1000Base-SX / LX to 10/100/1000Base-T

802.3at PoE

Industrial Media Converter

IGTP-802T / IGTP-802TS / IGTP-805AT

User's Manual

Table of Contents

Trademarks

Contents subject to revision without prior notice.

Disclaimer

PLANET Technology does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose.

PLANET has made every effort to ensure that this User's Manual is accurate; PLANET disclaims liability for any inaccuracies or omissions that may have occurred.

Information in this User's Manual is subject to change without notice and does not represent a commitment on the part of PLANET. PLANET assumes no responsibility for any inaccuracies that may be contained in this User's Manual. PLANET makes no commitment to update or keep current the information in this User's Manual, and reserves the right to make improvements to this User's Manual and/or to the products described in this User's Manual, at any time without notice.

If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

FCC Warning

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 his own expense.

CE Mark 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.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

PLANET 1000Base-SX / LX to 10/100/1000Base-T 802.3at PoE Industrial Media Converter User's Manual

For Models: IGTP-802T / IGTP-802TS / IGTP-805AT

Revision: 1.0 (September, 2011)

Part No: EM-IGTP-80xT_v1.0 (2350-AH1170-000)

1. Introduction

1.1 Package Contents

Check the contents of your package for following parts:

- ◆ 802.3at PoE Industrial Media Converter x 1
- ◆ User's Manual x 1
- ◆ DIN Rail Kit x 1
- ◆ Wall Mount Kit x 1

If any of these are missing or damaged, please contact your dealer immediately, if possible, retain the carton including the original packing material, and use them against to repack the product in case there is a need to return it to us for repair.

In the following section, the term **"Industrial 802.3at PoE Media Converter"** means the IGTP-802T / IGTP-802TS / IGTP-805AT.

1.2 How to Use This Manual

This Industrial 802.3at PoE Media Converter User Manual is structured as follows:

Chapter 2 Installation

The chapter explains the feature, functionality and the physical installation of the Industrial 802.3at PoE Media Converter.

Chapter 3 Link Pass-through

The chapter explains the link pass through function of Industrial 802.3at PoE Media Converter.

Chapter 4 Troubleshooting

The chapter explains the troubleshooting of the Industrial 802.3at PoE Media Converter.

Chapter 5 Cable Connection Parameters

The chapter explains the cable connection parameters of the Industrial 802.3at PoE Media Converter.

Appendix A

This chapter contains cable information of the Industrial 802.3at PoE Media Converter.

1.3 Product Features

Physical Port

- 1-Port 10/100/1000Mbps RJ-45 interface, auto-negotiation and auto-MDI/MDI-X
  - 1-Port **Data + Power** output, 802.3af / 802.3at PoE standard compatible
  - 10/100/1000Base-T: 1-port Cat. 5/5e/6 UTP cable, up to 100 meters
- 1-Port Gigabit Fiber Interface
  - IGTP-802T: SC Fiber Interface
  - IGTP-802TS: SC Fiber Interface
  - IGTP-805AT: LC Fiber Interface (Vary on SFP Module 100 / 1000 dual mode support)

Hardware

- LED Indicators:
  - **System:** Power 1, Power 2 and Fault LED
  - **Fiber port:** LNK / ACT
  - **10/100/1000Base-T port:** LNK / ACT, PoE In-use
- DIP-Switch: LFP (Link Fault Pass-through) mode selection

IEEE 802.3af / 802.3at PoE

- Comply with IEEE 802.3af standard and IEEE 802.3at standard, End-Span PSE, 1/2(+), 3/6(-)
- 24V / 48V DC Power Input for PoE
- Provides DC 52V power over RJ-45 Ethernet cable to devices with Ethernet port
- Supports PoE Power up to 30 Watts for PoE port
- Auto-detect of PoE IEEE 802.3at / IEEE 802.3af equipments, protecting the devices from being damaged by incorrect installation
- Remote power feeding up to 100m

- IEEE 802.3at / IEEE 802.3af Splitter devices compatible

Industrial Case / Installation

- IP-30 Aluminum metal case / Protection
- DIN Rail and Wall Mount Design
- 24 and 48V DC, redundant power with polarity reverse protect function and connective removable terminal block for master and slave power
- Supports EFT protection 6000 VDC for power line
- Supports 6000 VDC Ethernet ESD protection
- -40 to 75 Degree C operating temperature

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-TX / 100Base-FX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3z 1000Base-SX / LX
- IEEE 802.3at Power over Ethernet Standard
- IEEE 802.3af Power over Ethernet Standard
- FCC Part 15 Class A, CE

