

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

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FO converter with integrated optical diagnostics, alarm contact, for RS-422/RS-485 4-wire/INTERBUS up to 2 Mbps, terminal device with one FO interface (BFOC), 850 nm, for PCF/fiberglass cable (multimode)

### Your advantages

- ✓ Supply voltage routed through via DIN rail connectors
- ✓ Connections can be plugged in using a COMBICON screw terminal block
- ✓ Redundant power supply possible by means of optional system power supply unit
- ✓ High-quality electrical isolation between all interfaces (INTERBUS // fiber optic ports // power supply // DIN rail connector)
- ✓ Approved for use in zone 2
- ✓ Floating switch contact for leading alarm generation in relation to critical fiber optic paths
- ✓ Integrated optical diagnostics for continuous monitoring of fiber optic paths
- ✓ Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1
- ✓ Automatic data rate detection for all data rates up to 2 Mbps
- ✓ Shipbuilding approval in accordance with DNV GL



### Key Commercial Data

|              |               |
|--------------|---------------|
| Packing unit | 1 pc          |
| GTIN         |               |
| GTIN         | 4017918974053 |

### Technical data

#### Note

|                         |   |
|-------------------------|---|
| Utilization restriction | EMC: class A product, see manufacturer's declaration in the download area |
|-------------------------|---|

#### Dimensions

|        |        |
|--------|--------|
| Width  | 35 mm  |
| Height | 99 mm  |
| Depth  | 103 mm |

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## Technical data

### Ambient conditions

|   |  |
|---|--|
| Ambient temperature (operation)         | -20 °C ... 60 °C   |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C   |
| Permissible humidity (operation)        | 30 % ... 95 % (non-condensing)   |
| Altitude                                | ≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation) |
| Degree of protection                    | IP20   |
| Noise immunity                          | EN 61000-6-2:2005  |

### General

|  |   |
|--|---|
| Transmission channels                    | 2 (1/1) RD, TD, full duplex   |
| Bit distortion, input                    | ± 35 % (permitted)  |
| Bit distortion, output                   | < 6.25 %  |
| Electrical isolation                     | VCC // RS-422   |
| Test voltage data interface/power supply | 1.5 kV <sub>rms</sub> (50 Hz, 1 min.)   |
| Electromagnetic compatibility            | Conformance with EMC Directive 2014/30/EU   |
| Noise emission                           | EN 55011  |
| Net weight                               | 190.238 g   |
| Housing material                         | PA 6.6-FR   |
| Color                                    | green   |
| 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)) |

### Power supply

|                             |                                       |
|-----------------------------|---------------------------------------|
| Nominal supply voltage      | 24 V DC (With UL approval)            |
| Supply voltage range        | 18 V DC ... 30 V DC                   |
| Max. current consumption    | 130 mA                                |
| Typical current consumption | 120 mA (24 V DC)                      |
| Connection method           | COMBICON plug-in screw terminal block |

### Interfaces

|                                       |  |
|---------------------------------------|--|
| Interface 1                           | RS-422 interface in acc. with ITU-T V.11, EIA/TIA-422, DIN 66348-1       |
| Operating mode                        | full duplex  |
| Connection method                     | Pluggable screw connection   |
| Transmission medium                   | Copper   |
| Transmission length                   | ≤ 1000 m (depending on the data rate, with shielded, twisted data cable) |
| Termination resistor                  | 220 Ω  |
|                                       | 100 Ω  |
|                                       | 220 Ω  |
| Conductor cross section solid min.    | 0.2 mm <sup>2</sup>  |
| Conductor cross section solid max.    | 2.5 mm <sup>2</sup>  |
| Conductor cross section flexible min. | 0.2 mm <sup>2</sup>  |

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## Technical data

### Interfaces

|                                       |                     |
|---------------------------------------|---------------------|
| Conductor cross section flexible max. | 2.5 mm <sup>2</sup> |
| Conductor cross section AWG min.      | 24                  |
| Conductor cross section AWG max.      | 14                  |
| Serial transmission speed             | ≤ 2 Mbps            |

