FOI-1GBT
FIBER OPTIC ISOLATOR

fiberplex TECHNOLOGIES, LLC

Description

The FOI-1GBT provides complete electrical isolation for 1000BASE-T Gigabit Ethernet communications. The unit has an automatic MDI/MDIX switch over capability that allow users to use either a straight or crossover cable for all LAN configurations.

The unit can be used in areas of high electrical noise or in and out of RF shielded enclosures. The fiber optic cable is not susceptible to interference caused by impulse noise, crosstalk, or EMI. Privacy of communications is also enhanced because the fiber optic cable does not radiate any emissions.

In addition, fiber optic cable offers much longer transmission distances than copper wiring. Traditional 1000BASE-T Cat5e cabling is limited to a maximum distance of 100m, but multimode optics on the unit can extend the distance to 550m, while singlemode optics can further extend the distance to 70km. For more information, please see the "OPTICAL CHARACTERISTICS" table. A typical link consists of two FOI-1GBT, one at each end of the network, with a duplex fiber optic cable between them as shown under "TYPICAL APPLICATION".
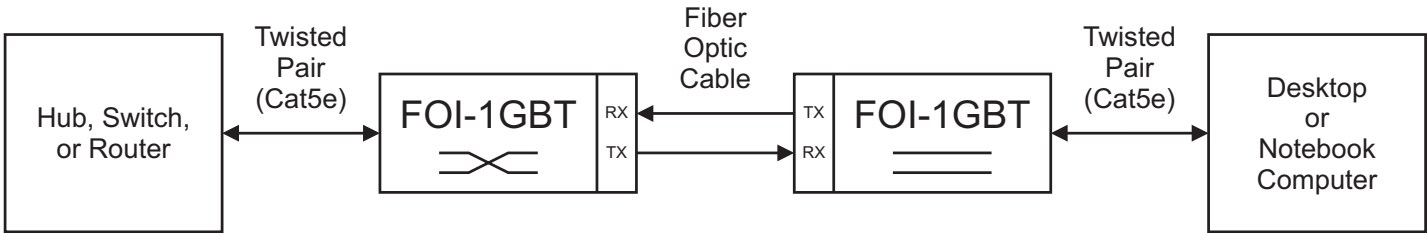
Ethernet

Multimode:
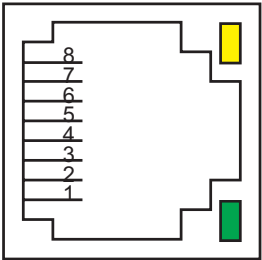1000BASE-T to 1000BASE-SX

Singlemode:
1000BASE-T to 1000BASE-LX

Features:
- Data Rate: 1000 Mbps
- Compliant with: IEEE 802.3ab
- Automatic polarity correction. If TP+ and TP- are reversed, the unit will automatically swap the polarity internally.
- Automatic MDI/MDIX switch over capability. If the transmit and receive pairs are reversed, the unit will automatically swap both pairs internally. Therefore, either a crossover or straight cable can be used.

Typical Application

RJ-45 crossover pinout		
Pin	Direction	Description
1	In / Out	TP1+
2	In / Out	TP1-
3	In / Out	TP0+
4	In / Out	TP3+
5	In / Out	TP3-
6	In / Out	TP0-
7	In / Out	TP2+
8	In / Out	TP2-

RJ-45 straight pinout		
Pin	Direction	Description
1	In / Out	TP0+
2	In / Out	TP0-
3	In / Out	TP1+
4	In / Out	TP2+
5	In / Out	TP2-
6	In / Out	TP1-
7	In / Out	TP3+
8	In / Out	TP3-

