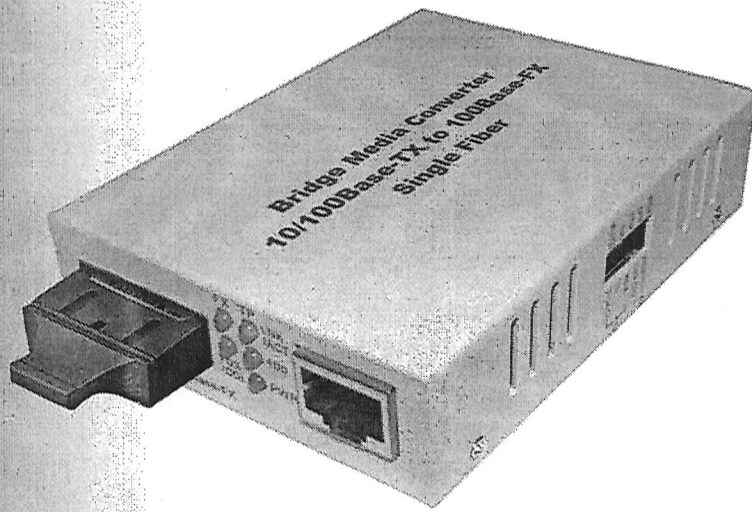


USER'S MANUAL

10/100Base-TX to 100Base-FX FE Media Converter



User's Manual

**10/100Base-TX to 100Base-FX FE Media Converter
Release 4.0**

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Circuit devices are sensitive to static electricity, which can damage their delicate electronics. Dry weather conditions or walking across a carpeted floor may cause you to acquire a static electrical charge.

To protect your device, always:

- Touch the metal chassis of your computer to ground the static electrical charge before you pick up the circuit device.
- Pick up the device by holding it on the left and right edges only.

Electronic Emission Notices

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a class A computing device pursuant to Subpart B of part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in an industrial environment.

CISPR 22:A1:2000+A2:2002
ICES-003:2004, Class A

European Community (CE) Electromagnetic Compatibility Directive

This equipment has been tested and found to comply with the protection requirements of European Emission Standard EN55022/EN61000-3 and the Generic European Immunity Standard EN55024.

EMI	EN55022::2000, Class A
	EN61000-3-2:2000
	EN61000-3-3:1995+A1:2001
EMS	EN55024:2001
	→IEC61000-4-2:1995
	→IEC61000-4-3:1996
	→IEC61000-4-4:1995
	→IEC61000-4-5:1995
	→IEC61000-4-6:1996
	→IEC61000-4-8:1993
	→IEC61000-4-11:1994

ABOUT THIS USER'S MANUAL

In this user's manual, it will not only tell you how to install and connect your network system but show you all the functions.

Overview of this user's manual

- 1. Overview
- 2. Model Description
- 3. Checklist
- 4. Installing the Converter
- 5. WDM Single Fiber Model
- 6. Link Fault Pass Through
- 7. LED Description
- 8. DC Jack and AC-DC Power Adapter
- 9. Connecting to TP, Fiber Device
- 10. Cable Connection Parameter
- 11. TP-Fiber Technical Specifications

1. Overview

IEEE802.3u 100Mbps Fast Ethernet supports two types of media, 10/100Base-TX and 100Base-FX, for network connection. The media converter has commercial and industrial different operating temperature optional specification. This media converter also supports POF (Plastic Optical Fiber) optional networking solution. It is suitable for in-door and out-door industrial Ethernet with fiber optical cable. The POF cable can use PROFINET compatible SC-RJ connector, it has special design for easy fiber cable assembling, the POF cable could be easily assembled on-site with simple tools. LFP (Link Fault Pass Through) feature enhances the TP-Fiber Link integrity and conformity. The TP-Fiber converter can be used as a standalone unit or as a slide-in module to the 19" converter rack (up to 12 units) for use at a central wiring closet.

2. Model Description

Model	Power Description
TP↔ST/SC AC-DC +5V	By AC-DC Adapter
TP↔ST/SC USB +5V	By Self Powering Cable(USB)

The 100Mbps Fiber Transceiver	Wavelength
ST/SC/LC multi-mode 2Km	1310nm
SC/LC.S05/S20/S40/S60Km single-mode	1310nm
SC/LC.S80/S100Km single-mode	1550nm
POF SC-RJ multi-mode 50m	650nm

*:Any other fiber model, such as MT-RJ, VF-45, etc. is available upon request.

