

**8-Port 10/100TX 802.3at PoE + 1-Port 10/100/1000T +
1-Port 100/1000X SFP Desktop Switch**

ST-811HP

User's Manual

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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.

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Revision

BEWARD 8-Port 10/100TX 802.3at PoE + 1-Port 10/100/1000T + 1-Port 100/1000X SFP Desktop Switch User's Manual

For Model: ST-811HP

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1. Introduction

1.1 Checklist

Check the contents of your package for the following parts:

ST-811HP x 1 	User's Manual x 1 
Power Cord x 1 	Rubber Feet x 4 
Rack-mounting Brackets 	Screws x 8 

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 again to repack the product in case there is a need to return it to us for repair.

1.2 Product Description

The ST-811HP, a new member in the BEWARD 802.3at PoE Fast Ethernet Switch family, provides 8-port 10/100Mbps 802.3af/at Power over Ethernet, 1 Gigabit port and 1 Gigabit SFP port with a total of 120 watts of PoE budget. Its PoE power

is more than enough for those network applications with Fast Ethernet speed transmission. The eight 802.3af/at PoE ports feature PoE power injector function which is able to drive 8 IEEE 802.3at compliant powered devices. The ST-811HP also offers a simple, costeffective and nonblocking wirespeed performance. It comes with a 9-inch metal compact housing, suitable for desktop deployment in SOHO office or department network application.

The mini-GBIC slot built in the ST-811HP supports SFP auto-detection and dual speed as it features 100BASE-FX and 1000BASE-SX/LX SFP (Small Form-factor Pluggable) fiber-optic modules, meaning the administrator now can flexibly choose the suitable SFP transceiver according to the transmission distance or the transmission speed required to extend the network efficiently.

1.3 Features

➤ Physical Port

- 8 10/100Mbps Fast Ethernet ports
- 1 10/100/1000BASE-T Gigabit Ethernet port
- 1 1000BASE-X mini-GBIC SFP interface

➤ Power over Ethernet

- Complies with IEEE 802.3af/at Power over Ethernet end-span
- Up to 8 IEEE 802.3af/at devices powered
- Supports PoE Power up to 30 watts for each PoE port
- 120-watt PoE budget
- 8 ports support 54V DC power to PoE powered device (Port 1 to port 8)
- Hardware DIP switch for "Standard", "VLAN" and "Extend" mode selection; the "Extend" mode features 30-watt PoE transmit distance of 250m at speed of 10Mbps and VLAN isolation
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100m in standard mode

➤ Switching

- Hardware-based 10/100/1000Mbps auto-negotiation and auto MDI/MDI-X
- Flow control for full duplex operation and back pressure for half duplex operation
- Integrates address look-up engine, supporting 4K absolute MAC addresses
- Automatic address learning and address aging
- Solid DIP switch to isolate ports to prevent broadcast storm and defend DHCP spoofing

➤ Hardware

- 9-inch desktop size, 1U height, mountable
- LED indicators for PoE ready/activity and LINK/ACT
- Fanless design
- Internal AC power supply
- Supports Energy-Efficient Ethernet (EEE) function (IEEE 802.3az)

1.4 Specifications

Model	ST-811HP
Hardware Specifications	
10/100Mbps Ports	8 10/100BASE-TX MDI/MDI-X RJ45 ports
Gigabit Ports	1 10/100/1000BASE-T MDI/MDI-X RJ45 port
SFP Slot	1 100/1000BASE-X SFP/mini-GBIC interface
PoE Inject Port	8-port with 802.3af/at PoE injector function (Port-1 to Port-8)
LED Display	System: ■ Power (Green) 10/100BASE-TX RJ45 Interface: ■ PoE (Orange, Port-1 to Port-8) ■ LNK/ACT (Green, Port-1 to Port-8) 10/100/1000BASE-T RJ45 Interface: ■ 1000Mbps LNK/ACT (Green, Port 9) 100/1000BASE-X SFP Interface: ■ 1000Mbps LNK/ACT (Green, Port 10)
DIP Switch	100m distance in standard mode 250m distance in extend mode (based on the cable category)
Switch Architecture	Store and Forward switch architecture
MAC Address Table	4K MAC address table with auto learning function
Switch Fabric	5.6Gbps
Switch Throughput	4.16Mpps @64bytes
Maximum Packet Size	9K bytes
Flow Control	Back pressure for half duplex; IEEE 802.3x pause frame for full duplex
Power Requirements	AC 100~240V, 2.5A max.

