

PSI-MOS-RS485W2/FO 850 T Serial to Fiber Converter

2-wire RS485 to Redundant Fiber



- Two ST type fiber connectors
- Extend serial data up to 2.6 miles
- Immune to EMI, RFI and transient surges
- Point-to-point or star configuration
- Terminal Block for 2-wire RS485 Connections

For applications where redundancy is required, the PSI-MOS-RS485W2/FO 850 T can be used to transmit data from RS485 2-wire devices out over two fiber optic cables. By transmitting serial data over optical fiber, these serial to fiber converters provide an economical path to extend the reach of RS485 devices. The serial data input is transmitted out both fiber ports to different locations or back-up systems.

All popular protocols with 10/11-bit UART data format and NRZ data coding are supported, such as:

- Modbus ASCII / MODBUS RTU
- SUCONET K
- S-BUS
- DH-485, and more...

Expandable Serial to Fiber Network infrastructures

Up to ten (10) Serial to Fiber Converters can be grouped together using the TBUS DIN Rail bus system for voltage and data. This allows the serial converter to operate in additional network topology environments:

- as a star coupler, taking the serial data input signal and distributing it to up to 20 Fiber optic output ports
- linear structure can be used to network several RS485 devices
- linear and star structures can be cascaded to create complex tree structures

Long Distance Serial Data Transmission over Fiber

With the FO 850 T Serial to Fiber Converter you can extend your serial data transmission up to 4.2km (2.6 miles). Therefore, any two pieces of asynchronous serial equipment, located miles apart, can communicate at half duplex over fiber optic cable at rates up to 500 kbps.

EMI, RFI and Transient Surge Immunity

Another advantage of the FO 850 T fiber optic transmission system is the electrically isolated connection of devices. Electromagnetic interference (EMI) is a common phenomenon in typical environments like industrial plants, warehouses and factory floors. This interference can cause corruption of data over RS485 or copper-based Ethernet links. Data transmitted over fiber optic cable however is completely immune to this type of noise, thus preventing the negative effects of voltage equalization currents and electromagnetic interference on the data cables. A Serial to Fiber Media Converter therefore enables you to inter-connect your serial devices over fiber ensuring optimal data transmission, increased availability of the system, and improved network design flexibility for point-to-point connections and star structures.

Flexible Fiber Optic Connections

The FO 850 T operates at 850 nm wavelength, using a separate LED emitter and photo-detector on ST type connectors. Almost any multimode glass fiber size can be used including 50/125 m, 62.5/125 m, and 200/230 m.

Power Budget Considerations



Calculating the power budget is critically important with planning the fiber optic link. The optical power budget is the amount of light required to transmit data successfully over distance through a fiber-optic connection. The amount of light energy available within the setup will dictate the length of the fiber optic cable run between serial media converters within the network. Optical power budgets are critical to help businesses avoid signal distortion. **To learn how to calculate optical power budget read our technical note.** Transmit and receive dBm can be found in the Hardware specifications.

High Quality Features and Support

The FO 850 E are also equipped with comprehensive diagnostic functions to increase system availability, simplify start-up and permanently monitor the optical transmission quality. The integrated optical diagnostics allow permanent monitoring of the FO paths during installation and operation. The floating switch contact is activated when the signal level on the fiber optic paths reaches a critical level. This early alarm generation enables critical system states to be detected before they result in failure. These cost and time saving features, along with free worldwide technical support, make the FO 850 T serial to fiber converter the smart choice for IT professionals.

- Supply voltage and data signals routed through via DIN rail connectors
- Connections can be plugged in using a COMBICON screw terminal block
- Automatic data rate detection or fixed data rate setting via DIP switches
- Redundant power supply possible by means of optional system power supply unit
- High-quality electrical isolation between all interfaces (RS-485, fiber optic ports, power supply, DIN rail connector)
- Approved for use in zone 2
- 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
- Floating switch contact for leading alarm generation in relation to critical fiber optic paths
- Suitable for data rates up to 500 kbps



