POE120 Series

10/100 Base-TX to 100Base-FX Converter
POE Powered Device

Version 1.01
Date: 13 July 2005

1. Overview

The POE120 Series IEEE 802.3u compliant media converters support two types of media 10/100 Base-TX and 100Base-FX. With LFP (Link Fault Propagation) support it allows the administrator to easily diagnose link faults on their network. If the Copper or Fibre link fails, the converter forces the link status of the connecting device to also fail.

The POE120 Series media converters are fully compliant to the IEEE 802.3af standard. The converters advanced auto-sensing algorithm allows the unit to draw power from any IEEE 802.3af Power Sourcing Equipment (PSE) device (POE100 Series Converter, or PoE Switch) or Power over Ethernet Injector. It also supports high levels of safety support with short circuit protection and power-in auto-detection. The POE120 series converters can be powered from either a standard plug pack or a PSE device.

2. Model Description

Model	Power Description
POE120 Series	60mA@-48VDC over Cat.5

100Mbps Fibre Transceiver	Wavelength
ST/SC Multimode 2Km	1310nm
SC.S05/S20/S40/S60Km Single Mode	1310nm
SC.S80/S100Km Single Mode	1550nm

Single Fibre Model	TX, RX Wavelength
1310nm Single Mode 20Km	TX (Transmit) 1310nm
	RX (Receive) 1550nm
1550nm Single Mode 20Km	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 the 1550nm model at the other end.

3. Checklist

Before you start installing the POE converter, please verify that the package contains the following items.

- The POE120 Series Converter
- CD containing this manual

Please notify your sales representative if any of the above items are missing or damaged.

4. Installing the Converter

4.1 POE120 converter connected to a Power Sourcing Equipment Device (PSE)

1. Connect the copper cable to your IEEE 802.3af compliant PSE device. *The POE120 can also work as a standard media converter and connect to a non POE device. (power supply is optional)*

2. Connect the fibre cable to your connecting device.

Note:

- *Please make sure that the 802.3af power is being supplied from a PSE device to the PD Media Converter.*
- *In case there is no 802.3af PSE available or the PSE device power fails, you may install an AC-DC adapter as a backup solution. Do not connect the PSE Copper port and a AC-DC adapter at the same time. (the power options are not designed in a redundant configuration)*

TP Port	**Default:** Auto Auto or Force setting, see figure 11. S1-Bit 1
	Attach Cat. 5 cable to the copper port and ensure the cable run is not over 100m in distance. The Copper port supports Auto MDI-X, therefore there is no need to use a cross-over cable when connecting to a switch.
Fibre Port	**Default:** 100FDX ”100FDX”/”100HXD” setting, see figure 11. S1-Bit 5

