

COMPLIANCE INFORMATION

UL Listed
C-UL Listed (Canada)
CISPR/EN55022 Class A

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung !

Dieses ist ein Gerät der Funkstörwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention !

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

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100BASE-TX/100BASE-FX

Media Converters

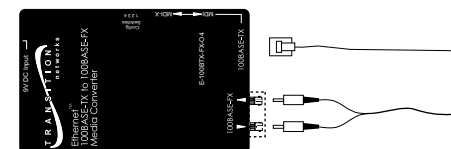
E-100BTX-FX-04

USER'S GUIDE

The TRANSITION Networks E-100BTX-FX-04 series Ethernet™ 100BASE-TX to 100BASE-FX media converters connect 100BASE-TX unshielded twisted pair cable to 100BASE-FX *multimode* OR *singlemode* fiber-optic cable.

E-100BTX-FX-04

Provides an RJ-45 twisted pair 100BASE-TX connector and a set of RX (receive) and TX (transmit) ST 100BASE-FX connectors to 1300 nm *multimode* fiber-optic cable.



E-100BTX-FX-04(SC)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to 1300 nm *multimode* fiber-optic cable.

E-100BTX-FX-04(LH)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to 1300 nm *singlemode* fiber-optic cable.

E-100BTX-FX-04(MT)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) MT-RJ 100BASE-FX connector to 1300 nm *multimode* fiber-optic cable.

E-100BTX-FX-04(XL)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to 1310 nm *singlemode* fiber-optic cable.

E-100BTX-FX-04(SM)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to 1300 nm *singlemode* fiber-optic cable.

E-100BTX-FX-04(LW)

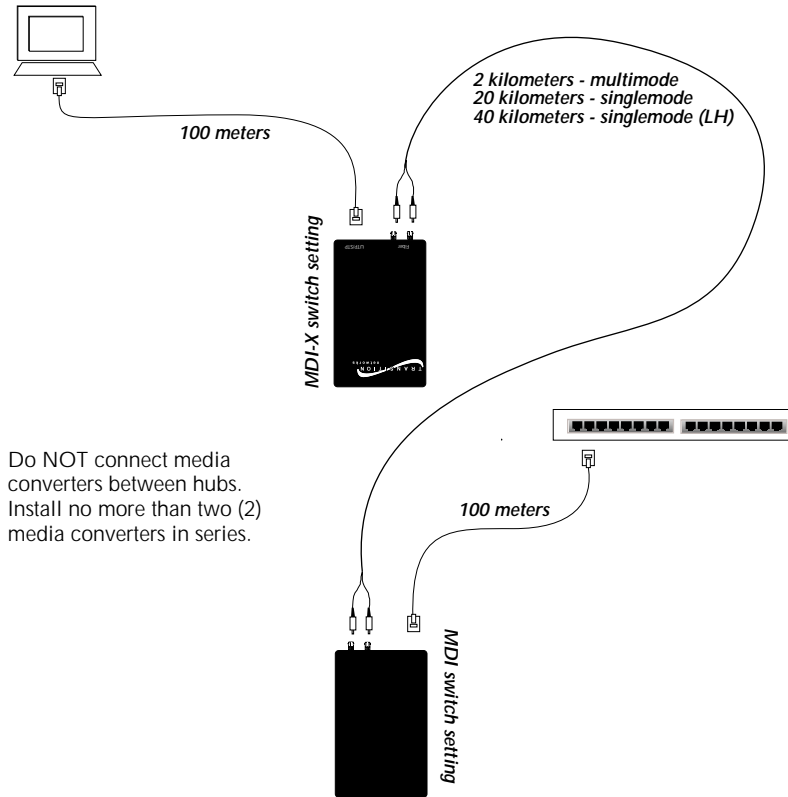
Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) SC 100BASE-FX connector to 1550 nm *singlemode* fiber-optic cable.

E-100BTX-FX-04(SMLC)

Provides an RJ-45 twisted pair 100BASE-TX connector and an RX (receive) and TX (transmit) LC 100BASE-FX connector to 1300 nm *singlemode* fiber-optic cable.