Power Consumption	135 watts, 463.2 BTU
Dimensions (W x D x H)	220 x 150 x 44 mm
Weight	1220 g
ESD Protection	Contact discharge of $\pm 6\text{KV}$ DC Air discharge of $\pm 8\text{KV}$ DC
Surge Immunity	$\pm 4\text{KV}$
Power over Ethernet	
PoE Standard	IEEE 802.3af Power over Ethernet/PSE IEEE 802.3at Power over Ethernet Plus/PSE
PoE Power Supply Type	End-span
Power Pin Assignment	1/2(+), 3/6(-)
PoE Power Output	Per Port 54V DC, 600mA. max. 30 watts (IEEE 802.3at) Per Port 54V DC, 300mA. max. 15.4 watts (IEEE 802.3af)
PoE Power Budget	120 watts
Number of PDs, 7 watts	8
Number of PDs, 15.4 watts	8
Number of PDs, 30 watts	4
Standards Conformance	
EMI Safety	CE, FCC
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit 1000BASE-T IEEE 802.3z Gigabit SX/LX IEEE 802.3x Flow Control IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus
Environment	
Operating Environment	0 ~ 50 degrees C
Storage Environment	-10 ~ 70 degrees C
Operating Humidity	5 ~ 95%, relative humidity, non-condensing
Storage Humidity	5 ~ 95%, relative humidity, non-condensing

2. Hardware Description

The switch provides three different running speeds – 10/100/1000Mbps, and automatically distinguishes the speed of the incoming connection.

This section describes the hardware features of the ST-811HP. For easier management and control of the ST-811HP, familiarize yourself with its display indicators and ports. Front panel illustrations in this chapter display the unit LED indicators. Before connecting any network device to the ST-811HP, please read this chapter carefully.

2.1 Front Panel

The front panel of the ST-811HP PoE+ Ethernet Switch consists of 8 auto-sensing 10/100Mbps Ethernet RJ45 ports, 1 auto-sensing 10/100/1000Mbps Ethernet RJ45 port and 1 auto-sensing 10/100/1000 Mbps SFP port. The LED indicators are also located on the front panel of the ST-811HP.

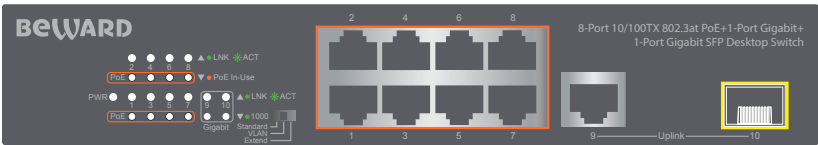


Figure 2-1: ST-811HP Switch Front Panel

The front panel of the ST-811HP provides one DIP switch for **Standard**, **VLAN** and **Extend** mode selections. The detailed descriptions are shown in the following table.

DIP Switch Mode	Function
 Standard VLAN Extend	This mode makes the ST-811HP operate as a general switch and all PoE ports operate at 10/100Mbps auto-negotiation.
 Standard VLAN Extend	This mode makes the ST-811HP operate as a VLAN isolation switch and 1.Port 1 to port 8 will isolate respectively. 2.Port 1 to port 8 can only communicate with port 9 and port 10 (uplink port).

Standard
VLAN
Extend



This mode makes the ST-811HP operate as an **Extend** and VLAN isolation switch and

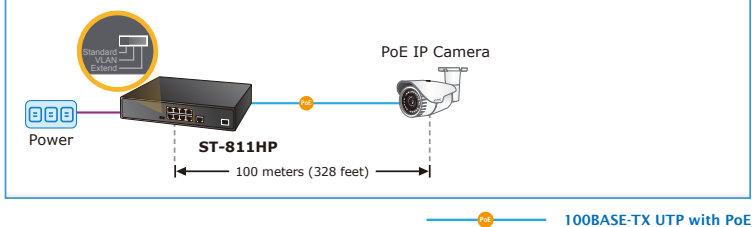
1. Port 1 to port 8 will isolate respectively
2. Port 1 to port 8 can only communicate with port 9 and port 10 (uplink port).
3. 30-watt PoE transmit distance of 250m at speed of 10Mbps.



