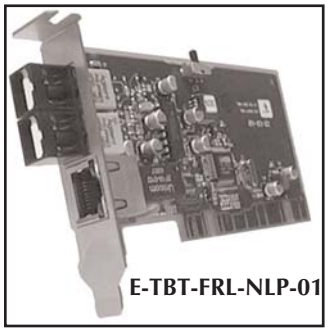
TRANSITION networks

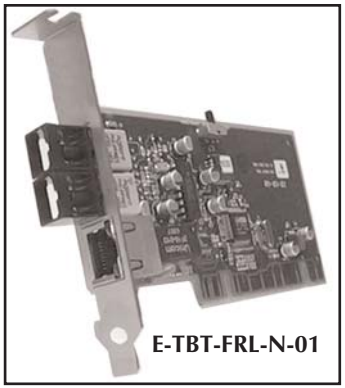

E-TBT-FRL-NLP-01

User's Guide

E-TBT-FRL-NLP-01
E-TBT-FRL-N-01

PCI Ethernet Media Converter

- ***Copper to Fiber***
- ***10Base-T to 10Base-FL***


E-TBT-FRL-N-01

Transition Networks E-TBT-FRL-NLP-01 series and E-TBT-FRL-N-01 series media converters connect 10Base-T copper to 10Base-FL fiber. These PCI (Peripheral Component Interconnect) powered media converters are designed to install directly inside a PC workstation or file server and mount on any slot on a standard PCI.

No additional power supply is needed since the power is drawn directly from the PCI slot.Two LEDs integrated into the RJ-45 10Base-T port allow for network monitoring.

The **E-TBT-FRL-NLP-01** PCI media converter (above) is **3.15"** (80mm) wide.
The **E-TBT-FRL-N-01** PCI media converter (right) is **4.76"** (121mm) wide.

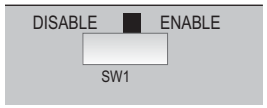
Part Number	Port One - *Copper*	Port Two - *Fiber-Optic*
E-TBT-FRL-NLP-01	*RJ-45, 10Base-T* *100 m (328 ft)**	*ST, 850 nm multimode* *10Base-FL, 2 km (1.2 miles)**
E-TBT-FRL-NLP-01 (SC)	*RJ-45, 10Base-T* *100 m (328 ft)**	*SC, 850 nm multimode* *10Base-FL, 2 km (1.2 miles)**
E-TBT-FRL-N-01	*RJ-45, 10Base-T* *100 m (328 ft)**	*ST, 850 nm multimode* *10Base-FL, 2 km (1.2 miles)**
E-TBT-FRL-N-01 (SC)	*RJ-45, 10Base-T* *100 m (328 ft)**	*SC, 850 nm multimode* *10Base-FL, 2 km (1.2 miles)**

* Typical maximum cable distance. Actual distance is dependent upon the physical characteristics of the network installation.

The information in this user's guide is subject to change.For the most up-to-date information, see the user's guide on-line at: www.transition.com.

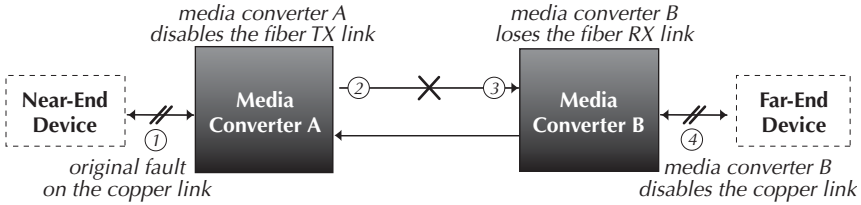
Installation

Set the Link Pass-Through Switch



The Link Pass-Through switch is located on the edge of the printed circuit board and can be easily enabled or disabled without the use of tools.

The Link Pass-Through feature allows the media converter to monitor both the fiber and copper RX (receive) ports for loss of signal.In the event of a loss of an RX signal (1), the media converter will automatically disable the TX (transmit) signal (2), thus, "passing through" the link loss (3).The far-end device is automatically notified of the link loss (4), which prevents the loss of valuable data unknowingly transmitted over an invalid link.



NOTE: If ALL network devices attached to the media converter(s) are capable of auto-negotiation, enable the Link Pass-Through feature on the media converter(s). Otherwise, disable the Link Pass-Through feature.

Install the Media Converter

To install the PCI media converter slide-in-module:

1. Locate an empty installation slot on the PC workstation or file server.
2. Remove the screws that secure the cover over the installation slot.
3. Carefully slide the media converter into the installation slot, aligning the module with the installation guides.
4. Ensure that the converter is firmly seated inside the installation slot.
5. Secure the converter by attaching it to the workstation or file server housing using the screws from step 2.

