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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



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



2708339

<https://www.phoenixcontact.com/us/products/2708339>

## 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
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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
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 <sub>rms</sub> (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
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## Connection data

### Supply

Connection method	COMBICON plug-in screw terminal block
Single conductor/terminal point, rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Single-wire/terminal point, flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
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)

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

## Approvals

### CE

Certificate	CE-compliant
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### IECEX

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



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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
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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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## 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
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## 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

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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	$\pm 2$ kV
Signal	$\pm 2$ kV
Comments	Criterion B

## Surge current load (surge)

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

Input	$\pm 0.5$ kV
Signal	$\pm 1$ kV
Comments	Criterion B

## 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

## 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

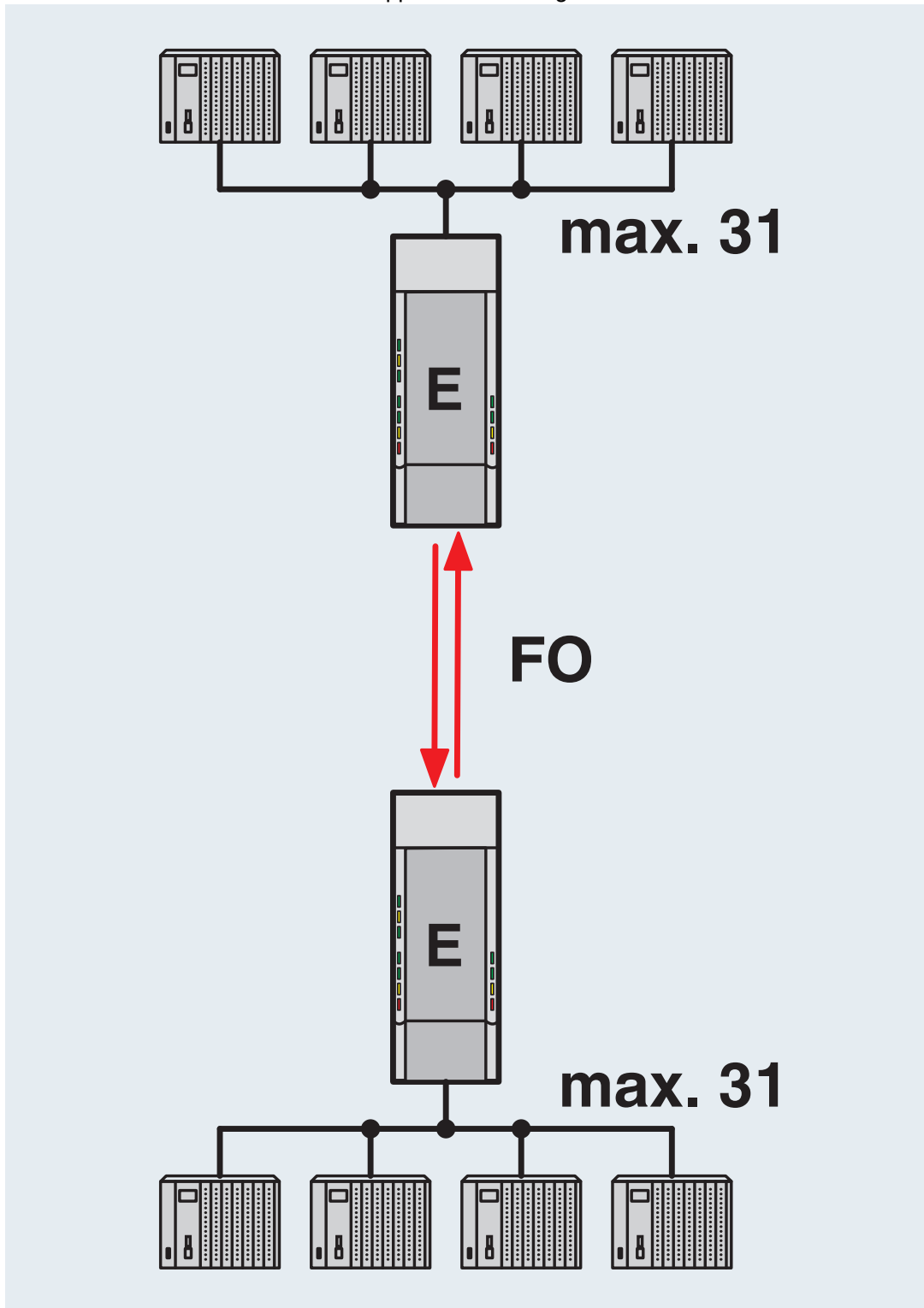
Free from substances that could impair the application of coating	VDMA 24364:2018-05
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## Mounting