Single Fiber Model	TX, RX Wavelength	
1310nm Single-Mode 20Km * 40/60Km models are option	TX (Transmit)	1310nm
	RX (Receive)	1550nm
1550nm Single-Mode 20Km * 40/60Km models are option	TX (Transmit)	1550nm
	RX (Receive)	1310nm

Note:

The 1310nm and 1550nm models must be installed in pairs, i.e., install 1310nm model at one end and 1550nm model at the other one.

following:

- The TP-Fiber Converter
- AC-DC Power Adapter or Self Powering Cable(USB) (upon the model user purchases)
- This User's Manual

Please notify your sales representative immediately if any of the aforementioned items is missing or damaged.

4. Installing the Converter

Note: The Media Converter is hot-swappable.

- ⇒ Wear a grounding device for electrostatic discharge

4.1 TP-Fiber Converter with AC-DC Power Adapter

Note: Please ensure that the power select button is on the left side of slide switch (See Fig. 6-1).

For as a standalone unit:

- ⇒ Verify that the AC-DC adapter conforms to your country AC power requirement and then insert the power plug
- ⇒ Install the media cable for network connection

For as a slide-in unit:

- ⇒ Verify that the media converter is the right model and conforms to the chassis slot. The Media Converter and Rack are built to match each other in imensions, DC jack, DC receptacle and power safety
- ⇒ Locate +5VDC power jack on converter back, and carefully slide in and plug to 19" rack +5VDC power receptacle
- ⇒ Install the media cable for network connection

4.2 TP-Fiber Converter with Self Powering Cable (USB)

Note: Please ensure that the power select button is on the right side of slide switch (See Fig. 6-2).

- ⇒ Install USB cable. Plug type A connector in PC's USB port(jack) and type B connector in the converter's USB port (See Fig. 2)
- ⇒ Install the media cable for network connection

Warning:

Please make sure that the power of PC/USB Hub is turned on, or else the converter will not work

TP Port	Default: AUTO AUTO or FORCE setting, see Fig. 13 S1—Bit 1
	Attach TP Cat. 5 cable to TP port, and the distance can be up to 100m. Use the straight-through cable to connect the switch or workstation, the 10/100 TP port can support AUTO MDI-X sensing.
Fiber Port	Default: 100FDX "100FDX"/"100HDX" setting, see Fig. 13 S1—Bit 5

