

# User's Manual

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10/100/1000Base-T to SFP PoE PSE GbE Media  
Converter

Release 1.0

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## Revision History

| Release | Date       | Revision |
|---------|------------|----------|
| 1.0     | 08/12/2022 | A1       |



## **Caution**

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**

This equipment has been tested and found to comply with the FCC Part 15, Subpart B, Class A.

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 and EN55024.

|     |  |
|-----|--|
| EMI | EN55022:2006 Class A                             |
|     | EN61000-3-2:2006                                 |
|     | EN61000-3-3:1995+A1:2001+A2/2005+A1/2001+A2/2005 |
| EMS | EN55024/1998+A1:2001+A2:2003                     |
|     | →IEC61000-4-2:2001                               |
|     | →IEC61000-4-3:2002+A1:2002                       |
|     | →IEC61000-4-4:1995+A1:2000+A2:2001               |
|     | →IEC61000-4-5:2001                               |
|     | →IEC61000-4-6:2003                               |
|     | →IEC61000-4-8:2001                               |
|     | →IEC61000-4-11:2001                              |

## 1. Overview

10/100/1000Base-T to 1000Base-SX/LX LC IEEE802.3ab/z/at GbE media converter, which allows two types of network segments to be connected easily and inexpensively. Complied with IEEE802.3at Power Over Ethernet standard, this AC powered PoE media converter is a Power Sourcing Equipment (PSE) which combines data received over a TP link with –48VDC power, providing power to IEEE802.3at powered device (PD) over the existing CAT5 UTP cable. The converter includes a PD signature sensing and power monitoring features. Other features include over-current protection, under-current detection and fault protection input. The LFP (Link Fault Pass-through) allows the media converter to monitor both the fiber and copper RX ports for loss of signal. In case of a loss of RX signal on one media port, the converter will automatically disable the TX signal to the other media port, thus passing through the link fault. FEF (Far End Fault) enables the converter to stop sending link pulse to the link partner once a loss of the fiber RX signal is encountered. Then the link partner will synchronously stop sending data. FEF prevents loss of valuable data transmitted over invalid link. Combining LFP and FEF troubleshooting features of RP-130GPFPA, both end devices can be notified of a loss of fiber link.

## 2. Checklist

Before you start installing the Converter, verify that the package contains the following:

- The PoE PSE TP-Fiber Converter
- AC Power Cord
- This User's Manual

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

## 3. Installing the Converter

### **PSE TP-Fiber Converter with Powered Device (PD)**

⇒ Connect the PSE media converter to an AC power source

⇒ Install the TP media cable to the IEEE 802.3at PD converter  
(See Fig. 2)

Note: It can work as a pure converter that connects to the non-PoE converter.

⇒ Install the media cable for network connection

### **Warning:**

- ⇒ Verify that the AC input conforms to your country AC power requirement and then insert the power plug
- ⇒ Ensure that the power of PSE device is turned on
- ⇒ Install the media cable for network connection

|            |   |
|------------|---|
| TP Port    | <b>10/100Base-TX</b><br>Auto-Negotiation<br>Auto-MDIX<br>flow control for Full-Duplex<br>backpressure for Half-Duplex |
|            | <b>1000Base-TX</b><br>Auto-Negotiation mode<br>Auto-MDIX only for Auto-Negotiation<br>w control for Full-Duplex only  |
| Fiber Port | <b>1000Base-SX/LX (LC)</b><br>with NWay flow control<br>Link partner must be 1000FDX with NWay flow control           |