Mounting type	DIN rail mounting
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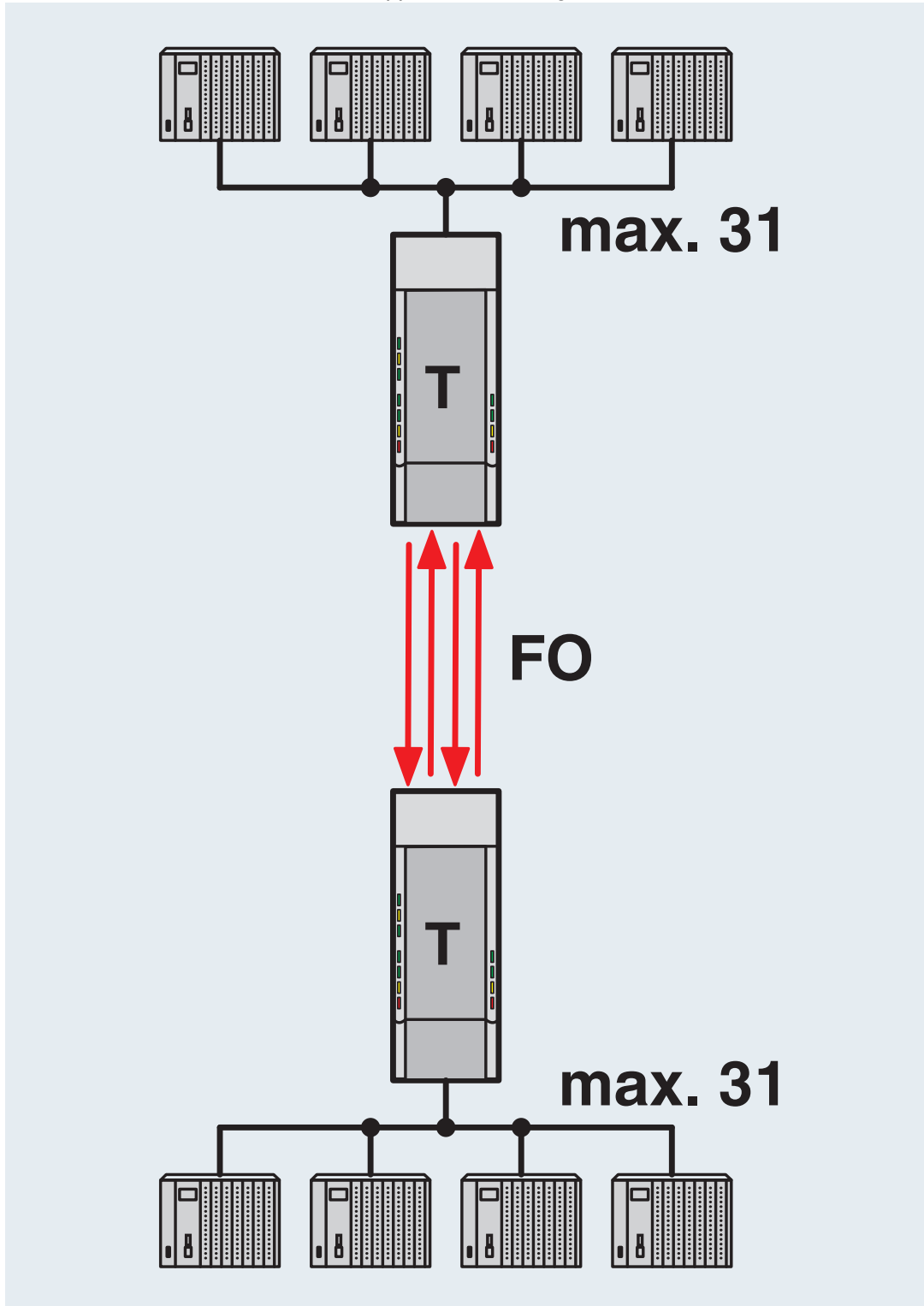
Drawings

