Fast Ethernet 100BASE-TX to 100BASE-FX
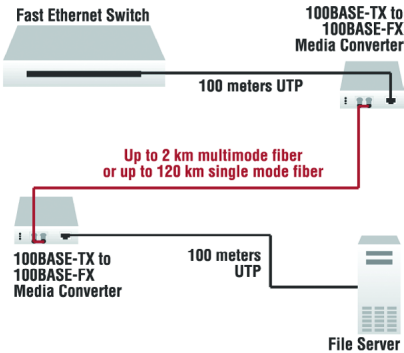
Stand-Alone Media Converters

E-100BTX-FX-05(xxxx)

Convert 100BASE-TX to 100BASE-FX

▶ Extend Network Distance

Fast Ethernet Switch

100BASE-TX to 100BASE-FX Media Converter

100 meters UTP

Up to 2 km multimode fiber or up to 120 km single mode fiber

100BASE-TX to 100BASE-FX Media Converter

100 meters UTP

File Server

▶ Extend Network Distance
Used in pairs, this media converter can extend distances between two twisted pair switches or a switch and a server up to 2 km over multi-mode fiber or up to 120 km over single mode fiber.

▶ Connect Remote Devices
Using one media converter, a switch with a copper port can be connected to a switch with an existing fiber interface.

Features

▶ Operates under heavy traffic loads without excess heat, so there is no need for a failure-prone internal fan

▶ Round trip delay of only 40 bit times —far below the Class II rating of 92 bit times

▶ Auto-Negotiation *see next pages*

▶ AutoCross™ *see next pages*

▶ Link Pass Through *see next pages*

▶ Far End Fault (FEF) *see next pages*

▶ Automatic Link Restoration *next pages*

▶ Pause *see next pages*

The converters will automatically re-establish link when connected to two 10/100 auto-negotiating switches if link is lost. With other manufacturers' converters the user must intervene to re-establish link.

Specifications

Standards	IEEE Std. 802.3™ 100BASE-FX, 100BASE-TX
Fiber Optic Connector Specs	
E-100BTX-FX-05; E-100BTX-FX-05(SC); E-100BTX-FX-05(LC)	Min TX PWR: -19.0 dBm Max TX PWR: -14.0 dBm RX Sensitivity: -30.0 dBm Max In PWR: -14.0 dBm Link Budget: 11.0 dB
E-100BTX-FX-05(MT)	Min TX PWR: -19.0 dBm Max TX PWR: -14.0 dBm RX Sensitivity: -33.5 dBm Max In PWR: -14.0 dBm Link Budget: 14.5 dB
E-100BTX-FX-05(SM)	Min TX PWR: -15.0 dBm Max TX PWR: -8.0 dBm RX Sensitivity: -31.0 dBm Max In PWR: -8.0 dBm Link Budget: 16.0 dB
E-100BTX-FX-05 (SMLC)	Min TX PWR: -15.2 dBm Max TX PWR: -8.0 dBm RX Sensitivity: -32.5 dBm Max In PWR: -3.0 dBm Link Budget: 17.3 dB
E-100BTX-FX-05(LH)	Min TX PWR: -8.0 dBm Max TX PWR: -2.0 dBm RX Sensitivity: -34.0 dBm Max In PWR: -7.0 dBm Link Budget: 26.0 dB
E-100BTX-FX-05(XL); E-100BTX-FX-05(LW)	Min TX PWR: -5.0 dBm Max TX PWR: 0.0 dBm RX Sensitivity: -34.0 dBm Max In PWR: -7.0 dBm Link Budget: 29.0 dB
E-100BTX-FX-05(XLW)	Min TX PWR: 0.0 dBm Max TX PWR: +5.0 dBm RX Sensitivity: -36.0 dBm Max In PWR: -3.0 dBm Link Budget: 36.0 dB
Single Fiber Products	
E-100BTX-FX-05 (100); E-100BTX-FX-05(101)	Min TX PWR: -13.0 dBm Max TX PWR: -6.0 dBm RX Sensitivity: -32.0 dBm Max In PWR: -3.0 dBm Link Budget: 19.0 dB
E-100BTX-FX-05 (102); E-100BTX-FX-05(103)	Min TX PWR: -8.0 dBm Max TX PWR: -3.0 dBm RX Sensitivity: -33.0 dBm Max In PWR: -3.0 dBm Link Budget: 25.0 dB
Switches	SW1: Auto-Negotiation On/Off SW2: Pause TX On/Off SW3: Link Pass Through On/Off SW4: Far End Fault On/Off
Jumpers	Jumper Block 1: AutoCross™ enable
Status LEDs	Power: Lit for normal operation SDF or LKF *(Link Fiber)*: Lit for fiber link SDC or LKC *(Link Copper)*: Lit for copper link RXF *(Receive Fiber)*: Flashing = RX data RXC *(Receive Copper)*: Flashing = RX data
Dimensions	Width: 3.0" [76 mm] Depth: 4.7" [119 mm] Height: 1.0" [25 mm]
Power	External AC/DC required: 12 VDC, 0.5 A, unregulated, standard
Environment	0 – 50°C, 5% – 95% humidity non-condensing, 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	Wall Mount Power Supply: UL approved and CSA certified
Regulatory Compliance	FCC Class A, EN55024, EN55022 Class A, EN61000, CE Mark
Warranty	Lifetime

