

PSI-MOS-RS232/FO 1300 E Serial to Fiber Converter

 perle.com/products/serial-extendrs/psi-mos-rs232-fo1300e-rs232-to-fiber.shtml

Connect RS232 devices to fiber optic cable

- Extend serial data up to 28 miles
- Immune to EMI, RFI and transient surges
- Point-to-point or star configuration
- SC type fiber connectors
- Configurable DB9 Male DTE / DCE RS-232 Connector

The PSI-MOS-RS232/FO 1300 E Serial to Fiber Converter transparently connects RS232 devices to fiber optic cable. By transmitting RS232 data over optical fiber, these serial media converters provide an economical path to extend the reach of serial devices.



Long Distance Serial Data Transmission over Fiber

RS232 Serial transmission is limited to 20 Kbps over a distance of only 15 meters (50 feet). Using the FO 1300 E Serial to Fiber Converter you can extend your serial data transmission up to 27km (16.7 miles) over multimode fiber or 45km (28 miles) over single mode fiber. The result is that any two pieces of asynchronous serial equipment, located miles apart, can communicate at half or full duplex over fiber optic cable at rates up to 115.2 kbps.

EMI, RFI and Transient Surge Immunity

Another advantage of the FO 1300 E 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 serial 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 1300 E operates at 1300 nm wavelength, using a separate LED emitter and photo-detector on SC type connectors. Almost any multimode or single mode glass fiber size can be used.

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.

Transmit each serial signal out over 10 fiber optic lines

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 as a star coupler, taking the serial data input signal and distributing it to all Fiber optic output ports.

High Quality Features and Support

The FO 1300 E are also equipped with comprehensive diagnostic functions to increase system availability, simplify start-up and permanently monitor the optical transmission quality. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with free worldwide technical support, make the FO 1300 E RS232 serial to fiber converter the smart choice for IT professionals.

- Connections can be plugged in using a COMBICON screw terminal block
- Supply voltage and data signals routed through via DIN rail connectors
- High-quality electrical isolation between all interfaces (RS-232, 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 fiber optic paths
- Floating switch contact for leading alarm generation in relation to critical fiber optic paths
- Automatic data rate detection for all data rates up to 115.2 kbps



RS-232



PSI-MOS-RS232/FO 1300 E Technical Specifications

	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 89/336/EC

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 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 II 3 G Ex nA nC IIC T4 Gc X

UL, USA/Canada 508 listed
508 recognized

Optical interface FO

Number of FO ports 1

Wavelength 1300 nm

Transmission length incl. 3 dB system reserve 27 km (With F-G 50/125 0.7 dB/km at 1300 nm)
22 km (with F-G 62.5/125 0.8 dB/km at 1300 nm)
45 km (With F-E 9/125 0,4 dB/km at 1300 nm)

Transmission medium Multi-mode fiberglass

Single-mode fiberglass

Transmission protocol Transparent to protocol for RS-232 interface

Connection method SC duplex

General

Transmission channels 2 (1/1), RxD, TxD, full duplex

Bit distortion, input $\pm 35\%$ (permitted)

Bit distortion, output $< 6.25\%$

Electrical isolation VCC // V.24 (RS-232)

Test voltage data interface/power supply 1.5 kVrms (50 Hz, 1 min.)

Electromagnetic compatibility Conformance with EMC directive 89/336/EC

Noise emission EN 55011

Net weight 183.78 g

Housing material PA 6.6-FR

Color green

MTBF 549 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day))
113 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day))

Conformance CE-compliant

ATEX II 3 G Ex nA nC IIC T4 Gc X (Please follow the special installation instructions in the documentation!)

UL, USA/Canada 508 listed
508 recognized

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	1:00 AM
-----------------------------	---------

Power supply

Nominal supply voltage	24 V DC (With UL approval)
------------------------	----------------------------

Supply voltage range	18 V DC ... 32 V DC
----------------------	---------------------

Typical current consumption	100 mA (24 V DC)
-----------------------------	------------------

Connection method	COMBICON plug-in screw terminal block
-------------------	---------------------------------------

Serial interface

Interface 1	V.24 (RS-232) interface in acc. with ITU-T V.28, EIA/TIA-232, DIN 66259-1
-------------	---

Connection method	D-SUB 9 plug
-------------------	--------------

Transmission medium	Copper
---------------------	--------

Transmission length	≤ 15 m
---------------------	--------

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
----------------------------------	----

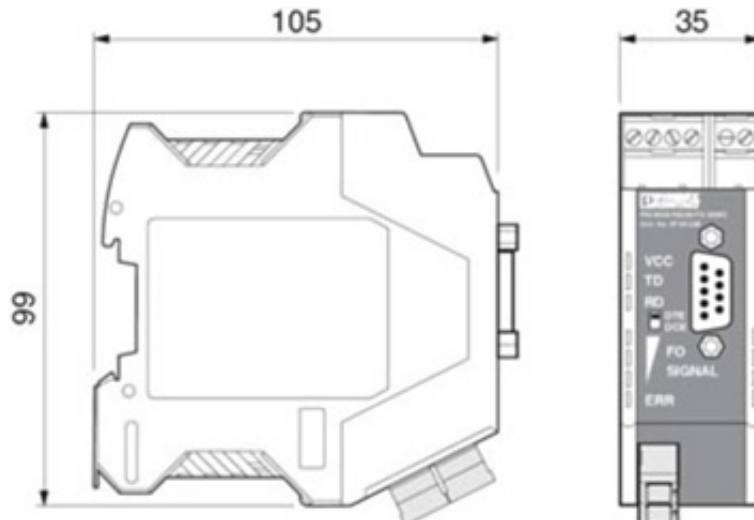
Serial transmission speed	115.2 kbps (NRZ)
---------------------------	------------------

