SerialComm®
Data Conversion Experts

SERIALCOMM.COM

ETH-FIBER-MM
10/100M Ethernet To Fiber Optic
Multi-Mode 2KM Converter

Datasheet Revision 3.0

GENERAL FEATURES:

- Fiber Point to Point 2KM MM Configuration
- Plug-and-Play (hot-pluggable)
- Externally Powered
- Fiber optic range of up to 1.2 miles (2.0 KM)
- Available with ST or SC type connectors
- Data direction auto-turnaround - no flow control necessary
- Built-in surge and static protection
- 5-year replacement manufacturer's warranty
- CE, FCC, RoHS and REACH certified

DESCRIPTION:

The SerialComm ETH-FIBER-MM is a bi-directional externally powered 10/100M Ethernet to Multi-Mode Fiber Optic Converter which converts a standard 10/100BaseTX to 100BaseFX Multi-mode SC or ST connector type fiber optic link. A data direction auto-turnaround feature automatically enables the Ethernet transmit and receive data signals when data is present, avoiding the need for software drivers, and making the device fully plug-and-play. The ETH-FIBER-MM supports straight-through (MDI) or crossover (MDX) cable configurations. The ETH-FIBER-MM has a RJ45 connector for the 10/100M Ethernet port, and either an ST type or SC type connector for the fiber optic link. The unit extends the maximum distance of any 10/100M Ethernet signal up 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.
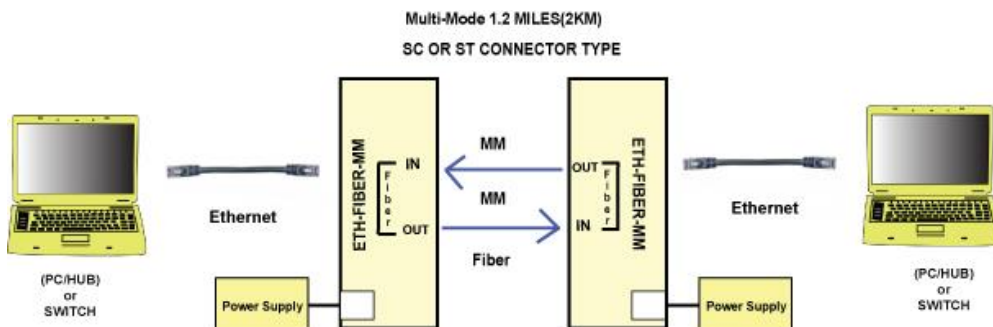
CERTIFICATIONS:

APPLICATIONS:

Multi-Mode 1.2 MILES(2KM)
SC OR ST CONNECTOR TYPE

FIGURE 1: EXTENDING 10/100M ETHERNET DATA DISTANCE

SPECIFICATIONS:

COMMUNICATION	
STANDARDS:	IEEE 802.1 10Base-T, IEEE 802.3u 100Base-T and IEEE 802.3 100Base-FX Standards
MODEL NUMBERS:	ETH-FIBER-MM-ST - ST Connector Version ETH-FIBER-MM-SC - SC Connector Version
BAUD RATES:	10/100 mbps Half-duplex, 20/200 mbps Full-duplex
CONNECTOR TYPES:	DC Input: Male Jack, Ethernet Side: RJ45 Female and Fiber Side: either 2 X ST Connectors or 2 X SC Connectors
DISTANCE:	10BaseT or 100BaseT Side: 328 ft (100m) and Multi-mode Side: 1.2 miles (2 KM)
CABLING:	CAT 3, 4, or 5, 5e, 6, 6e, 7, or 7e
ELECTRICAL	
POWER SOURCE:	5VDC
DC/AC POWER ADAPTER:	5VDC/(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 2KM Multi-Mode Configuration
FIBER OPTIC CABLING:	50/125µm and 62.5/125µm MM Fiber Cable
WAVELENGTH:	1310 nm
OUTPUT LEVEL (MIN):	-14 dBm
OUTPUT LEVEL (MAX):	-3 dBm
FIBER SENSITIVITY LEVEL:	-30 dBm
MECHANICAL	
HOUSING:	Heavy Duty Steel Housing
DIN RAIL:	Optional DIN Rail Mounts
WEIGHT:	**With ST Connector**: 8.11oz (230.0 grams) **With SC Connector**: 7.82oz (221.6 grams)
DIMENSIONS:	**With ST Connector:** 4.30" X 3.75" X 1.05" (109.0 mm X 95.0 mm X 26.6 mm) **With SC Connector**: 3.90" X 3.75" X 1.05" (99.0 mm X 95.0 mm X 26.6 mm)
ENVIRONMENTAL	
OPERATING TEMP:	-4° F to 167° F (-20°C to 75° 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 and REACH Third-party Certified
QUALITY MANAGEMENT	Manufactured and Distributed to ISO 9001:2015 QMS
MEAN TIME BEFORE FAILURE:	353,022 Hours
RELIABILITY:	Low Failure Rate – 99+% Reliability Since Inception
WARRANTY:	5 Year Replacement Warranty

ETHERNET RJ45 PIN ASSIGNMENT:

PIN NUMBER	MDI SIGNAL	MDI-X SIGNAL
1	TX+	RX+
2	TX-	RX-
3	RX+	TX+
6	RX-	TX-
4	Not Connected	Not Connected
5	Not Connected	Not Connected
7	Not Connected	Not Connected
8	Not Connected	Not Connected

INDICATOR LED TABLE:

LED	STATE	INDICATION
PWR	OFF	Power Off
	SOLID	Power On
100	OFF	10M Ethernet
	SOLID	100M Ethernet
FX	OFF	Fiber Optic Unit is Faulty
	SOLID	Fiber Optic Unit is Functional
LNK/ACT (TX)	OFF	Ethernet is Not Connected
	FLASHING	Transmitting or Receiving Data
	SOLID	Ethernet is Connected
LNK/ACT (FX)	OFF	Fiber Links are not Connected
	FLASHING	Transmitting or Receiving Data
	SOLID	Fiber Links are Connected
FDX	OFF	Half-Duplex Mode or Network Disconnected
	FLASHING	Data Collision Detected
	SOLID	Full-Duplex Mode

TROUBLESHOOTING INSTRUCTIONS:

Using one ETH-FIBER-MM unit:
1. Perform a loop back test on one unit:
   a) Plug the power connector to the converter.
   b) Connect the Ethernet port to a PC. Connect fiber in to fiber out.
   c) Running a Ethernet Analyzer program on the PC, send ASCII characters to the ETH-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 ETH-FIBER-MM unit is working properly.

Using two ETH-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.
   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) Connect the Ethernet connections to two Ethernet ports.
   e) Running Ethernet Analyzer programs on both PCs, send ASCII characters to the ETH-FIBER-MM 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 ETH-FIBER-MM units are working properly.