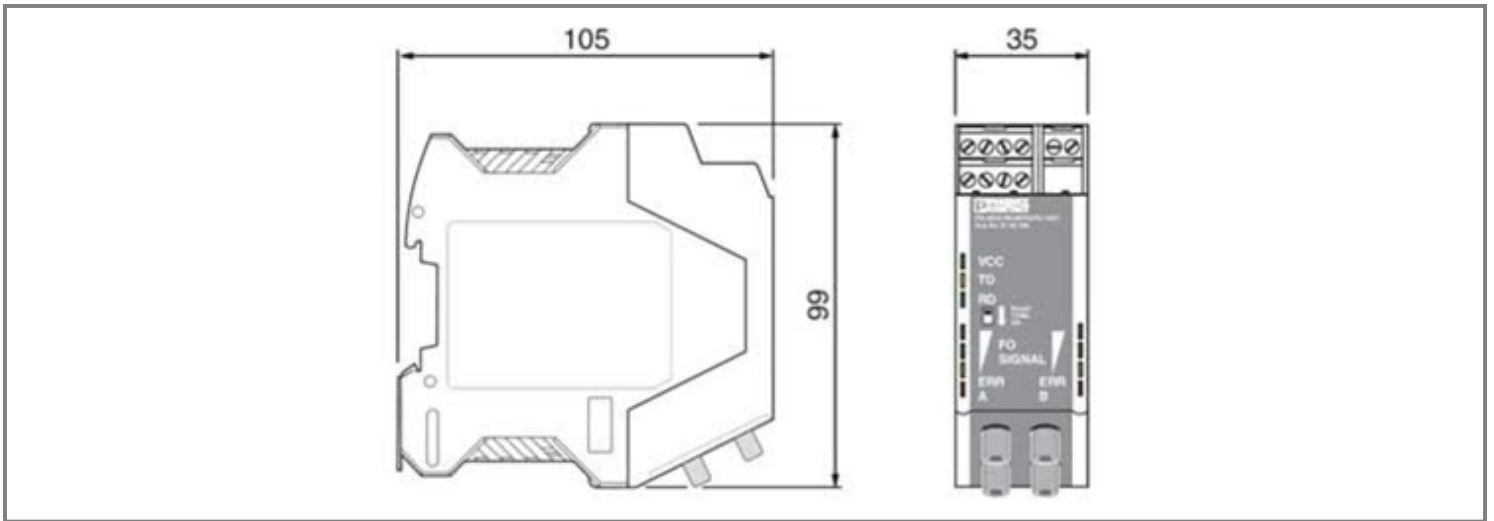
Specifications	
1 Year Return to Factory Warranty	Reach, RoHS and WEEE Compliant
HTSUS Number: 8517.62.0020	UNSPSC Code: 43201500
ECCN: 5A991	
	
Ambient conditions	
Ambient temperature (operation)	-20°C ... 60°C
Ambient temperature (storage/transport)	-40°C ... 85°C
Permissible humidity (operation)	30 % ... 95 % (non-condensing)
Altitude	5000 m (For restrictions see manufacturer's declaration)
Degree of protection	IP20
Noise immunity	EN 61000-6-2:2005
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
Shock	15g in all directions in acc. with IEC 60068-2-27
Noise emission	EN 55011

Noise immunity	EN 61000-6-2:2005
Free from substances that could impair the application of coating	according to P-VW 3.10.7 57 65 0 VW-AUDI-Seat central standard
Connection in acc. with standard	CUL
Standards/regulations	<ul style="list-style-type: none"> • EN 61000-4-2 • EN 61000-4-3 • EN 61000-4-4 • EN 61000-4-5 • EN 61000-4-6
Vibration (operation)	In acc. with IEC 60068-2-6: 5g, 150 Hz
Conformance	CE-compliant
ATEX	<ul style="list-style-type: none"> • II 3 G Ex nA nC IIC T4 Gc X • II (2) G [Ex op is Gb] IIC (PTB 06 ATEX 2042 U) • II (2) D [Ex op is Db] IIIC (PTB 06 ATEX 2042 U)
UL, USA/Canada	<ul style="list-style-type: none"> • 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
Optical interface FO	
Number of FO ports	2
Transmit capacity, minimum	<ul style="list-style-type: none"> • -4 dBm (200/230 μm) • -17.6 dBm (50/125 μm) • -14 dBm (62,5/125 μm)
Minimum receiver sensitivity	<ul style="list-style-type: none"> • -32.5 dBm (50/125 μm) • -32.5 dBm (62,5/125 μm) • -32.1 dBm (200/230 μm)
Overrange receiver	-3 dBm (200/230 μ m)
Wavelength	850 nm

Transmission length incl. 3 dB system reserve	<ul style="list-style-type: none"> • 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) • 3300 m (with F-G 62,5/125 3.0 dB/km)
Transmission medium	<ul style="list-style-type: none"> • PCF fiber • Multi-mode fiberglass
Transmission protocol	Protocol-transparent to the RS-485 interface
Connection method	B-FOC (duplex ST®)
General	
Bit delay	≤ 1 bit
Bit distortion, input	± 35 % (permitted)
Bit distortion, output	< 6.25 %
Electrical isolation	VCC // RS-485
Test voltage data interface/power supply	1.5 kVrms (50 Hz, 1 min.)
Electromagnetic compatibility	Conformance with EMC Directive 2014/30/EU
Noise emission	EN 55011
Net weight	210.08 g
Housing material	PA 6.6-FR
Color	green
MTBF	<ul style="list-style-type: none"> • 159 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))
Conformance	CE-compliant

