

## User's Manual

**FSD-804P**

**8-Port 10/100Mbps with  
4-Port PoE  
Fast Ethernet Switch**



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## Revision

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# 1. INTRODUCTION

## 1.1 Checklist

Check the contents of your package for following parts:

- FSD-804P x1
- User's manual CD x1
- 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 How to Use This Manual

The PoE Ethernet Switch User manual is structured as follows:

### Chapter 2 **Installation**

This chapter explains the functions and how to physically install the FSD-804P.

### Chapter 3 **Switch Operation**

This chapter explains the switch operation of FSD-804P

### Chapter 4 **Trouble Shooting**

This chapter contains troubleshooting of FSD-804P

### **Appendix**

This chapter contains cable information of FSD-804P

In the following section, the term “**Switch**” means the Switch device, ie. FSD-804P; term of “**switch**” can be any third switches.

## 1.3 Features

- ◆ 8-Port 10/100Mbps Fast Ethernet ports
- ◆ 4-Port supports 48VDC power to PoE Powered device
- ◆ Hardware based 10/100Mbps auto-negotiation
- ◆ Flow control for full duplex operation and back pressure for half duplex operation
- ◆ Integrates address look-up engine, supports 2K absolute MAC addresses
- ◆ Automatic address learning and address aging
- ◆ Supports Auto MDI/MDI-X function
- ◆ LED indicators for easy network diagnostic
- ◆ Ethernet standards comply with IEEE 802.3 Ethernet, IEEE 802.3u Fast Ethernet, IEEE 802.3x Flow Control and IEEE 802.3af Power over Ethernet.
- ◆ EMI standards comply with FCC, CE class A

## 1.4 Specification

<b>Model</b>	<b>FSD-804P</b>
<b>Hardware Specification</b>	
<b>Network Connector</b>	8-Port RJ-45 for 10/100TX
<b>PoE Inject Port</b>	4-Port with PoE injector function, Port-1 to Port-4
<b>LED Display</b>	One power, 1-4 port PoE in-use, LNK/ACT, 100, 5-8 port LNK/ACT, 100
<b>PoE Output power budget</b>	55 Watts
<b>Switch Architecture</b>	Store and forward switch architecture
<b>Switch Fabric</b>	1.6Gbps
<b>MAC Address</b>	2K MAC address table with Auto learning function
<b>Throughput</b>	1.19Mbps
<b>Remote power feeding</b>	End-point insert type and compatible with IEEE 802.3af Per port feeding power: 48V DC, 15.4W, 350mA (Maximum) (Ping 1, 2, 3, 6)
<b>Power</b>	AC 100~240V, 50/60Hz,
<b>Power Consumption</b>	Max. 65 watts / 221 BTU
<b>Dimension (W x D x H)</b>	217 x 135 x 43 mm
<b>Weight</b>	1.0 kg
<b>Standard Conformance</b>	
<b>EMI Safety</b>	FCC Class A, CE
<b>Operating environment</b>	0~40 degree C, 10%~95%RH
<b>Storage environment</b>	-40 ~70 degree C, 95% RH
<b>Operating Humidity</b>	5% to 90% , relative humidity, non-condensing
<b>Storage Humidity</b>	5% to 90% , relative humidity, non-condensing
<b>Standard Compliance</b>	IEEE 802.3 Ethernet, IEEE 802.3u Fast Ethernet, IEEE 802.3x Flow Control IEEE 802.3af Power over Ethernet.

## 2. HARDWARE DESCRIPTION

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

This section describes the hardware features of FSD-804P. For easier management and control of the Switch, 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 FSD-804P, please read this chapter carefully.

### 2.1 Product Description

The FSD-804P is equipped with unshielded twisted-pair (UTP) cable ports providing dedicated 10 or 100Mbps bandwidth. The FSD-804P supports MDI/ MDI-X convertible on 8-10/100Mbps ports, also provide PoE inject function on port#1, 2, 3, 4, which is able to drive 4 IEEE 802.3af compliant powered devices. The dual speed ports use standard twisted-pair cabling and are ideal for SOHO or segmenting networks into small. Each 10/100Mbps port can supports up to 200Mbps of throughput in full-duplex mode, the FSD-804P also provides a simple, cost-effective, and highly reliable network connection for data as well as power. Furthermore, it is the ideal device for bridging among Ethernet, Fast Ethernet workgroups and networks.

