1000BASE-X to 10/100/1000BASE-T

802.3at PoE

Industrial Media Converter

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

User's Manual

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Revision

PLANET 1000BASE-X to 10/100/1000BASE-T 802.3at PoE Industrial Media Converter User's Manual

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

Revision: 2.0 (September, 2018)

Part No: EM-IGTP-80xT_v2.0 (2350-AH1170-002)

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

1. Introduction

1.1 Package Contents

Check the contents of your package for the following parts:

- ◆ Industrial 802.3at PoE Media Converter x 1
- ◆ User's Manual x 1
- ◆ DIN-rail Kit x 1
- ◆ Wall Mounting Kit x 1
- ◆ RJ45 Dust Cap x 1
- ◆ SFP Dust Cap 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 again 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 Passthrough

The chapter explains the link passthrough 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 10/100/1000BASE-T RJ45 with **IEEE 802.3af/802.3at PoE** Injector
- 1 1000BASE-SX/LX SC Fiber interface (IGTP-802T/IGTP-802TS)
- 1 SFP slot, supporting 1000BASE-X and 100BASE-FX transceiver dual mode (IGTP-805AT)

Power over Ethernet

- Complies with IEEE 802.3at/af PoE Plus end-span PSE
- 1 IEEE 802.3at/af device powered
- Supports PoE Power up to 30.8 watts for PoE port
- Provides DC 52V power over RJ45 Ethernet cable to PD with Ethernet port
- Auto-detects IEEE 802.3at/af equipment and protects devices from being damaged by incorrect installation
- Remote power feeding up to 100m
- IEEE 802.3at/af splitter devices compatible

Layer 2 Features

- Supports auto-negotiation and 10/100Mbps half/full duplex and 1000Mbps full duplex mode on RJ45 port
- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)

Hardware

- LED Indicators
  - **–System:** Power 1, Power 2 and Fault LED
  - **–Fiber port:** LNK/ACT
  - **–10/100/1000BASE-T port:** LNK/ACT, 1000, PoE-in-use
- DIP switch: LFP (Link Fault Passthrough) mode selection

Industrial Case and Installation

- IP30 metal case
- DIN-rail and wall-mount design
- 12 ~ 48V DC/24V AC redundant power with polarity reverse protect function and connective removable terminal block for master and slave power
- Supports 6000 VDC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

1.4 Product Specifications

Product	IGTP-802T	IGTP-802TS	IGTP-805AT
Ethernet Interface			
Copper	10/100/1000BASE-T Ethernet TP interface. Maximum 100m distance. Auto-negotiation, auto MDI/MDI-X with PoE injector function		
1000BASE-X Fiber-optic Connector Type	SC	SC	SFP (LC)
Fiber Cable	Multi-mode: 50/125μm or 62.5/125μm optic fiber	Single-mode: 9/125μm optic fiber	Varying on SFP Module
Fiber Cable Distance	220m & 550m	10km	
Fiber Optical Frequency	850nm	1310nm	
Launch Power	Max. -4dBm Min. -9.5dBm	Max. -3dBm Min. -9.5dBm	
Receive Sensitivity	-13.5dBm	-14.4dBm	
Maximum Input Power	-18dBm	-20dBm	
Power Over Ethernet			
PoE Standard	IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus		
PoE Power Output	52V DC: 15.4 watts 52V DC: 30 watts		
PoE Power Supply Type	End-span		
Power Pin Assignment	1/2(+), 3/6(-)		
PoE Power Budget	30 watts		