Ordering Info

Product Number	Port One	Port Two
E-100BTX-FX-05	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1300nm multimode (ST) **[2 km/ 1.2 miles]**
E-100BTX-FX-05(SC)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1300nm multimode (SC) **[2 km/ 1.2 miles]**
E-100BTX-FX-05(LC)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1300nm multimode (LC) **[2 km/ 1.2 miles]**
E-100BTX-FX-05(MT)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1300nm multimode (MT-RJ) **[2 km/ 1.2 miles]**
E-100BTX-FX-05(SM)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm single mode (SC) **[20 km/12.4 miles]**
E-100BTX-FX-05(SMLC)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm single mode (LC) **[20 km/12.4 miles]**
E-100BTX-FX-05(LH)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm single mode (SC) **[40 km/24.9 miles]**
E-100BTX-FX-05(XL)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm single mode (SC) **[60 km/37.3 miles]**
E-100BTX-FX-05(LW)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1550nm single mode (SC) **[80 km/49.7 miles]**
E-100BTX-FX-05(XLW)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1550nm single mode (SC) **[120 km/74.6 miles]**

Product Number	Port One	Port Two
Single Fiber Products *Note: Recommended use in pairs (see next pages)*		
E-100BTX-FX-05(100)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 miles]**
E-100BTX-FX-05(101)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 miles]**
E-100BTX-FX-05(102)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[40 km/ 24.9 miles]**
E-100BTX-FX-05(103)	100BASE-TX (RJ-45) **[100 m/328 ft.]**	100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[40 km/ 24.9 miles]**

Optional Accessories *(sold separately)*

Product Number	Description
SPS-1872-CC	Wide Input (18 – 72VDC) Piggy Back Power Supply
SPS-1872-SA	Wide Input (18 – 72VDC) Stand-Alone Power Supply
E-MCR-04	12-slot Media Converter Rack

Product Number	Description
WMBD	DIN Rail Mount Bracket 5.0" [127 mm]
WMBD-FS	DIN Rail Mount Bracket (flat, small) 3.1" [79 mm]
WMBL	Wall Mount Bracket 4.0" [102 mm]
WMBV	Vertical Wall Mount Bracket 5.0" [127 mm]

TRANSITION n e t w o r k s®

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▸ Auto-Negotiation (802.3u)

Auto-Negotiation allows devices to perform automatic configuration to achieve the best possible mode of operation over a link. Devices with this feature will broadcast their speed (10Mbps, 100Mbps, etc.) and duplex (half/full) capabilities to other devices and negotiate the best mode of operation between the two devices.

- ▸ No user intervention required to determine best mode of operation
- ▸ Optimal link established automatically
- ▸ Quick and easy installation

While the inclusion of this feature is beneficial, the ability to disable it is equally beneficial. In the event of a non-negotiating end device trying to connect to a negotiating device, the mode of operation will drop to the least common denominator between the two devices (i.e. 100Mbps, half-duplex). Disabling this feature gives the user the ability to force the connection to the best mode of operation when trying to link with a non-negotiating device. Most Transition converters with Auto-Negotiation will allow you to disable this feature.
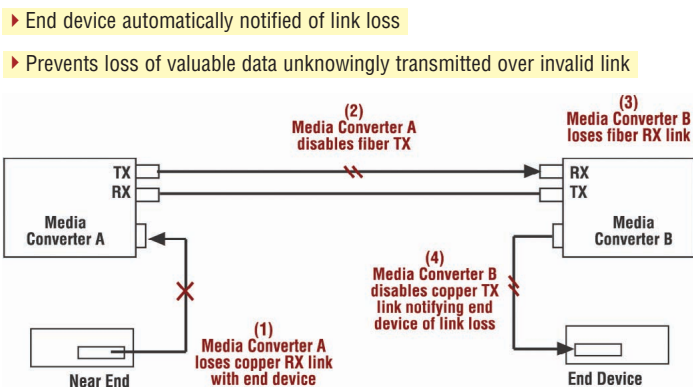
▸ AutoCross™

Automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration.

- ▸ Eliminates an entire category of troubleshooting
- ▸ No need to identify cable type—straight-through or crossover
- ▸ No user intervention required to determine correct button / switch settings

▸ Link Pass Through

Link Pass Through is a troubleshooting feature that allows the media converter to monitor both the fiber and copper RX ports for loss of signal. In the event of a loss of RX signal on one media port, the converter will automatically disable the TX signal of the other media port, thus "passing through" the link loss.
(see diagram below)

- ▸ End device automatically notified of link loss
- ▸ Prevents loss of valuable data unknowingly transmitted over invalid link

If someone tells you media conversion is a commodity product that anyone can bring to market, they probably haven't looked at the extensive product suite offered by Transition Networks. With the industry's most comprehensive offering of full-featured products, Transition's media converters stand out as "the choice" among industry IT professionals.