With 4 PoE interfaces, the FSD-804P is ideal for small business and workgroups requiring to deploy the PoE for the wireless access points, IP-based surveillance camera or IP phones in any places easily, efficiently and cost effective.

The front panel of FSD-804P provides LEDs for easy recognition of the switch operation status and troubleshooting. These LED indicators display the power status for the system, LNK/ACT and speed for each10/100M port. Also the PoE in use LED indicates for PoE ports (port#1 to port#4).

With data and power over Ethernet from one unit, the FSD-804P shall reduce cables and eliminates the need for dedicated electrical outlets on the wall, ceiling or any unreachable place. A wire carries both data and power lowering the installation costs, simplifying the installation effort and eliminating the need for electricians or extension cords. We are also proud of the key feature – energy saving. With more efficient switching power supply, the efficiency of the FSD-804P would be much better than four linear power adapters in a long run.

### 2.2 Front Panel

The Front Panel of the FSD-804P PoE Ethernet Switch consists of 8x Auto-Sensing 10/100Mbps Ethernet RJ-45 Ports. The LED Indicators are also located on the front panel of the FSD-804P.

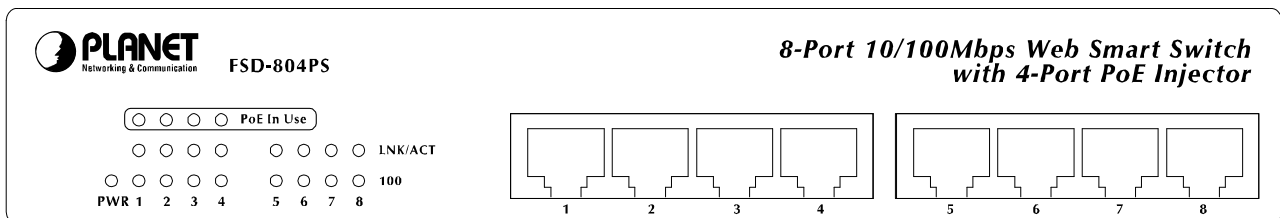


Figure 2-1: FSD-804P Switch front panel

#### 2.2.1 LED indicators

##### ■ System

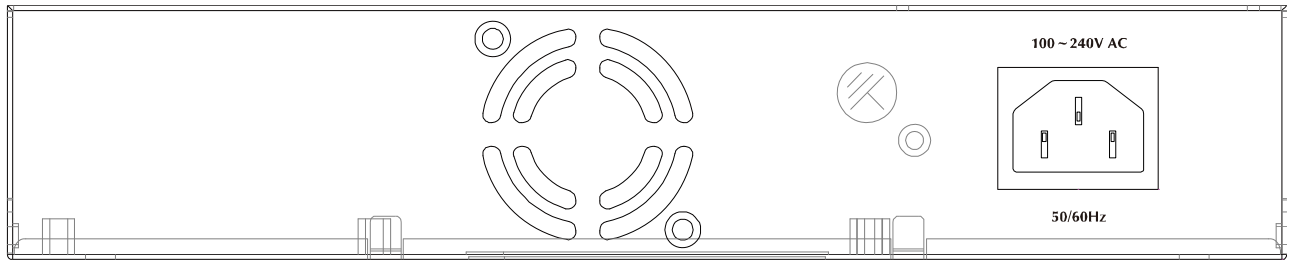
LED	Color	Function
PWR	Green	Lights to indicate that the Switch has power.

##### ■ Per 10/100Mbps port

LED	Color	Function
PoE in-use	Green	Lights to indicate the port is providing 48VDC in-line power. (1-4 ports)
LNK/ACT	Green	Lit: indicate the link through that port is successfully established. Blinks to indicate that the Switch is actively sending or receiving data over that port.
100	Green	Lights to indicate the port is running in 100Mbps speed.

## 2.3 Rear Panel

The rear panel of the FSD-804P indicates an AC inlet power socket, which accepts input power from 100 to 240VAC, 50-60Hz, 1A max.