Dimensions

Width	35 mm
-------	-------

Height	99 mm
--------	-------

Depth	105 mm
-------	--------



Environmental Product Compliance

China RoHS	Environmentally Friendly Use Period = 50
Reach and RoHS Compliant	Reach and RoHS Compliant

Approvals

cUL Listed
 cULus Listed
 UL Listed
 ATEX
 EAC
 DNV
 cUL Recognized
 cULus Recognized
 UL Recognized

Commercial data

Packing unit	1
Weight per piece	222.7 g
Country of origin	Germany
Warranty	1 Year

Classifications

eCl@ss 4.0	27230207
eCl@ss 4.1	27230207
eCl@ss 5.0	27230207

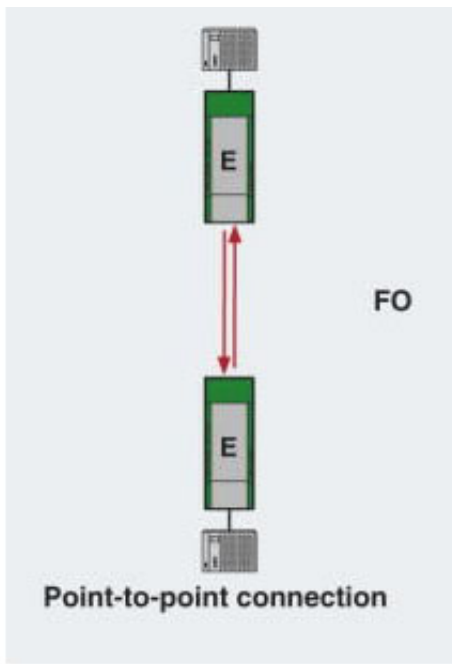
eCl@ss 5.1	27230207
eCl@ss 6.0	27230207
eCl@ss 7.0	27230207
eCl@ss 8.0	19179290
eCl@ss 9.0	19179290
ETIM 2.0	EC001423
ETIM 3.0	EC001423
ETIM 4.0	EC001423
ETIM 5.0	EC000310
ETIM 6.0	EC000310
UNSPSC 6.01	30211506
UNSPSC 7.0901	39121008
UNSPSC 11	39121008
UNSPSC 12.01	39121008
UNSPSC 13.2	43222604

PSI-MOS-RS232/FO 1300 E Serial to Fiber Media Converter Applications

- near heavy electrical equipment
- in environments with electrical (EMI) or radio (RFI) interference
- in environments with transient surges
- in industrial plants, warehouses and factory floors
- enabling asynchronous serial equipment to communicate at half or full duplex, with rates up to 115.2 kbps, over optical fiber

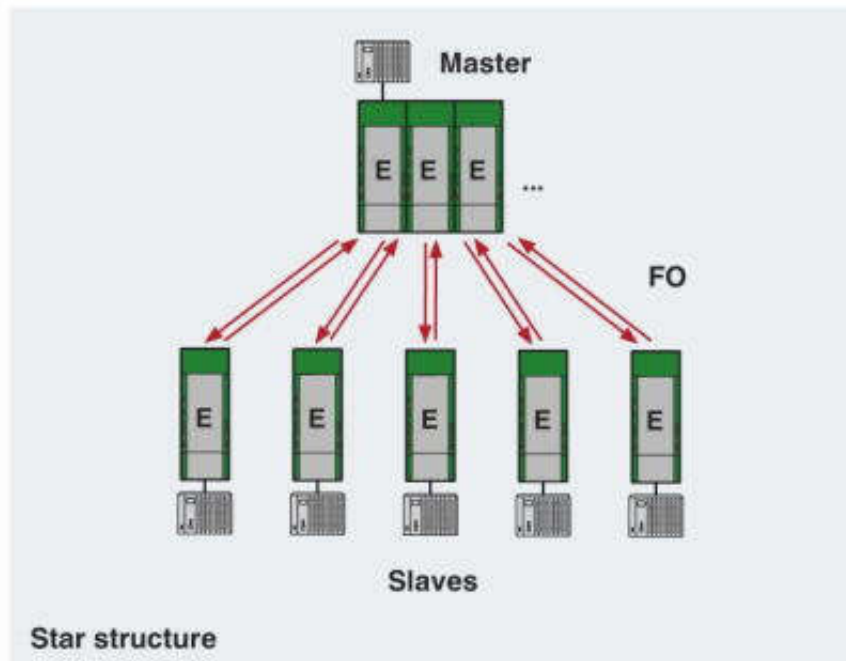
Point-to-point connections between serial devices over fiber

You can use two PSI-MOS-RS232/FO 1300 E Serial to Fiber Converters to easily convert a data link from copper cable to fiber optics.



Star structures

You can network RS-232 devices within a star structure as a master/slave network. Depending on the number of star lines required, several PSI-MOS-RS232/FO 1300 E Serial to Fiber Converters are connected to TBUS DIN Rail bus systems for voltage and data. This makes up to 10 fiber optic ports available. Cross-wiring for RS-232 data and for the supply voltage is provided automatically by the DIN rail connector.



Block Diagram

