

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

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FO converter with integrated optical diagnostics, coated PCB, alarm contact, for PROFIBUS up to 12 Mbps, T-coupler with two FO interfaces (BFOC), 850 nm, for PCF or fiberglass cable (multimode)

Product Description

The PSI-MOS-PROFIB/FO... devices convert copper-based PROFIBUS interfaces to fiber optics.

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-PROFIB/FO... T T-couplers allow the interface to be converted for two FO cables. They can be used to create linear structures and ring structures for increased system availability.

Your advantages

- ✓ With coated PCB for increased resistance to salt-laden atmospheres
- ✓ Can be combined with the PSI copper repeater in a modular way using DIN rail connectors
- ✓ Connections can be plugged in via a COMBICON screw terminal block
- ✓ Supply voltage and data signals routed through the DIN rail connectors
- ✓ Automatic data rate detection or fixed data rate setting via DIP switches
- ✓ High-quality electrical isolation between all interfaces (PROFIBUS // 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
- ✓ Integrated optical diagnostics for continuous monitoring of FO paths
- ✓ Intrinsically safe fiber optic interface (Ex op is) for direct connection to devices in zone 1
- ✓ Floating switch contact for advance warning of critical FO paths
- ✓ Suitable for all data rates up to 12 Mbps
- ✓ Bit retiming for any cascading depth
- ✓ Shipbuilding approval in accordance with DNV GL



Key Commercial Data

| | |
|--------------|------|
| Packing unit | 1 pc |
|--------------|------|

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

| | |
|--------------------------------------|---|
| GTIN |  4 017918 974176 |
| GTIN | 4017918974176 |
| Weight per Piece (excluding packing) | 244.300 g |
| Custom tariff number | 85176200 |
| Country of origin | Germany |

Technical data

Note

| | |
|-------------------------|---|
| Utilization restriction | EMC: class A product, see manufacturer's declaration in the download area |
| | Use in potentially explosive areas is not permitted in China. |

Dimensions

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

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) |
| | ≤ 2000 m (Hazardous locations) |
| Degree of protection | IP20 |

General

| | |
|--|---|
| Bit delay | < 1 bit () |
| | 11 bit () |
| Bit distortion, input | ± 35 % (permitted) |
| Bit distortion, output | < 6.25 % |
| Electrical isolation | VCC // RS-485 |
| Test voltage data interface/power supply | 1.5 kV _{rms} (50 Hz, 1 min.) |
| Mounting type | DIN rail mounting |
| Net weight | 256.9 g |
| Housing material | PA 6.6-FR |
| Color | green |
| MTBF | 149 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day)) |
| | 24 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)) |

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Technical data

General

| | |
|------|---|
| MTTF | 212 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 150 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 86 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |

Power supply

| | |
|-----------------------------|---|
| Nominal supply voltage | 24 V DC (in acc. with UL) |
| Supply voltage range | 18 V DC ... 30 V DC (via pluggable COMBICON screw terminal block) |
| Max. current consumption | 130 mA |
| | ≤ 2 A (For operation in a connection station, via the DIN rail connector) |
| Typical current consumption | 120 mA (24 V DC) |
| Connection method | COMBICON plug-in screw terminal block |
| Stripping length | 7 mm |

Interfaces

| | |
|---------------------------------------|---|
| Interface 1 | PROFIBUS acc. to IEC 61158, RS-485 2-wire, half duplex, automatic control |
| Interface | PROFIBUS |
| Operating mode | Semi-duplex |
| Connection method | D-SUB-9 female connector |
| File format/coding | UART (11 Bit, NRZ) |
| Data direction switching | Automatic control |
| Transmission medium | Copper |
| Transmission length | ≤ 1200 m (depending on the data rate, with shielded, twisted pair data cable) |
| Conductor cross section solid min. | 0.2 mm ² |
| Conductor cross section solid max. | 2.5 mm ² |
| Conductor cross section flexible min. | 0.2 mm ² |
| Conductor cross section flexible max. | 2.5 mm ² |
| Conductor cross section AWG min. | 24 |
| Conductor cross section AWG max. | 14 |
| Serial transmission speed | ≤ 12 Mbps |
| Output nominal voltage | 5 V ±0.25 (50 mA) |

Optical interface FO

| | |
|------------------------------|-------------------------|
| No. of channels | 2 |
| Transmit capacity, minimum | -4.2 dBm (200/230 μm) |
| | -17.8 dBm (50/125 μm) |
| | -14.6 dBm (62,5/125 μm) |
| Minimum receiver sensitivity | -30 dBm (50/125 μm) |