Fig. 1 The View of PoE PSE Media Converter

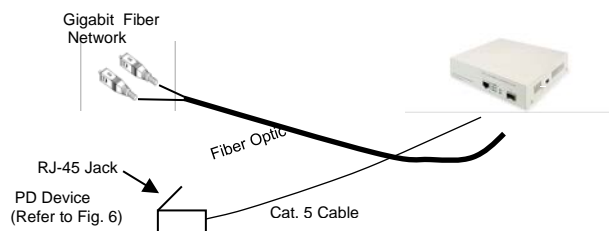


Fig. 2 Connection among PSE PoE Converter, Fiber and TP Cables

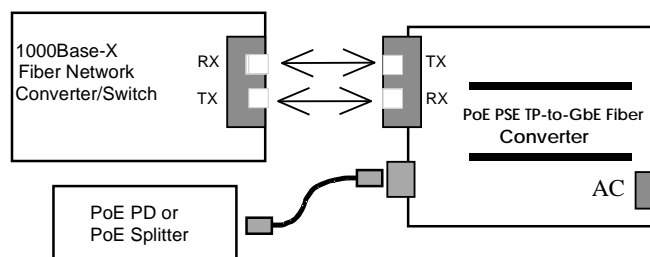


Fig. 3 PSE to PD or PoE Splitter

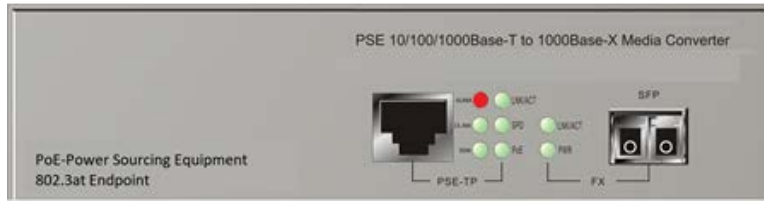


Fig. 4 PoE PSE Media Converter Front Panel



Fig. 5 PoE PSE Media Converter Rear Panel

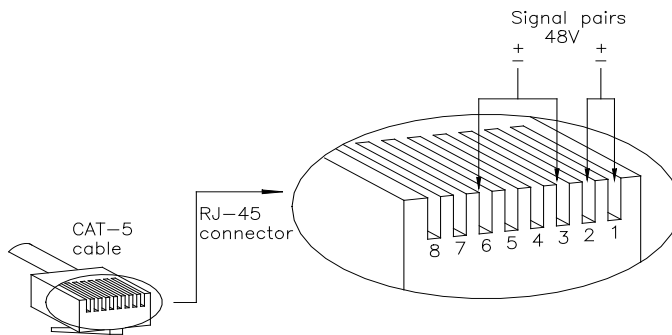


Fig. 6 Endpoint PSE RJ-45 Male Connector

**Note:**

IEEE802.3at assigns pairs on the RJ-45 connector and Cat.5 cable of Endpoint PSE.

Endpoint : -48V via TP pin 1, 2, 3, 6

**4. 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 10Km<br>* 20Km models are option | TX (Transmit)     | 1310nm |
|   | RX (Receive)      | 1550nm |
| 1550nm Single-Mode 10Km                             | TX (Transmit)     | 1550nm |



|                          |              |        |
|--------------------------|--------------|--------|
| * 20Km models are option | 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.

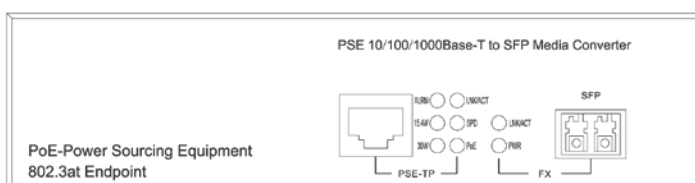


Fig.7 PoE PSE WDM Single Fiber Converter Front Panel

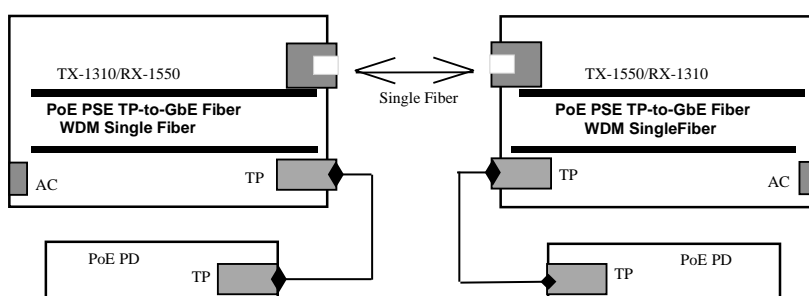


Fig. 8 Power from PSE to PD

## 5. Link Fault Pass Through

The Converter model of LFP (link fault pass through) in TX/FX converter application is controlled by the software and instantly take effect. 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.

Note: Link fault pass through (LFP) function only takes effect as S1-

Bit2 (see Fig. 15) is enabled. Disabled S1-Bit2 will turn this media converter into a general one.