### Optical interface 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)   |
| Minimum receiver sensitivity                  | -33.2 dBm   |
| Wavelength                                    | 850 nm  |
| Transmission length incl. 3 dB system reserve | 2800 m (with 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 medium                           | PCF fiber   |
|   | Multi-mode fiberglass   |
| Transmission protocol                         | Transparent to protocol for RS-422 interface                    |
| Connection method                             | B-FOC (ST <sup>®</sup> )  |

### Digital outputs

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

### Conformance/approvals

|                 |   |
|-----------------|---|
| Designation     | CE  |
| Identification  | CE-compliant  |
| Designation     | EAC   |
| Identification  | EAC   |
| Designation     | ATEX  |
| Identification  | # II 3 G Ex nA nC IIC T4 Gc X   |
| Additional text | Please follow the special installation instructions in the documentation! |
| Designation     | 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  |
| Additional text | Please follow the special installation instructions in the documentation! |
| Designation     | UL, USA/Canada  |

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Technical data

#### Conformance/approvals

|                |   |
|----------------|---|
| 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  |
| Designation    | Corrosive gas test  |
| Identification | ISA-S71.04-1985 G3 Harsh Group A  |
| Designation    | Shipbuilding  |
| Identification | DNV GL  |
| Temperature    | B   |
| Humidity       | A   |
| Vibration      | A   |
| EMC            | B   |
| Enclosure      | Required protection according to the Rules shall be provided upon installation on board |

#### Standards and Regulations

|                                  |  |
|----------------------------------|--|
| Electromagnetic compatibility    | Conformance with EMC Directive 2014/30/EU                    |
| Type of test                     | Vibration resistance in acc. with EN 60068-2-6/IEC 60068-2-6 |
| Test result                      | 5g, 10...150 Hz, 2.5 h, in XYZ direction                     |
| Type of test                     | Shock in acc. with EN 60068-2-27/IEC 60068-2-27              |
| Test result                      | 15g, 11 ms period, half-sine shock pulse                     |
| Noise emission                   | EN 55011   |
| Noise immunity                   | EN 61000-6-2:2005  |
| Connection in acc. with standard | CUL  |
| Standards/regulations            | EN 61000-4-2   |
| Contact discharge                | ± 6 kV   |
| Standards/regulations            | EN 61000-4-3   |
|                                  | EN 61000-4-4   |
| Comments                         | Criterion B  |
| Standards/regulations            | EN 61000-4-5   |
| Signal                           | ± 1 kV   |
| Standards/regulations            | EN 55011   |
|                                  | EN 61000-4-6   |

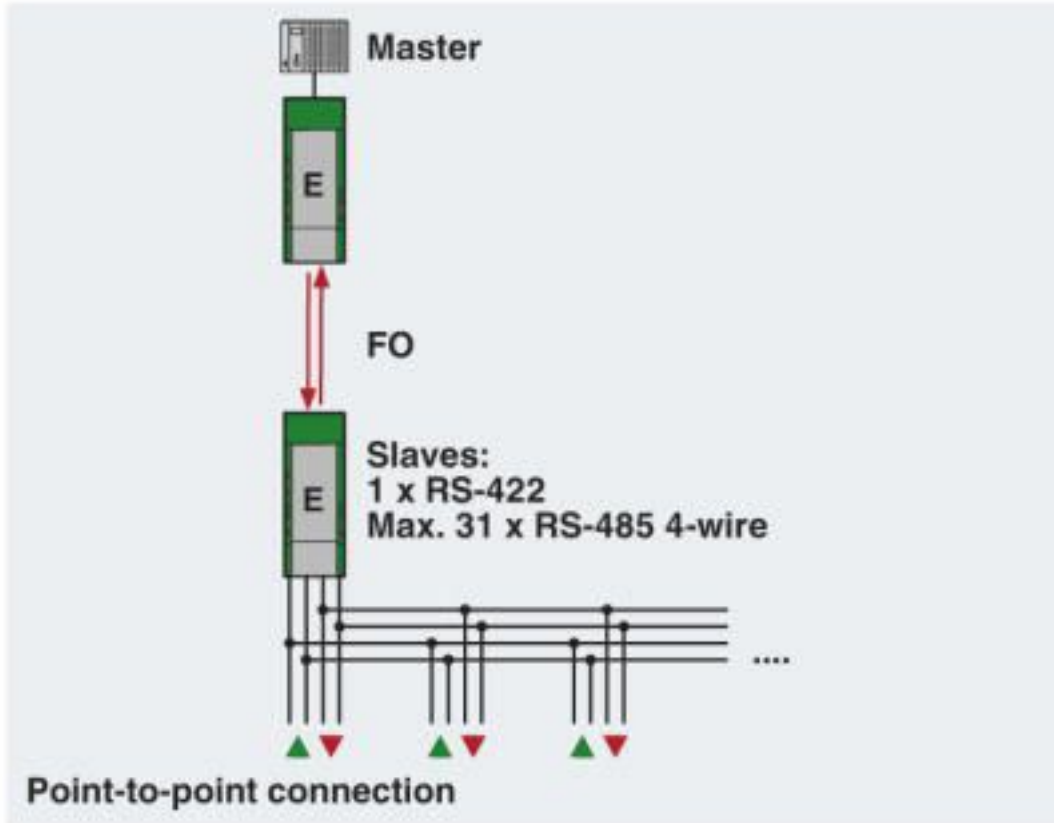
#### Environmental Product Compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 50 years  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