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Technical data

Optical interface FO

| | |
|---|---|
| Overrange receiver | -3 dBm (200/230 µm) |
| Wavelength | 850 nm |
| Transmission length incl. 3 dB system reserve | 2600 m (with F-G 50/125 2.5 dB/km) |
| | 3300 m (with F-G 62,5/125 3.0 dB/km) |
| | 800 m (With F-K 200/230 10 dB/km with quick mounting connector) |
| Transmission length | min. 1 m (with F-K 200/230, 8 dB/km) |
| Transmission medium | PCF fiber |
| | Multi-mode fiberglass |
| Connection method | B-FOC (ST®) |

Digital outputs

| | |
|-----------------------------|--------------------------------|
| Output name | Relay output |
| Output description | Alarm output |
| Number of outputs | 1 |
| Maximum switching voltage | 60 V DC () |
| | 30 V AC (Resistive load) |
| | 42 V AC (peak, resistive load) |
| Limiting continuous current | 0.46 A |

Conformance/approvals

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

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Technical data

Conformance/approvals

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

| | |
|----------------------------------|--|
| 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 |
| Type of test | Free fall in acc. with IEC 60068-2-32 |
| Test result | 1 m |
| Connection in acc. with standard | CUL |
| Designation | Air clearances and creepage distances |
| Standards/regulations | DIN EN 60664-1 |
| | VDE 0110-1 |
| | DIN EN 50178 |
| | EN 60950 |

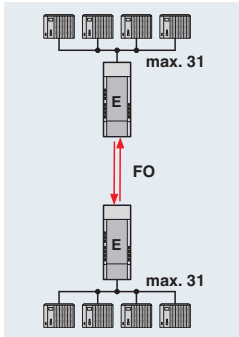
Environmental Product Compliance

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

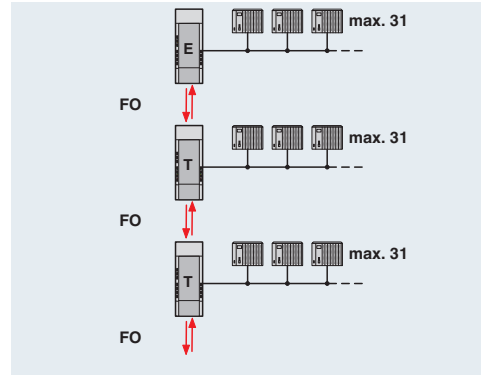
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Application drawing



