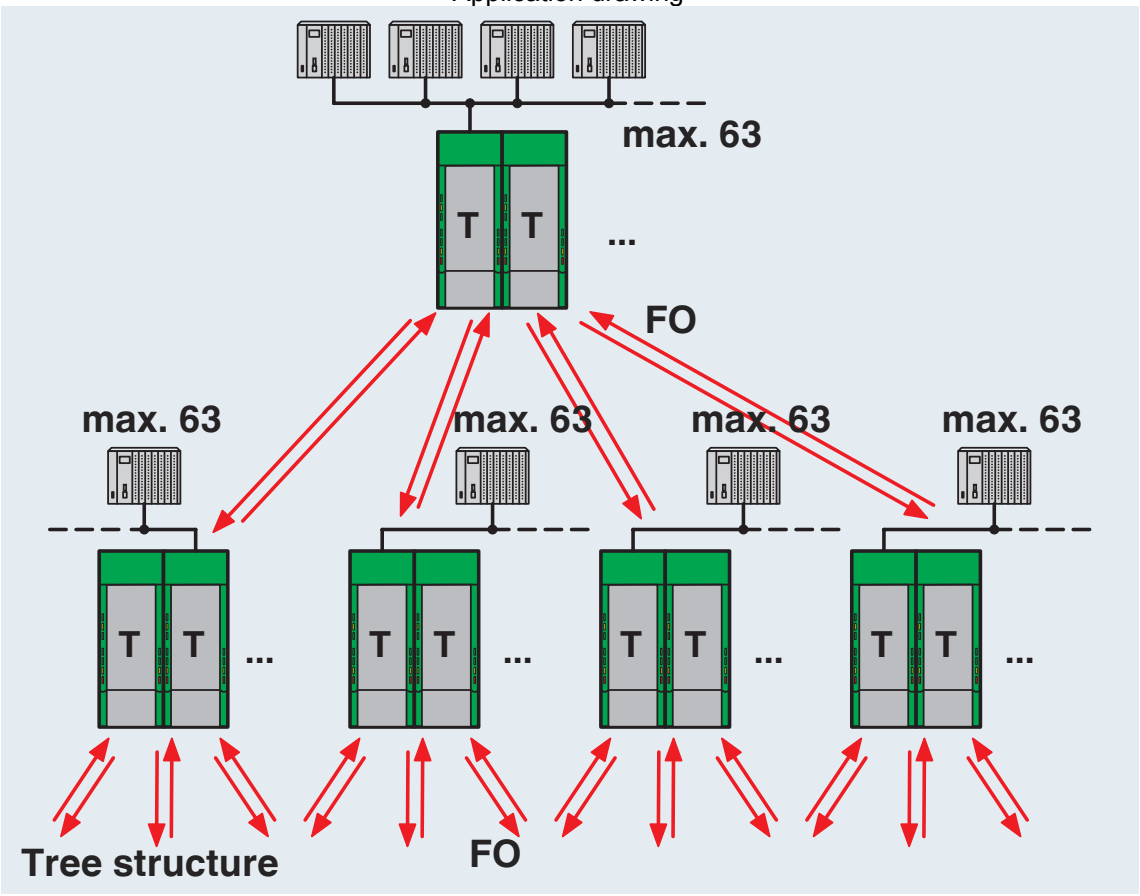

Line structure

Application drawing



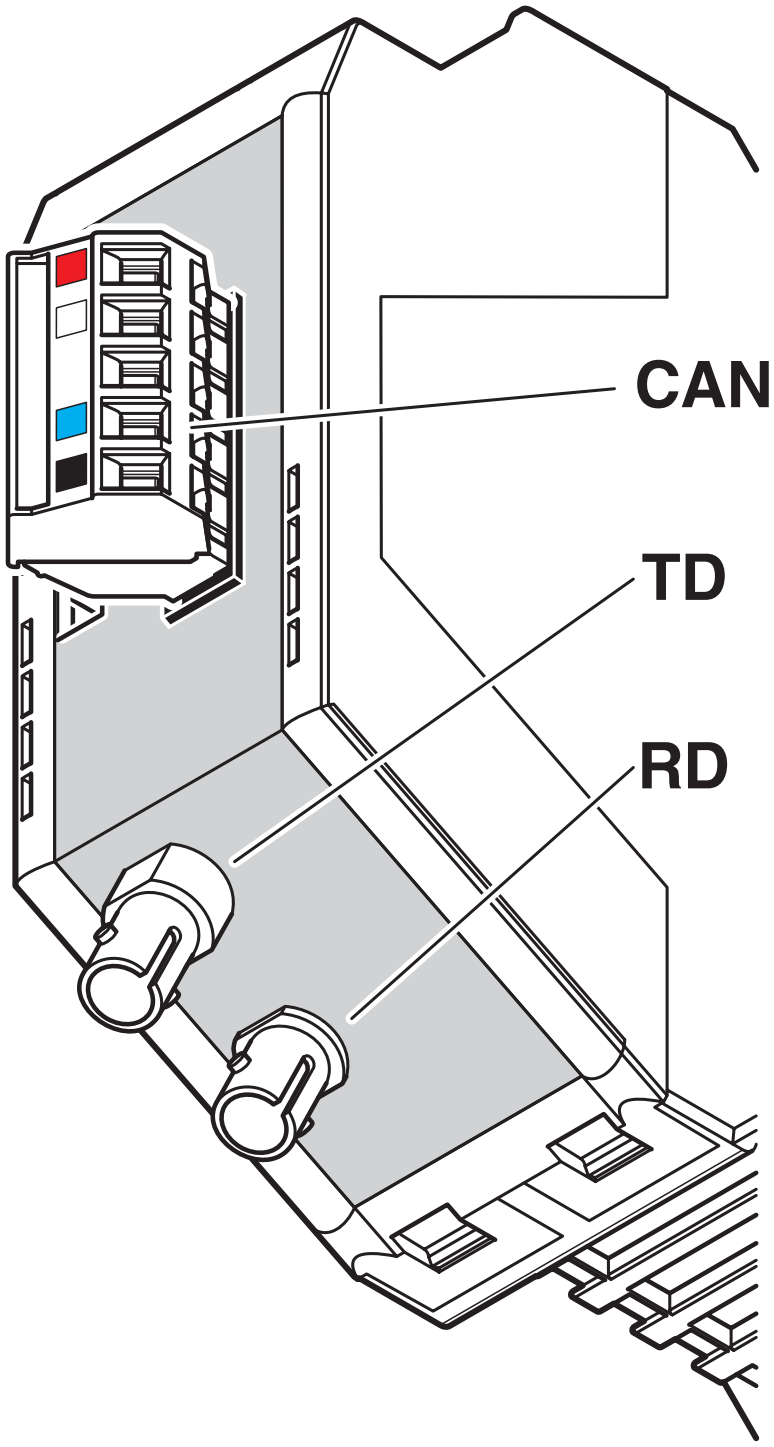

Star structure

Application drawing



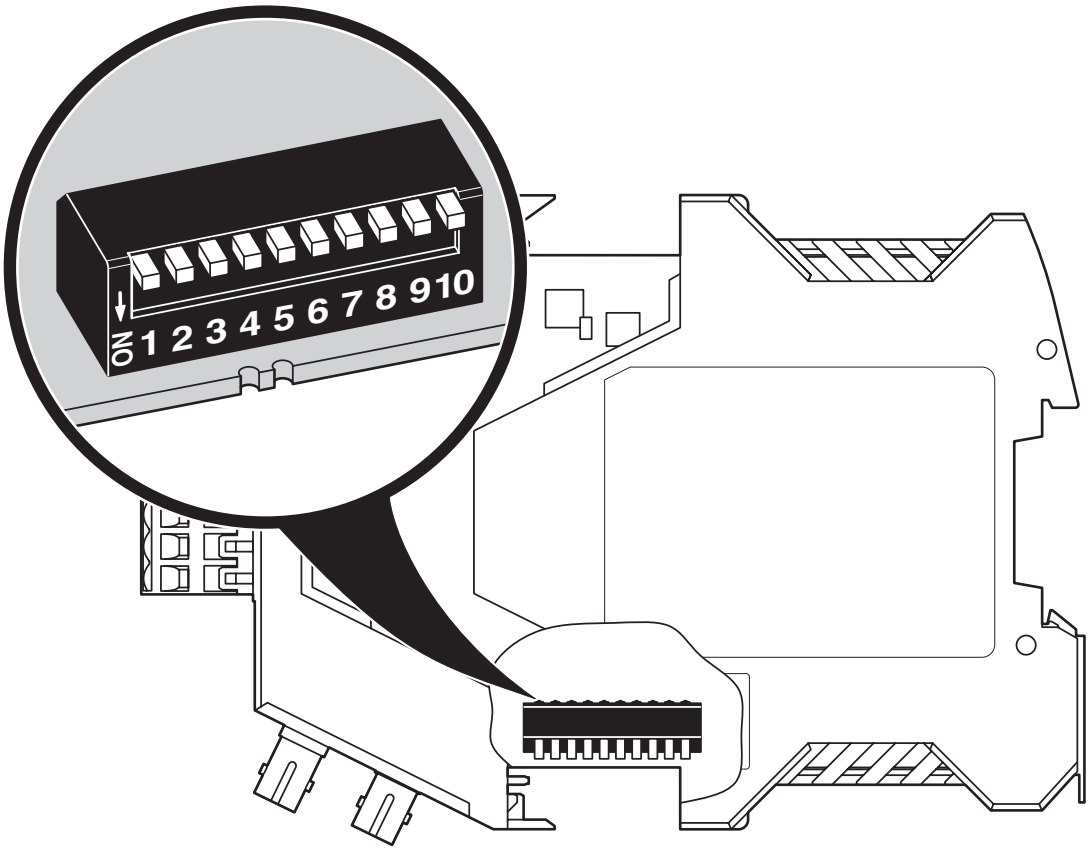

Tree structure

Schematic diagram



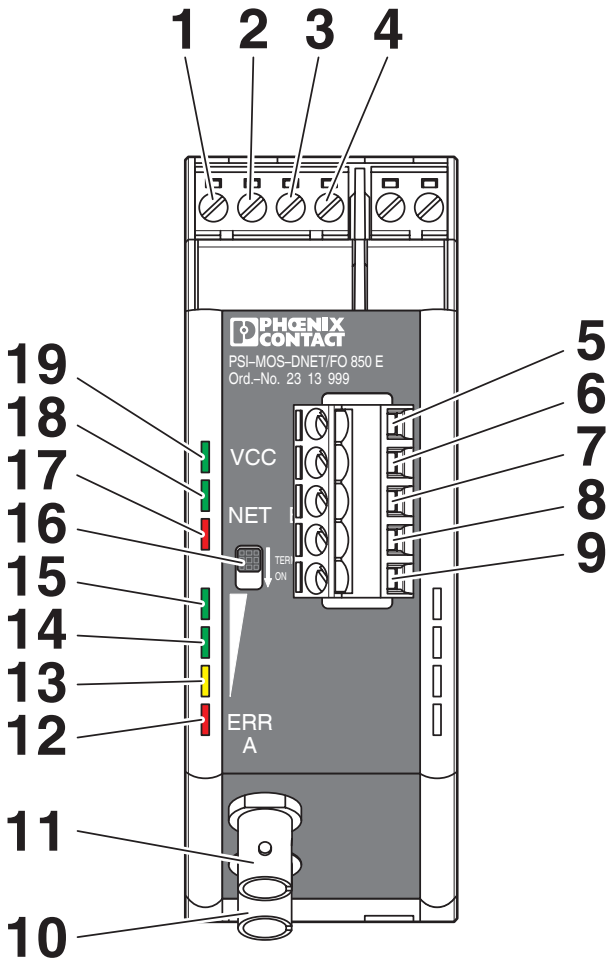

Device connections

Schematic diagram