Application drawing



Point-to-point connection

Application drawing



Redundant point-to-point connection

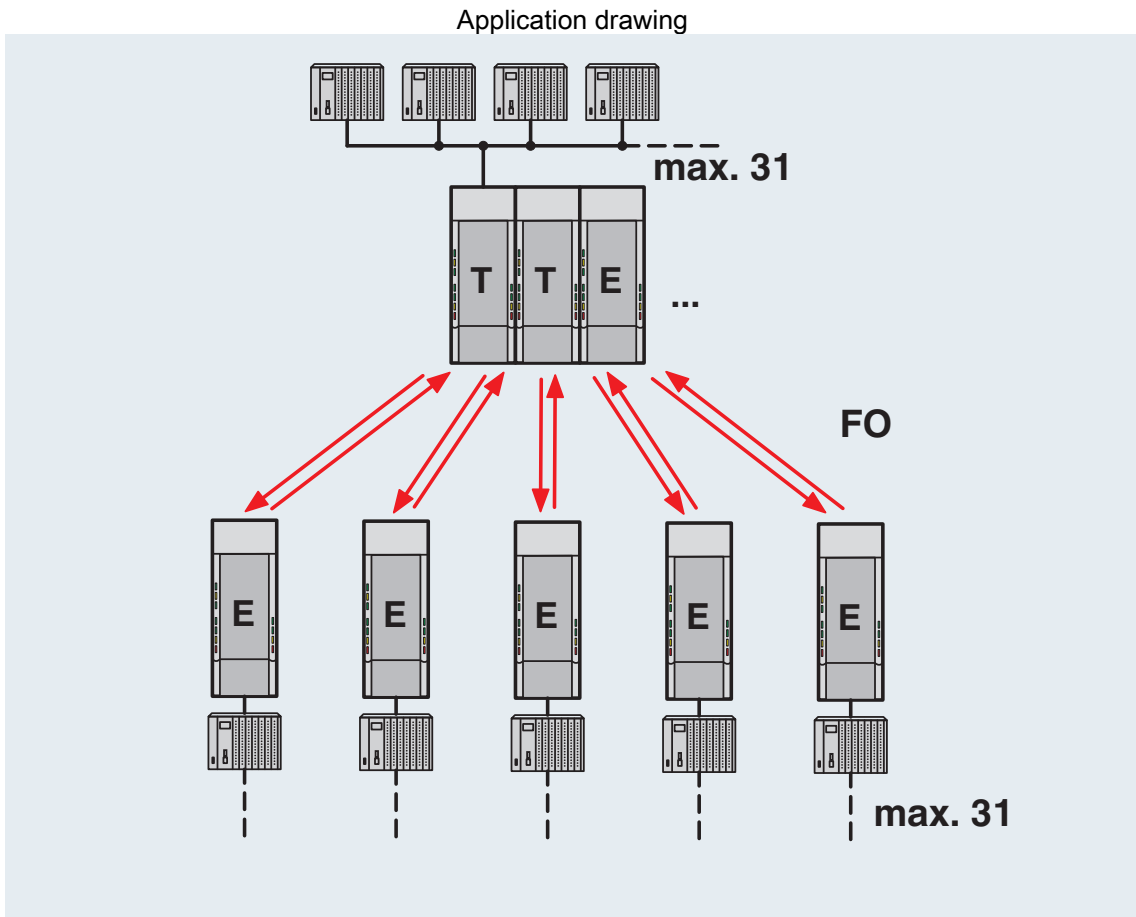
# PSI-MOS-RS485W2/FO 850 E - FO converters