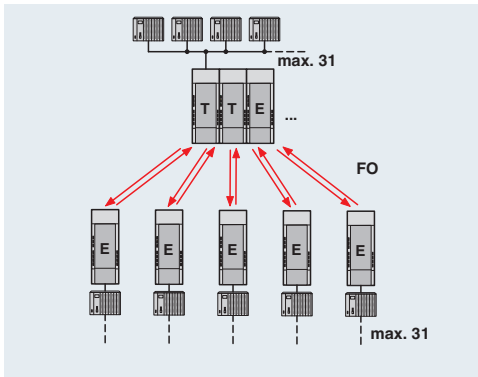
Point-to-point connection

Application drawing



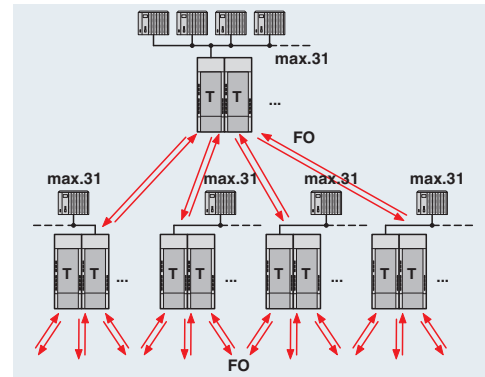
Line structure

Application drawing



Star structure

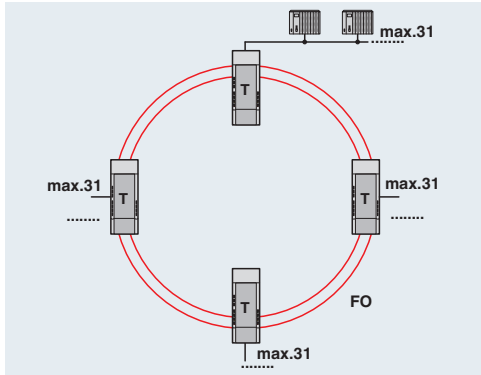
Application drawing



Tree structure

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Application drawing



Redundant FO ring

Application drawing

Redundant point-to-point connection

Classifications

eCl@ss

| | |
|---------------|----------|
| eCl@ss 10.0.1 | 19170132 |
| eCl@ss 11.0 | 19170411 |
| eCl@ss 4.0 | 27230200 |
| eCl@ss 4.1 | 27230200 |
| eCl@ss 5.0 | 27230200 |
| eCl@ss 5.1 | 27230200 |
| eCl@ss 6.0 | 27230200 |
| eCl@ss 7.0 | 19170114 |
| eCl@ss 9.0 | 19170114 |

ETIM

| | |
|----------|----------|
| ETIM 2.0 | EC001423 |
| ETIM 3.0 | EC001423 |
| ETIM 4.0 | EC001423 |
| ETIM 6.0 | EC001467 |

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Classifications

ETIM

| | |
|----------|----------|
| ETIM 7.0 | EC001467 |
|----------|----------|

UNSPSC

| | |
|---------------|----------|
| UNSPSC 6.01 | 30211506 |
| UNSPSC 7.0901 | 39121008 |
| UNSPSC 11 | 39121008 |
| UNSPSC 12.01 | 39121008 |
| UNSPSC 13.2 | 43201553 |
| 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 / UL Recognized / cUL Recognized / DNV GL

Ex Approvals

UL Listed / cUL Listed / UL Listed / cUL Listed / ATEX / ATEX / ATEX / ATEX

Approval details

| | | | |
|--------|--|---|------------|
| DNV GL | | https://approvalfinder.dnvgl.com/ | TAA00001KR |
|--------|--|---|------------|

| | | | |
|---------------|--|---|---------------|
| UL Recognized | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|---------------|--|---|---------------|

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| cUL Recognized | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|----------------|--|---|---------------|

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Approvals

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|---------------|--|---|---------------|
| UL Recognized | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|---------------|--|---|---------------|

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|----------------|--|---|---------------|
| cUL Recognized | | http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm | FILE E 238705 |
|----------------|--|---|---------------|

| | | | |
|--------|--|---|------------|
| DNV GL | | https://approvalfinder.dnvgl.com/ | TAA00001KR |
|--------|--|---|------------|

Accessories

Accessories

Adapter

Connection distributor - PSM PTK - 2760623



Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and two 9-pin D-SUB socket strips

Connection distributor - PSM PTK-4 - 2799364



Passive RS-485 T-distributor, fitted with one 9-pin D-SUB pin strip and five 9-pin D-SUB socket strips

Data cable by the meter

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



PCF cable, duplex 200 μ m/230 μ m, by the meter without male connector, for installation in stationary systems and machines

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

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



PCF cable, duplex 200/230 µm, by the meter, without connector, for outdoor installation

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



Fiber glass cable, duplex 50 µm/125 µm, 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 µm, by the meter, without connector, for outdoor installation

Bus system cable - PSM-CABLE-PROFIB/FC - 2744652



By the meter, Bus system cable, PROFIBUS (12 Mbps), shielded, PVC FR VI/PVC, Violet, 2-wire (1X2XAWG22/1), color single wire: Red, green, cable length: Free entry (1.0 ... 1000.0 m)

Bus system cable - PSM-CABLE-PROFIB/FC - 2744652



By the meter, Bus system cable, PROFIBUS (12 Mbps), shielded, PVC FR VI/PVC, Violet, 2-wire (1X2XAWG22/1), color single wire: Red, green, cable length: Free entry (1.0 ... 1000.0 m)