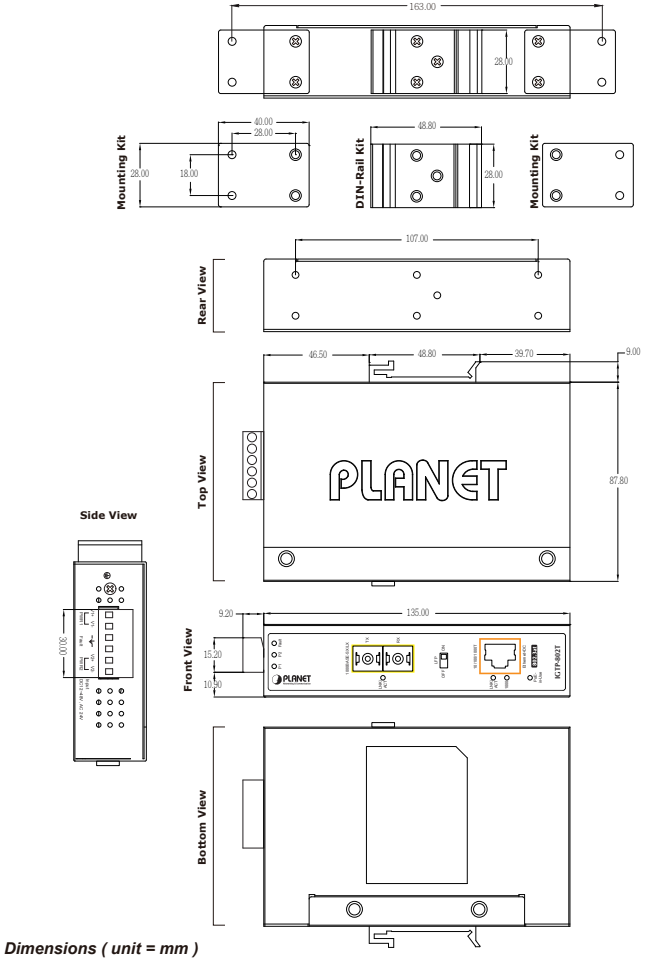
Hardware Specifications		
Speed	**Twisted-pair:** 10/20Mbps for half/full duplex 100/200Mbps for half/full duplex 1000/2000Mbps for full duplex **Fiber Optic:** 200Mbps / 2000Mbps for full duplex	
Flow Control	Back pressure for half duplex mode IEEE 802.3x pause frame for full duplex mode	
Maximum Frame Size	9K	
LED	System: Power 1, Power 2 and Fault LED (green) Fiber 1000BASE-X: LNK/ACT (green) TP 10/100/1000BASE-T: LNK/ACT, 1000 (green) PoE: Power-in-use (orange)	
Dimensions (W x D x H)	135 x 87 x 32 mm	
Weight	510g	500g
Unit Input Voltage	12 ~ 48V DC 24V AC	
Power Consumption	**24V:** 4.3 watts / 14BTU, **48V:** 4.8 watts / 16BTU (without PoE) **24V:** 33 watts / 112BTU, **48V:** 31 watts / 105BTU (with PoE)	
Link Fault Passthrough DIP Switch	ON/OFF	
Enclosure	IP30 metal case	
Installation	DIN-rail kit and wall-mount ear	
ESD Protection	6KV DC	

Alarm	Provides one relay output for power failure Alarm relay current carry ability: 1A @ DC 24V
Cables	**10/100/1000BASE-T:** 2-pair UTP Cat. 3, 4, 5, 5e, 6 (maximum 100 meters) EIA / TIA-568 100-ohm STP (maximum 100 meters) **100BASE-FX/1000BASE-SX/LX:** Multi-mode: 50/125μm or 62.5/125μm optical fiber Single-mode: 9/125μm optical fiber
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Protocols and Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.3z Gigabit Ethernet over Fiber Optic IEEE 802.3x Flow Control IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Stability Testing	IEC60068-2-32 (free fall) IEC60068-2-27 (shock) IEC60068-2-6 (vibration)
Environment	
Temperature	Operating: -40~75 degrees C Storage: -40~85 degrees C
Humidity	Operating: 5~90% (non-condensing) Storage: 5~90% (non-condensing)