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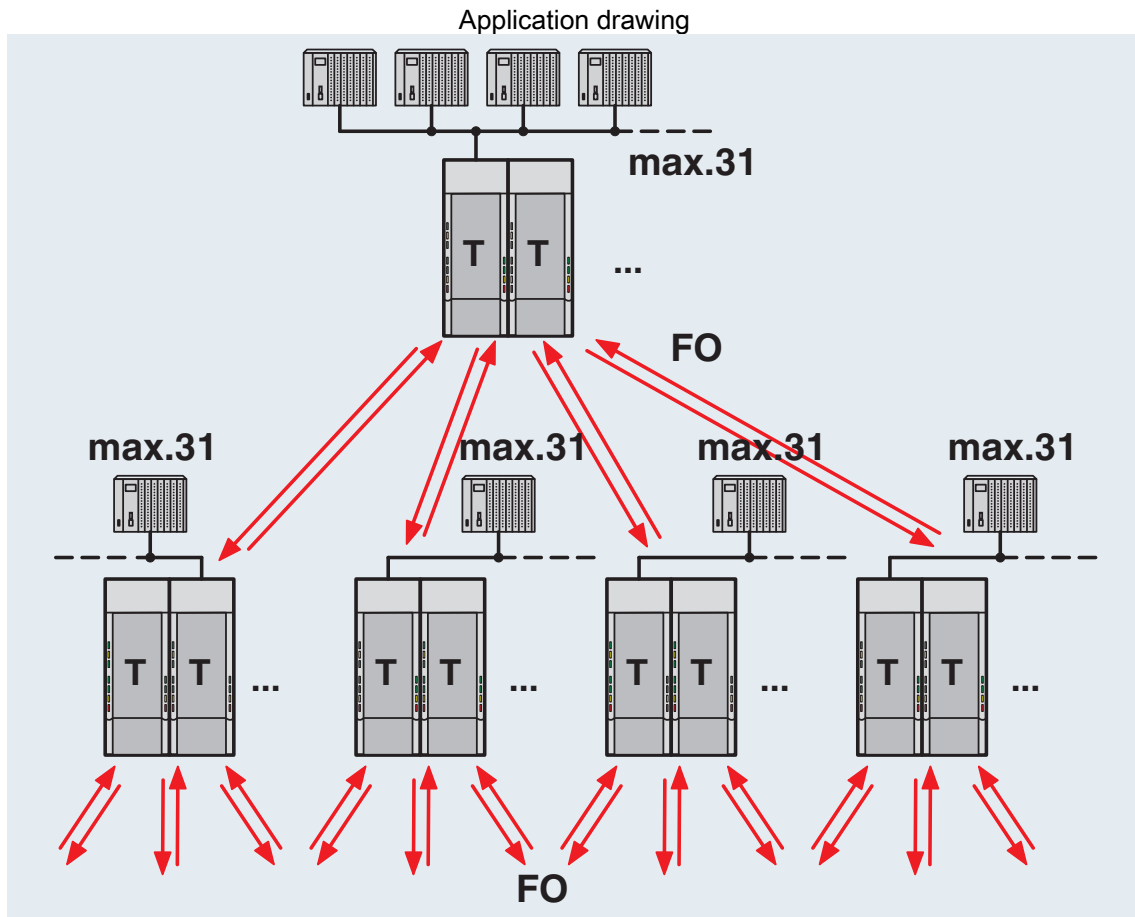
<https://www.phoenixcontact.com/us/products/2708339>