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E-100BTX-FX-04 IN THE NETWORK



Do NOT connect media converters between hubs. Install no more than two (2) media converters in series.

Switches at the side of the media converter are used to configure the media converter for the network.

MDI/MDI-X SWITCH

Allows *straight-through* twisted-pair cable to be used for *crossover* 100BASE-TX connections.

4-POSITION SWITCH

- 1(UP)** Enables Auto-negotiation function to detect and adapt to line speed/operation mode of attached device. **(DOWN)** Disables Auto-negotiation function.
- 2(UP)** Allows an attached full-duplex station to transmit and receive simultaneously. **(DOWN)** Allows an attached half-duplex station to transmit and receive sequentially.
- 3(UP)** Enables BOTH Link Pass Through AND Remote Fault Detect functions. (See page 4) **(DOWN)** Disables BOTH Link Pass Through AND Remote Fault Detect functions
- 4 Relevant only if Switch 3 is UP.** **(UP)** Enables Remote Fault Detect function at Switch 3. **(DOWN)** Disables Remote Fault Detect function at Switch 3.



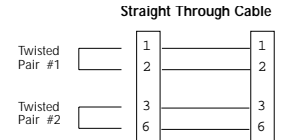
Copper Cable

Category 5 shielded twisted-pair (STP) or unshielded twisted-pair (UTP) copper wire is required. DO NOT USE FLAT OR SILVER SATIN WIRE.

CATEGORY 5:

Gauge: 24 to 22 AWG
 Attenuation: 22.0 dB /100m @ 100 MHz
 Maximum Cable Distance: 100 meters

The two active pairs in a 100BASE-TX network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange) for the active pins.



TECHNICAL SPECIFICATIONS

Standards	IEEE 802.3u	
Case Dimensions	4.75" x 3.0" x 1.0" (119mm x 76mm x 25mm)	
Shipping Weight	3 pounds (1.4 kilograms)	
Delay	400nsec round trip	
Environment	Temperature:	0-40°C (32° to 104° F)
	Humidity:	10-90%, non condensing
	Altitude:	0-10,000 feet

Power Supply Requirements Replace power supply with only the equivalent input rating (see below) and output rating (regulated 9VDC at 550 mA).

TN PN	Requirement	Location
3525	240 volts, 50 hertz	United Kingdom
3525	230 volts, 50 hertz	Europe
3518	120 volts, 60 hertz	USA/Canada/Mexico
3514	100 volts, 50-60 hertz	Japan
3525	240 volts, 50 hertz	Australia

NOTE: This product can be powered by the E-MCR series media converter rack.

Warranty Lifetime

TRANSITION NETWORKS

DECLARATION OF CONFORMITY

Name of Mfg: **Transition Networks**
 6475 City West Parkway, Minneapolis MN 55344 USA

Model: **E-100BTX-FX-04 Series Media Converters**

Part Number(s): **E-100BTX-FX-04, E-100BTX-FX-04(SC), E-100BTX-FX-04(MT), E-100BTX-FX-04(SM), E-100BTX-FX-04(SMLC), E-100BTX-FX-04(LH), E-100BTX-FX-04(XL), E-100BTX-FX-04(LV)**

Regulation: **EMC Directive 89/336/EEC**

Purpose: To declare that the **E-100BTX-FX-04** to which this declaration refers is in conformity with the following standards.
 EMC-CISPR 22: 1985 Class A; EN 55022: 1988 Class A; EN 50082-1:1992; EN 60950 A4:1997; IEC 801.2, IEC 801.3, and IEC 801.4; IEC 950

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson
 Stephen Anderson, Vice-President of Engineering

August 1, 1999
 Date

CABLE SPECIFICATIONS

The physical characteristics of the media cable must meet or exceed IEEE 802.3 specifications.