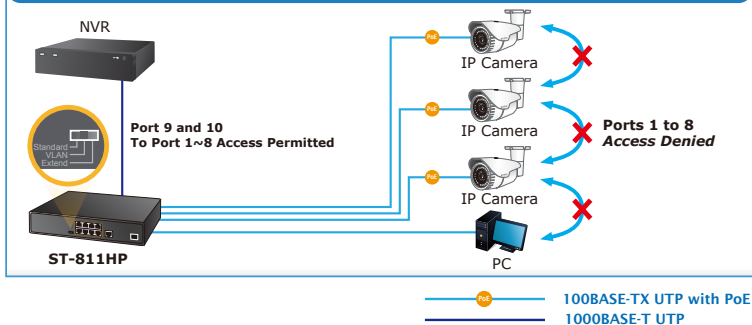
Note

Please reboot the ST-811HP after adjusting the DIP switch to take effect.

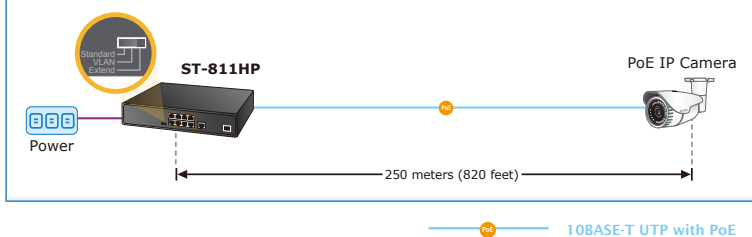
Standard Mode (default)



VLAN Isolation Mode



Extend Mode



2.1.1 LED Indicators

System

LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.

Per 10/100Mbps Port

LED	Color	Function
PoE-in-use	Orange	Lights to indicate the port is providing 54V DC in-line power. (1-8 ports)
Speed/ LNK/ACT	Green	Lights to indicate the Switch is successfully connecting to the network at 10/100Mbps. Blinks to indicate that the Switch is actively sending or receiving data over that port.
Gigabit	Green	Lights to indicate the link through that port is successfully established at 1000Mbps

2.2 Rear Panel

The rear panel of the ST-811HP has an AC inlet power socket, which accepts input power of 100 to 240V AC, 50-60Hz.



Figure 2-2: ST-811HP Switch Rear Panel



Power Note

1. The device is a power-required device which means it will not work till it is powered. If your networks should be active all the time, please consider using UPS (Uninterrupted Power Supply) for your device. It will prevent you from network data loss or network downtime.
2. In some areas, installing a surge suppression device may also help to protect your ST-811HP from being damaged by unregulated surge or current to the ST-811HP.

3. Hardware Installation

Start up

Please refer to the following for your cabling:

■ 10/100BASE-TX

All 10/100BASE-TX ports come with Auto-Negotiation capability. They automatically support 100BASE-TX and 10BASE-T networks. Users only need to plug a working network device into one of the 10/100BASE-TX ports, and then turn on the ST-811HP. The port will automatically run in 10Mbps, 20Mbps, 100Mbps or 200Mbps after negotiating with the connected device.

■ 10/100/1000BASE-T

The 10/100/1000BASE-T port comes with Auto-Negotiation capability, which automatically supports 1000BASE-T, 100BASE-TX and 10BASE-T networks. Users only need to plug a working network device into the 10/100/1000BASE-T port, and then turn on the PoE Ethernet Switch. The port will automatically run in 10Mbps, 20Mbps, 100Mbps or 200Mbps and 1000Mbps or 2000Mbps after negotiating with the connected device.

■ Cabling

Both 10/100BASE-TX and 10/100/1000BASE-T ports use RJ45 sockets -- similar to the phone jacks -- for connection of unshielded twisted-pair cable (UTP). The IEEE 802.3/802.3u/802.3ab Fast/Gigabit Ethernet standard requires Category 5 UTP for 100Mbps 100BASE-TX. 10BASE-T networks can use Cat.3, 4, 5 or 1000BASE-T uses 5/5e/6 UTP (see table below). Maximum distance is 100 meters (328 feet).

Port Type	Cable Type	Connector
10BASE-T	Cat.3, 4, 5, 2-pair	RJ45
100BASE-TX	Cat.5, 5e UTP, 4-pair	RJ45
1000BASE-T	Cat.5/5e/6 UTP, 4-pair	RJ45

Any Ethernet devices like hubs/PCs can be connected to the ST-811HP by using straight-through wires. The whole 10/100/1000 Mbps ports are auto-MDI/MDI-X that can be used on straight-through or crossover cable.

3.1 Desktop Installation

To install the ST-811HP on desktop, simply follow the following steps:

Step 1: Attach the rubber feet to the recessed areas on the bottom of the ST-811HP, as shown in Figure 3-1.

