1. Introduction

1.1 Checklist

Thank you for purchasing our HPOE-460 4-Port Gigabit IEEE 802.3at High Power over Ethernet Injector Hub, the High Power over Ethernet Injector Hub package shall contains following contents:

Check the contents of your package for following parts:

- High Power over Ethernet Injector Hub x 1
- User's Manual x 1
- Power Adapter x 1
- Power Cord x 1

If any of these pieces 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.

1.2 About the Power over Ethernet Injector Hub

The PLANET HPOE-460 is the next generation 4-Port Gigabit IEEE 802.3at High Power PoE injector Hub, features both IEEE 802.3af and High Power IEEE 802.3at Power over Ethernet (PoE) that combines up to 30 Watts power output and data per port over one CAT 5E / 6 Ethernet cable. It is designed specifically to satisfy the growing demand of higher power consuming network PD (powered devices) such as PTZ (Pan, Tilt & Zoom) / Speed Dome network cameras, multi-channel (802.11a/b/g/n) wireless LAN access points and other network devices by providing double amount of PoE power than conventional 802.3af PoE PSE.

The HPOE-460 is installed between a regular Ethernet Switch and the powered devices; it injects power to the PDs without affecting data transmission performance. It offers a cost effective and quick solution to upgrade network system to IEEE 802.3af / IEEE 802.3at Power over Ethernet system without replacing the existing Ethernet Switch. There are 8 RJ-45 STP ports on the front panel of the HPOE-460, half of the ports on right panel function as **"Data input"** and the other half on left panel function as **"PoE (Data and Power) output"**. The 4 **"PoE (Data and Power) output"** ports are also the power injectors that transmit DC voltage to the CAT. 5/5e/6 cable and transfer data and power simultaneously between the Injectors and Splitters.

1.3 Features

8-Port RJ-45

- 4-Port 10/100/1000Mbps **"Data input"**
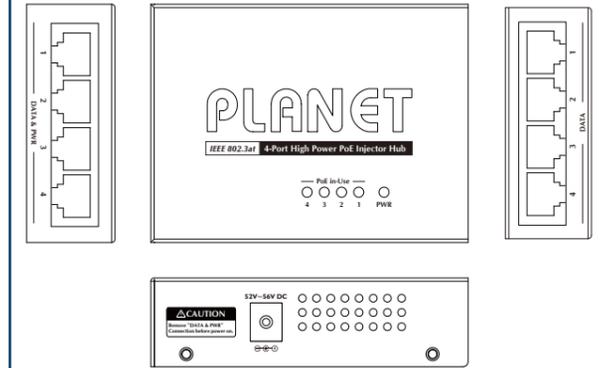- 4-Port 10/100/1000Mbps **"Data + Power output"**

Power over Ethernet

- IEEE 802.3at and IEEE 802.3af Power over Ethernet Mid-Span PSE
- Up to 4 IEEE 802.3at / 802.3af devices powered
- DC 52V power over RJ-45 Ethernet cable to devices with Ethernet port
- PoE power up to 30.8 Watts (802.3at PoE) / 15.4 Watts (802.3af PoE) for each PoE ports
- Remote power feeding up to 100m
- Full power support for per POE port
- Automatically detect powered device (PD)
- Circuit protection prevents power interference between ports

Hardware

- Desktop palm size, wall mountable
- LED indicator power input indication
- FCC Part 15 Class B, CE
- 100~240V AC, 50/60Hz, 2A universal power supply adapter with DC 52V / 2.31A power output
- Plug & play

Standard Compliance

- IEEE 802.3 10Base-T
- IEEE 802.3u 100Base-TX
- IEEE 802.3ab 1000Base-T
- IEEE 802.3at pre-standard Power over Ethernet
- IEEE 802.3af Power over Ethernet

1.4 Specification

Product		HPOE-460
Hardware		
Interface	"Data" Input Ports	4 x RJ-45
	"Data+Power" Output Ports	4 x RJ-45
Data Rate		10/100/1000Mbps
LED		System: Power x 1 (Green) Per PoE Port: PoE ready / in-use x 4 (Green)
Network Cable		10Base-T: 4-Pair UTP Cat. 5 up to 100m (328ft) 100Base-TX: 4-Pair UTP Cat. 5 up to 100m (328ft) 1000Base-T: 4-Pair UTP Cat. 5e, 6, up to 100m (328ft) EIA/TIA-568 100-ohm STP (100m, 328ft)
Dimension (H x W x D)		26 x 70 x 97mm
Weight		220g
Power Requirement		DC 52V~56V

Power over Ethernet	
PoE Power Supply Type	Mid-Span
PoE Power Output	Per Port DC 52V 30.8 Watts / 15.4 Watts
Power Pin Assignment	4/5(+), 7/8(-)
PoE Power Budget	120 Watts
Number of 802.3af PD Class 0, 1, 2, 3 can be powered	4
Number of 802.3at PD Class 1, 2, 3 can be powered	4
Number of 802.3at PD Class 0, 4 can be powered	4
Standards Conformance	
Standards Compliance	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet IEEE 802.3at Power over Ethernet (Pre-standard) IEEE 802.3af Power over Ethernet
Regulation Compliance	FCC Part 15 Class B, CE
Environment	
Operating Temperature	0 ~ 50 Degree C
Storage Temperature	-10 ~ 70 Degree C
Humidity	5 ~ 95% (Non-condensing)

1.5 Product Outlook

LED Definition:

LED	Color	Function
Power	Green	Lights to indicate that the HPOE-460 has power.
PoE Ready / In-Use	Green	Lights to indicate the port is providing 52V DC in-line power.