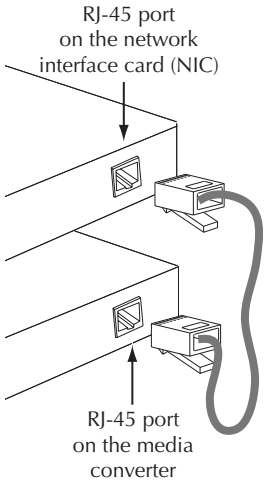
The E-TBT-FRL-NLP-01 is designed for 3.15" (80 mm) installation slots.
The E-TBT-FRL-N-01 is designed for 4.76" (121 mm) installation slots.

Power the Media Converter

The media converter is powered by the PCI (Peripheral Component Interconnect) edge connector on the circuit board.

Installation -- Continued

NOTE:A 10Base-T twisted-pair copper cable is included with the PCI media converter.



Install the Copper Cable

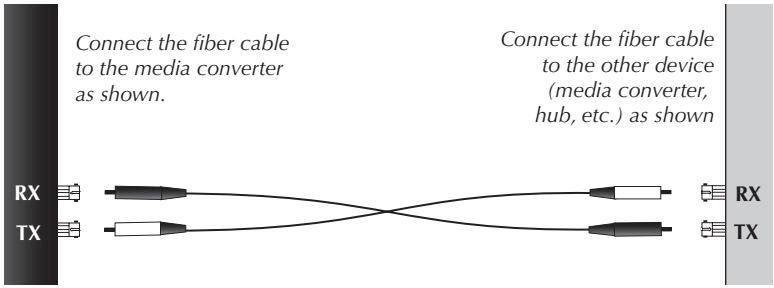
1. Use the enclosed 10Base-T copper cable with male, RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the media converter.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the network interface card (NIC).

AutoCross™

The AutoCross allows either straight-through (MDI) or crossover (MDI-X) copper cables to be used when connecting to 10Base-T devices.AutoCross determines the characteristics of the connection and automatically configures the unit to link up, regardless if the copper cable is MDI or MDI-X configuration.

Install the Fiber Cable

1. Locate or build 10Base-FL compliant fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the PCI media converter as described:
   - Connect the male **TX** cable connector to the female **TX** port.
   - Connect the male **RX** cable connector to the female **RX** port.
3. Connect the fiber cables to the other device (another media converter, hub, etc.) as described:
   - Connect the male **TX** cable connector to the female **RX** port.
   - Connect the male **RX** cable connector to the female **TX** port.



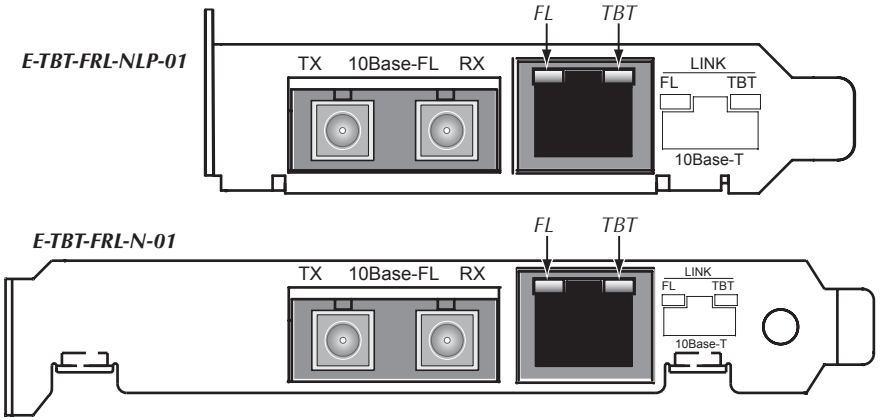
Operation

LED Indicators

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

FL Flashing = The media converter is connected to external power.
On = The 10Base-FL (fiber) link has been established.

TBT Flashing = The media converter is connected to external power.
On = The 10Base-T (copper) link has been established.



Cable Specifications

Fiber Cable 62.5/125 µm (recommended); bit error rate: <10-9

E-TBT-FRL-NLP-01
E-TBT-FRL-N-01 850 nm multimode

Fiber-optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.5 dBm	max: -14.0 dBm
Link Budget	13.5 dB	

E-TBT-FRL-NLP-01(SC)
E-TBT-FRL-N-01(SC) 850 nm multimode

Fiber-optic Transmitter Power:	min: -16.0 dBm	max: -10.0 dBm
Fiber-optic Receiver Sensitivity:	min: -29.5 dBm	max: -7.2 dBm
Link Budget	14.5 dB	

The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC-825/CDRH standards and comply with 21 CFR1040.10 and 21CFR1040.11.

CAUTION: Visible and invisible laser radiation when open.Do not stare into beam or view directly with optical instruments.