Generally, media converters are low-level OSI model devices with no IP or MAC addresses and therefore are transparent to the network. This "transparency" makes them very inexpensive and easy to use, but also can make troubleshooting the network very difficult. In an effort to overcome this difficulty and to make media converters "visible" to network managers, Transition has designed their full-featured products to include the most advanced features on the market today.

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ADVANCED PRODUCT FEATURES

▸ Far End Fault (802.3u)

Far End Fault (FEF) is a troubleshooting feature that is generally used in conjunction with Link Pass Through to notify both end devices of a loss of link. In the event of a loss of the fiber RX signal on the far end converter the converter will automatically generate a Far End Fault signal and send it on its TX fiber port to notify the near end converter of a fiber link loss. Link Pass Through will then disable the copper links on both ends; alerting both end devices of network trouble (see diagram below).

▸ Both end devices automatically notified of link loss

▸ Prevents loss of valuable data unknowingly transmitted over invalid link

▸ Allows for quick diagnosis and resolution of network problems
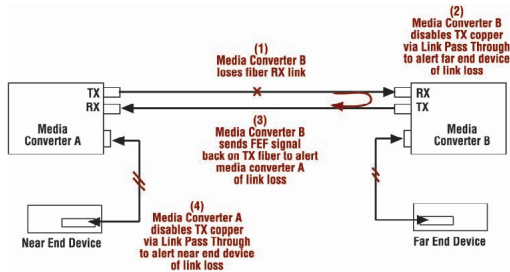
Transition Networks's media converters that include the FEF feature do not need to be used as pictured above as they will work with other network devices that support Far End Fault per IEEE standards.

▸ Automatic Link Restoration

Transition Networks's converters will automatically re-establish link in all network conditions.

▸ No need to reset devices

Transition Networks's converters will automatically re-establish link when connected to switches if link was lost. With other manufacturers' converters the user must reset the converter to re-establish the link.

▸ Auto-Negotiation Enabled

Automatic Link Restoration allows the users to continue using Auto-Negotiation with Link Loss Notification features. With other manufacturers' converters the user must disable Auto-Negotiation and hard set the link.

▸ Link Pass Through Activated in both directions

Automatic Link Restoration on Transition Networks's products allows users to continue using Link Loss Notification feature activated in both directions. Many competitive solutions allow for Link Loss Notification activation only in one direction. If Link Loss feature is activated in both directions, competitive products are put in a "deadly embrace" and they cannot restore the link without resetting the converters.
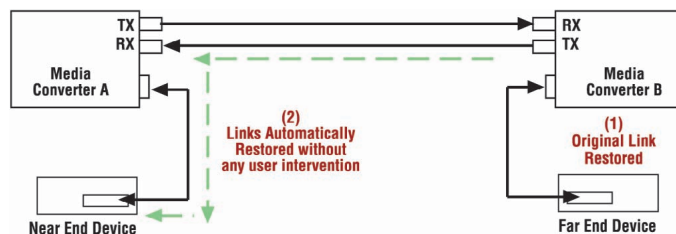
▸ Pause (IEEE 802.3xy)

PAUSE signaling is an IEEE feature that temporarily suspends data transmission between two devices in the event that one of the devices becomes overwhelmed. In the event that a device needs some time to clear network congestion, it will send out a PAUSE signal to the other end device, which will then wait a pre-determined amount of time before re-transmitting the data. Transition's converters will pass PAUSE signaling unhindered; ensuring that the message is delivered to the end device.

▸ PAUSE enabled devices allowed to work properly

▸ Prevents loss of valuable data transmission

▸ Reduces bottlenecks and allows for efficient use of network devices

PAUSE signaling is not standardized over fiber media. Transition's media converters will communicate this signaling over fiber between the converters to pass this signaling on to the other end device.

▸ Single Fiber

Single fiber technology offers a 50% savings in fiber utilization. It is an attractive solution to maximize the usage of a limited number of fiber runs.

In a traditional optical link, a fiber pair consists of two uni-directional strands. The single fiber technology multiplexes two optical wavelengths of 1310nm and 1550nm into a single strand fiber. In a single fiber media converter each wavelength is responsible for either the transmit or receive function. Consequently, the bi-directional transmission is achieved by using a single strand. The converters in a single fiber scenario "match" each other's wavelengths. Converter A transmits at the wavelength of 1310nm and receives at 1550nm while the other converter transmits at 1550nm and receives at 1310nm. Therefore, converters are usually used in pairs.

Single Fiber
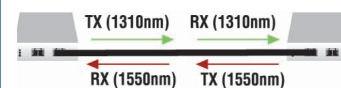
Single fiber technology is available on all Transition Networks Media Converters in maximum distance ranges from 20 to 80km.

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