### Drawings

# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

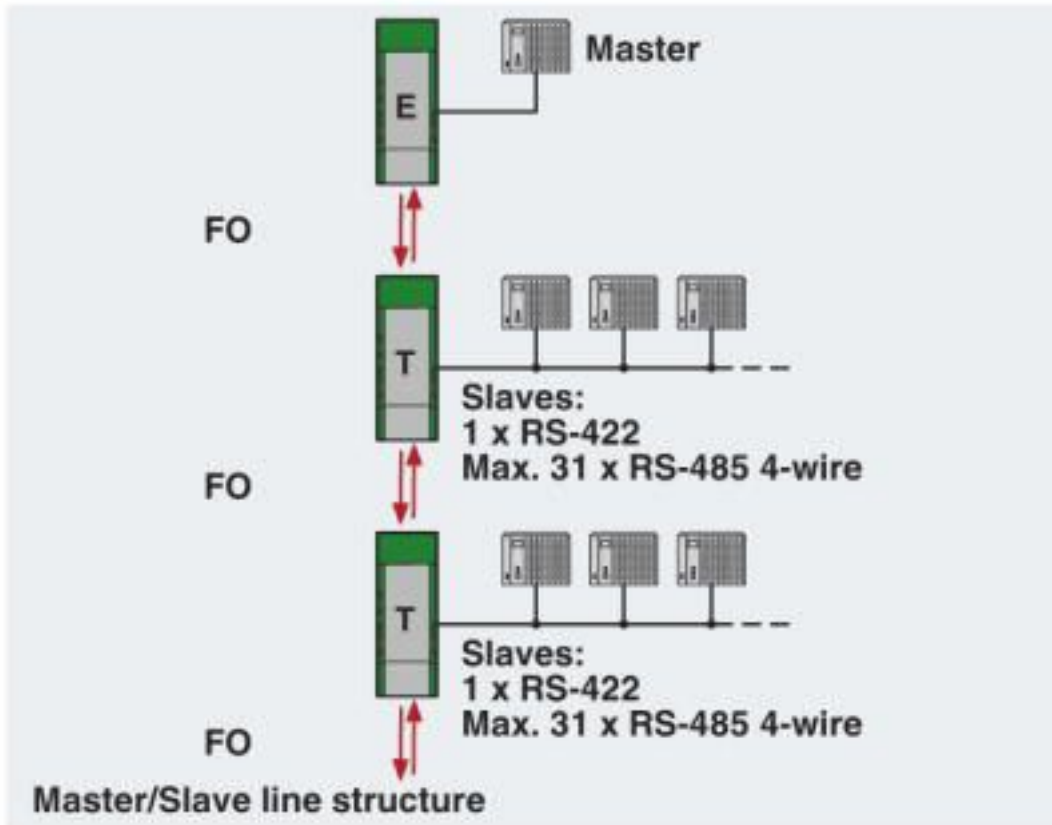
Application drawing



Point-to-point connection

# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

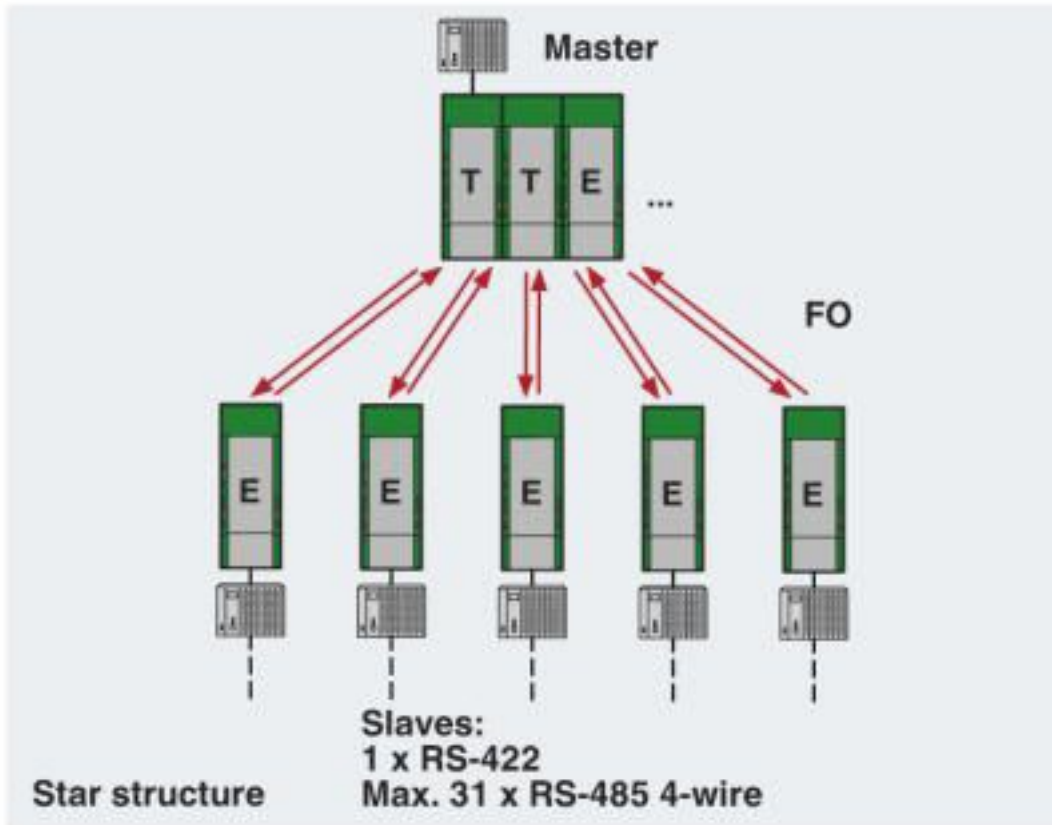
Application drawing



Master/Slave line structure

# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