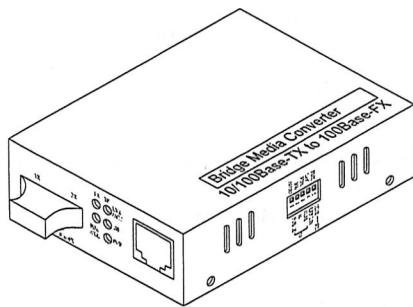


Fig. 1 The View of LFP Bridge Media Converter

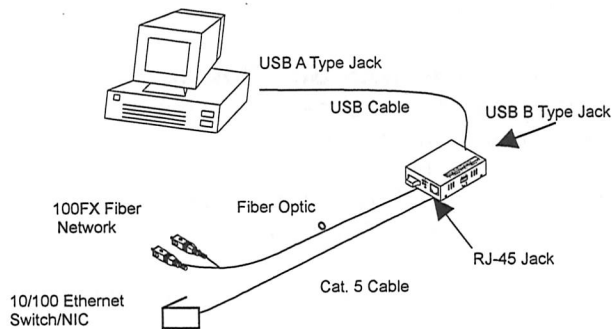


Fig. 2 Connection among USB (Type B-to-Type A Plug), Fiber and TP Cables

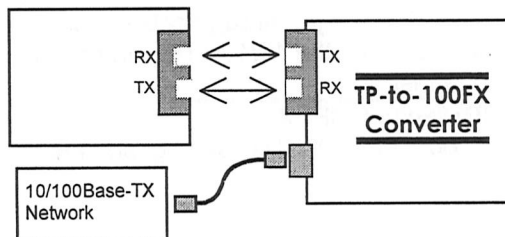


Fig. 3 Basic Network Connection

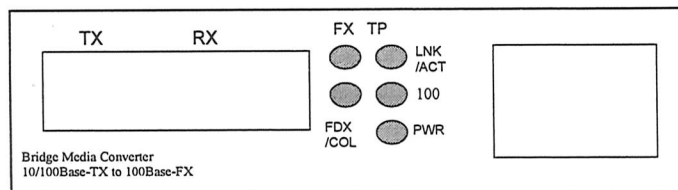


Fig. 4 Bridge Media Converter Front Panel

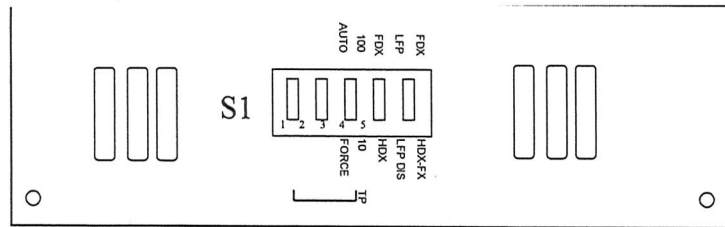


Fig. 5 Bridge Media Converter Side Panel

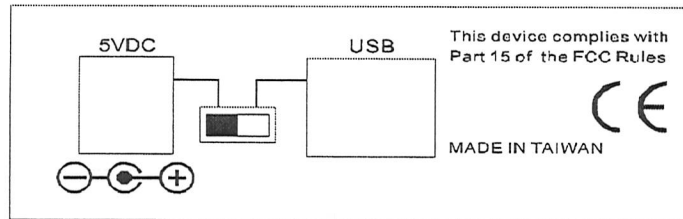


Fig. 6 Bridge Media Converter Rear Panel and Power Select Button

Note:

Fig. 6-1 represents that TP-Fiber Converter with AC-DC Power Adapter is enabled;
 Fig. 6-2 represents that TP-Fiber Converter with Self Powering Cable (USB) is enabled.

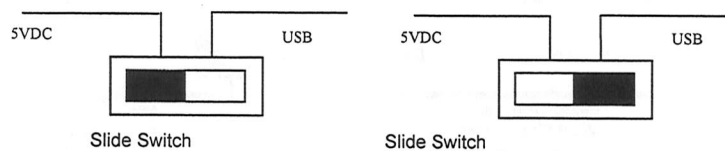


Fig. 6-1

Fig. 6-2

5. WDM Single Fiber Model

The TP-Fiber converter is specially designed with an optic Wavelength Division Multiplexing (WDM) model that can transport bi-directional full duplex signal over a single fiber simultaneously.

Single Fiber Model	TX, RX Wavelength	
1310nm Single-Mode 20Km * 40/60Km models are option	TX (Transmit)	1310nm
	RX (Receive)	1550nm
1550nm Single-Mode 20Km * 40/60Km models are option	TX (Transmit)	1550nm
	RX (Receive)	1310nm

Note:

The 1310nm and 1550nm models must be installed in pairs, i.e., install 1310nm model at one end and 1550nm model at the other one.

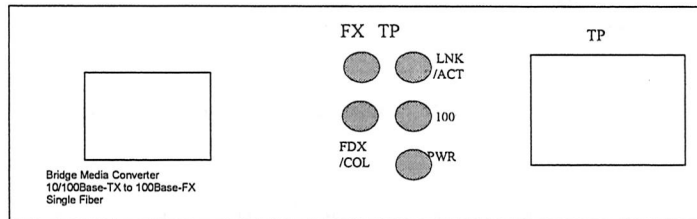


Fig. 7 WDM Single Fiber Converter Front Panel

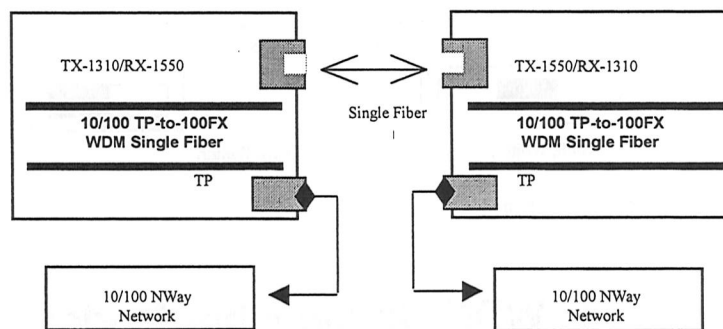


Fig. 8 Basic Network Connection of WDM Single Fiber

6. Link Fault Pass Through

Note: Link fault pass through (LFP) function only takes effect as S1-Bit4 (see Fig. 13) is enabled. Disabled S1-Bit4 will turn this media converter into a general one.