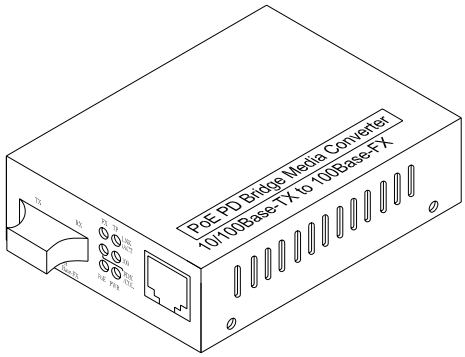


Fig. 1 View of the POE120 Series Media Converter

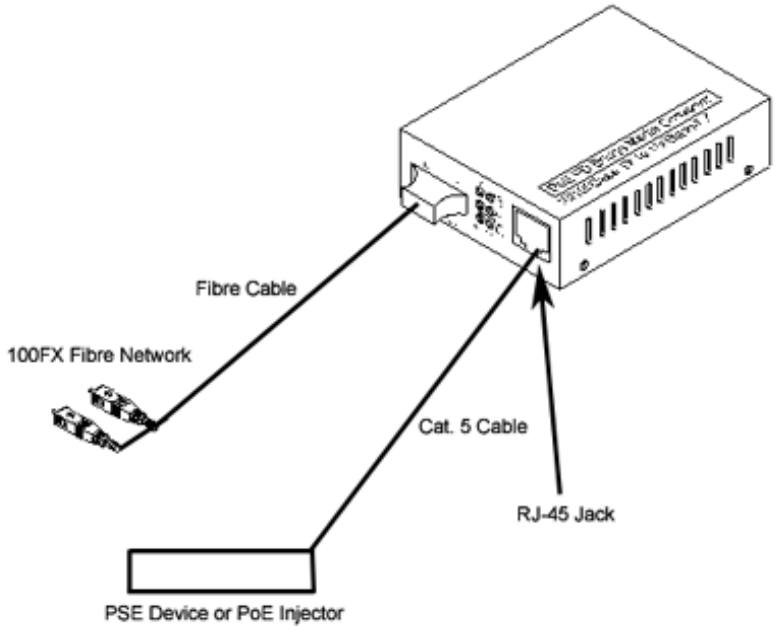


Fig. 2 Example connection between POE120, PSE device and Fibre Cable

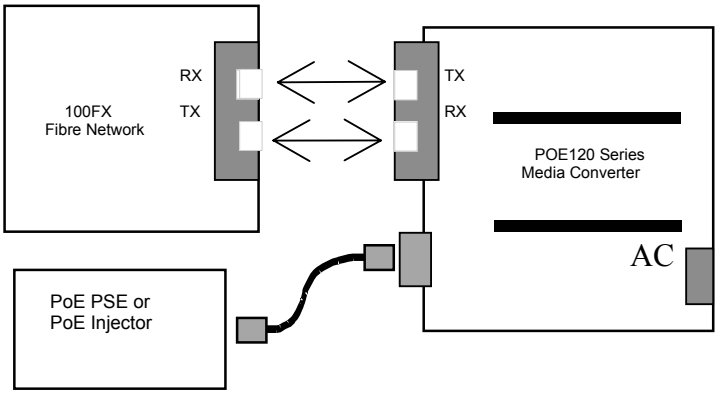


Fig. 3 POE120 Series to PSE Device or POE Injector

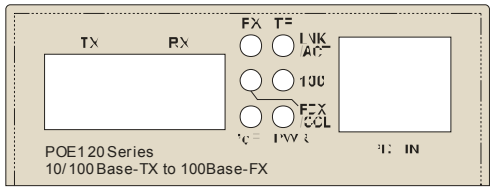


Fig. 4 POE120 Series Media Converter Front Panel

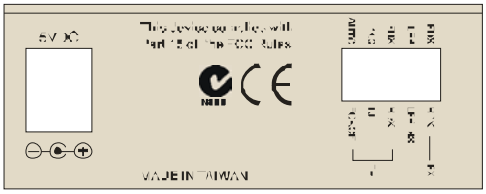


Fig. 5 POE120 Series Media Converter Rear Panel

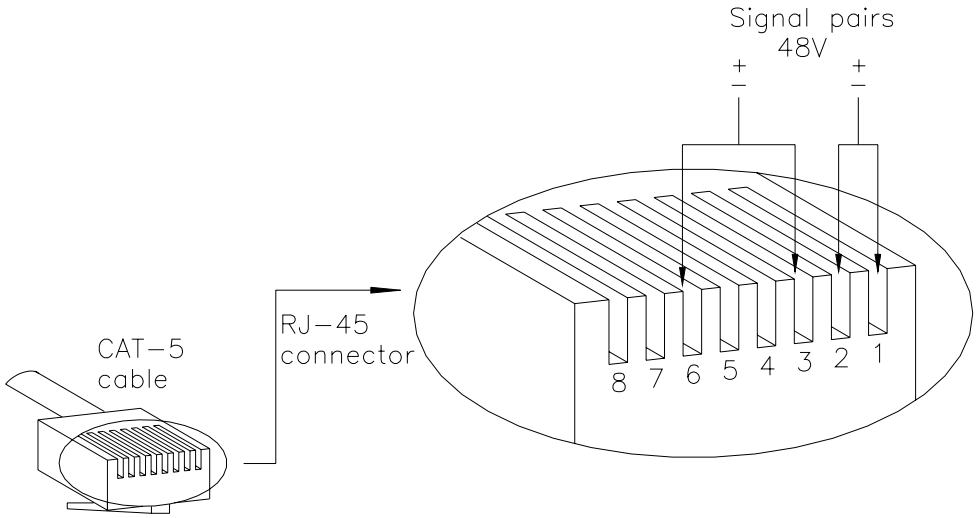


Fig. 6 Pairs used for receiving power over Ethernet Cable.