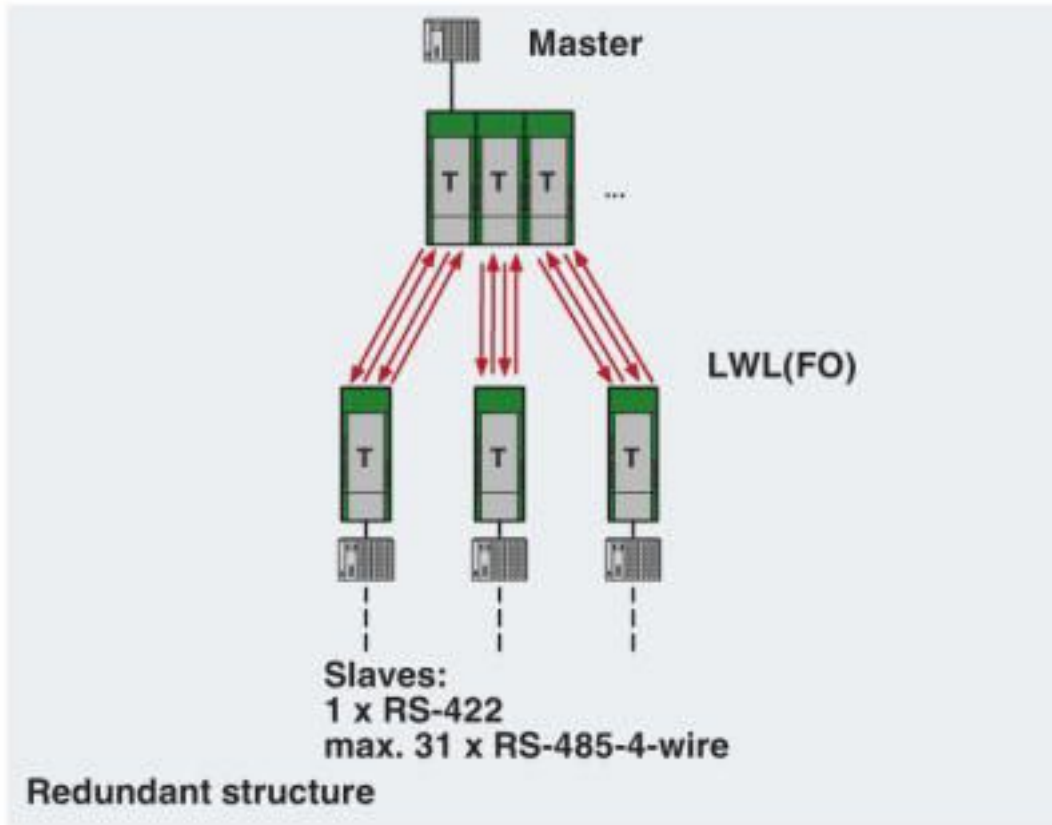
Application drawing



Star structure

# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

Application drawing

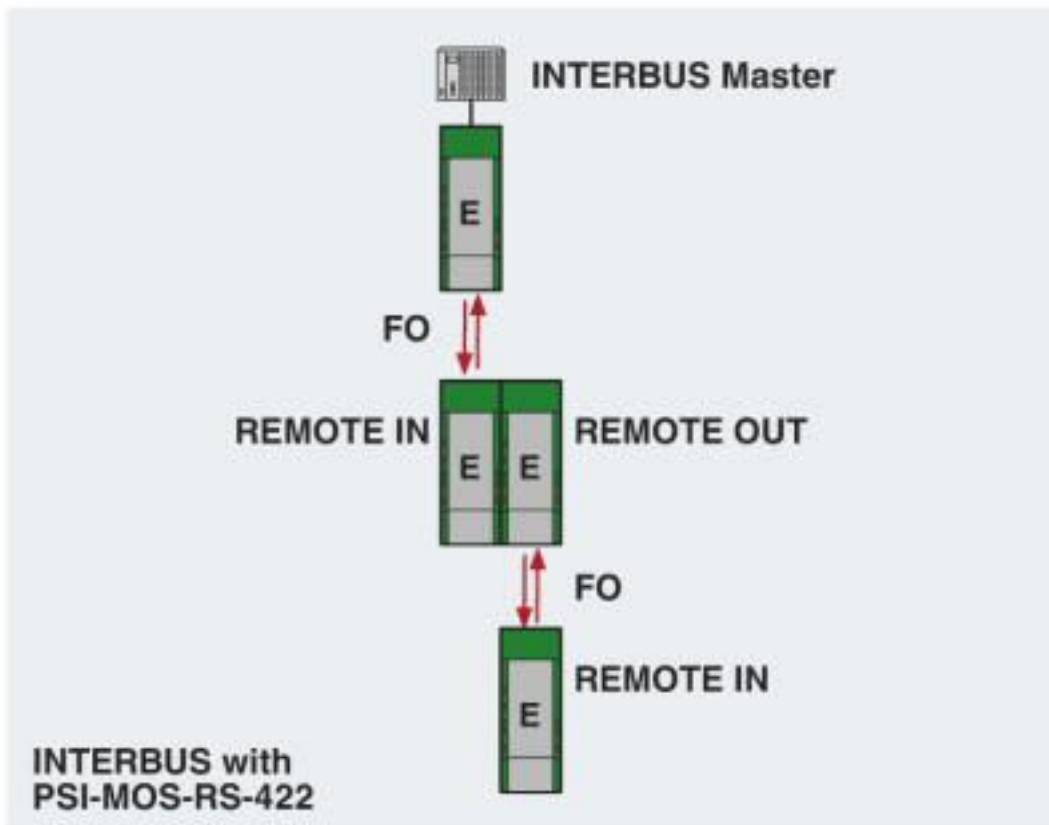


Redundant structure



# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

Application drawing



INTERBUS with PSI-MOS-RS-422  
Redundant connection

## Classifications

eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 19170132 |
| eCl@ss 4.0    | 27230200 |
| eCl@ss 4.1    | 27230200 |
| eCl@ss 5.0    | 27230200 |
| eCl@ss 5.1    | 27230200 |
| eCl@ss 6.0    | 19179200 |
| eCl@ss 7.0    | 19179290 |
| eCl@ss 8.0    | 19179290 |
| eCl@ss 9.0    | 19170114 |