**Figure 2-2:** FSD-804P Switch rear panel

### Power Notice:

1. The device is a power-required device, it means, it will not work till it is powered. If your networks should 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 area, installing a surge suppression device may also help to protect your FSD-804P from being damaged by unregulated surge or current to the FSD-804P or the power adapter.

## 2.4 Hardware Installation

### 2.4.1 Before start up

Before your installation, please refer to the followings for your cabling:

#### 100Base-TX

All 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 100Base-TX ports, and then turn on the FSD-804P. The port will automatically runs in 10Mbps, 20Mbps, 100Mbps or 200Mbps after the negotiation with the connected device.

#### Cabling

Each 10/100Base-TX ports use RJ-45 sockets -- similar to phone jacks -- for connection of unshielded twisted-pair cable (UTP). The IEEE 802.3u Fast Ethernet standard requires Category 5 UTP for 100Mbps 100Base-TX. 10Base-T networks can use Cat.3, 4, or 5 UTP (see table below). Maximum distance is 100meters (328 feet).

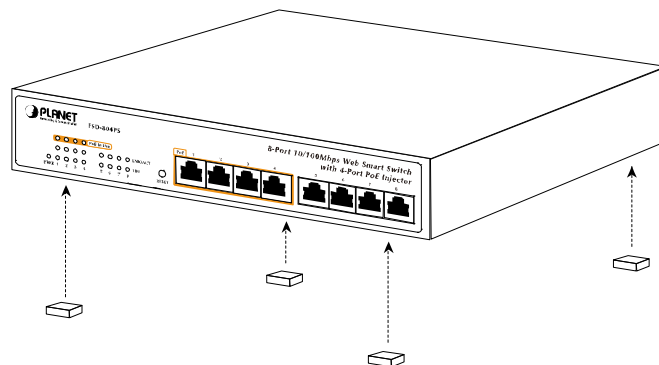
Port Type	Cable Type	Connector
10Base-T	Cat 3, 4, 5, 2-pair	RJ-45
100Base-TX	Cat.5 UTP, 2-pair	RJ-45

Any Ethernet devices like hubs/ PCs can connect to the FSD-804P by using straight-through wires. The eight-10/100Mbps ports are auto-MDI/MDI-X can be used on straight-through or crossover cable.

## 2.5 Desktop Installation

To install the Switch on desktop, simply follow the next steps:

**Step1:** Attach the rubber feet to the recessed areas on the bottom of the Switch, as shown in Figure 2-3.



**Figure 2-3** Attaching the rubber feet to the Fast Ethernet Switch

**Step2:** Place the Switch on desktop near an AC power source.

**Step3:** Keep enough ventilation space between the Switch and the surrounding objects.

**Notice:**

When choosing a location, please keep in mind the environmental restrictions discussed in Chapter 1, Section 1.4 Product Specification.

**Step4:** Connect your Switch to network devices.

- A. Connect one end of a standard network cable to the 10/100 RJ-45 ports on the Back of the Switch.
- B. Connect the other end of the cable to the network devices such as printer servers, workstations or routers...etc.

**Notice:**

Connection to the Fast Ethernet Switch requires UTP Category 5 network cabling with RJ-45 tips. For more information, please see the Cabling Specification in Appendix A.

**Step5:** Supply power to the Switch.

- A. Connect one end of the power cable to the Switch.
- B. Connect the power plug of the power cable to a standard wall outlet.

When the Switch receives power, the Power LED should remain solid Green.



## 2.6 Rack Mounting

To install the Switch in a 10-inch standard rack, follow the instructions described below.

**Step1:** Place your Fast Ethernet Switch on a hard flat surface, with the front panel positioned towards your front side.

**Step2:** Attach a rack-mount bracket to each side of the Switch with supplied screws attached to the package. Figure 2-4 shows how to attach brackets to one side of the Switch.