1.4 Product Specifications

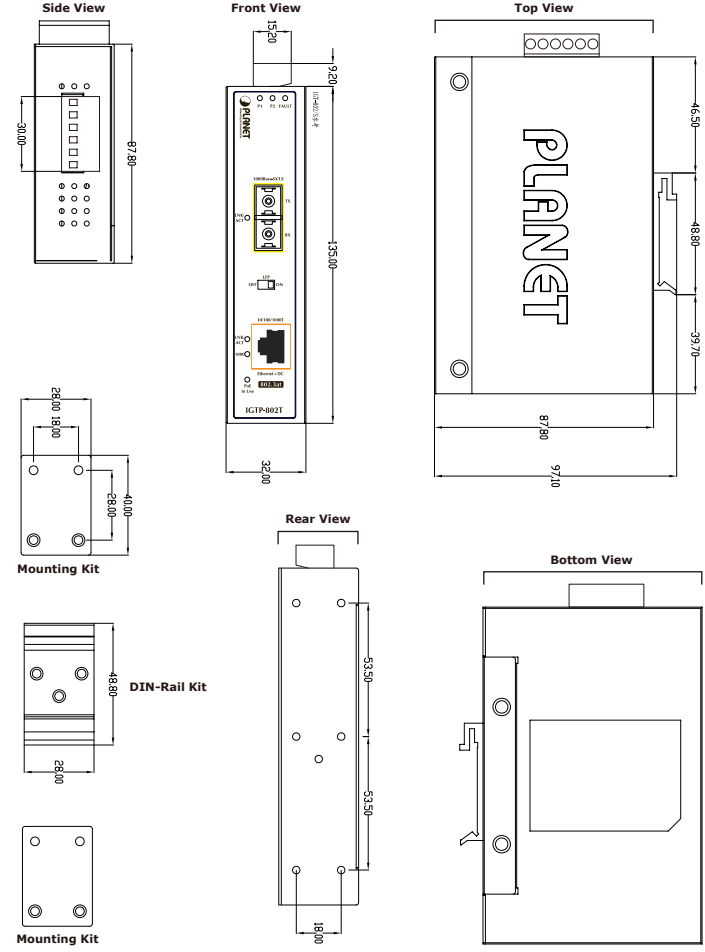
Model	IGTP-802T	IGTP-802TS	IGTP-805AT
Hardware Specification			
10/100/1000Base-T Port	1-Port RJ-45 interface, auto-negotiation and auto-MDI/MDI-X		
1000Base-X Fiber Interface	SC	SC	SFP (LC)
Fiber Cable	Multi-mode: 50/125 μm or 62.5/125 μm optic fiber	Single-mode: 9/125 μm optic fiber	Vary on SFP Module
Cable Distance	220m & 550m	10km	Vary on SFP Module
Optical Frequency	850nm	1310nm	
Launch Power	Max. -4 dBm Min. -9.5 dBm	Max. -3 dBm Min. -9.5 dBm	
Receive Sensitivity	-13.5 dBm	-14.4 dBm	
Maximum Input power	-18 dBm	-20 dBm	
IEEE 802.3at / 802.3af PoE Port	1, End-Span, 1/2(+), 3/6(-)		
LED Indication	**System:** Power 1, Power 2 and Fault LED (Green) **Fiber port:** LNK / ACT (Green) **10/100/1000Base-T port:** LNK / ACT, PoE In-use (Green / Orange)		
LFP DIP Switch	ON / OFF		
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex		
Maximum Frame Size	9216 bytes		
Power Requirement	24 and 48V DC, redundant power with polarity reverse protect function		
Enclosure	IP-30 Aluminum metal case		
Dimension	135 x 87 x 32mm		
Weight	510g		500g
Installation	DIN rail kit and wall mount ear		
ESD Protection	6KV DC		
EFT Protection	6KV DC		

Alarm	Provides one relay output for power fail Alarm Relay current carry ability: 1A @ DC 24V
Speed	**Twisted-pair:** 10/20Mbps for Half / Full-Duplex, 100/200Mbps for Half / Full-Duplex 1000/2000Mbps for Full-Duplex **Fiber-optic:** 200Mbps / 2000Mbps for Full-Duplex
Network Cables	**10/100/1000Base-T:** 2-Pair UTP Cat. 3, 4, 5, 5e, 6 (100 meters, max.) EIA/TIA-568 100-ohm STP (100 meters, max.) **100Base-FX /1000Base-SX / LX:** Multi-mode: 50/125μm or 62.5/125μm optic fiber Single-mode: 9/125μm optic fiber
Power Consumption	**Without PoE:** **24V:** 4.3 Watts / 14BTU **48V:** 4.8 Watts / 16BTU **With PoE:** **24V:** 33 Watts / 112BTU **48V:** 31 Watts / 105BTU
Power over Ethernet	
PoE Standard	IEEE 802.3af / 802.3at High Power over Ethernet / PSE
PoE Power Supply Type	End-Span
PoE Power Output	52V DC. 15.4 Watts 52V DC. 30 Watts
Power Pin Assignment	1/2(+), 3/6(-)
PoE Budget	30 Watts
Standards Conformance	
Standards Compliance	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX / FX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet IEEE 802.3z 1000Base-SX / LX Gigabit Ethernet IEEE 802.3x Full-Duplex Flow Control IEEE 802.3af Power over Ethernet IEEE 802.3at High Power over Ethernet
Stability Testing	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)