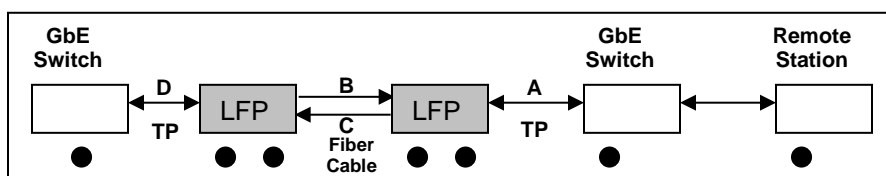


Fig. 9 Normal status via LFP converter

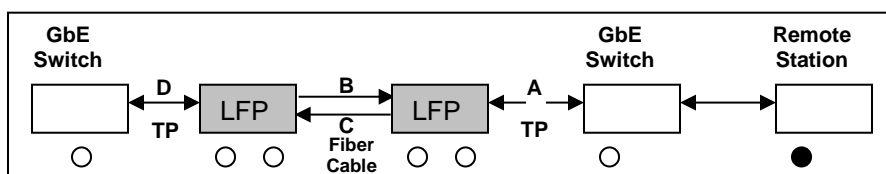


Fig. 10 The status as TP Cable A or D is broken

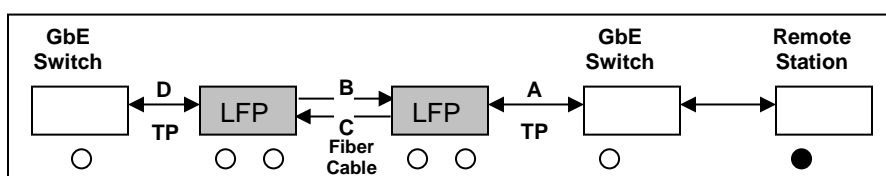


Fig. 11 The status as Fiber Cable B or C is broken

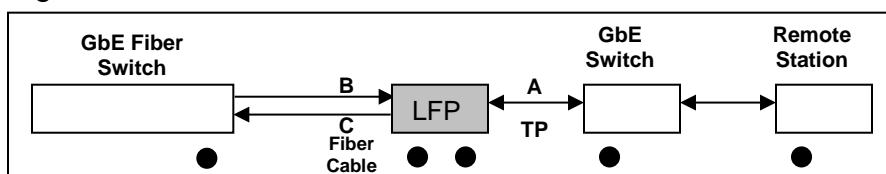


Fig. 12 Normal status via LFP converter

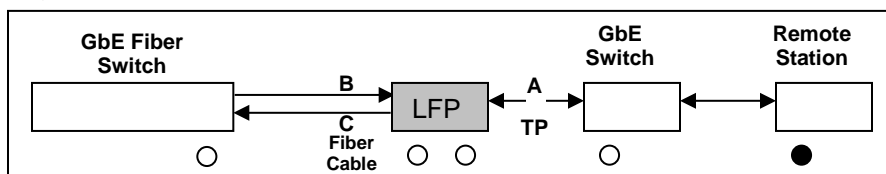


Fig. 13 The status as TP Cable A is broken

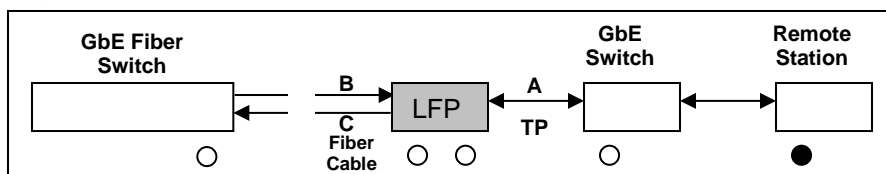


Fig. 14 The status as Fiber Cable B or C is broken

|          |                           |
|----------|---------------------------|
| Note : ● | Indicates LNK/ACT LED Lit |
| ○        | Indicates LNK/ACT LED Off |

**Notice:** The LFP ( Link Fault Pass Through) function can work with

different link partners (for Example: Fiber port on Switch).  
It does not need both two converters with the same model in pairs.