## ETIM

|          |          |
|----------|----------|
| ETIM 2.0 | EC001423 |
| ETIM 3.0 | EC001423 |
| ETIM 4.0 | EC001423 |

# FO converters - PSI-MOS-RS422/FO 850 E - 2708355

## Classifications

### ETIM

|          |          |
|----------|----------|
| ETIM 5.0 | EC000310 |
| ETIM 6.0 | EC001467 |
| ETIM 7.0 | EC001467 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211506 |
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11     | 39121008 |
| UNSPSC 12.01  | 39121008 |
| UNSPSC 13.2   | 43222604 |
| UNSPSC 18.0   | 43223323 |
| UNSPSC 19.0   | 43223323 |
| UNSPSC 20.0   | 43223323 |
| UNSPSC 21.0   | 43223323 |

## Approvals

### Approvals

#### Approvals

DNV GL / UL Recognized / cUL Recognized / EAC / cULus Recognized

#### Ex Approvals

UL Listed / cUL Listed / cULus Listed

### Approval details

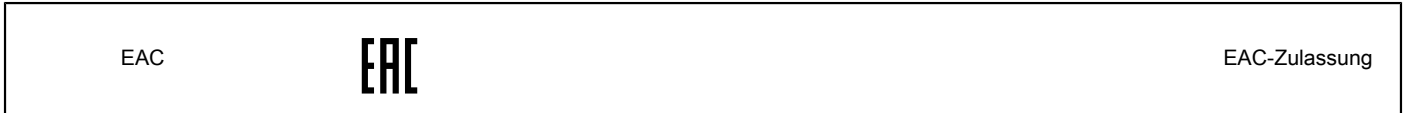
|        |  |   |            |
|--------|--|---|------------|
| DNV GL |  | <a href="https://approvalfinder.dnvgl.com/">https://approvalfinder.dnvgl.com/</a> | TAA00001KR |
|--------|--|---|------------|

|               |  |   |               |
|---------------|--|---|---------------|
| UL Recognized |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|---------------|--|---|---------------|

|                |  |   |               |
|----------------|--|---|---------------|
| cUL Recognized |  | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | FILE E 238705 |
|----------------|--|---|---------------|

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Approvals



### Accessories

#### Accessories

#### Data cable by the meter

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



PCF cable, duplex 200  $\mu\text{m}$ /230  $\mu\text{m}$ , by the meter without male connector, for installation in stationary systems and machines

FO cable - PSM-LWL-HCSO-200/230 - 2799445



PCF cable, duplex 200/230  $\mu\text{m}$ , by the meter, without connector, for outdoor installation

FO cable - PSM-LWL-GDM-RUGGED- 50/125 - 2799322



Fiber glass cable, duplex 50  $\mu\text{m}$ /125  $\mu\text{m}$ , by the meter, without male connector, for installation in stationary systems and machines

FO cable - PSM-LWL-GDO- 50/125 - 2799432



Fiberglass cable, duplex 50/125  $\mu\text{m}$ , by the meter, without connector, for outdoor installation

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

#### Data cable preassembled

##### FO patch cable - FL MM PATCH 1,0 LC-ST - 2989174



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: LC/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 1 m

##### FO patch cable - FL MM PATCH 2,0 LC-ST - 2989271



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: LC/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 2 m

##### FO patch cable - FL MM PATCH 5,0 LC-ST - 2901801



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: LC/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 5 m

##### FO patch cable - FL MM PATCH 1,0 SC-ST - 2901809



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: SC duplex/B-FOC(ST), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 1 m

##### FO patch cable - FL MM PATCH 5,0 SC-ST - 2901811



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: SC duplex/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 5 m