1000B-T

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Specifications

		minimum	typical	maximum	unit
Power Requirement	Voltage Range	7	9	12	V
	Supply Current	-	250	-	mA
Data Rate	1000 Mbps				
Line Encoding	PAM5 (Pulse Amplitude Modulation 5)				
Interface Connector	RJ-45				
Case Dimensions	Size 4	length	width	height	weight
		4.5 in (114 mm)	1.453 in (37 mm)	2.562 in (65 mm)	2 lb (0.9 kg)

Optical Characteristics

Fiber	Size	Max Distance	Wavelength	Output Power	Receiver Sensitivity	Loss Budget
Multimode	62.5 / 125 μm	275 m	820 nm	-7 dBm	-17 dBm	10 dB
Multimode	50 / 125 μm	550 m	820 nm	-7 dBm	-17 dBm	10 dB
Singlemode (S)	9 /125 μm	5 km	1300 nm	-7 dBm	-20 dBm	13 dB

LED Indicators

| Label	Color	Description
PWR	Green	Power supply in FOI unit is operating properly.
	Off	No power from the PSQ power supply or open fuse inside the FOI unit. Check that the PSQ power supply is operating properly. If the PSQ power supply is good, separate the FOI unit from the PSQ power supply for 30 seconds and then reattach so that the fuse inside the FOI unit has time to reset. If the PWR led is still off or not constant, replace the FOI unit.
TPTX	Amber	Twisted pair transmit data is active.
LINK	Green	1000BASE-T twisted pair link and 1000BASE-SX/LX optical link has been established.
	Off	No link pulses or optical level too low. Check that the opposite unit has power and that the fiber optic cables are properly connected. The TX optic from one end of the network connects to the RX optic at the opposite end as shown under "TYPICAL APPLICATION". Also, make sure to use a "four" twisted pair category 5 cable and not a "two" twisted pair category 5 cable, which are sometimes used for 10BASE-T and 100BASE-TX applications. The unit has an automatic MDI/MDIX switch over capability that will detect the link partner's transmit and receive pairs, and determine the correct alignment. If it is not correct, it automatically swaps the transmit and receive pairs internally. Therefore, either a crossover or straight cable can be used. For more information, please see the RJ-45 pinout tables.
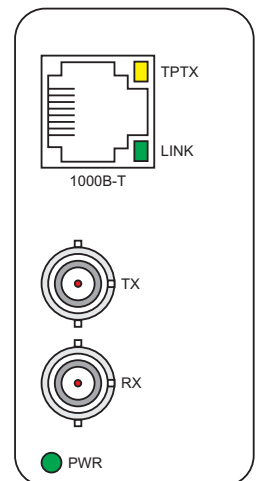
**FOI-1GBT-ST
Front View**

Accessories

Model	Description
CMA-2001	Chassis Mount Adapter for RMC-2101
CMA-3002	Chassis Mount Adapter for RMC-3101, RMC-3102
PSQ-4910	Power Supply for FOI-4xxx series
RMC-2101	Rack Mount Chassis, 3-1/2" H x 19" W, rear access
RMC-3101	Rack Mount Chassis, 5-1/4" H x 19" W, front access
RMC-3102	Rack Mount Chassis, 5-1/4" H x 19" W, front access with optical patch panel
WMA-2001	Wall Mount Adapter with optical patch
WMA-3002	Wall Mount Adapter

Ordering Information

FOI-1GBT

Optical Interface:
ST

Fiber:
Blank = Multimode
S = Singlemode (5km)
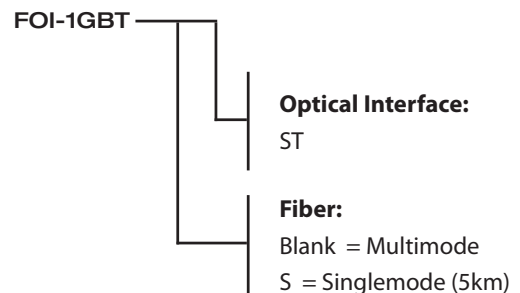
Standard Options:
FOI-1GBT-ST
FOI-1GBTS-ST