

**SER-FIBER-SM**  
Industrial RS-232/RS-485/RS-422 To  
Fiber Optic Single Mode 20KM Converter

[SERIALCOMM.COM](http://SERIALCOMM.COM)

Datasheet Revision 2.8



**GENERAL FEATURES:**

- Point to Point Fiber 20KM SM Configuration
- Plug-and-Play (hot-pluggable)
- Externally Powered
- Fiber optic range of up to 12.4 miles (20 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

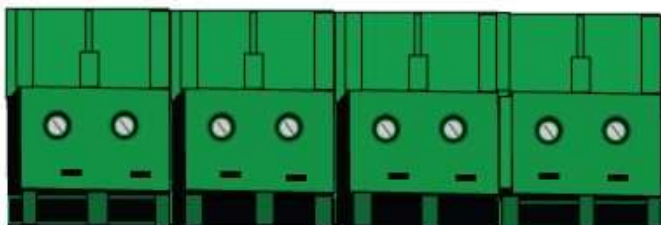
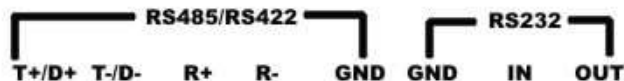
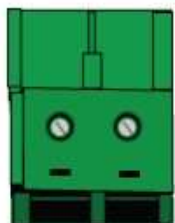
**DESCRIPTION:**

The SerialComm SER-FIBER-SM 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 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 to 12.4 miles (20 KM) using SM fiber optic cable. The unit is enclosed in a rugged steel housing. An external power supply is included.

**CERTIFICATIONS:**



**CONNECTORS:**



**SPECIFICATIONS:**

COMMUNICATION	
<b>STANDARDS:</b>	EIA/TIA RS-232C, RS-485 and RS-422 Standards
<b>MODEL NUMBERS:</b>	SER-FIBER-SM-ST - ST Connector Version SER-FIBER-SM-SC - SC Connector Version
<b>BAUD RATES:</b>	From 300 baud to 128,000 baud
<b>CONNECTOR TYPES:</b>	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
<b>DISTANCE:</b>	RS-232 Side: 16ft (5m), RS-485/RS-422 Side: 4000 ft (1.2KM) and Single Mode Side: 12.4 miles (20KM)
ELECTRICAL	
<b>POWER SOURCE:</b>	9VDC to 36VDC
<b>DC/AC POWER ADAPTER:</b>	Included 12VDC / (100 - 240VAC 50/60hz US Type A Plug) 500 mA
<b>POWER CONSUMPTION:</b>	4 Watts
<b>STATIC PROTECTION:</b>	15KV Electric Static Discharge (ESD) Protection
<b>SURGE PROTECTION:</b>	600W Surge Protection
FIBER OPTIC	
<b>FIBER OPTIC OPERATION:</b>	Point to Point Fiber 20KM Single Mode Configuration
<b>FIBER OPTIC CABLING:</b>	8.3/12µm, 8.7/125µm, 9/125µm or 10/125µm SM Cable
<b>WAVELENGTH:</b>	1310 nm
<b>OUTPUT LEVEL (MIN):</b>	-14 dBm
<b>OUTPUT LEVEL(MAX):</b>	-7 dBm
<b>FIBER SENSITIVITY LEVEL:</b>	-34 dBm
MECHANICAL	
<b>HOUSING:</b>	Heavy Duty Steel Housing
<b>DIN RAIL:</b>	Optional DIN Rail Mounts
<b>WEIGHT:</b>	<b>With ST Connector:</b> 8.87oz (251.4 grams) <b>With SC Connector:</b> 8.73oz (245.3 grams)
<b>DIMENSIONS:</b>	<b>With ST Connector:</b> 4.96" X 3.58" X 0.87" (126.0 mm X 91.0 mm X 22.0 mm) <b>With SC Connector:</b> 4.65" X 3.58" X 0.87" (118.0 mm X 91.0 mm X 22.0 mm)
ENVIRONMENTAL	
<b>OPERATING TEMP:</b>	-40° F to 185° F (-40°C to 85° C)
<b>STORAGE TEMP:</b>	-40° F to 185° F (-40°C to 85° C)
<b>OPERATING HUMIDITY:</b>	5% To 95% - No Condensation
QUALITY	
<b>PRODUCT SAFETY:</b>	CE, FCC, RoHS, REACH Third-party Certified
<b>QUALITY MANAGEMENT</b>	Manufactured and Distributed to ISO 9001:2015 QMS
<b>MEAN TIME BEFORE FAILURE:</b>	792,085 Hours
<b>RELIABILITY:</b>	Low Failure Rate – 99+% Reliability Since Inception
<b>WARRANTY:</b>	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:

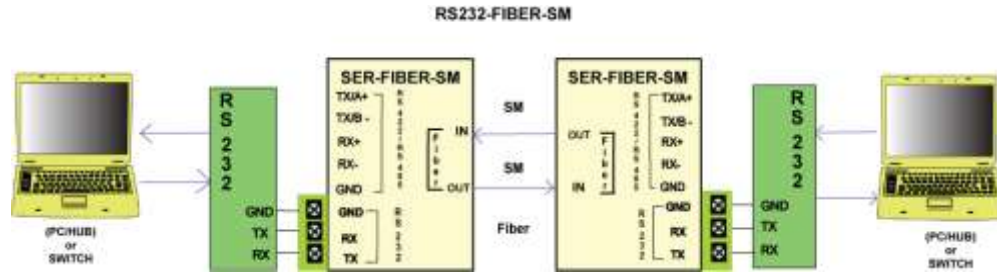


FIGURE 1: EXTENDING RS-232 DATA DISTANCE

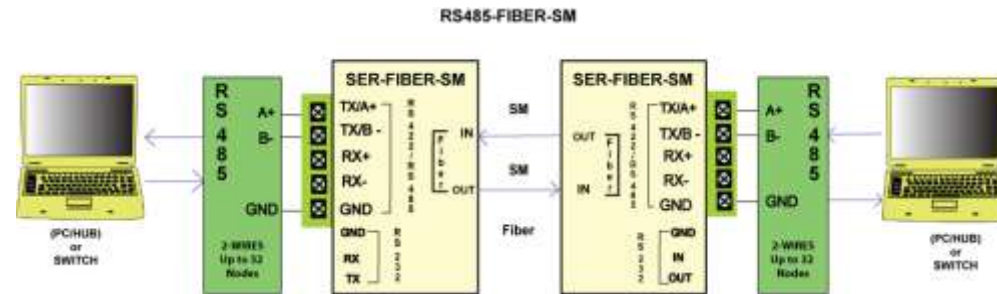


FIGURE 2: EXTENDING RS-485 DATA DISTANCE

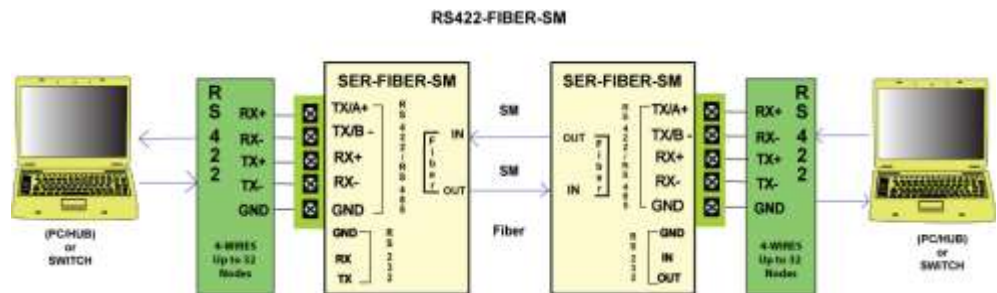


FIGURE 3: EXTENDING RS-422 DATA DISTANCE

## 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 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) Connect the fiber optic in to fiber optic out. Only the PWR light should be lit.
  - c) Connect the RS-232, RS-485 or RS-422 port to a PC.
  - d) Running a hyper terminal program on the PC, send ASCII characters to the SER-FIBER-SM 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 unit is working properly.
  - e) 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 units:

1. Check that all connections comply with the connection diagrams.
2. Perform a loop back test on two units:
  - a) Plug the power connector to both converters. Both the PWR light and RX light should be on both units.
  - b) Connect the fiber optic in of one converter and fiber optic out to the other converter.
  - c) Connect the fiber optic out of one converter and fiber optic in to the other converter.
  - d) Only the PWR light should be lit on both converters.
  - e) 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.
  - f) Running hyper terminal programs on both PCs, send ASCII characters to the SER-FIBER-SM converter from one PC port, and check that the characters are received at the 2<sup>nd</sup> PC port. Repeat the test in the opposite direction. This tests that the transmit and receive functions of both SER-FIBER-SM units are working properly.
  - g) When data is transmitting to the converter the TX light should blink and when the converter is receiving data the RX light should blink.