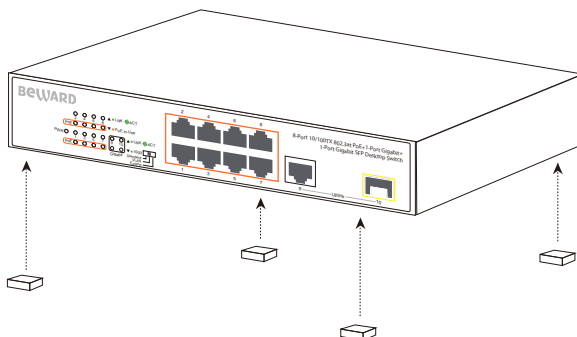


Figure 3-1: Attaching the Rubber Feet to the ST-811HP

Step 2: Place the ST-811HP on desktop near an AC power source.

Step 3: Keep enough ventilation space between the ST-811HP and the surrounding objects.



Note

When choosing a location, please keep in mind the environmental restrictions discussed in Chapter 1, Section 4, under Specifications.

Step 4: Connect your ST-811HP to 802.3af/at compliant power devices (PDs) and other network devices.

- A.** Connect one end of a standard network cable to the 10/100BASE-TX RJ45 ports on the front panel of the ST-811HP.
- B.** Connect the other end of the cable to the network devices such as printer servers, workstations, routers, etc



Note

Connection to the Switch requires UTP Category 5, 5e, 6 network cabling with RJ45 tips.

Step 5: Supply power to the ST-811HP.

A. Connect one end of the power cable to the ST-811HP.

B. Connect the power plug of the power cable to a standard wall outlet.

When the ST-811HP receives power, the Power LED should remain solid Green.

3.2 Rack Mounting

To install the ST-811HP in a 19-inch standard rack, follow the instructions described below.

Step 1: Place your ST-811HP on a hard flat surface, with the front panel positioned towards your front side.

Step 2: Attach a rack-mount bracket to each side of the ST-811HP with supplied screws attached to the package. Figure 3-2 shows how to attach brackets to one side of the ST-811HP.

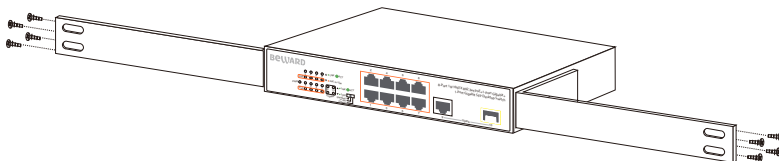


Figure 3-2: Attaching the Brackets to the ST-811HP.



You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate the warranty.

Step 3: Secure the brackets tightly.

Step 4: Follow the same steps to attach the second bracket to the opposite side.

Step 5: After the brackets are attached to the ST-811HP, use suitable screws to securely attach the brackets to the rack, as shown in Figure 3-3.

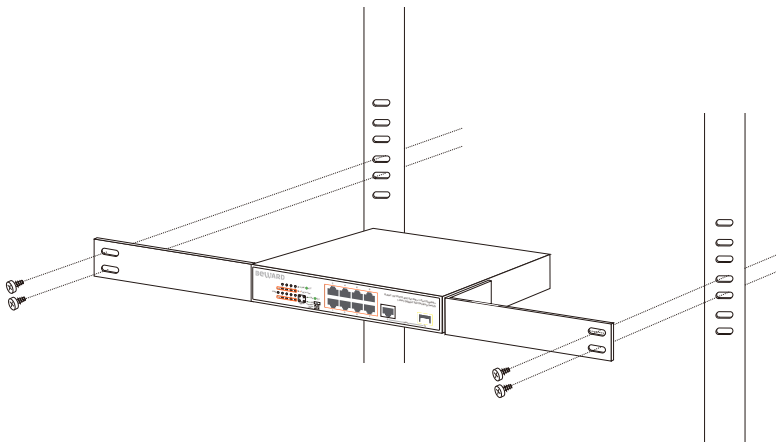


Figure 3-3: Mounting the ST-811HP in a Rack

Step 6: Proceed with Steps 4 and 5 of session 3.1 Desktop Installation to connect the network cabling and supply power to your Switch.

3.3 Wall Mounting Installation

Step 1: Please find the wall that can mount the ST-811HP.

Step 2: Install two screws on the wall.