Fiber Cable

Bit error rate: $\leq 10^{-9}$

MULTIMODE

Fiber Optic Cable Recommended: 62.5 / 125 μm multimode fiber
Optional: 100 / 140 μm multimode fiber
85 / 125 μm multimode fiber
50 / 125 μm multimode fiber

E-100BTX-FX-04

Fiber Optic Transmitter Power: min: -19.0 dBm max: -14.0 dBm
Fiber Optic Receiver Sensitivity: min: -30.0 dBm max: -14.0 dBm
Typical Maximum Cable Distance*: 2 kilometers

E-100BTX-FX-04(SC)

Fiber Optic Transmitter Power: 1300 nM min: -19.0 dBm max: -14.0 dBm
Fiber Optic Receiver Sensitivity: min: -30.0 dBm max: -14.0 dBm
Typical Maximum Cable Distance*: 2 kilometers

E-100BTX-FX-04(MT)

Fiber Optic Transmitter Power: 1300 nM min: -19.0 dBm max: -14.0 dBm
Fiber Optic Receiver Sensitivity: min: -33.5 dBm max: -14.0 dBm
Typical Maximum Cable Distance*: 2 kilometers

SINGLEMODE

Fiber Optic Cable Recommended: 9 μm singlemode fiber

E-100BTX-FX-04(SM)

Fiber-optic Transmitter Power: 1300 nM min: -15.0 dBm max: -8.0 dBm
Fiber-optic Receiver Sensitivity: min: -32.5 dBm max: -8.0 dBm
Typical Maximum Cable Distance*: 20 kilometers

E-100BTX-FX-04(SMLC)

Fiber-optic Transmitter Power: 1300 nM min: -15.0 dBm max: -8.0 dBm
Fiber-optic Receiver Sensitivity: min: -32.5 dBm max: -3.0 dBm
Typical Maximum Cable Distance*: 20 kilometers

E-100BTX-FX-04(LH)

Fiber-optic Transmitter Power: 1300 nM min: -8.0 dBm max: 0.0 dBm
Fiber-optic Receiver Sensitivity: min: -34.0 dBm max: -8.0 dBm
Minimum Attenuation: 8 dB

Typical Maximum Cable Distance*: 40 kilometers

E-100BTX-FX-04(XL)

Fiber-optic Transmitter Power: 1310 nM min: -5.0 dBm max: 0.0 dBm
Fiber-optic Receiver Sensitivity: min: -34.0 dBm max: -7.0 dBm
Minimum Attenuation: 7 dB

Typical Maximum Cable Distance*: 60 kilometers

E-100BTX-FX-04(LW)

Fiber-optic Transmitter Power: 1550 nM min: -5.0 dBm max: 0.0 dBm
Fiber-optic Receiver Sensitivity: min: -34.0 dBm max: -7.0 dBm
Spectral Width: 0.4 nm FWHM
Minimum Attenuation: 7 dB

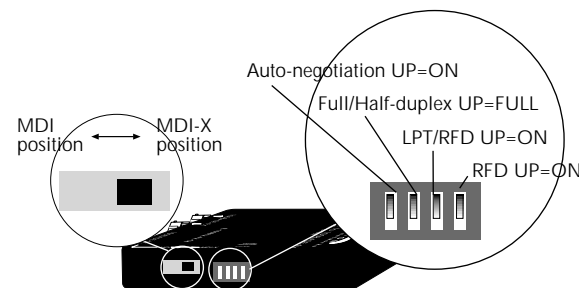
Typical Maximum Cable Distance*: 80 kilometers

*Actual distance dependent upon physical characteristics of network installation.

INSTALLATION

Set Switches

Use small flatblade screwdriver or similar device to set recessed switches according to site installation.



- Set the MDI/MDI-X switch to MDI for cable connection between hub and media converter. Set the MDI/MDI-X switch to MDI-X for cable connection between media converter and terminal, transceiver or network interface card (NIC).
- Refer to drawing for four-position switch settings.

Install Cable

COPPER

NOTE: KEEP TWISTED PAIR RUNS AS SHORT AS POSSIBLE.

- Locate or build 802.3 compliant cables with straight through configuration and male RJ-45 plug connectors.
- Connect male RJ-45 plug connector at one end of cable to media converter RJ-45 jack connector.
- Connect male RJ-45 plug connector at other end of cable to DTE terminal RJ-45 jack connector (setting MDI switch to MDI-X) or to Hub RJ-45 jack connector (setting MDI switch to MDI).