CAUTION: Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Cable Specifications -- Continued

Copper Cable

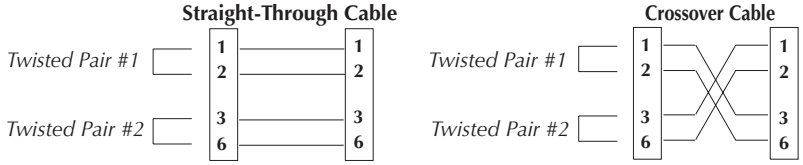
Category 3: (Minimum requirement)

Gauge	24 to 22 AWG
Attenuation	11.5 dB/100m @ 5-10 MHz

Category 5: (Recommended)

Gauge	24 to 22 AWG
Attenuation	22.0 dB /100m @ 100 MHz

- Either straight-through twisted-pair cable may be used.
- Shielded (STP) or unshielded(UTP)twisted-pair may be used.
- Pins 1&2 and 3&6 are the two active pairs in an Ethernet network .
- RJ-45 Pin-out:Pin 1 = TD+, Pin 2 = TD-, Pin 3 = RD+, Pin 6 = RD-
- Use only dedicated wire pairs for the active pins:
(e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.



Technical Specifications

For use with Transition Networks Model E-TBT-FRL-NLP-01 or equivalent

Standards:	IEEE 802.3™	
Data Rate:	10 Mb/s	
Dimensions:	*(-NLP-01)*	3.154 x 5.208 x 0.932"(80 x 134 x 24mm)
	(-N-01)	4.762 x 5.208 x 0.932"(121 x 134 x 24mm)
Weight:	3 oz.(91g)(approximate)	
Power Consumption:	<450 mA	
MTBF	1,203,000 hours (MIL217F2 V5.0) (MIL-HDBK-217F)	
	3,222,000 hours (Bellcore7 V5.0)	
Environment:	Operating Temp*:	0 to 50°C (32 to 122°F)
	Storage Temp:	-25 to 85°C (-13 to 185°F)
	Humidity:	10 to 90%, non condensing
	Altitude:	0 to 10,000 feet
Warranty:	Lifetime	

*Manufacturer's rated ambient temperature:Tmra range for this slide-in-module depends on the physical characteristics and the installation configuration of the file server or PC workstation in which this slide-in-module will be installed.

Product is certified by the manufacturer to comply with DHHS Rule 21/CFR, Subchapter J applicable at the date of manufacture.

Troubleshooting

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

1. Are both the FL and TBT LEDs illuminated?

NO

- Confirm that the media converter is properly inserted into the PC workstation or the file server.
- Confirm that the PC workstation or the file server is properly connected to the power source and is turned on.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 2.

2. Is the FL LED illuminated?

NO

- Check the **fiber cables** for proper connection.
- Verify that the TX and RX cables on the media converter are connected to RX and TX ports, respectively, on the other device.
- Disconnect and reconnect the 10Base-FL cable to restart the initialization process.
- Restart the attached device to restart the initialization process.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Proceed to step 3.

3. Is the TBT LED illuminated?

NO

- Check the **twisted-pair copper cables** for proper connection.
- Disconnect and reconnect the 10Base-T cable to restart the initialization process.
- Restart the attached device to restart the initialization process.
- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

YES

- Contact Tech Support: 1-800-260-1312, Int'l: 00-1-952-941-7600.

Contact Us

Technical Support

Technical support is available 24 hours a day.
US and Canada: **1-800-260-1312**
International: **00-1-952-941-7600**

Transition Now

Chat live via the Web with Transition Networks Technical Support.
Log onto **www.transition.com** and click the **Transition Now** link.

Web-Based Seminars

Transition Networks provides seminars via live web-based training.
Log onto **www.transition.com** and click the **Learning Center** link.

E-Mail

Ask a question anytime by sending an e-mail to our technical support staff.
techsupport@transition.com

Address

Transition Networks
6475 City West Parkway
Minneapolis, MN55344, USA
telephone: 952-941-7600
toll free: 800-526-9267
fax: 952-941-2322

TRANSITION networks

Declaration of Conformity

Name of Mfg:	**Transition Networks** 6475 City West Parkway, Minneapolis MN 55344 USA
Model:	**E-TBT-FRL-NLP-01 & E-TBT-FRL-N-01 Media Converters**
Part Number:	**E-TBT-FRL-NLP-01, E-TBT-FRL-NLP-01(SC), E-TBT-FRL-N-01, E-TBT-FRL-N-01(SC)**
Regulation:	**EMC Directive 89/336/EEC**

Purpose:To declare that the ***E-TBT-FRL-NLP-01*** and ***E-TBT-FRL-N-01*** to which this declaration refers is in conformity with the following standards.

EN 55022:1998+A1:2000 Class A; FCC Part 15 Subpart B; UL listed, 21CFR subpart J

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

Stephen Anderson, Vice-President of Engineering — March 30, 2003 (Date)

Compliance Information

UL Listed, C-UL Listed
CISPR22/EN55022 Class A
CE Mark

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 Funkstörgrenzwertklasse A.In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fäll ist der Benutzer fürGegenmaßnahmen verantwortlich.

Attention! Ceci est un produit de Classe A.Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures 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 öffentlickes Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweligen 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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