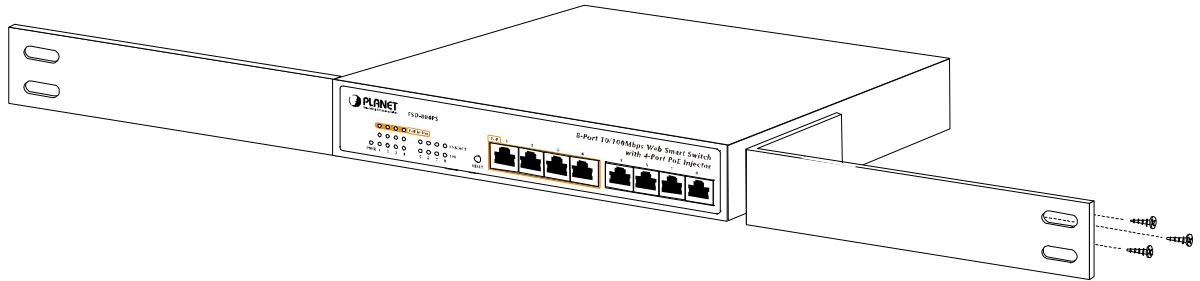


Figure 2-4 Attaching the brackets to the Switch.

### **Caution:**

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

**Step3:** Secure the brackets tightly.

**Step4:** Follow the same steps to attach the second bracket to the opposite side.

**Step5:** After the brackets are attached to the Switch, use suitable screws to securely attach the brackets to the rack, as shown in Figure 2-5.

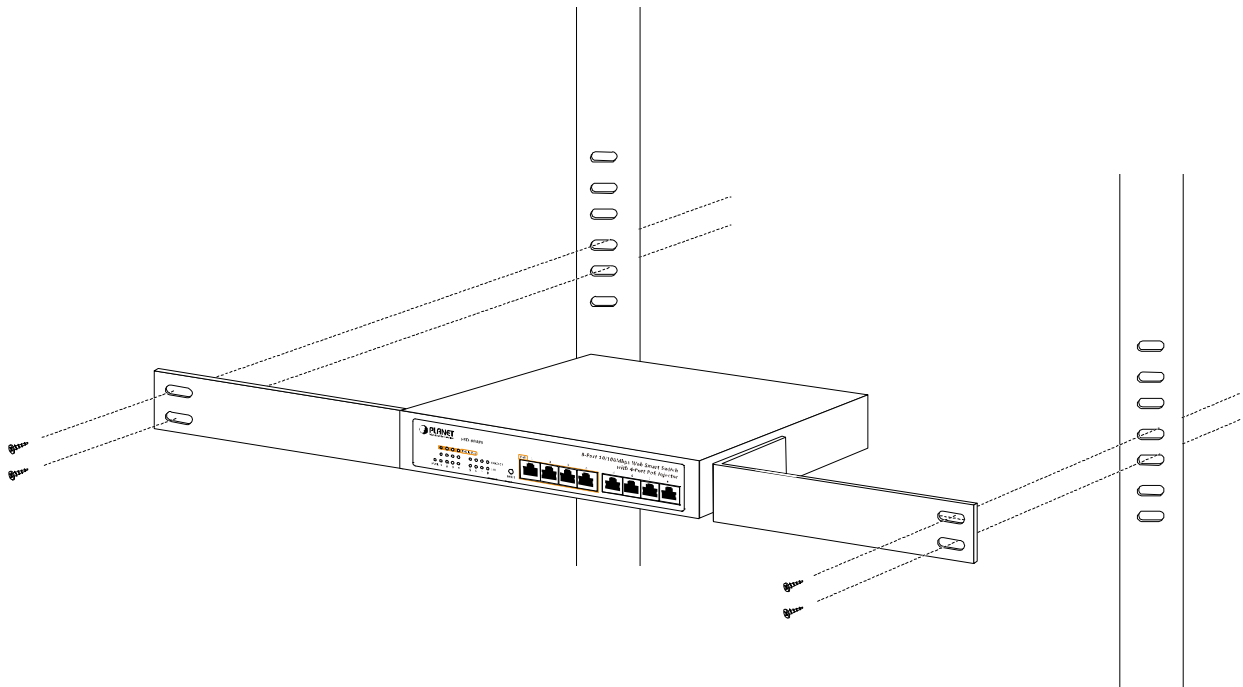


Figure 2-5 Mounting the Switch in a Rack

**Step6:** Proceeds with the steps 4 and steps 5 of **session 2.5 Desktop Installation** to connect the network cabling and supply power to your Switch.