## 6. LED Description

| LED        | Color           | Function   |
|------------|-----------------|--|
| FX LNK/ACT | Green           | Lit when fiber connection is good<br>Blinks when packet is forwarding on fiber port                                    |
| TP LNK/ACT | Green           | Lit when TP connection is good<br>Blinks when packet is forwarding on fiber port                                       |
| TP SPD     | Green<br>Yellow | Green Lit when TP speed is 1000Mbps<br>Amber Lit when TP speed is 100Mbps<br>Off when TP speed is 10Mbps               |
| PWR        | Green           | Lit when power is coming up<br>Off when power was turned off   |
| PoE        | Green           | Green lit when PoE feeling power is active<br>Off when PoE feeling power was turned off                                |
| ALRM       | Red             | Red lit when PoE feeling power was disrupted (In case of over-temp or over-current)<br>Off when PoE is powering normal |
| 15.4W      | Green           | Light when PD Class Type is Class 0 or 3   |
| 30W        | Green           | Light when PD Class Type is Class 4  |

## 7. DIP Switch and Reset Button

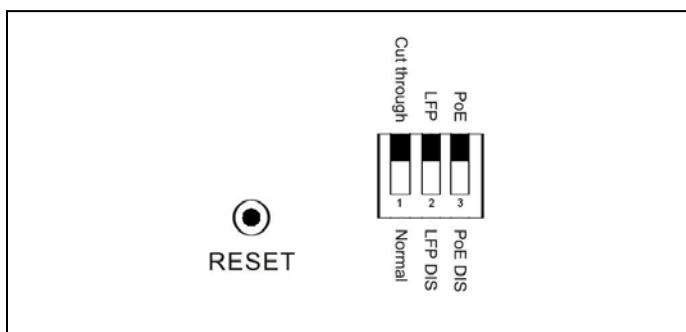


Fig. 15 Reset button and S1—Bit 1, 2, 3 Configuration and Setting

**Reset :** Once S1-1, S1-2 is changed, please press this button to have the setting taken effect.

S1-1 Bridge mode : Cut through (default) or Normal  
 S1-2 LFP : LFP enabled(default) or disabled  
 S1-3 PoE ON/OFF : Enable(default) or disable

**Note:**

1. S1-1 : Cut through mode support jumbo frame size max. up to 9216Bytes. Normal mode max. frame size up to 2048 Bytes
2. S1-3 : Must be set to PoE ON while power supplies to PD.

## 8. Cable Connection Parameter

1000Base-SX/LX network only support full-duplex mode. The 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:**

| Mode                             | Multi-Mode Fiber<br>62.5/125μm   |          | Multi-Mode Fiber<br>50/125μm |          |
|----------------------------------|--|----------|------------------------------|----------|
|                                  | Bandwidth<br>MHz-Km  | Distance | Bandwidth<br>MHz-Km          | Distance |
| 1000SX (LC)<br>850nm             | 160  | 220m     | 400                          | 500m     |
|                                  | 200  | 275m     | 500                          | 550m     |
| 1000LX (LC)<br>1310nm/<br>1550nm | Single-Mode Fiber 9/125μm<br>Single-Mode transceiver 1310nm: 10Km<br>Single-Mode transceiver 1550nm: 30/50Km |          |                              |          |

| Single Fiber Model                                  | TX, RX Wavelength |        |
|---|-------------------|--------|
| 1310nm Single-Mode 10Km<br>* 20Km models are option | TX (Transmit)     | 1310nm |
|   | RX (Receive)      | 1550nm |
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### Note:

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## 9. PoE PSE TP-Fiber Technical Specifications

- **Standards** : IEEE802.3ab 1000Base-T Gbit/s Ethernet over twisted pair  
IEEE802.3z 1000Base-X Gbit/s Ethernet over Fiber-Optic  
IEEE802.3at max. 30W Power over Ethernet
- **UTP Cable** : Cat. 5 cable and up to 100m
- **Fiber Cable** : 50/125, 62.5/125 or 100/140μm multi-mode  
8.3/125, 8.7/125, 9/125 or 10/125μm single-mode
- **PSE Power Feeding Supports** :  
“Endpoint” via TP pin 1, 2, 3, 6
- **LED Indicators** :

POWER, PoE, TP LNK/ACT, SPD, FX LNK/ACT,  
ALRM,15.4W,30W

- **Data Transfer Rate :**

| Speed    | Forwarding Rate |
|----------|-----------------|
| 1000Mbps | 148,8000 PPS    |
| 100Mbps  | 148,800 PPS     |
| 10Mbps   | 14,880 PPS      |

- **Flow Control :** IEEE802.3at compliant for full duplex  
Backpressure flow control for half duplex
- **Power Requirement :**  
**AC Line:** 100-240V 50-60Hz
- **Power Consumption :** 3W (No PoE loading)
- **Ambient Temperature :** 0° to 50°C
- **Humidity :** 5% to 90%
- **Dimensions :** 40(H) × 158(W) × 133(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 Technical  
Manual.***