Note:

The pins used for receiving power from a PSE Device follows the IEEE 802.3af standard.

Endpoint: -48V via TP pins 1, 2, 3, 6
Midspan: - 48V via pins 4, 5, 7, 8

5. WDM Single Fibre Model

The POE120 Series media converter has an optional Wavelength Division Multiplexing (WDM) Model that can transport bi-directional full duplex signals over a single fibre simultaneously.

Single Fibre Model	TX, RX Wavelength
1310nm Single Mode 20Km	TX (Transmit) 1310nm
	RX (Receive) 1550nm
1550nm Single Mode 20Km	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 the 1550nm model at the other end.

6. Link Failure Propagation

The POE120 Series media converters support Link Failure Propagation (LFP). If the Copper port is unplugged, the converter stops transmission on the fibre port. This causes the remote fibre node link to fail as well. The LED's on the converter will now show link failure on both the copper and fibre ports. If the fibre link fails, the converter restarts auto-negotiation on the copper port but always stays in the link failure state. This causes the remote copper node link to fail as well. The LED's on the converter will now show link failure on both the copper and fibre ports.
Refer to Fig. 7 shown below for the normal status when link is active. Also refer to Fig. 8 and Fig. 9 for the LED status when copper Cable A, Fibre Cable B or Fibre Cable C fails.

Note:

The Link Failure Propagation (LFP) function only takes effect when S1-Bit4 (see Fig. 11) is enabled. When S1-Bit4 is disabled the media converter will function normally.

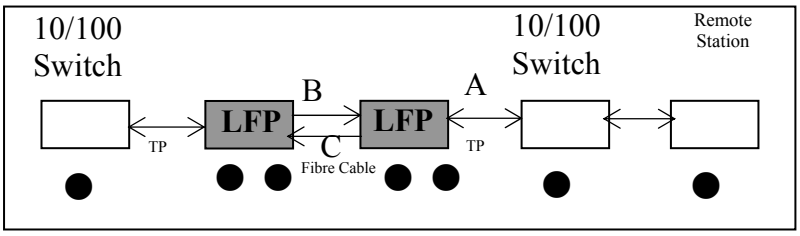


Fig. 7 Normal Status via a pair of LFP's

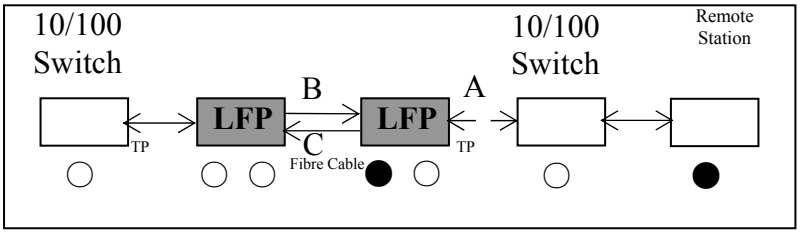


Fig. 8 The Status when Copper Cable A link is broken

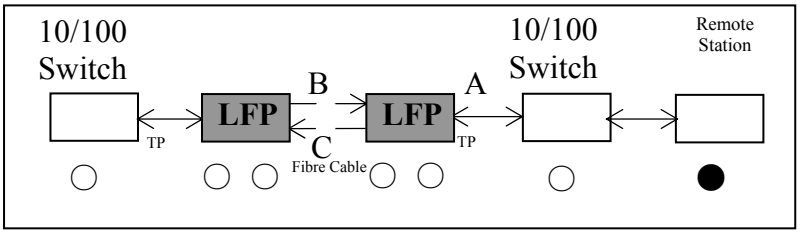


Fig. 9 The Status when Fibre Cable C or B link is broken

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

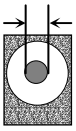
7. LED Description

The following table describes the LED's located on the POE100 Series media converter.