## 2.7 Product Application

### 2.7.1 Connecting end node or switch

1. Place the FSD-804P on a smooth surface or fasten the mounting brackets purchased separately with the provided screws in a standard 19" rack.
2. Connect the power cord to the power inlet socket of FSD-804P and the other end into the local power source outlet. When the Switch receives power, the Power LED should remain solid Green.
3. Connect other switch or PC to one port of the FSD-804P using Category 3/4/5 UTP/STP cabling.
4. Connect another switch or PC to the other port of FSD-804P by following the same process as described in Step 3.

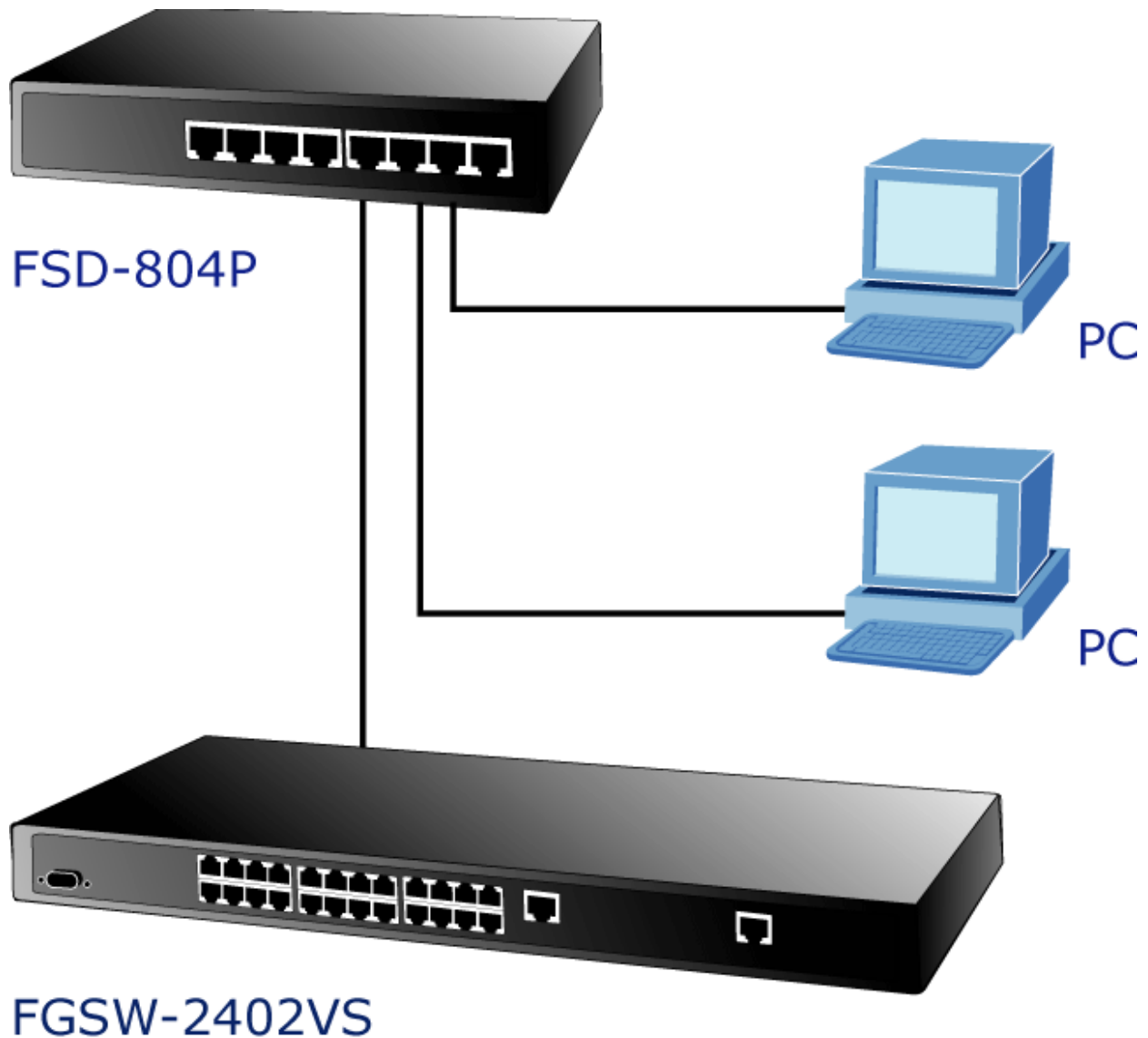


Figure 2-6. End node or Switch connection

#### Notice:

##### Cable distance for Switch

The cable distance between the FSD-804P and PC should not exceed 100 meter for UTP/STP cable.