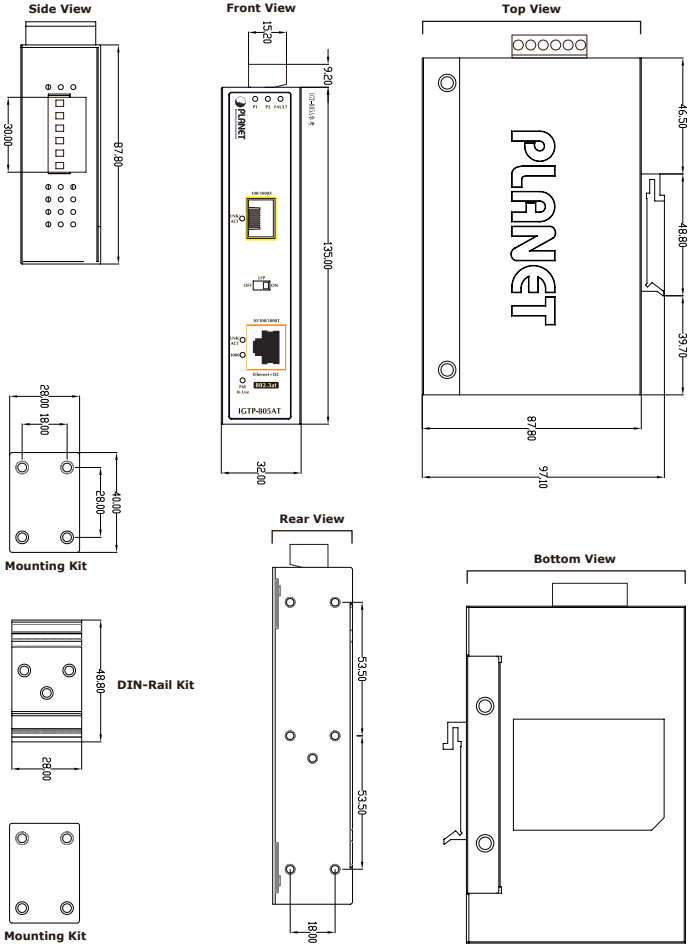
1.5 Physical Dimension

IGTP-80xT Industrial 802.3at PoE Media Converter dimension (W x D x H): 135 x 87 x 32 mm

IGTP-802T / 802TS:



IGTP-805AT:


Side View
Front View
Top View
Rear View
Bottom View
Mounting Kit
DIN-Rail Kit
Mounting Kit
IGTP-805AT
PLANET
15.20
9.20
135.00
32.00
46.50
48.80
39.70
87.80
97.10
30.00
87.80
28.00
18.00
28.00
40.00
48.80
28.00
53.50
53.50
18.00

2. Installation

This product provides three different running speeds – 10Mbps, 100Mbps and 1000Mbps in the same Industrial 802.3at PoE Media Converter and automatically distinguishes the speed of incoming connection, this section describes the functionalities of IGTP-80xT's components and guides how to install it on the DIN Rail Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

2.1 Product Description

The Industrial 802.3at High Power over Ethernet Gigabit Media converter – IGTP-80xT series, fully complies with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T and IEEE 802.3z 1000Base-SX / LX, the Gigabit media conversion installation is quite quick and easy by simple plugging and playing feature. The IGTP-80xT series Industrial 802.3at High Power over Ethernet Gigabit Media converter also supports flow control and back pressure in half-duplex to eliminate packets loss.

The IGTP-80xT series extends communication distance with highly Gigabit performance via fiber optical wire, in which the extension distance could be up to 10km by applying IGTP-802TS and IGTP-805AT (vary on SFP module) or up to 550m by IGTP-802T, the IGTP-80xT series is specifically designed with durable components and strong housing case to operate reliably in electrically harsh and climatically demanding environments. The industrial level Gigabit media converter provides a high level of immunity to electromagnetic interference and heavy electrical surges which are usually found on plant floors or traffic control cabinets in sidewalk. Being able to operate under the temperature range from -40 to 75 Degree C allow the IGTP-80xT series can be placed in almost any difficult environment.

The maximum distance between the PoE PSE to PD is 100 meters. To extend the network device deployment range, the IGTP-80xT series is integrated with Fiber interface. The IGTP-80xT series is used to convert optical Ethernet signal to electrical Ethernet signal that allows two type segments to connect easily, efficiently and inexpensively. It can convert 10/100/1000Base-T signal to 1000Base-SX / LX one and provides the diverse options of fiber connecting types to meet different network applications.

With the long Fiber distance support, it still sustains the transmission performance as high as 1000Mbps. It works in high performance Store and Forward mechanism, and also can prevent packet loss with IEEE 802.3x Flow Control (Full-Duplex) and the LFP (Link Fault Pass Through function) (LLCF/LLR) with the DIP Switch design. Furthermore, it can immediately alarm the administrators the issue from the link media and provide efficient solution to monitor the network power usage.

To fill the growing demand of Industrial PoE PD devices those need higher Power Input and long distance transmission, the IGTP-80xT series Industrial 802.3at High Power over Ethernet Gigabit Media converter with brand-new IEEE 802.3at High Power over Ethernet technology applied. The IGTP-80xT provides the following key features:

- ◆ IEEE 802.3at Power over Ethernet standard compliant
- ◆ IEEE 802.3af Power over Ethernet standard
- ◆ Maximum 30 Watts output power support
- ◆ 10/100/1000Mbps duplex mode support on 1000Base-T port
- ◆ 1000Mbps Fiber-Optical support on IGTP-802T / IGTP-802TS
- ◆ 100Mbps / 1000Mbps Fiber-Optical support on IGTP-805AT

The IGTP-80xT series is a Single-Port, End-Span Industrial IEEE 802.3at High Power over Ethernet Gigabit Media converter with maximum up to 30 Watts of power output over Ethernet cables. It is designed specifically to satisfy the growing demand of higher power required network equipments such as PTZ (Pan, Tilt & Zoom) network cameras, PTZ Speed Dome, color touch-screen / Video and Voice over IP (VoIP) telephones, multi- channel (11a / b / g / n) wireless LAN access points and other Network devices that need higher power to function normally. The IGTP-80xT series Industrial 802.3at High Power over Ethernet Gigabit Media converter is an ideal solution to deliver data and power to network devices directly via the RJ-45 Port interface without the need of installing extra power outlets and electrical cabling.