LED	Colour	Function
FX LNK/ACT	Green	Lit when fibre connection has link Blinks when fibre 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 Copper connection has link Blinks when Copper data is present
TP 100	Green	Lit when Copper speed is 100Mbps Off when Copper speed is 10Mbps
PWR	Green	Lit when +5V power is supplied
POE	Green	Lit when POE power is supplied

8. DC Jack and AC-DC Power Converter

The DC jacks central post is 2.5mm wide.



DC Jack : 2.5mm
DC Input : +5V

Fig. 10 DC+5V Input Jack and Dimension

9. DIP Switch Configuration

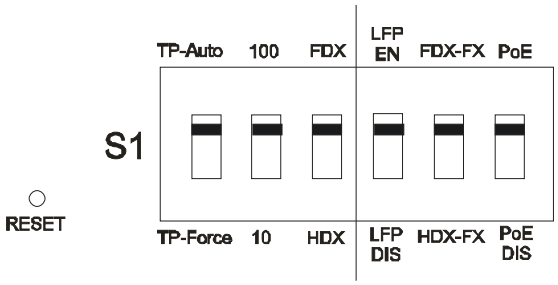


Fig. 11 Reset button and S1 – Bit 1, 2, 3, 4, 5, 6, Configuration and Settings

Reset	:	If S1-1, S1-2, S1-3, S1-4 or S1- status is changed, please press this button for your settings to take effect.
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 Fibre Port Duplex	:	100FDX (Default) or 100HDX
S1-6 POE ON/OFF	:	Enabled (Default) or Disabled

Note:

1. *S1-2 and S1-3 will take effect only when S1-1 is set to TP-Force*
2. *S1-5 must be set to 100FDX for Single Fibre Model*
3. *S1-6 must be set to POE when you need to supply power to a PD.*

Warning:

- When a Copper port set to AUTO and is connected to a device that is Forced to 100Mbps FDX , instead of a device running NWAY, it may result in the devices connecting in HDX mode, this may cause packet collisions on your network.
- Please ensure that all network nodes that this device connects to are set to the same mode at each end of the link.
  e.g., Both ends are set to Auto-Negotiation mode (AUTO)

10. Cable Distances and Limitations

- **TP Cable Limitations:** Cat 5 up to 100m
- **Fibre Cable Limitations:**

SC/ST Converter Models	
Multi Mode Half Duplex	412m
Multi Mode Full Duplex	2Km
Single Mode Half Duplex	412m
Single Mode Half Duplex	5/20/40/60/80/100Km

11. Technical Specifications

Standards:	IEEE 802.3u 10/100Base-TX, 100Base-FX IEEE 802.3af Power Over Ethernet
UTP Cable:	Cat. 5 cable up to 100m
Fibre Cable:	50/125, 62.5/125 or 100/140 µm multi mode 8.3/125, 8.7/125, 9/125 or 10/125 µm single mode
Power Reception Support:	“Endpoint” Via TP Pins 1, 2, 3 and 6 ”Midspan” Via TP pins 4, 5, 7 and 8
LED Indicators:	Power, POE, TP LNK/ACT, 100, FX LNK/ACT, FDX/COL
Data Transfer Rate:	100Mbbps – 148,800pps 10Mbps – 14,880pps
Flow Control:	IEEE 802.3x compliant for Full Duplex Backpressure flow control for Half Duplex
Power Requirements:	60mA@-48VDC from IEEE 802.3af PSE or POE Injector
Ambient Temperature:	0º to 50º C
Humidity:	5% to 90%
Dimensions:	26.2(H) x 70.3(W) x 94(D) mm
Complies with C-Tick, FCC Part 15 Class A and CE Mark	