1.5 Physical Dimensions

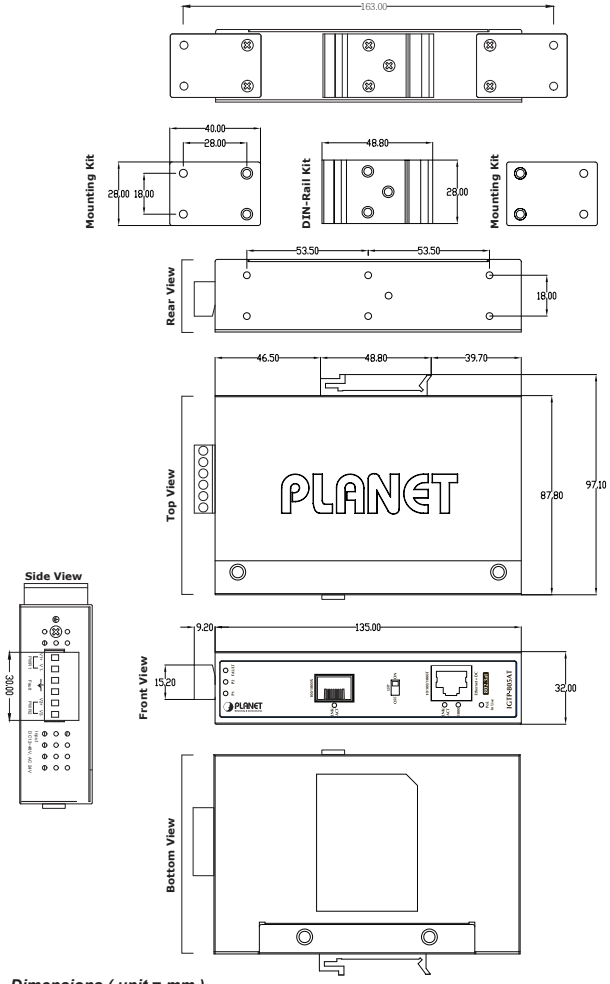
- IGTP-80xT Industrial 802.3at PoE Media Converter dimensions (W x D x H): 135 x 87 x 32 mm

- **IGTP-802T/IGTP-802TS:**



Dimensions (unit = mm)

■ IGTP-805AT:



Dimensions (unit = mm)

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 IGTP-80xT Industrial Gigabit Media Converter combines Ethernet media conversion (from 1000BASE-X to 10/100/1000BASE-T) with **802.3at Power over Ethernet Plus (PoE+)** injector to deliver both up to 30 watts of power output and high data transmission speed to PDs (powered devices) installed in a remote area where sufficient and reliable power input is required. Its 1000BASE-X fiber optic uplink port provides long distance, high speed and stable data transmission to a remote core network. The special and convenient power system of the IGTP-80xT supports **12~48V DC** power input or **24V AC** power input for power redundancy and operational flexibility.

Being able to operate under the temperature ranging from -**40 to 75 degrees C** and with an **IP30** rugged case, the IGTP-80xT can be placed in almost any difficult environment.

The maximum distance between a PoE PSE (power sourcing equipment) and PD via Ethernet cable is 100 meters. To extend the PoE deployment range, the IGTP-80xT is integrated with fiber interface for farther distance applications. The IGTP-80xT's fiber connector type is as follows:

- IGTP-802T Fiber SC connector supporting 1000BASE-SX multi-mode and transmission distance up to 550m.
- IGTP-802TS Fiber SC connector supporting 1000BASE-LX single-mode and transmission distance up to 10km.
- IGTP-805AT SFP slot supporting 100BASE-FX/1000BASE-X multi/single mode SFP module and transmission distance up to 120km (Varying on SFP module).

With the long fiber distance support, the IGTP-80xT still sustains the transmission performance as high as 1000Mbps. It works in the high-performance Store and Forward mechanism, and also can prevent packet loss with IEEE 802.3x flow control and the **LFP (Link Fault Passthrough)** function in 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.