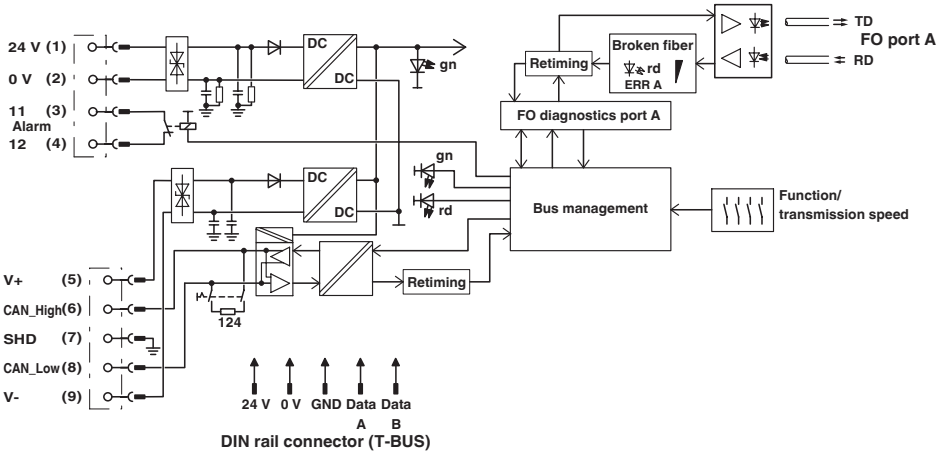

DIP switches

Schematic diagram




Front view

Block diagram




Basic circuit diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2313999

**UL Listed**
Approval ID: E238705

**cUL Listed**
Approval ID: E238705

**DNV GL**
Approval ID: TAA00001KR_7

## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 43223323 |

## 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.) | 1-Methyl-2-pyrrolidone (NMP)(CAS: 872-50-4) |
| | Lead(CAS: 7439-92-1) |
| SCIP | 754cee8a-ec4a-4f91-bffa-412fccf110b0 |

EF3.1 Climate Change

| | |
|---|---|
| CO2e kg | 22.317 kg CO2e |

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