Line structure



Star structure



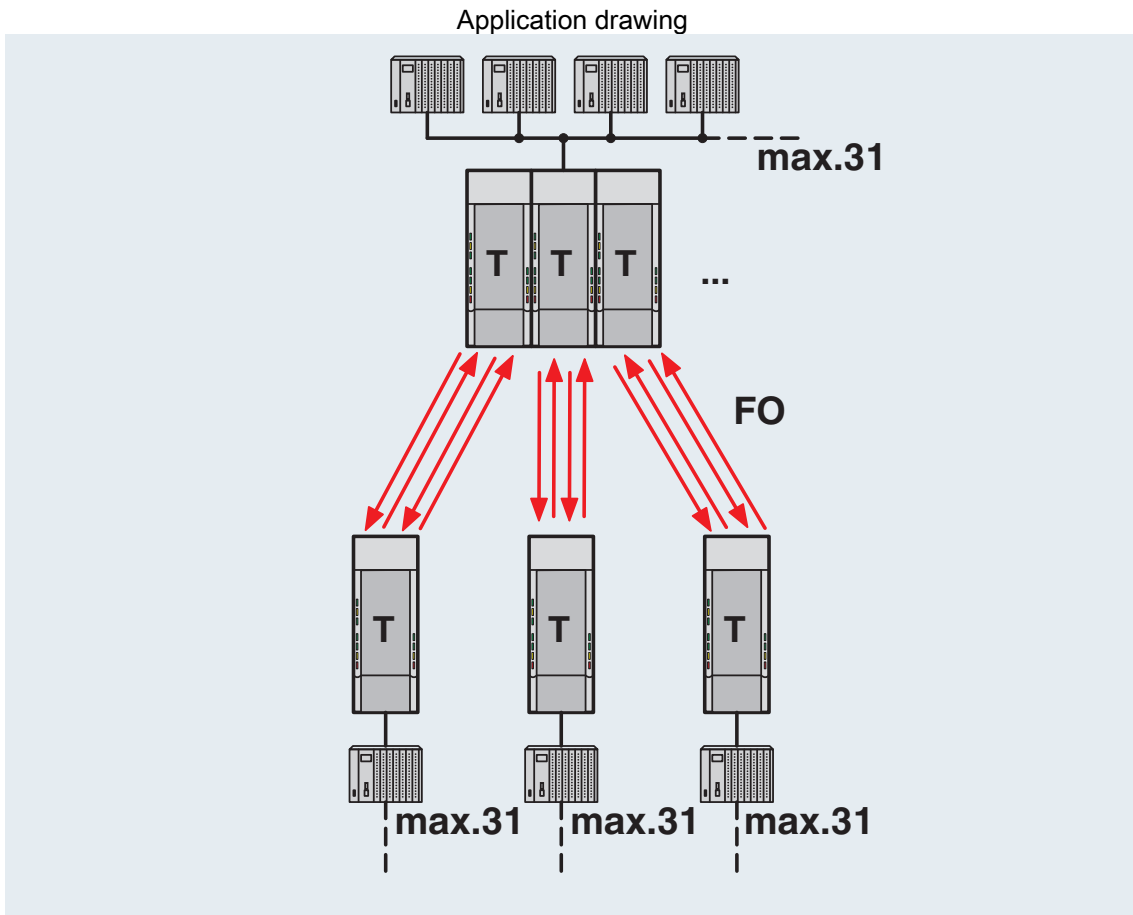
Tree structure

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Redundant structure

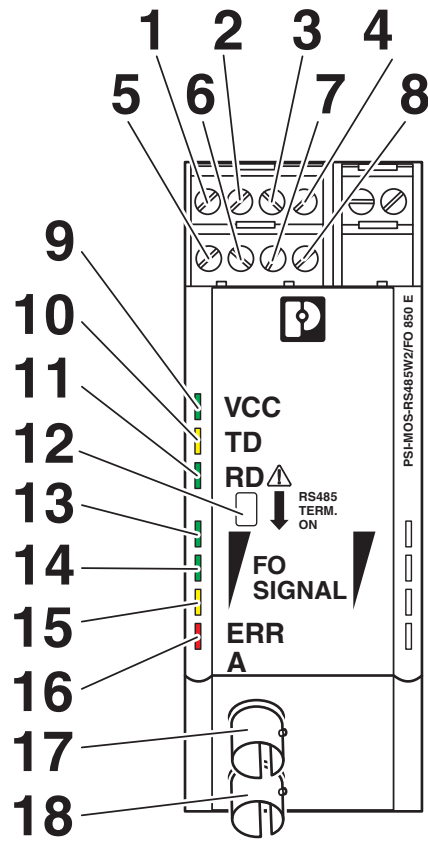
# PSI-MOS-RS485W2/FO 850 E - FO converters