This media converter supports link fault pass through (LFP) in TX/FX converter application. Link status on one port is propagated to the other port to notice the remote nodes. If TP port is unplugged, this converter stops transmission on fiber port. This causes the remote fiber node link to fail. LED shows the link failure on both TP and fiber ports. If fiber link fails, this converter restarts auto-negotiation on TP port but always stays in the link failure state. This causes the remote TP node link to fail. LED also shows the link failure on both TP and fiber ports. Refer to Fig. 9 shown below for the normal status when the link succeeds. Also refer to Fig. 10 and Fig. 11 for the erroneous status when TP Cable A, Fiber Cable B or Fiber Cable C fails to connect.

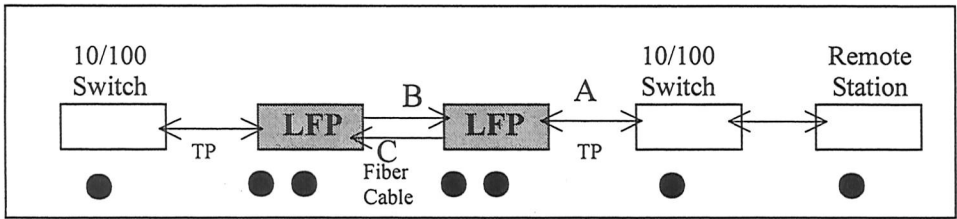


Fig. 9 Normal status via a pair of LFPs

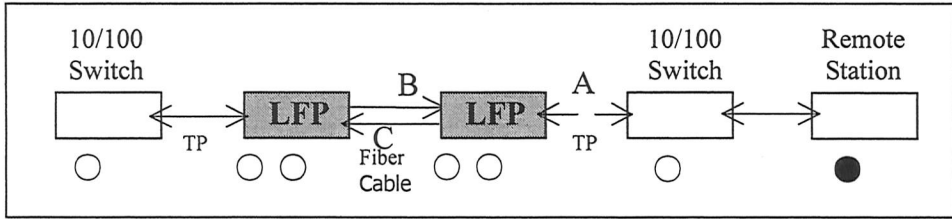


Fig. 10 The status as TP Cable A is broken

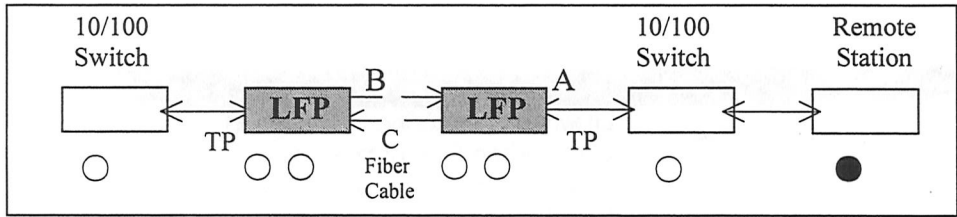


Fig. 11 The status as Fiber Cable B or C is broken

Note : ● indicates LNK/ACT LED Lit
 ○ indicates LNK/ACT LED Off

Warning:

The LFP (Link Fault Pass Through) function works only when both two converters own this capability in pairs. Furthermore, both LFP converters should be supplied only by the same manufacturer/vender. The connection coming from LFP converters with odd models or non-LFP converters will cease the LFP function.

7. LED Description

LED	Color	Function
FX LNK/ACT	Green	Lit when fiber connection is good Blinks when fiber data is present
FX FDX/COL	Amber	Lit when full-duplex mode is active Off when half-duplex is active Blinks when collision is present
TP LNK/ACT	Green	Lit when TP connection is good Blinks when TP data is present
TP 100	Green	Lit when TP speed is 100Mbps Off when TP speed is 10Mbps
PWR	Green	Lit when +5V power is coming up

8. DC Jack and AC-DC Power Adapter

The DC jack's central post is 2.5mm wide and conforms to the DC receptacle (2.5mm) on the 19-inch Converter Rack slot.