2.1.1 Product Overview

The Front Panel of the Industrial 802.3at PoE Media Converter consists of one 1000Base-SX / 1000Base-LX / mini-GBIC SFP ports and one Auto-Sensing 10/100/1000Mbps Ethernet RJ-45 Port. Figure 2-1, 2-2 shows a front panel of Industrial 802.3at PoE Media Converter.

2.1.2 Converter Front Panel

Figure 2-1 & 2-2 shows a front panel of Industrial 802.3at PoE Media Converter.

Figure 2-1:
IGTP-802T/ 802TS Front Panel

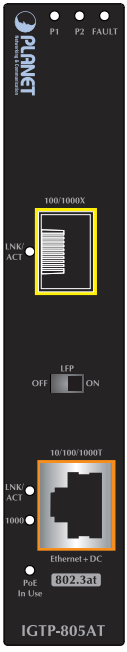


Figure 2-2:
IGTP-805AT Front Panel

2.1.3 LED Indicators

System:

LED	Color	Function
P1	Green	**Lit:** indicate the power 1 has power.
P2	Green	**Lit:** indicate the power 2 has power.
FAULT	Green	**Lit:** indicate the either power 1 or power 2 has no power.

Gigabit Fiber Interface

LED	Color	Function
Fiber LNK/ ACT	Green	**Lit:** indicate that the Fiber Optical Port is successfully connecting to the network at 1000Mbps.
		Blinks: indicate the Fiber Optical Port is receiving or sending data.

Gigabit TP Interface

LED	Color	Function
TP LNK/ ACT	Green	**Lit:** indicate that the Gigabit Ethernet Port is successfully connecting to the network at 10/100/1000Mbps.
		Blinks: indicate the Gigabit Ethernet Port is receiving or sending data.
TP 1000		**Lit:** indicate that the Gigabit Ethernet Port is successfully connecting to the network at 1000Mbps. OFF indicate the Gigabit Ethernet Port is successfully connecting to the network at 10/100Mbps.

PoE

LED	Color	Function
PoE In-Use	Orange	**Lit:** Indicate that the port is providing DC 52V to remote powered device.
		Off: Indicate that the port is not providing DC 52V to remote powered device.

2.1.4 Converter Upper Panel

The upper panel of the Industrial 802.3at PoE Media Converter consist one terminal block connector within two DC power inputs. Figure 2-3 shows the upper panel of the Industrial 802.3at PoE Media Converter.

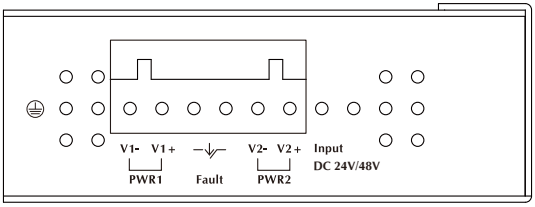
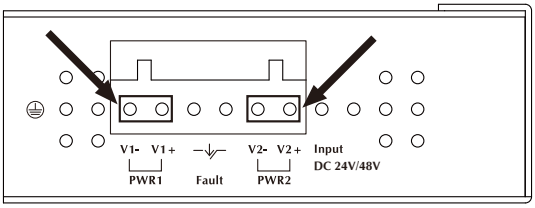


Figure 2-3: Industrial 802.3at PoE Media Converter upper Panel.

2.1.5 Wiring the Power Inputs

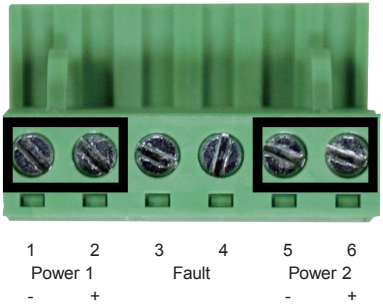
The 6-contact terminal block connector on the top panel of Industrial 802.3at PoE Media Converter is used for two DC redundant powers input. Please follow the steps below to insert the power wire.

1. Insert positive / negative DC power wires into the contacts 1 and 2 for POWER 1, or 5 and 6 for POWER 2.



V1- V1+ V2- V2+

2. Tighten the wire-clamp screws for preventing the wires from loosing.

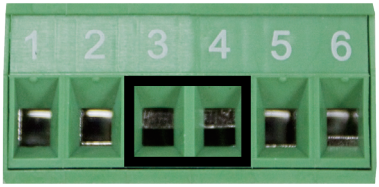


Note

The wire gauge for the terminal block should be in the range between 12 ~ 24 AWG.

2.1.6 Wiring the Fault Alarm Contact

The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. Inserting the wires, the Industrial 802.3at PoE Media Converter will detect the fault status of the power failure, or port link failure (available for managed model) and then forms an open circuit. The following illustration shows an application example for wiring the fault alarm contacts.



Insert the wires into the fault alarm contacts

Note

1. The wire gauge for the terminal block should be in the range between 12 ~ 24 AWG.
2. Alarm relay circuit accepts up to 30V, max. 3A currents.

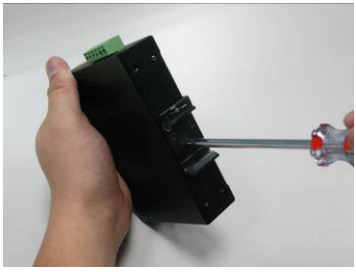
2.2 Mounting Installation

This section describes how to install the Industrial 802.3at PoE Media Converter and make connections to it. Please read the following topics and perform the procedures in the order being presented.