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Schematic diagram



Front view

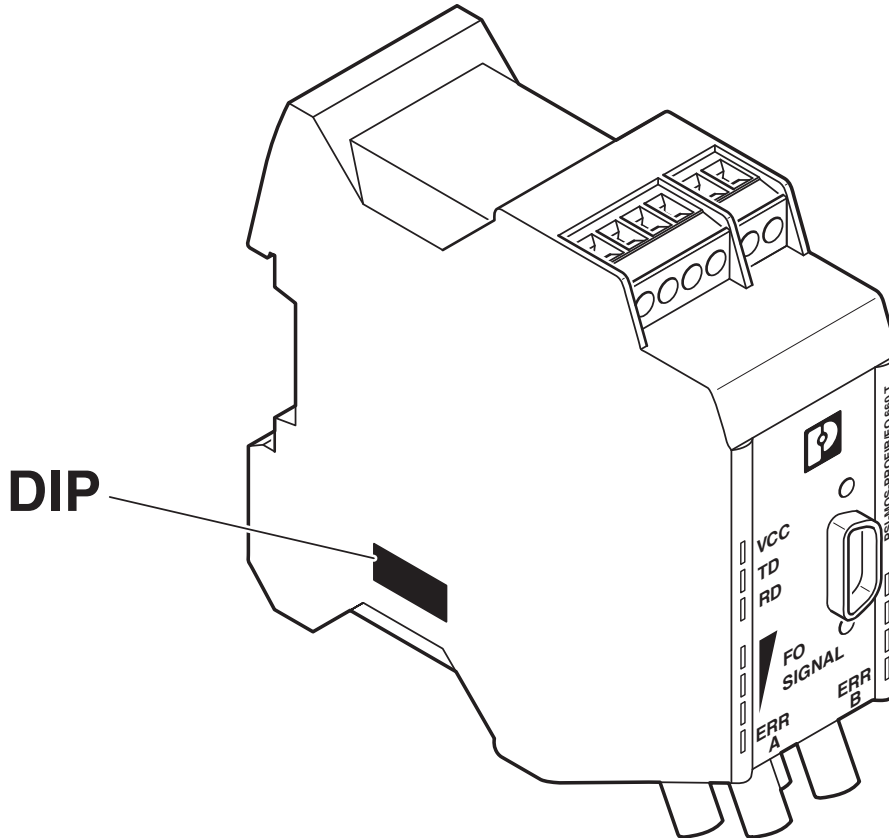
# PSI-MOS-RS485W2/FO 850 E - FO converters



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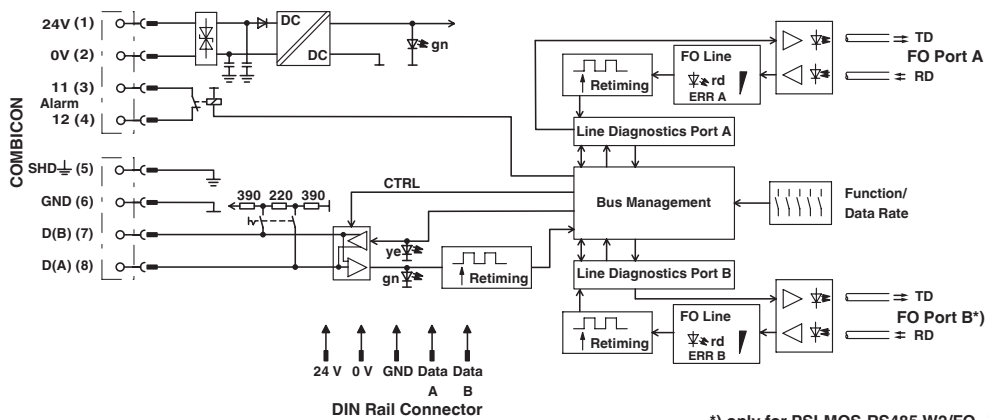
<https://www.phoenixcontact.com/us/products/2708339>

Schematic diagram



Position of DIP switches

Block diagram



\*) only for PSI-MOS-RS485 W2/FO...T


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


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## Approvals

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 **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

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



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**UL Listed**

Approval ID: E199827



**cUL Listed**

Approval ID: E199827



**ATEX**

Approval ID: UL 24 ATEX 3197X

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## Classifications

### ECLASS

ECLASS-13.0	19170411
ECLASS-15.0	19170411

### ETIM

ETIM 10.0	EC001467
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### UNSPSC

UNSPSC 21.0	43201500
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## 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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