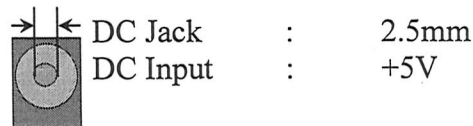


Fig. 12 DC+5V Input Jack and Dimension

Keep the AC-DC adapter as spare parts when Media Converter is installed in a 19-inch Media Converter Rack.

9. Connecting to TP, Fiber Device

Converter TP Port 10/100TP	AUTO, FORCE selectable: Bit 1, 2, 3 of S1 a. AUTO: 10/100 NWay Auto-negotiation b. FORCE: 100 or 10, FDX or HDX
Converter Fiber Port 100FX	100Mbps duplex selectable: Bit 5 of S1 a. FDX for 100FDX fiber link partner, default b. HDX for 100HDX fiber link partner

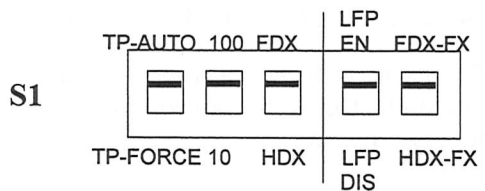


Fig. 13 S1—Bit 1, 2, 3, 4, 5 Configuration and Setting

- S1-1 TP port mode : AUTO (default) or FORCE
- S1-2 TP port speed : 100 or 10 when TP at Force
- S1-3 TP port duplex : FDX or HDX when TP at Force
- S1-4 LFP : LFP enabled (default) or disabled
- S1-5 Fiber port duplex : 100FDX (default) or 100HDX

Note:

1. S1-2 and S1-3 will take effect only when S1-1 is set at TP-FORCE.
2. S1-5 must be set to 100FDX for Single Fiber Model.

Warning:

- When TP NWay port is connected to TP 100FDX(force mode) instead of NWay partner, it will result in 100HDX mode with invalid collision signal
- Ensure that all network nodes are configured at an identical operation mode. Improper operation and flow control mode between TP and Fiber port connections will render the LAN to work poorly

10. Cable Connection Parameter

100Base-X network allows 512-bit time delay between any two node-stations in a collision domain. Switch-based Media Converter breaks up TP and Fiber segments' collision domain to extend the cabling distance.

- **TP Cable Limitations:** Cat. 5 and up to 100m
- **Converter Fiber Cable Limitations:**

SC/ST/LC Converter Models	
Multi-mode Half-duplex	412m
Multi-mode Full-duplex	2Km
Single-mode Half-duplex	412m
Single-mode Full-duplex	5/20/40/60/80/100Km
POF SC-RJ Converter Models	
Multi-mode Half/Full-duplex	50m

11. TP-Fiber Technical Specifications

- **Standards** :IEEE802.3u 10/100Base-TX, 100Base-FX
- **UTP Cable** :Cat. 5 cable and up to 100m
- **Fiber Cable** :
50/125, 62.5/125 or 100/140 μ m multi-mode
8.3/125, 8.7/125, 9/125 or 10/125 μ m single-mode
- **POF Cable** :
POF Standard Cable GP 0.98/1mm multi-mode
- **LED Indicators** :
POWER, TP LNK/ACT, 100, FX LNK/ACT, FDX/COL
- **Data Transfer Rate** :

Speed	Forwarding Rate
100Mbps	148,800 PPS
10Mbps	14,880 PPS

- **Flow Control:** IEEE802.3x compliant for full-duplex
Backpressure flow control for half-duplex
- **Power Requirement** : 1A@+5VDC above AC-DC Adapter
0° to 50°C (Commercial)
: 1A@+5VDC above AC-DC Adapter
0° to 60°C (Industrial)
- **Ambient Temperature** : 0° to 50°C (Commercial)
: 0° to 60°C (Industrial)
- **Humidity** : 5% to 90%
- **Dimensions** : 26.2(H) × 70.3(W) × 94(D) mm
- **Complies with FCC Part 15 Class A and CE Mark**

Note: For connecting this device to Router, Bridge or Switch. please refer to the corresponding device's