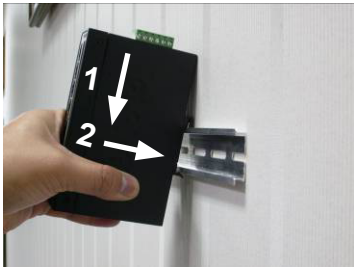
Note	In the installation steps below, this Manual use IGS-801(PLANET 8 Port Industrial Gigabit Switch) as the example. However, the steps for PLANET Industrial Switch & Industrial Media / Serial Converter are similar. Terms of **"Industrial Equipment"** in following section means the PLANET Industrial devices that mentioned above.

2.2.1 DIN-Rail mounting

The DIN-Rail is screwed on the Industrial Equipment when out of factory. When need to replace the wall mount application with DIN-Rail application on Industrial Equipment, please refer to following figures to screw the DIN-Rail on the Industrial Equipment. To hang the Industrial Equipment, follow the below steps:



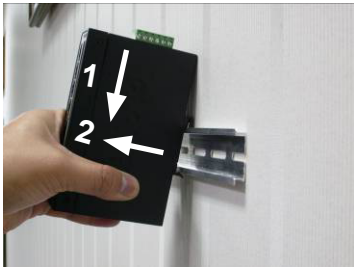
Step 1: screw the DIN-Rail on the Industrial 802.3at PoE Media Converter



Step 2: Lightly press the button of DIN-Rail into the track.

Step 3: Check the DIN-Rail is tightly on the track.

Step 4: Please refer to following procedures to remove the Industrial 802.3at PoE Media Converter from the track.



Step 5: Lightly press the button of DIN-Rail for remove it from the track.

2.2.2 Wall Mount Plate Mounting

To install the Industrial 802.3at PoE Media Converter on the wall, please follows the instructions described below.

Step 1: Remove the DIN-Rail from the Industrial 802.3at PoE Media Converter; loose the screws to remove the DIN-Rail.

Step 2: Place the wall mount plate on the rear panel of the Industrial 802.3at PoE Media Converter.

Step 3: Use the screws to screw the wall mount plate on the Industrial 802.3at PoE Media Converter.

Step 4: Use the hook holes at the corners of the wall mount plate to hang the Industrial 802.3at PoE Media Converter on the wall.

Step 5: To remove the wall mount plate, reverse steps above.

2.2.3 Stand-alone Installation

IGTP-802T / IGTP-802TS/ IGTP-805AT Installation:

To install an Industrial 802.3at PoE Media Converter stand-alone, on a Track or wall mount, simply complete the following steps:

Step 1: Turn off the DC power of the device/station in a network to which IGTP-802T / IGTP-802TS will be attached.

Step 2: Ensure that there is no activity in the network.

Step 3: Attach fiber cable from the Industrial 802.3at PoE Media Converter to the fiber network. TX, RX must be paired at both ends.

Step 4: Connect the DC power to the IGTP-802T / IGTP-802TS and verify that the Power LED lights up.

Step 5: Turn on the power of the device/station; the PWR LED (Green) should light when all cables are attached.

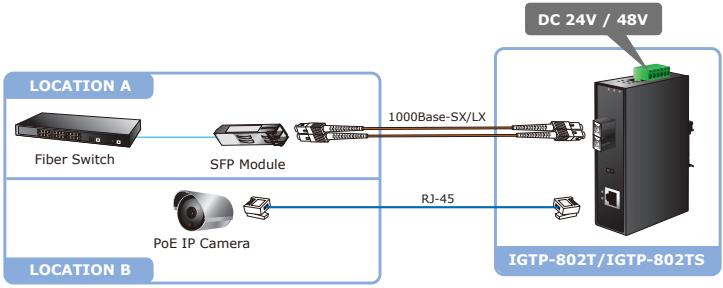


Figure 2-4: IGTP- 802T / IGTP-802TS Stand-alone Installation

Note	Please refers to APPENDIX-A for detailed wiring information of the Industrial 802.3at PoE Media Converter. To prevent from optic acceptor malfunction, check the both wires / transmitter before power on the Industrial 802.3at PoE Media Converter.

IGTP-805AT Installation:

IGTP-805AT is with high reliability and flexibility to extend the distance from 220m to 120Km. It depends on the 100M / 1000M mini GBIC modules. The SFP transceivers are hot-plug and hot-swappable. You can plug-in and out the transceiver to/from any SFP port without having to power down the Industrial 802.3at PoE Media Converter.

To install IGTP-805AT with 100Base-FX, 1000Base-SX / LX SFP, simply complete the following steps:

Step 1: Precede with the steps 4 and steps 5 of session **2.2.3 Stand-alone Installation** to connect the network cabling and supply power to your Industrial Managed Media Converter.

Step 2: Slot in the 100Base-FX, 1000Base-SX / LX SFP. Make sure both side of the SFP transceiver are with the same media type, for example: 100Base-FX / 2km to 100Base-FX / 2km, 1000Base-SX / 220m & 550m to 1000Base-SX / 220m & 550m, 1000Base-LX / 10km to 1000Base-LX / 10km.

Step 3: Connect the fiber cable. Attach the duplex LC connector on the network cable into the SFP transceiver.