Complying with the **IEEE 802.3at Power over Ethernet Plus** technology, the IGTP-80xT provides up to **30 watts** of PoE output power, doubling that of the earlier 802.3af. It is also backward compatible with **802.3af PoE** standards to allow users to flexibly deploy standard and high powered devices simultaneously with no need of software configuration. With data and Power over Ethernet from one unit, the IGTP-80xT can reduce cable deployment and eliminate the need for dedicated electrical outlets on the wall, ceiling or any unreachable place.

To facilitate the 802.3at power PoE+ usage with the commonly-used **12~48V DC** power input or **24V AC** power input for transportation and industrial-level applications, the IGTP-80xT adopts the **12~48V DC** to **52V** power boost technology to solve power source issue but does not require special power supplies. Its wide-ranging voltages design is suitable for worldwide operability with high availability applications requiring dual or backup power inputs.

The IGTP-80xT is specifically designed with durable components and strong housing case to operate reliably in electrically harsh and climatically demanding environments like plant floors or curbside traffic control cabinets. The IGTP-80xT is packaged in a compact, IP30 rugged case that allows either DIN-rail or wall mounting to have the efficient use of cabinet space. With IP30 rugged case protection and PoE design, the IGTP-80xT is ideal for service providers, campuses and public areas to deploy PoE wireless access points, IP cameras or IP phones in any places easily and efficiently with cost-effectiveness. It can also operate in wide temperature range of -40 to 75 degrees C, so it can be placed in almost any location.

2.1.1 Product Overview

The Front Panel of the Industrial 802.3at PoE Media Converter consists of one 1000BASE-SX/1000BASE-LX/100/1000BASE-X mini-GBIC SFP port and one Auto-sensing 10/100/1000Mbps Ethernet RJ45 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 the front panel of Industrial 802.3at PoE Media Converter.

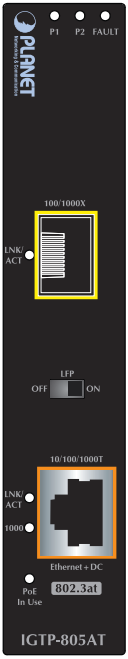


Figure 2-1: IGTP-802T/802TS Front Panel **Figure 2-2:** IGTP-805AT Front Panel

2.1.3 LED Indicators

■ **System:**

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

■ **Gigabit Fiber Interface**

LED	Color	Function
Fiber LNK/ ACT	Green	**Lit:** indicates that the Fiber Optical Port is successfully connecting to the network at 1000Mbps (IGTP-802T/IGTP-802TS), at 100Mbps/1000Mbps (IGTP-805AT).
		Blinks: indicates the fiber optical port is receiving or sending data.

■ **Gigabit TP Interface**

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

■ **PoE**

LED	Color	Function
PoE in-Use	Orange	**Lit:** Indicates that the port is providing DC 52V to remote powered device.
		Off: Indicates 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 consists of one terminal block connector within two DC power inputs. Figure 2-3 shows the upper panel of the Industrial 802.3at PoE Media Converter.

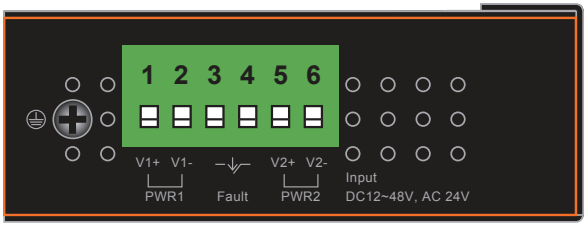
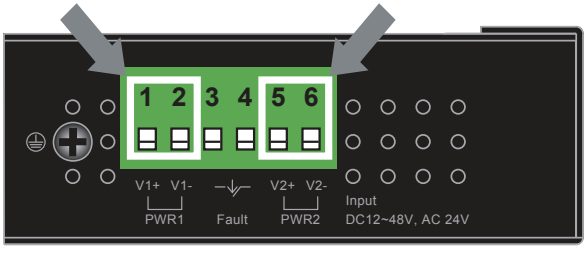


Figure 2-3: Industrial 802.3at PoE Media Converter Upper Panel

2.1.5 Wiring the Power Inputs

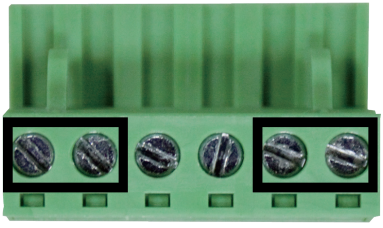
The 6-contact terminal block connector on the top panel of Industrial 802.3at PoE Media Converter is used for two DC redundant power inputs. Please follow the steps below to insert the power wire.

