SerialComm®
Data Conversion Experts

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SER-FIBER-SM-8
Industrial RS-232/RS-485/RS-422 To
Fiber Optic Single Mode 80KM Converter

Datasheet Revision 1.3

GENERAL FEATURES:

- Point to Point Fiber 80KM SM Configuration
- Plug-and-Play (hot-pluggable)
- Externally Powered
- Fiber optic range of up to 49.6 miles (80 KM)
- RS-232 / RS-485 / RS-422 can be mixed or matched
- Available with ST or SC type connectors
- Data direction auto-turnaround - no flow control necessary
- Built-in surge and static protection
- 5-year manufacturer's warranty
- CE, FCC, RoHS and REACH certified

DESCRIPTION:

The SerialComm SER-FIBER-SM-8 is a industrial grade bi-directional externally powered multi-functional RS-232/RS-485/RS-422 to Single Mode Fiber Optic Converter which converts either full-duplex RS-232, half-duplex RS-485 or full-duplex RS-422 to a Single Mode SC or ST connector type fiber optic link. A data direction auto-turnaround feature automatically enables the serial transmit and receive data signals when data is present, avoiding the need for software drivers, and making the device fully plug-and-play. The SER-FIBER-SM-8 has a 8-position terminal block for the serial port, and either an ST type or SC type connector for the fiber optic link. The unit extends the maximum distance of any RS-232/RS-485/RS-422 signal up 49.6 miles (80 KM) using SM fiber optic cable. The unit is enclosed in a rugged steel housing. An external power supply is included.

CERTIFICATIONS:

CE FC RoHS REACH COMPLIANT

CONNECTORS:

POWER
GND DCIN

RS485/RS422
T+/D+ T-/D- R+ R- GND
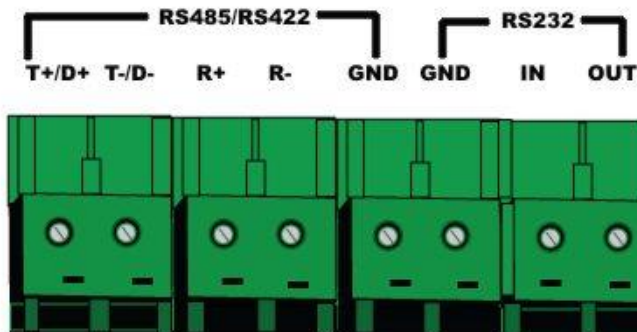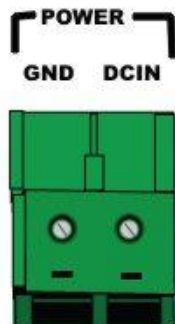
RS232
GND IN OUT

SPECIFICATIONS:

COMMUNICATION	
STANDARDS:	EIA/TIA RS-232C, RS-485 and RS-422 Standards
MODEL NUMBERS:	SER-FIBER-SM-8-ST - ST Connector Version SER-FIBER-SM-8-SC - SC Connector Version
BAUD RATES:	From 300 baud to 128,000 baud
CONNECTOR TYPES:	DC Input: 2-way Terminal Block, Serial Side: 8 Position Terminal Block and Fiber Side: either 2 X ST Connectors or 2 X SC Connectors
DISTANCE:	RS-232 Side: 16ft (5m), RS-485/RS-422 Side: 4000 ft (1.2KM) and Single Mode Side: 12.4 miles (80KM)
ELECTRICAL	
POWER SOURCE:	12VDC to 48VDC
DC/AC POWER ADAPTER:	12VDC/(100-240VAC 50/60hz US Type A Plug) 1000 mA
POWER CONSUMPTION:	Less than 200mA
STATIC PROTECTION:	15KV Electric Static Discharge (ESD) Protection
SURGE PROTECTION:	600W Surge Protection
FIBER OPTIC	
FIBER OPTIC OPERATION:	Point to Point Fiber 80KM Single Mode Configuration
FIBER OPTIC CABLING:	8.3/12µm, 8.7/125µm, 9/125µm or 10/125µm SM Cable
WAVELENGTH:	1310 nm
OUTPUT LEVEL (MIN):	-14 dBm
OUTPUT LEVEL(MAX):	-7 dBm
FIBER SENSITIVITY LEVEL:	-34 dBm
MECHANICAL	
HOUSING:	Heavy Duty Steel Housing
DIN RAIL:	Optional DIN Rail Mounts
WEIGHT:	**With ST Connector**: 8.87oz (251.4 grams) **With SC Connector**: 8.73oz (245.3 grams)
DIMENSIONS:	**With ST Connector:** 4.96" X 3.58" X 0.87" (126.0 mm X 91.0 mm X 22.0 mm) **With SC Connector**: 4.65" X 3.58" X 0.87" (118.0 mm X 91.0 mm X 22.0 mm)
ENVIRONMENTAL	
OPERATING TEMP:	-40° F to 185° F (-40°C to 85° C)
STORAGE TEMP:	-40° F to 185° F (-40°C to 85° C)
OPERATING HUMIDITY:	5% To 95% - No Condensation
QUALITY	
PRODUCT SAFETY:	CE, FCC, RoHS, REACH Third-party Certified
QUALITY MANAGEMENT	Manufactured and Distributed to ISO 9001:2015 QMS
MEAN TIME BEFORE FAILURE:	792,085 Hours
RELIABILITY:	Low Failure Rate – 99+% Reliability Since Inception
WARRANTY:	5 Year Replacement Warranty

FLEXIBLE SERIAL CONVERSION:

This serial converter is versatile. Not only can you extend RS-232, RS-485 or RS-422 data but convert from one serial protocol to another. For instance, on one end of the fiber optic you can connect RS-232 and the other RS-485 or RS-485 to RS-422 or any other combination.
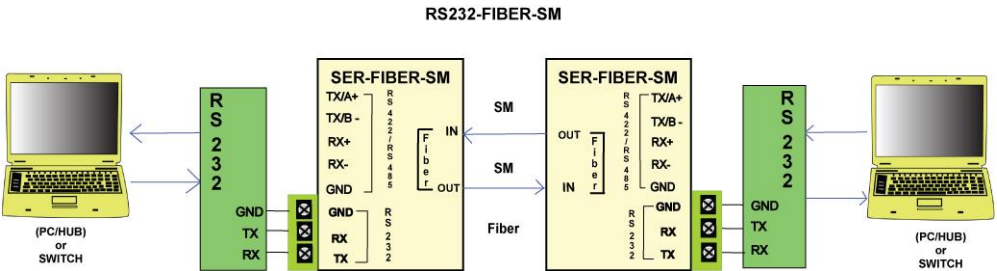
APPLICATIONS:
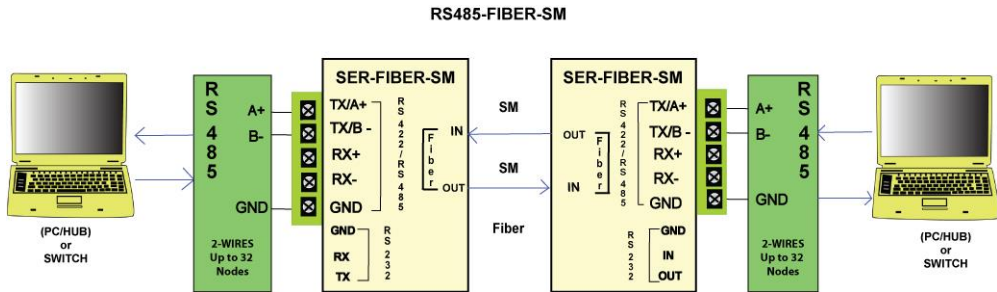

RS232-FIBER-SM

FIGURE 1: EXTENDING RS-232 DATA DISTANCE

RS485-FIBER-SM

FIGURE 2: EXTENDING RS-485 DATA DISTANCE

RS422-FIBER-SM
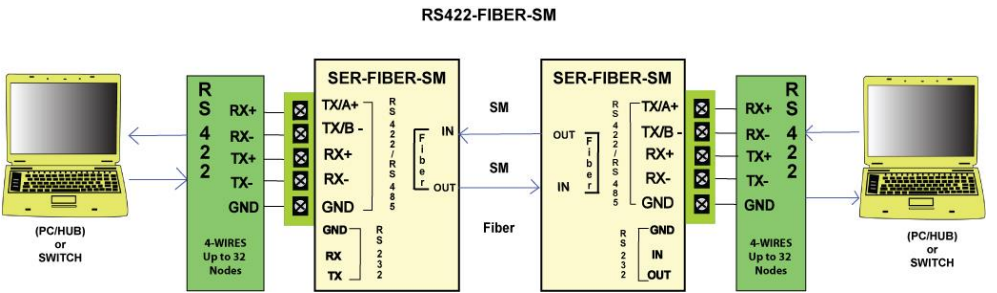
FIGURE 3: EXTENDING RS-422 DATA DISTANCE

LED INDICATIONS:

PWR	Power Indicator	ON: Power On - OFF: Power OFF
RX	Data Receive Indicator	ON: When Power is Connected, OFF: When Fiber is Connected, FLASHING: When Data is Received
TX	Data Transmit Indicator	FLASHING: When Data is Transmitted

TROUBLESHOOTING INSTRUCTIONS:

Using one SER-FIBER-SM-8 unit:
1. Perform a loop back test on one unit:
   a) Plug the power connector to the converter. Both the PWR light and RX light should be on
   b) Please use 3db attenuator when doing loopback test..
   c) Connect the fiber optic in to fiber optic out. Only the PWR light should be lit.
   d) Connect the RS-232, RS-485 or RS-422 port to a PC.
   e) Running a hyper terminal program on the PC, send ASCII characters to the SER-FIBER-SM-8 converter from one PC port, and check that the characters are received at the same PC port. This tests that the transmit and receive functions of the SER-FIBER-SM-8 unit is working properly.
   f) When data is transmitting to the converter the TX light should blink and when the converter is receiving data the RX light should blink.

Using two SER-FIBER-SM-8 units:
1. Check that all connections comply with the connection diagrams.
2. Please use 3db attenuator when doing loopback test..
3. Perform a loop back test on two units:
4. Plug the power connector to both converters. Both the PWR light and RX light should be on both units.
5. Connect the fiber optic in of one converter and fiber optic out to the other converter.
6. Connect the fiber optic out of one converter and fiber optic in to the other converter.
7. Only the PWR light should be lit on both converters.
8. Connect the RS-232 connections to two RS-232C ports or connect the RS-485 connections to two RS-485 ports or connect the RS-422 connections to two RS-422 ports.
9. Running hyper terminal programs on both PCs, send ASCII characters to the SER-FIBER-SM-8 converter from one PC port, and check that the characters are received at the 2nd PC port. Repeat the test in the opposite direction. This tests that the transmit and receive functions of both SER-FIBER-SM-8 units are working properly.
10. When data is transmitting to the converter the TX light should blink and when the converter is receiving data the RX light should blink.