Data cable preassembled

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

FO patch cable - FOC-ST:PA-SC:PA-OM2:D01/1 - 1115574



Multi-mode OM2 duplex jumper, ST-SC, UPC polishing, length 1 m

FO patch cable - FOC-ST:PA-SC:PA-OM2:D01/2 - 1115573



Multi-mode OM2 duplex jumper, ST-SC, UPC polishing, length 2 m

FO patch cable - FOC-ST:PA-ST:PA-OM2:D01/1 - 1115560



Multi-mode OM2 duplex jumper, ST-ST, UPC polishing, length 1 m

FO patch cable - FOC-ST:PA-ST:PA-OM2:D01/2 - 1115557



Multi-mode OM2 duplex jumper, ST-ST, UPC polishing, length 2 m

Fiber optic cable - FOC-LC:PA-ST:PA-OM2:D01/1 - 1115588



Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 1 m

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

Fiber optic cable - FOC-LC:PA-ST:PA-OM2:D01/2 - 1115587



Multi-mode OM2 duplex jumper, LC-ST, UPC polishing, length 2 m

FO patch cable - FOC-LC:PA-ST:PA-OM1:D01/1 - 1146499



Multi-mode OM1 duplex jumper, LC-ST, UPC polishing, length 1 m

FO patch cable - FOC-LC:PA-ST:PA-OM1:D01/2 - 1146508



Multi-mode OM1 duplex jumper, LC-ST, UPC polishing, length 2 m

FO patch cable - FOC-ST:PA-ST:PA-OM1:D01/1 - 1146501



Multi-mode OM1 duplex jumper, ST-ST, UPC polishing, length 1 m

FO patch cable - FOC-ST:PA-ST:PA-OM1:D01/2 - 1146509



Multi-mode OM1 duplex jumper, ST-ST, UPC polishing, length 2 m

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

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



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: 1 m

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



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: 2 m

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 converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

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 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

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-PROFIB/FO 850 T-SO - 2708614

Accessories

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



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

D-SUB bus connector - SUBCON-PLUS-PROFIB/SC2 - 2708232



D-SUB connector, 9-pos., male connector, cable entry < 35°, bus system: PROFIBUS DP up to 12 Mbps, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks

D-SUB bus connector - SUBCON-PLUS-PROFIB/PG/SC2 - 2708245



D-SUB connector, 9-pos., male connector, cable entry < 35°, bus system: PROFIBUS DP up to 12 Mbps with PG D-SUB socket for connecting a programming device, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks

D-SUB bus connector - SUBCON-PLUS-PROFIB/AX/SC - 2744380



D-SUB connector, 9-pos., male connector, axial version with two cable entries, bus system: PROFIBUS DP up to 12 Mbps, termination resistor can be switched on via slide switch, pin assignment: 3, 5, 6, 8; screw connection terminal blocks

Stripping tool - PSM-STRIP-FC/PROFIB - 2744623



Quick stripping tool for PROFIBUS cable, type Fast Connect

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

D-SUB bus connector - SUBCON-PLUS-PROFIB/AX/M12 - 2902321



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable glands (B-coded) under 180° (axial). Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.

D-SUB bus connector - SUBCON-PLUS-PROFIB/90X/M12 - 2902729



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable glands (B-coded) under 90°. Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator. Long version; S7-compatible.

D-SUB bus connector - SUBCON-PLUS-PROFIB/90/M12 - 2902318



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable glands (B-coded) under 90°. Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.

D-SUB bus connector - SUBCON-PLUS-PROFIB/35/M12 - 2902320



D-SUB plug, 9-pos., pin, assignment: 3, 5, 6, 8; two M12 cable glands (B-coded) under 35°. Bus system: PROFIBUS DP up to 12 Mbps. Termination resistor via separate M12 terminator.

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.

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

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.

DIN rail bus connectors - ME 17,5 TBUS 1,5/ 5-ST-3,81 KMGY - 2713645



DIN rail connector, color: light gray, nominal current: 8 A (parallel contacts), rated voltage (III/2): 125 V, Number of positions per row: 5, pitch: 3.81 mm, mounting: DIN rail mounting, Locking: without, mounting: without, type of packaging: packed in cardboard, Item with gold-plated contacts, bus connectors for connecting with electronics housings, 5 parallel contacts

Interface converter

Repeater - PSI-REP-PROFIBUS/12MB - 2708863



Modular repeater for electrical isolation and range increase for PROFIBUS up to 12 Mbps, 4-way isolation, rail-mountable, supply 24 V DC

Repeater - PSM-ME-RS485/RS485-P - 2744429



Repeater, for potential separation and range increase in RS-485 2-wire bus systems, 3-way isolation, rail-mountable

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

FO converters - PSI-MOS-PROFIB/FO 850 T-SO - 2708614

Accessories

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

Terminal resistor

Termination resistor - PSI-TERMINATOR-PB-TBUS - 2702636



Active termination resistor for PROFIBUS and RS-485 bus systems, redundant power supply, routing of the supply voltage via DIN rail connector, electrical isolation, switchable termination, integrated programming interface