2. Hardware Installation

This product provides three different running speeds – 10Mbps, 100Mbps and 1000Mbps in the same device and automatically distinguishes the speed of incoming connection.

This section describes the hardware features of HPOE-460. Before connecting any network device to the HPOE-460, read this chapter carefully.

2.1. Before Installation

Before your installation, it is recommended to check your network environment. If there is any IEEE 802.3af / 802.3at device need power on, the HPOE-460 provide you a way to supply power for this Ethernet device conveniently and easily. The HPOE-460 equips with an AC-DC adapter with DC 52V input and injects this DC power into the pin of the twisted pair cable (pair 4, 5 and pair 7, 8).

If there is very difficult to find a power socket for AC-DC Adapter of your non-IEEE 802.3af / 802.3at networked device, the HPOE-460 and POE-161S can provide you a way to supply DC power for this Ethernet device conveniently and easily.

The 10Mbps or 100Mbps and 1000Mbps speed, duplex mode from Data port of HPOE-460 depends on which Ethernet device attached.

2.2 HPOE-460 and POE-161S, the IEEE 802.3at Injector / Splitter and Equipment Installation

For the places hard to find the power inlet, the HPOE-460 and IEEE 802.3at High Power over Ethernet Splitter (POE-161S) provides the easiest way to power your Ethernet devices such as IP Camera on the ceiling and the Wireless Access Point installed on the top of the building. With 4 10/100/1000Base-T Gigabit Ethernet ports, the HPOE-460 supports full 52V DC power for any remote IEEE 802.3af / 802.3at powered device (PD).

To control the power system of your networking devices, the HPOE-460 can directly co-work with PoE IP phone to build VoIP telephony network in the office. Furthermore, the HPOE-460 can be directly connected to any third party IEEE 802.3af / 802.3at compliant devices installed 100 meters away.
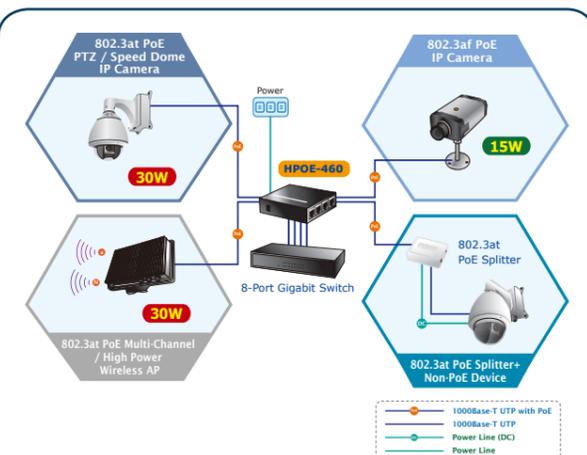
Figure 2-1: HPOE-460 Application Topology

Note
1. According to IEEE 802.3af standard and IEEE 802.3at pre-standard, the HPOE-460 will not inject power to the cable if not connecting to IEEE 802.3af and IEEE 802.3at pre-standard devices.
2. Due to the capability of IEEE 802.3af standard and IEEE 802.3at pre-standard, the HPOE-460 can directly connect with any IEEE 802.3af standard or IEEE 802.3at pre-standard compliant end-nodes.

3. Troubleshooting

This chapter contains information to help you solve issue. If the High Power over Ethernet Injector Hub is not functioning properly, make sure the High Power over Ethernet Injector Hub was set up according to instructions in this manual.

How to let my non IEEE 802.3af / 802.3at network devices can work with HPOE-460?

Solution:

You can use PLANET Power over Ethernet Splitter, such as PLANET POE-152S / POE-161S to work as a power transformer between HPOE-460 and non IEEE 802.3af / 802.3at devices. The POE-152S and POE-161S provide 5V DC and 12V DC voltage output through DIP switch.

The HPOE-460 PoE LED is not lit

Solution:

Check the cable connection between HPOE-460 and IEEE 802.3af / 802.3at devices.

Why I connect my PoE device to HPOE-460 and it cannot power on?

Solution:

1. Please check the cable type of the connection from HPOE-460 to the other end. The cable should be an 8-wire UTP, Category 5/5e/6, EIA568 cable within 100 meters. A cable with only 4-wire, short loop or over 100 meters, all will affect the power supply.

2. Please check and assure the device that fully complied with IEEE 802.3af standard and IEEE 802.3at pre-standard.

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Power over Ethernet

802.3at — High Power over Ethernet Injector Hub
HPOE-460 — Full Power Provision Without Area Restrictions

Power over Ethernet

User's Manual

Appendix A Networking Connection

RJ-45 Pin Assignments
1000Mbps, 1000Base T

RJ-45 Connector pin assignment		
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-

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

10/100Mbps, 10/100Base-TX

RJ-45 Connector pin assignment		
Contact	MDI MDI-X 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	IEEE 802.3af / 802.3at DC 48V / 52V	
6	Rx - (receive)	Tx - (transmit)
7, 8	IEEE 802.3af / 802.3at DC 0V	

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:

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.

Energy Saving Note of the Device
This power required device does not support Standby mode operation. For energy saving, please remove the power cable to disconnect the device from the power circuit.
Without removing power cable, the device wills still consuming power from the power source. In the view of Saving the Energy and reduce the unnecessary power consuming, it is strongly suggested to remove the power connection for the device if this device is not intended to be active.