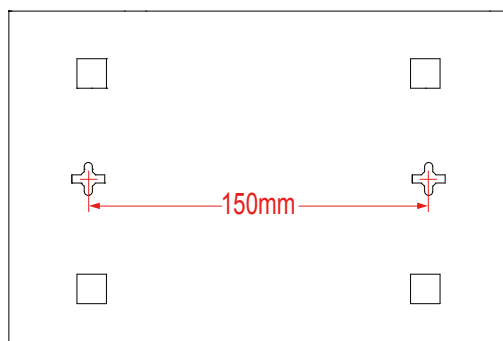
Step 3: Hang the ST-811HP on the screws from the wall.

Step 4: Repeat Step 5 of Desktop Installation for power supply to the ST-811HP.

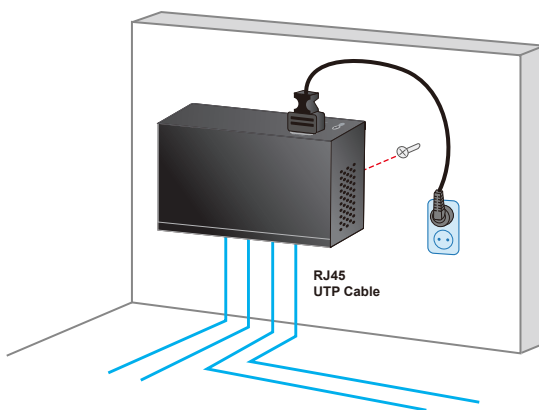


Note

Before mounting the device to the wall, please check the location of the electrical outlet and the length of the Ethernet cable.



ST-811HP Switch Bottom Side



4. Troubleshooting

This chapter contains information to help you solve issues. If the ST-811HP is not functioning properly, make sure the ST-811HP was set up according to instructions in this manual.

Q1: The Link LED is not lit.

Solution:

Check the cable connection and also try to swap one new cable.

Q2: 100BASE-TX port link LED is lit, but the traffic is irregular.

Solution:

Make sure the attached device is not set to 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.

Q3: Why the Switch isn't connected to the network.

Solution:

Check the LNK/ACT LED on the ST-811HP. Try another port on the ST-811HP. Make sure the cable is installed properly. Make sure the cable is the right type. Turn off the power. After a while, turn on the power again.

Q4: Why the ST-811HP, connected to PoE device, cannot be powered on.

Solution:

Please check the cable type of the connection from the ST-811HP to the other end. The cable should be an 8-wire UTP, Category 5 or above and EIA568 cable within 100 meters. A cable with only 4-wire, short loop or over 100 meters will affect the power supply.

Please make sure the device is fully complied with IEEE 802.3af/IEEE 802.3at standard.

Q5: What is the power output of each PoE port?

Solution:

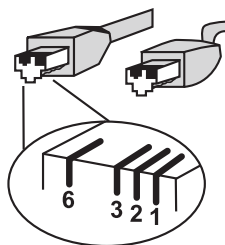
1. Each PoE port supports 51-54V DC, 600mA and a maximum of 30 watts of power output. Detect and inject by the standard of IEEE 802.3at.
2. Each PoE port supports 51-54V DC, 300mA and a maximum of 15.4 watts of power output. Detect and inject by the standard of IEEE 802.3af.

Appendix A - 10/100Mbps, 10/100BASE-TX

When connecting the Switch to another Fast Ethernet switch, a straight-through or crossover cable might be necessary. Each port of the Switch supports auto-MDI/MDI-X detection, meaning you can directly connect the Switch to any Ethernet devices without making a crossover cable. The following table and diagram show the standard RJ45 receptacle/connector and their pin assignments:

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	

The standard cable, RJ45 pin assignment



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-through cable and crossover cable connection:

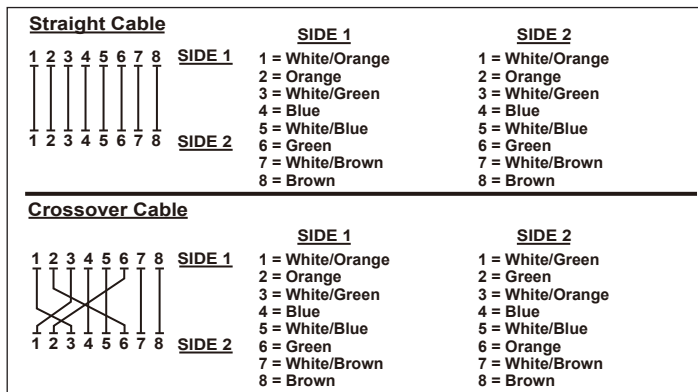


Figure A-1: Straight-through and Crossover Cable

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