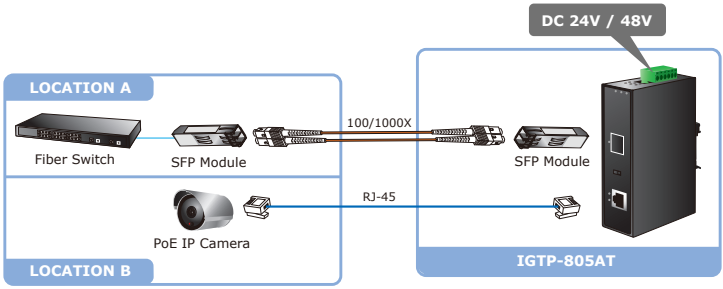


Figure 2-5: IGTP- 805AT Stand-alone Installation

Note	It recommends using PLANET MFB / MGB series 100Base-FX / 1000Base-SX / LX / LX WDM SFP on the IGTP-805AT. If you insert a SFP transceiver that is not supported, the IGTP-805AT will not recognize it.

The following list the available Modules for IGTP-805AT

MGB-GT	SFP-Port 1000Base-T Module
MGB-SX	SFP-Port 1000Base-SX mini-GBIC module - 550m
MGB-LX	SFP-Port 1000Base-LX mini-GBIC module - 10km
MGB-L30	SFP-Port 1000Base-LX mini-GBIC module - 30km
MGB-L50	SFP-Port 1000Base-LX mini-GBIC module - 50km
MGB-L70	SFP-Port 1000Base-LX mini-GBIC module - 70km
MGB-L120	SFP-Port 1000Base-LX mini-GBIC module - 120km
MGB-LA10	SFP-Port 1000Base-LX (WDM, TX:1310nm) mini-GBIC module - 10km

MGB-LB10	SFP-Port 1000Base-LX (WDM, TX:1550nm) mini-GBIC module - 10km
MGB-LA20	SFP-Port 1000Base-LX (WDM, TX:1310nm) mini-GBIC module - 20km
MGB-LB20	SFP-Port 1000Base-LX (WDM, TX:1550nm) mini-GBIC module - 20km
MGB-LA40	SFP-Port 1000Base-LX (WDM, TX:1310nm) mini-GBIC module - 40km
MGB-LB40	SFP-Port 1000Base-LX (WDM, TX:1550nm) mini-GBIC module - 40km
MGB-TLX	SFP-Port 1000Base-LX mini-GBIC module - 10km (-40~75 Degree C)
MGB-TSX	SFP-Port 1000Base-SX mini-GBIC module - 550m (-40~75 Degree C)
MGB-TL30	SFP-Port 1000Base-LX mini-GBIC module - 30km (-40~75 Degree C)
MGB-TL70	SFP-Port 1000Base-LX mini-GBIC module - 70km (-40~75 Degree C)
MFB-FX	SFP-Port 100Base-FX Transceiver (1310nm) - 2KM
MFB-F20	SFP-Port 100Base-FX Transceiver (1310nm) - 20KM
MFB-F40	SFP-Port 100Base-FX Transceiver (1310nm) - 40KM
MFB-F60	SFP-Port 100Base-FX Transceiver (1310nm) - 60KM
MFB-FA20	SFP-Port 100Base-BX Transceiver (WDM, TX:1310nm) - 20KM
MFB-FB20	SFP-Port 100Base-BX Transceiver (WDM, TX:1550nm) - 20KM
MFB-TFX	SFP-Port 100Base-FX Transceiver (1310nm) - 2km (-40~75 Degree C)
MFB-TF20	SFP-Port 100Base-FX Transceiver (1310nm) - 20km (-40~75 Degree C)

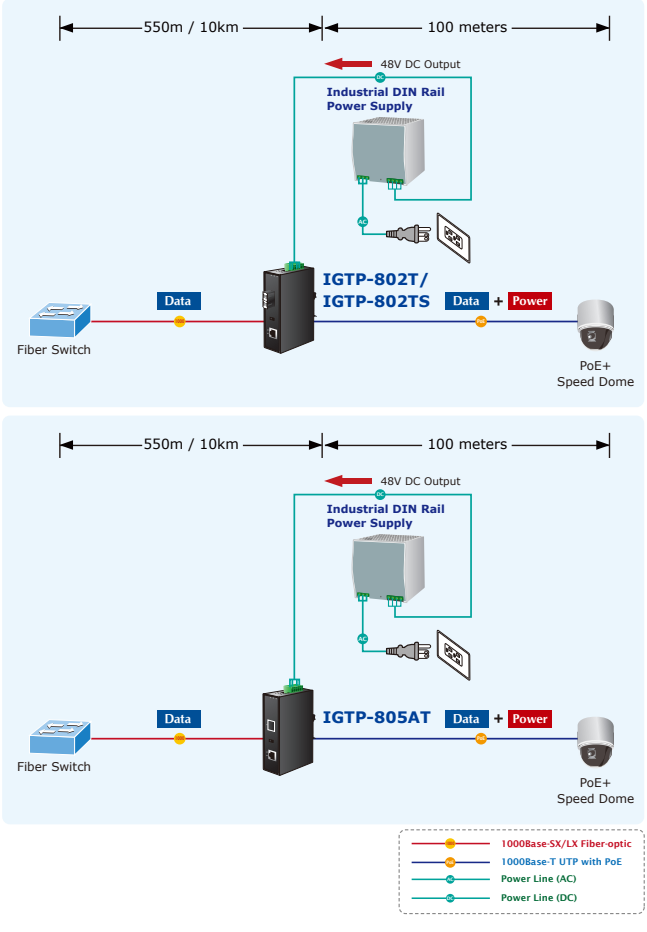
2.2.4 802.3at PoE Installation

IGTP-802T / IGTP-802TS/ IGTP-805AT Installation:
IGTP-80xT and the IEEE 802.3at / 802.3af Injector installation:

Before your installation, it is recommended to check your network

environment. If there is any IEEE 802.3at / 802.3af devices need to power on, the IGTP-80xT can provide you a way to supply power for this Ethernet device conveniently and easily.