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

FO patch cable - FL MM PATCH 1,0 ST-ST - 2901815



Assembled FO cable, break out cable, multimode fiberglass 50/125  $\mu\text{m}$  (OM2), connector: B-FOC(ST®)/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 1 m

FO patch cable - FL MM PATCH 2,0 ST-ST - 2901816



Assembled FO cable, break out cable, multimode fiberglass 50/125  $\mu\text{m}$  (OM2), connector: B-FOC(ST®)/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 2 m

FO patch cable - FL MM PATCH 5,0 ST-ST - 2901817



Assembled FO cable, break out cable, multimode fiberglass 50/125  $\mu\text{m}$  (OM2), connector: B-FOC(ST®)/B-FOC(ST®), degree of protection: IP20, for installation in cable ducts or control cabinets, length: 5 m

FO patch cable - FL MM PATCH 1,0 ST-SCRJ - 2901820



Assembled FO cable, break out cable, multimode fiberglass 50/125  $\mu\text{m}$  (OM2), connector: B-FOC(ST®)/SC-RJ, degree of protection: IP20, for installation in cable ducts or control cabinets, length: 1 m

FO patch cable - FL MM PATCH 2,0 ST-SCRJ - 2901821



Assembled FO cable, break out cable, multimode fiberglass 50/125  $\mu\text{m}$  (OM2), connector: B-FOC(ST®)/SC-RJ, degree of protection: IP20, for installation in cable ducts or control cabinets, length: 2 m

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

FO patch cable - FL MM PATCH 5,0 ST-SCRJ - 2901822



Assembled FO cable, break out cable, multimode fiberglass 50/125 µm (OM2), connector: B-FOC(ST®)/SC-RJ, degree of protection: IP20, for installation in cable ducts or control cabinets, length: 5 m

FO patch cable - FOC-HCS-RUGGED-1014/IP20/... - 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 - FOC-HCS-RUGGED-1014/... - 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.

FO patch cable - FOC-HCSO-1015/IP20/... - 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.

FO patch cable - FOC-GDM-RUGGED-1016/IP20/... - 2901558



Robust GOF 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 converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

FO patch cable - FOC-GDM-RUGGED-1016/... - 1402193



rugged GOF installation cable for inner areas with highly tear-proof aramid strain-relief elements. Individual elements consist of highly flexible FRNC material. The cable is halogen-free, ozone and UV resistant and has a rugged polyurethane (PUR) outer sheath.

FO patch cable - FOC-GDO-1017/IP20/... - 2901559



Highly rugged GOF 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.

### Data plug

FO connectors - PSM-SET-B-FOC/4-HCS - 2708481



B-FOC (ST) connector set for PCF fiber, for self assembly consisting of 4 quick mounting connectors with bend protection sleeve

Assembly tool - PSM-HCS-KONFTOOL/B-FOC - 2708465



HCS assembly kit for B-FOC(ST) quick mounting connectors, including stripping blade, stripping pliers, aramide yarn scissors, fiber stripper, microscope, fiber cleaving tool for standard HCS and HCS GI fibers, four B-FOC(ST) connectors for standard HCS fiber, and documentation

Measuring instrument - PSM-FO-POWERMETER - 2799539



Fiber optic measuring case, consisting of an optical power meter, F-SMA, B-FOC adapters, reference fibers and operating instructions

## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

Fiber optic coupling - PSM-SET-BFOC-LINK/2 - 2799429



Coupling; set consisting of 2 couplings for connecting B-FOC plugs

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



D-SUB connector, 9-pos. female connector, two cable entries < 35°, 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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D-SUB bus connector - SUBCON-PLUS 9/M - 2744018



D-SUB connector, 9-pos., male connector, two cable entries < 35°, 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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### DIN rail connector

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



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

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



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

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### Interface converter



## FO converters - PSI-MOS-RS422/FO 850 E - 2708355

### Accessories

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



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

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### Power supply

Power supply unit - MINI-SYS-PS-100-240AC/24DC/1.5 - 2866983



Primary-switched MINI POWER supply for DIN rail mounting, input: 1-phase, output: 24 V DC/1.5 A

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### Screwdriver tools

Screwdriver - SZS 0,4X2,5 VDE - 1205037



Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip

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