1. Insert positive/negative DC power wires into 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 loosening.

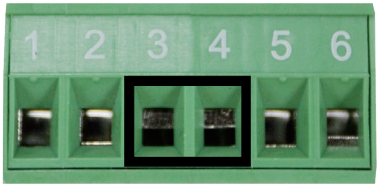


Note

1. The wire gauge for the terminal block should be in the range between 12 and 24 AWG.
2. The DC power input range is 12V ~ 48V DC and supports 24V AC.
3. Please just use one power input when using 24V AC.

2.1.6 Wiring the Fault Alarm Contact

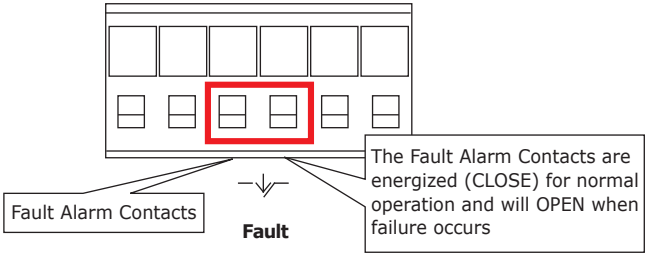
The fault alarm contacts are in the middle of the terminal block connector as the picture shows below. Inserting the wires, the Industrial 802.3at PoE Media Converter will detect the fault status of the power failure, and then forms an open circuit. The following illustration shows an application example 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 of 12 ~ 24 AWG.
2. Alarm relay circuit accepts up to 30V, max. 3A currents.



2.2 Mounting Installation

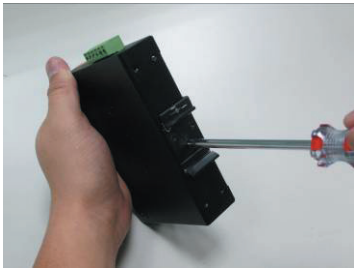
This section describes how to install the Industrial 802.3at PoE Media Converter and make connections to it. Please read the following topics and perform the procedures in the order being presented.

Note

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

2.2.1 DIN-rail Mounting

The DIN-rail bracket is screwed on the Industrial Equipment when out of factory. Please refer to the following figures to screw the DIN-rail bracket on the Industrial Equipment. To hang the Industrial Equipment, follow the steps below:

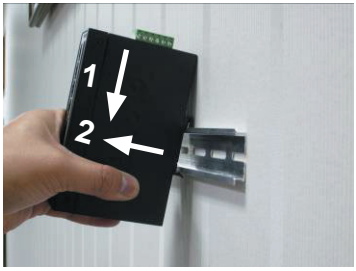


Step 1: Screw the DIN-rail bracket on the Industrial 802.3at PoE Media Converter.

Step 2: Lightly push forward the lower part of the DIN-rail bracket into the track.

Step 3: Check whether the DIN-rail bracket is tightly on the track.

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



Step 5: Lightly pull out the lower part of the DIN-rail bracket to 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 follow the instructions described below.

Step 1: Remove the DIN-rail bracket from the Industrial 802.3at PoE Media Converter; loosen the screws to remove the DIN-rail bracket.

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 the steps above.

2.2.3 Fiber Installation

IGTP-802T/IGTP-802TS 1000BASE-X 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.

