

**SER-FIBER-MM**  
Industrial RS-232/RS-485/RS-422 To  
Fiber Optic Multi-Mode 2KM Converter

Datasheet Revision 2.9

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

**GENERAL FEATURES:**

- Point to Point Fiber 2KM MM Configuration
- Plug-and-Play (hot-pluggable)
- Externally Powered
- Fiber optic range of up to 1.2 miles (2.0 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



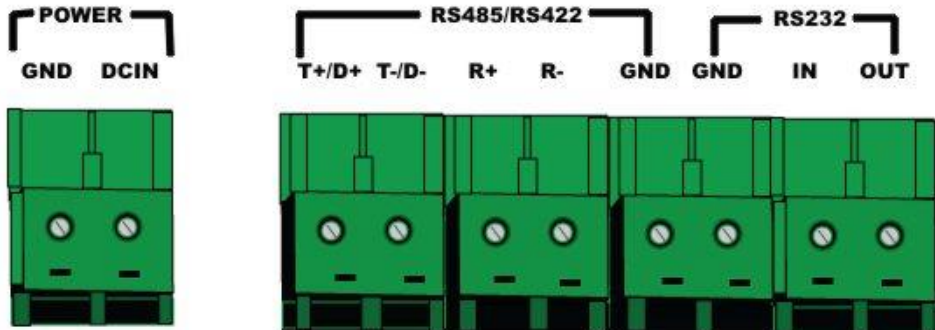
**DESCRIPTION:**

The SerialComm SER-FIBER-MM is an industrial grade bi-directional externally powered multi-functional RS-232/RS-485/RS-422 to Multi-Mode Fiber Optic Converter which converts either full-duplex RS-232, half-duplex RS-485 or full-duplex RS-422 to a Multi-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-MM 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 1.2 miles (2.0 KM) using MM fiber optic cable. The unit is enclosed in a rugged steel housing. An external power supply is included.

**CERTIFICATIONS:**



**CONNECTORS:**



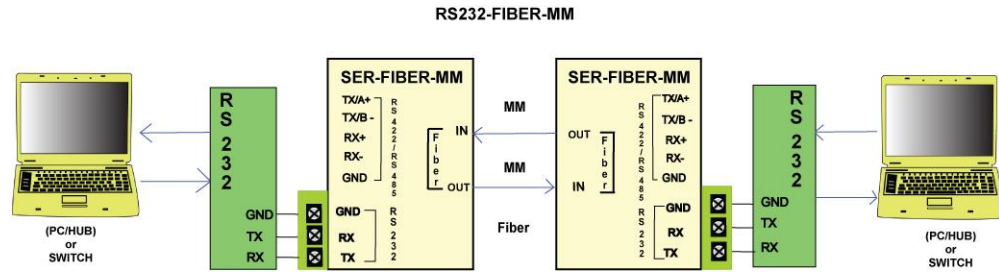
**SPECIFICATIONS:**

| COMMUNICATION                    |  |
|----------------------------------|--|
| <b>STANDARDS:</b>                | EIA/TIA RS-232C, RS-485 and RS-422 Standards   |
| <b>MODEL NUMBERS:</b>            | SER-FIBER-MM-ST - ST Connector Version<br>SER-FIBER-MM-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: 16 ft (5m), RS-485/RS-422 Side: 4000 ft (1.2KM) and Multi-mode Side: 1.2 miles (2KM)  |
| 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 2KM Multi-Mode Configuration  |
| <b>FIBER OPTIC CABLING:</b>      | 50/125µm or 62.5/125µm MM Fiber Cable  |
| <b>WAVELENGTH:</b>               | 1310 nm  |
| <b>OUTPUT LEVEL (MIN):</b>       | -14 dBm  |
| <b>OUTPUT LEVEL (MAX):</b>       | -3 dBm   |
| <b>FIBER SENSITIVITY LEVEL:</b>  | -30 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)<br><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"<br>(126.0 mm X 91.0 mm X 22.0 mm)<br><b>With SC Connector:</b> 4.65" X 3.58" X 0.87"<br>(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 and REACH Third-party Certified  |
| <b>QUALITY MANAGENT:</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  |

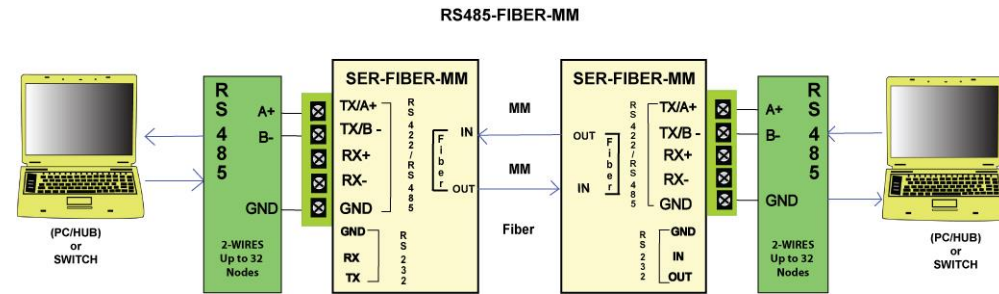
## FLEXIBLE SERIAL CONVERSION:

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.

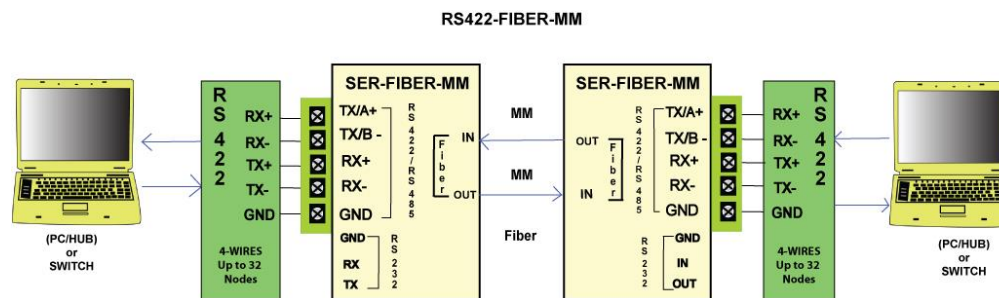
## APPLICATIONS:



**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-MM 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-MM 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-MM 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-MM 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-232 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-MM 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-MM 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.