ATEX	<ul style="list-style-type: none"> • II 3 G Ex nA nC IIC T4 Gc X (Please follow the special installation instructions in the documentation!) • II (2) G [Ex op is Gb] IIC (PTB 06 ATEX 2042 U) (Please follow the special installation instructions in the documentation!) • II (2) D [Ex op is Db] IIIC (PTB 06 ATEX 2042 U) (Please follow the special installation instructions in the documentation!)
UL, USA/Canada	<ul style="list-style-type: none"> • 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
Digital outputs	
Output name	Relay output
Output description	Alarm output
Number of outputs	1
Maximum switching voltage	<ul style="list-style-type: none"> • 60 V DC • 42 V AC
Limiting continuous current	0.46 A
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
Serial interface	
Interface 1	RS-485 interface, 2-wire
Operating mode	Semi-duplex

Connection method	Pluggable screw connection
File format/coding	UART (11/10 bit switchable; NRZ), slip-tolerant
Data direction switching	Automatic control
Transmission medium	Copper
Transmission length	≤ 1200 m (depending on the data rate, with shielded, twisted data cable)
Termination resistor	<ul style="list-style-type: none"> • 390 Ω • 220 Ω • 390 Ω (Can be connected)
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	4.8/ 9.6/ 19.2/ 38.4/ 57.6/ 75/ 93.75/ 115.2/ 136/ 187.5/ 375/ 500 kbps
Dimensions	
Width	35 mm
Height	99 mm
Depth	105 mm



Environmental Product Compliance	
China RoHS	Environmentally Friendly Use Period = 50
Approvals	
	<ul style="list-style-type: none"> • cUL Listed • cULus Listed • UL Listed • ATEX • EAC • DNV • cUL Recognized • cULus Recognized • UL Recognized
Commercial data	
Packing unit	1
Weight per piece	249.0 g
Country of origin	Germany
Classifications	
eCl@ss 4.0	27230207
eCl@ss 4.1	27230207
eCl@ss 5.0	27230207

eCl@ss 5.1	27230207
eCl@ss 6.0	27230207
eCl@ss 7.0	27230207
eCl@ss 8.0	19179290
eCl@ss 9.0	19179290
ETIM 2.0	EC001423
ETIM 3.0	EC001423
ETIM 4.0	EC001423
ETIM 5.0	EC000310
ETIM 6.0	EC000310
UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	43222604

Product List



PSI-MOS-RS485W2/FO 850 T - RS485 2-wire to fiber converter. Terminal block serial to 2x duplex fiber multimode 850nm (ST) [4.2km, 2.6 miles]

Power Cord & Part Number(s)

None

27083268



PSI-MOS-RS485W2/FO 850 T - RS485 2-wire to fiber converter. Terminal block serial to 2x duplex fiber multimode 850nm (ST) [4.2km, 2.6 miles] – 24VDC USA wall power adapter included

Power Cord & Part Number(s)

USA

27083264



PSI-MOS-RS485W2/FO 850 T - RS485 2-wire to fiber converter. Terminal block serial to 2x duplex fiber multimode 850nm (ST) [4.2km, 2.6 miles] – 24VDC UK wall power adapter included

Power Cord & Part Number(s)

UK

27083261



PSI-MOS-RS485W2/FO 850 T - RS485 2-wire to fiber converter. Terminal block serial to 2x duplex fiber multimode 850nm (ST) [4.2km, 2.6 miles] – 24VDC EU wall power adapter included

Power Cord & Part Number(s)

EU

27083262

Related Accessories

Power Supplies



AC US WALL MOUNT ADAPT TL 24VDC , 18W wall power adapter, with tinned leads - 0 to

2300234



AC UK WALL MOUNT ADAPT TL 24VDC , 18W wall power adapter with tinned leads - 0 to

2300235




AC EU WALL MOUNT ADAPT TL 24VDC, 18W wall power adapter with tinned leads - 0 to

2300236



UNO-PS/1AC/24DC/60W DIN-Rail Power Supply: 24 VDC, 60 Watt with universal

29029928



UNO-PS/1AC/24DC/150W Power Supply - DIN-Rail 24 VDC , 150 Watt power supply

29043768

Accessories



Transmit power voltage and data across the bus. Gold-plated contacts with 5 parallel positions. UL 8A / cUL 6A, 150 V. Width 17.5cm. Carton of 10. For use with PSI-MOS Serial to Fiber Converters and PSI-MODEM-SHDSSL/SERIAL Copper Extenders.

27095618



Transmit power voltage across the bus. Gold-plated contacts with 2 parallel positions. UL 8A / cUL 6A, 150 V. Width 17.5cm. Carton of 10. For use with PSI-MOS Serial to Fiber Converters and PSI-MODEM-SHDSSL/SERIAL Copper Extenders.

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