The IGTP-80xT need DC 52V input and it injects the DC power into the pin of the twisted pair cable (Pin 1, 2, 3 and 6).



3. Link Pass Through Function

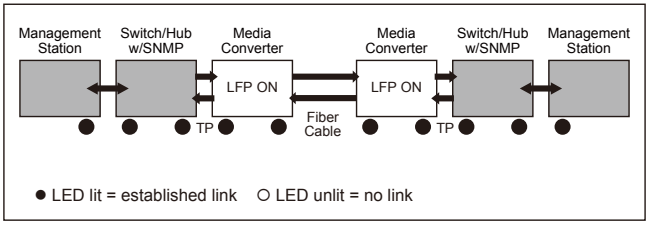
The LFP function includes the Link Fault Pass Through function (LLCF/LLR) and the DIP Switch design. LLCF/LLR can immediately alarm administrators the problem of the link media and provide efficient solution to monitor the net. The DIP Switch provides disable or enable the LFP function.

LLCF (Link Loss Carry Forward) means when a device connected to the converter and the TP line loss the link, the converter's fiber will disconnect the link of transmit. LLR (Link Loss Return) means when a device connected to the converter and the fiber line loss the link, the converter's fiber will disconnect the link of transmit. Both can immediately alarm administrators the problem of the link media and provide efficient solution to monitor the net.

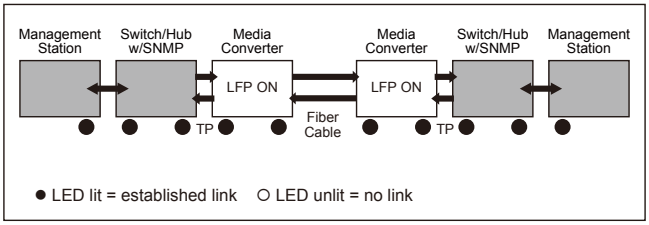
3.1 Link Loss Carry Forward (LLCF)

The IGTP-80xT incorporates default LLCF function for troubleshooting a remote connection; the Fiber/TP ports do not transmit a link signal until they receive a link signal from the opposite port.

The diagram below shows a typical network configuration with a good link status using IGTP-80xT for remote connectivity.



If the connection breaks, IGTP-80xT that link loss forward to the switch/hub which generates a trap to the management station. The administrator can then determine the source of the issue.



Note

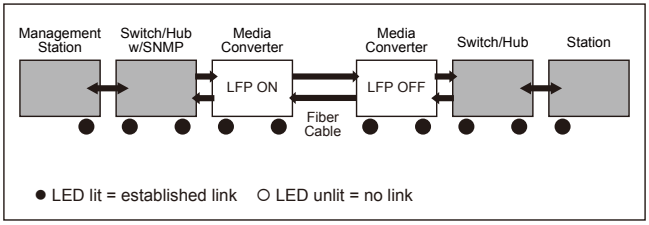
The converter is shipped with the default LFP (LLCF/ LLR) function disable. This feature can also be turned on on-purpose. If you are familiar with the network installation and for diagnostic purpose (i.e. check which end is broken), you can turn it on and the converter will take effect immediately. Otherwise, please remains it in the default position.

3.2 Link Loss Return (LLR)

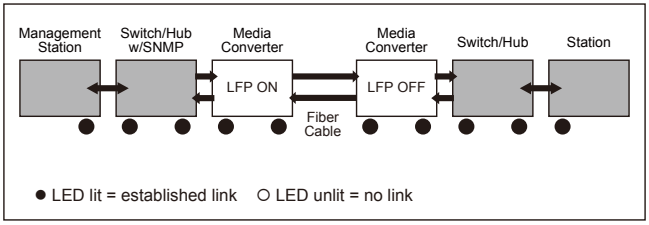
The fiber ports of IGTP-80xT have been designed with an LLR function for troubleshooting a remote connection. LLR works in conjunction with LLCF.

When LLR is enabled*, the port's transmitter shuts down when its receiver fails to detect a valid receive link. LLR should only be enabled on one end of the link and is typically enabled on either the unmanaged or remote device.

The diagram below shows a typical network configuration with a good link status using IGTP-80xT for remote connectivity. Note that LLR is enabled as indicated in the diagram.



If one of the optical conductors is bad (as shown in the diagram box below), the converter with LLR enabled will return a no-link condition to its link partner. With LLCF also default enabled, the no-link condition is carried forward to the switch/hub where a trap is generated to the management station, and the administrator can then determine the source of the loss.



Note

The converter is shipped with the default LFP (LLCF/ LLR) function disable. This feature can also be turned on on-purpose. If you are familiar with the network installation and for diagnostic purpose (i.e. check which end is broken), you can turn it on and the converter will take effect immediately. Otherwise, please remains it in the default position.

4. Troubleshooting

This chapter contains information to help you solve issues. If the IGTP-80xT is not functioning properly, make sure the IGTP-80xT was set up according to instructions in this manual.

The Power LED is not lit

Solution:

Check the power cable connection between power adapter and IGTP-80xT.

Why I connect IGTP-80xT to device with 1000Base-LX/SX interface and the 1000Base-LX/SX fiber connection fail?