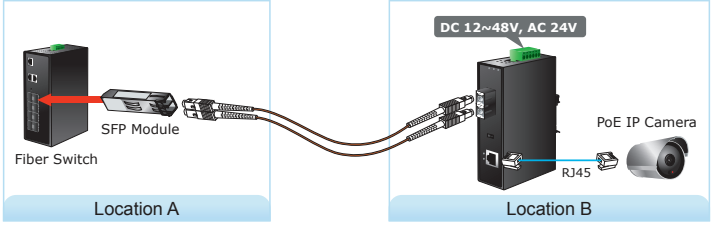


Figure 2-4: IGTP-802T/IGTP-802TS Stand-alone Installation

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 100/1000BASE-X Installation:

The IGTP-805AT is flexible enough 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: Slot in the 100BASE-FX, 1000BASE-SX/LX SFP. Make sure both sides 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 2: Connect the fiber cable. Attach the duplex LC connector on the network cable to the SFP transceiver.

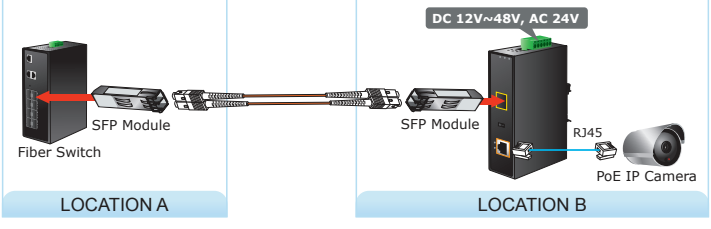


Figure 2-5: IGTP-805AT 100/1000BASE-X Installation

Note

It is recommended to use PLANET MFB/MGB series 100BASE-FX/1000BASE-SX/LX/LX WDM SFP on the IGTP-805AT. If you insert an SFP transceiver that is not supported, the IGTP-805AT will not recognize it.

The following list the available Modules for IGTP-805AT.

■ Gigabit Ethernet Transceiver (1000BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MGB-GT	1000	Copper	--	100m	--	0 ~ 60 degrees C
MGB-SX	1000	LC	Multi Mode	550m	850nm	0 ~ 60 degrees C
MGB-SX2	1000	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MGB-LX	1000	LC	Single Mode	10km	1310nm	0 ~ 60 degrees C
MGB-L30	1000	LC	Single Mode	30km	1310nm	0 ~ 60 degrees C
MGB-L50	1000	LC	Single Mode	50km	1550nm	0 ~ 60 degrees C
MGB-L70	1000	LC	Single Mode	70km	1550nm	0 ~ 60 degrees C
MGB-L120	1000	LC	Single Mode	120km	1550nm	0 ~ 60 degrees C
MGB-TSX	1000	LC	Multi Mode	550m	850nm	-40 ~ 75 degrees C
MGB-TLX	1000	LC	Single Mode	10km	1310nm	-40 ~ 75 degrees C
MGB-TL30	1000	LC	Single Mode	30km	1310nm	-40 ~ 75 degrees C
MGB-TL70	1000	LC	Single Mode	70km	1550nm	-40 ~ 75 degrees C

■ Gigabit Ethernet Transceiver (1000BASE-BX, Single Fiber Bi-directional SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MGB-LA10 MGB-LB10	1000	WDM (LC)	Single Mode	10km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA20 MGB-LB20	1000	WDM (LC)	Single Mode	20km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA40 MGB-LB40	1000	WDM (LC)	Single Mode	40km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-LA60 MGB-LB60	1000	WDM (LC)	Single Mode	60km	1310nm 1550nm	1550nm 1310nm	0 ~ 60 degrees C
MGB-TLA10 MGB-TLB10	1000	WDM (LC)	Single Mode	10km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA20 MGB-TLB20	1000	WDM (LC)	Single Mode	20km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA40 MGB-TLB40	1000	WDM (LC)	Single Mode	40km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C
MGB-TLA60 MGB-TLB60	1000	WDM (LC)	Single Mode	60km	1310nm 1550nm	1550nm 1310nm	-40 ~ 75 degrees C

■ Fast Ethernet Transceiver (100BASE-X SFP)

Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (nm)	Operating Temp.
MFB-FX	100	LC	Multi Mode	2km	1310nm	0 ~ 60 degrees C
MFB-F20	100	LC	Single Mode	20km	1310nm	0 ~ 60 degrees C
MFB-F40	100	LC	Single Mode	40km	1310nm	0 ~ 60 degrees C
MFB-F60	100	LC	Single Mode	60km	1310nm	0 ~ 60 degrees C
MFB-F120	100	LC	Single Mode	120km	1310nm	0 ~ 60 degrees C
MFB-TFX	100	LC	Multi Mode	2km	1310nm	-40 ~ 75 degrees C
MFB-TF20	100	LC	Single Mode	20km	13100nm	-40 ~ 75 degrees C

■ Fast Ethernet Transceiver (100BASE-BX, Single Fiber Bi-directional SFP)

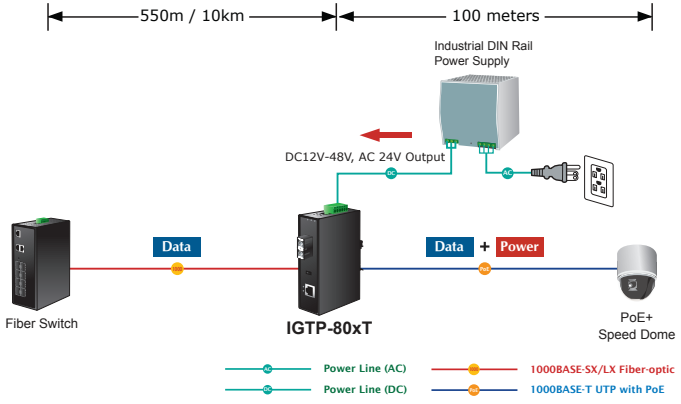
Model	Speed (Mbps)	Connector Interface	Fiber Mode	Distance	Wavelength (TX)	Wavelength (RX)	Operating Temp.
MFB-FA20 MFB-FB20	100	WDM (LC)	Single Mode	20km	1310nm	1550nm	0 ~ 60 degrees C
					1550nm	1310nm	
MFB-TFA20 MFB-TFB20	100	WDM (LC)	Single Mode	20km	1310nm	1550nm	-40 ~ 75 degrees C
					1550nm	1310nm	
MFB-TFA40 MFB-TFB40	100	WDM (LC)	Single Mode	40km	1310nm	1550nm	-40 ~ 75 degrees C
					1550nm	1310nm	

2.2.4 802.3at PoE Installation

The 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 needed to power on, the IGTP-805xT can provide you a way to supply power for this Ethernet device conveniently and easily.

The IGTP-80xT needs DC 12-48V or AC 24V input and it injects the DC power into the pin of the twisted pair cable (Pins 1, 2, 3 and 6).



3. Link Passthrough Function

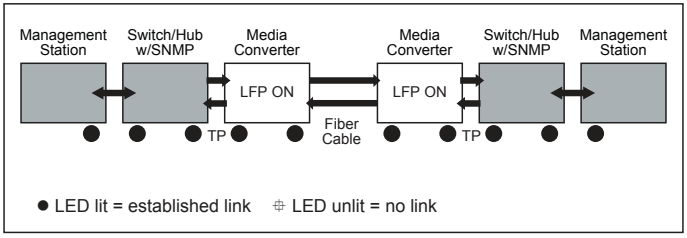
The LFP function includes the Link Fault Passthrough function (LLCF/LLR) and the DIP Switch design. LLCF/LLR can immediately alarm administrators the issue of the link media and provide efficient solution to monitor the net. The DIP Switch provides disable or enable the LFP function.

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

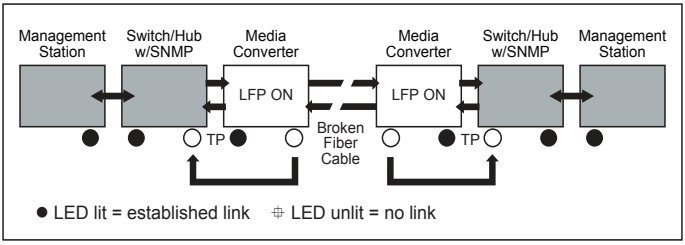
3.1 Link Loss Carry Forward (LLCF)

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 the IGTP-80xT for remote connectivity.