FIBER

- Locate or build 802.3 compliant fiber cable with male two-stranded TX to RX connectors **appropriate to the media converter** installed at both ends.
- Connect male **TX** and **RX** cable connectors at one end of cable to **TX** and **RX** female connectors, respectively, on media converter.
- Connect male **TX** and **RX** cable connectors at other end of cable to **RX** and **TX** connectors of 802.3 compliant fiber device.

Connect to Power

- Install Power Adapter cord at back of media converter.
- Connect Power Adapter 3-prong plug to AC power.
- Verify that media converter is powered by observing illuminated LED(s).

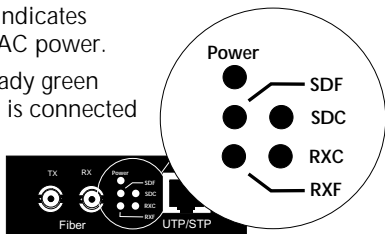
OPERATION

After installation, the media converter should function without operator intervention.

Status LEDs:

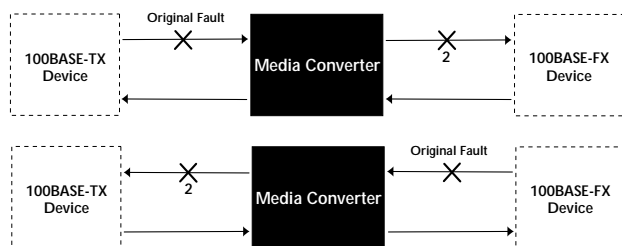
Use the status LEDs to monitor media converter operation in the network.

Power	Illuminated green LED indicates connection to external AC power.
SDF	Signal Detect/Fiber: Steady green LED indicates fiber port is connected to device.
SDC	Signal Detect/Copper: Steady green LED indicates RJ-45 port is connected to device.
RXC	Receive/Copper: Flashing green LED indicates packets are seen on RJ-45 port.
RXF	Receive/Fiber: Flashing green LED indicates packets are seen on fiber port.

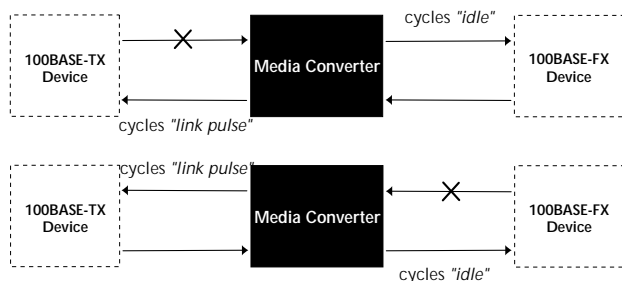


Link Pass Through/Remote Fault Detect

When the Link Pass Through function is active, a fault on one side of the media converter stops signal and data transmission on the other side.



When the Remote Fault Detect function is active, a fault on one side of the media converter allows signal, but not data, transmission on the other side.



FAULT ISOLATION and CORRECTION

If the media converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

1. Is the **Power LED on the media converter illuminated?**

NO

- Is the power adapter the proper type of voltage and cycle frequency for AC outlet?
NOTE: Refer to the "Power Supply Requirements" on page 7.
- Is the power adapter properly installed in the media converter and in the outlet?
- Contact Technical Support at (800) 260-1312/ (800) LAN-WANS.

YES

- Proceed to step 2.

2. Is the **SDC (Signal Detect/Copper) LED illuminated?**

NO

- Check UTP cables for proper connection.
- Verify MDI/MDI-X switch position.
- Contact Technical Support at (800) 260-1312/ (800) LAN-WANS.

YES

- Proceed to step 3.

3. Is the **SDF (Signal Detect/Fiber) LED illuminated?**

NO

- Check fiber cables for proper connection.
- Verify that TX and RX cables on media converter are connected to RX and TX ports, respectively, on the other 100BASE-FX device.
- Refer to Tech Tips available at: <http://www.transition.com>
- Contact Technical Support at (800) 260-1312/ (800) LAN-WANS.

YES

- Contact Technical Support at (800) 260-1312/ (800) LAN-WANS.