Solution:

Please check the fiber connection between two devices is correct.

10/100/1000Base-T port link LED is lit, but the traffic is irregular

Solution:

1. Check that the attached device is not set to dedicate full duplex. Some devices use a physical or software switch to change duplex modes. Auto-negotiation may not recognize this type of full-duplex setting.

2. Check and assure the TP ports from both IGTP-80xT and attached device run at Auto-negotiation mode.

Why the PoE port not provide power to my powered devices?

Solution:

Since the IGTP-80xT comply with IEEE 802.3at / 802.3af PoE standard, please check that the device is also comply with IEEE 802.3at / 802.3af PoE standard. Otherwise, the IGTP-80xT will not inject PoE power to the devices.

Why I connect IGTP-805AT to device with 100Base-FX interface and the 100Base-FX fiber connection fail?

Solution:

Please check the fiber connection between two devices is correct.

5. Cable Connection Parameter

The wiring details are as below:

100FX Fiber Optical Cables:

Standard	Fiber Type	Cable Specification
100Base-FX (1300nm)	Multi-mode	50/125μm or 62.5/125μm
100Base-FX (1310nm)	Multi-mode	50/125μm or 62.5/125μm
	Single-mode	9/125μm
100Base-BX-U (TX: 1310/RX: 1550)	Single-mode	9/125μm
100Base-BX-D (TX: 1550/RX: 1310)		

1000X Fiber Optical Cables:

Standard	Fiber Type	Cable Specification
1000Base-SX (850nm)	Multi-mode	50/125μm or 62.5/125μm
1000Base-LX (1300nm)	Multi-mode	50/125μm or 62.5/125μm
	Single-mode	9/125μm

Wiring Distances:

Standard	Fiber	Diameter (micron)	Modal Bandwidth (MHz * km)	Max. Distance (meters)
1000Base- SX	MM	62.5	100	220
		62.5	200	275
		50	400	500
		50	500	550
1000Base- LX	MM	62.5	5	550
		50	4	
		50	5	
	SM	9	N/A	5000*

The Single-mode port (1000Base-LX port) of IGTP-802TS, IGTP-805AT is complied with LX 5 kilometers and provides additional margin allowing for a 10/20/30/40/50/70/120 kilometers Gigabit Ethernet link on single mode fiber.

Appendix A: Networking Connection

A.1 Switch's RJ-45 Pin Assignments

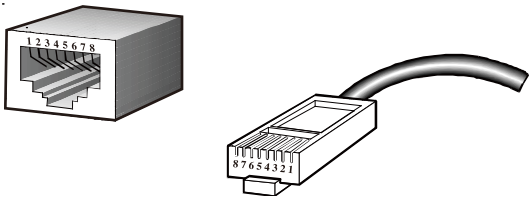
1000Mbps, 1000Base-T

Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

10/100Mbps, 10/100Base-TX

RJ-45 Connector pin assignment		
Contact	MDI Media Dependant Interface	MDI-X Media Dependant Interface -Cross
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

A.2 RJ-45 cable Pin Assignments



The standard RJ-45 receptacle/connector

There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

Straight Cable

		SIDE 1	SIDE 2
1 2 3 4 5 6 7 8	SIDE 1	1 = White/Orange	1 = White/Orange
| | | | | | | |		2 = Orange	2 = Orange
| | | | | | | |		3 = White/Green	3 = White/Green
| | | | | | | |		4 = Blue	4 = Blue
| | | | | | | |		5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8	SIDE 2	6 = Green	6 = Green
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown

Crossover Cable

		SIDE 1	SIDE 2
1 2 3 4 5 6 7 8	SIDE 1	1 = White/Orange	1 = White/Green
| | | | | | | |		2 = Orange	2 = Green
| | | | | | | |		3 = White/Green	3 = White/Orange
| | | | | | | |		4 = Blue	4 = Blue
| | | | | | | |		5 = White/Blue	5 = White/Blue
1 2 3 4 5 6 7 8	SIDE 2	6 = Green	6 = Orange
		7 = White/Brown	7 = White/Brown
		8 = Brown	8 = Brown

Figure A-1: Straight-Through and Crossover Cable

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

EC Declaration of Conformity

For the following equipment:

*Type of Product: 1000Base-SX/LX to 10/100/1000Base-T 802.3at PoE Media Converter (-40~75 Degree C)
*Model Number: IGTP-802T、IGTP-802TS、IGTP-805AT

* Produced by:
Manufacturer's Name : **Planet Technology Corp.**
Manufacturer's Address: 10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive on (2004/108/EC).
For the evaluation regarding the EMC, the following standards were applied:

EN55022		(2006 + A1:2007)
EN 61000-3-2		(2006 + A2:2009)
EN 61000-3-3		(2008)
EN55024		(1998 + A1:2001 + A2:2003)
	IEC 61000-4-2	(2008)
	IEC 61000-4-3	(2006 + A1:2007 + A2:2010)
	IEC 61000-4-4	(2004 + A1:2010)
	IEC 61000-4-5	(2005)
	IEC 61000-4-6	(2008)
	IEC 61000-4-8	(2009)
	IEC 61000-4-11	(2004)

Responsible for marking this declaration if the:

☒ **Manufacturer** ☐ **Authorized representative established within the EU**

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**

Company Address: **10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)**

Person responsible for making this declaration

Name, Surname **Kent Kang**

Position / Title : **Product Manager**

Taiwan	14th Oct., 2011	Kent Kang
Place	*Date*	*Legal Signature*