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



Note

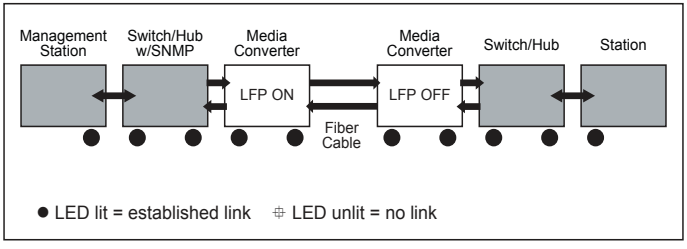
The converter is shipped with the default LFP (LLCF/ LLR) function disabled. This feature can also be turned on on-purpose. If you are familiar with the network installation and for diagnostic purpose (i.e. check which end is broken), you can turn it on and the converter will take effect immediately.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

3.2 Link Loss Return (LLR)

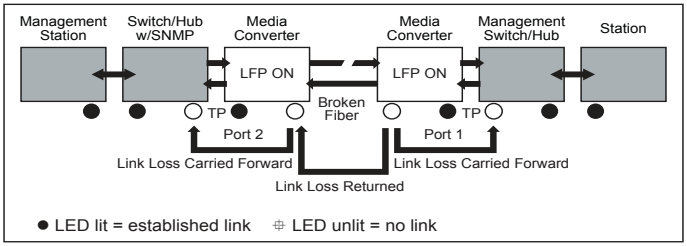
The fiber ports of the IGTP-80xT have been designed with an LLR function for troubleshooting a remote connection. LLR works in conjunction with LLCF.

When LLR is enabled*, the port's transmitter will shut 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 the 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 which is disabled. 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 put 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 did connecting the IGTP-80xT to device with 1000BASE-LX/SX interface and the 1000BASE-LX/SX fiber fail?

Solution:
Please check if 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 is the PoE port not providing power to my powered devices?

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

The IGTP-805AT was connected to device with 100BASE-FX interface but the 100BASE-FX fiber connection failed

Solution:
Please check whether the fiber connection between two devices is correct.

5. Cable Connection Parameter

The wiring details are shown 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: 1310nm/RX: 1550nm)	Single-mode	9/125μm
100BASE-BX-D (TX: 1550nm/RX: 1310nm)		

■ **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 the IGTP-802TS, and IGTP-805AT complies with LX 5 kilometers and provides an additional margin that allows a 10/20/30/40/50/70/120 kilometers Gigabit Ethernet link on single mode fiber.

Appendix A: Networking Connection

A.1 Switch's RJ45 Pin Assignments

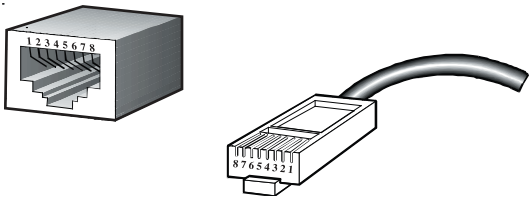
1000Mbps, 1000BASE-T

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

RJ45 Connector Pin Assignment		
Contact	MDI Media Dependent Interface	MDI-X Media Dependent 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 RJ45 Cable Pin Assignments



The standard RJ45 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 the 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 Industrial media converter

*Model Number : IGTP-805AT、IGTP-802T、IGTP-802TS
* 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 (2014/30/EU).

For the evaluation regarding the EMC, the following standards were applied:

EN 55032	(2015 + AC:2016)
EN61000-3-2	(2014)
EN61000-3-3	(2013)
EN 55024	(2010 + A1:2015)

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 : **Director**

Taiwan	**June 14, 2017**	Kent Kang
Place	*Date*	*Legal Signature*