SerialComm®
Data Conversion Experts

ETH-FIBER-SM-2

10/100/1000M Ethernet To Fiber Optic Single Mode 20KM Converter

SERIALCOMM.COM

Datasheet Revision 2.7

GENERAL FEATURES:

- Fiber Point to Point 20km SM
- Plug-and-Play (hot-pluggable)
- Externally Powered
- Fiber optic range of up to 12.4 miles (20 km)
- 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
- RoHS, CE, and FCC certified

DESCRIPTION:

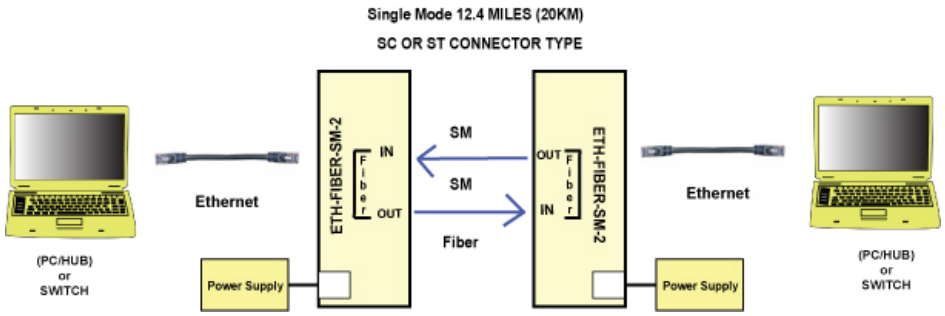
The SerialComm ETH-FIBER-SM-2 is a bi-directional externally powered 10/100/1000M Ethernet to Single Mode Fiber Optic Converter which converts a standard 10/100/1000BaseTX to 1000Base-SX/LX Single Mode SC or ST connector type fiber optic link. A data direction auto-turnaround feature automatically enables 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-SM-2 supports straight-through (MDI) or crossover (MDX) cable configurations. The ETH-FIBER-SM-2 has a RJ45 connector for the 10/100/1000M Ethernet port, and either an ST type or SC type connector for the fiber optic link. The unit extends the maximum distance of any 10/100/1000M Ethernet signal up 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:

CE FC RoHS REACH COMPLIANT

CERTIFYING LABS: TEST

APPLICATIONS:



SPECIFICATIONS:

COMMUNICATION	
STANDARDS:	IEEE 802.1 10Base-T, IEEE 802.3u 100Base-T, IEEE 802.3 100Base-FX, IEEE 802.3ab 1000Base-T, IEEE 802.3z 10000Base-SX/LX Standards
MODEL NUMBERS:	ETH-FIBER-SM-2-ST - ST Connector Version ETH-FIBER-SM-2-SC - SC Connector Version
BAUD RATES:	10/100/1000 mbps Half-duplex, 20/200/2000 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, 100BaseT, or 1000BaseT Side: 328 ft (100m) and Single Mode Side: 12.4 miles (20 km)
CABLING:	CAT 3, 4, or 5
ELECTRICAL	
POWER SOURCE:	5VDC
DC/AC POWER ADAPTER:	Included 5VDC / (100 - 240VAC 50/60hz US Type A Plug) 500 mA
POWER CONSUMPTION:	4 Watts
STATIC PROTECTION:	15KV Electric Static Discharge (ESD) Protection
SURGE PROTECTION:	600W Surge Protection
FIBER OPTIC	
FIBER OPTIC CABLING:	Compatible with Single Mode: 8.3/125um, 8.7/125um, 9/125um or 10/125um Fiber Optic Cable
WAVELENGTH:	1310nm
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:** 4.29" X 3.75" X 1.05" (109.0 mm X 95.0 mm X 26.6 mm) **With SC Connector**: 3.87" X 3.75" X 1.05" (98.2 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 and RoHS Conformance Certified
QUALITY MANAGEMENT	Manufactured and Distributed to ISO 9001:2015 QMS
RELIABILITY:	Low Failure Rate – 99+% Reliability Since Inception
WARRANTY:	5 Year Replacement Warranty

FIGURE 1: EXTENDING 10/100/1000M ETHERNET DATA DISTANCE

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
1000M	OFF	Not 1000M Ethernet
	SOLID	1000M Ethernet
DUP	OFF	Half Duplex
	FLASHING	Full Duplex
TX	OFF	Ethernet Port is not Connected
	FLASHING	Transmitting or Receiving Data
	SOLID	Ethernet is Connected
FX	OFF	Fiber Optic Unit is not Connected
	SOLID	Fiber Optic Unit is Connected

TROUBLESHOOTING INSTRUCTIONS:

Using one ETH-FIBER-SM-2 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-SM-2 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-SM-2 unit is working properly.

Using two ETH-FIBER-SM-2 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-SM-2 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-SM-2 units are working properly.