##### Make sure the wiring is correct

It can be used Category 3/4/5 cable in 10 Mbps operation. To reliably operate your network at 100Mbps, you must use an Unshielded Twisted-Pair (UTP) Category 5 cable, or better Data Grade cabling. While a Category 3 or 4 cables may initially seem to work, it will soon cause data loss.

## 2.7.2 Department/ Workgroup PoE Switch:

Providing up to 4 PoE, in-line power interfaces, the Switch can easily build a power central-controlled IP phone system, IP camera system, AP group for the enterprise. For instance, 4 camera / AP can be easily install around the corner in the company for surveillance demands or build a wireless roaming environment in the offices.

Without the power-socket limitation, the switch makes the installation of cameras or WLAN AP more easily and efficiently.

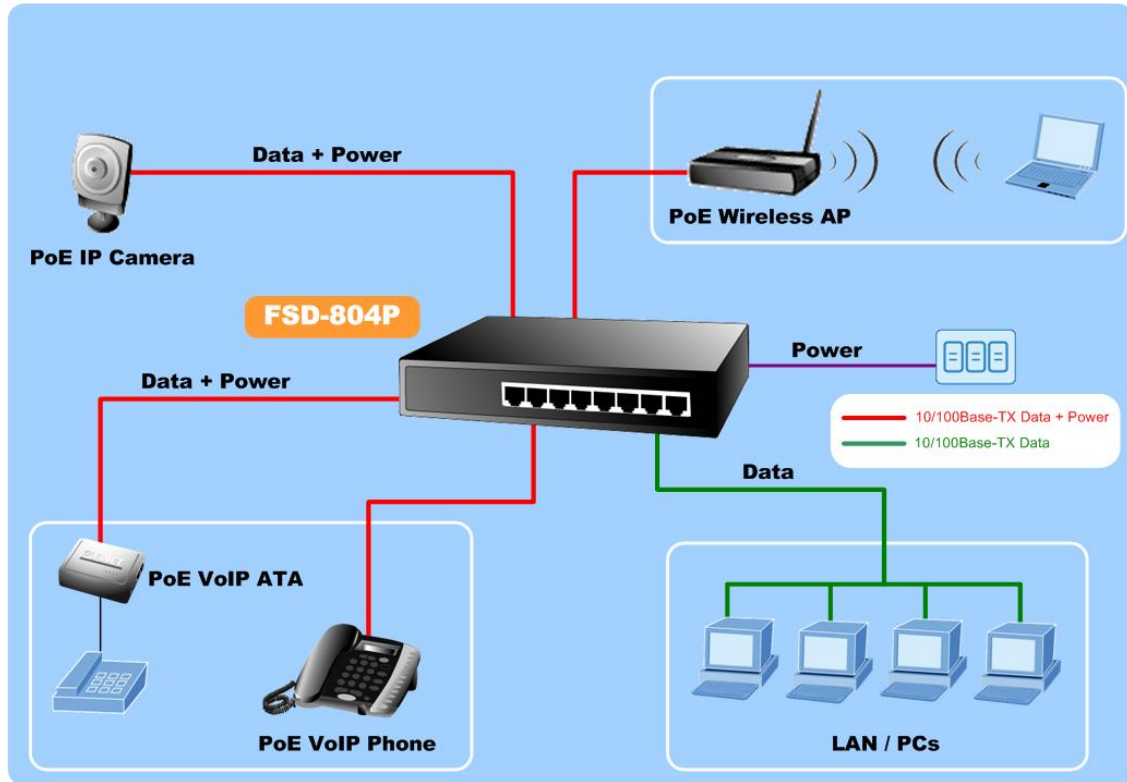


Figure 2-7. Department / workgroup PoE Switch connection

## 3. SWITCH OPERATION

### 3.1 Address Table

The Switch is implemented with an address table. This address table composed of many entries. Each entry is used to store the address information of some node in network, including MAC address, port no, etc. This information comes from the learning process of Ethernet Switch.

### 3.2 Learning

When one packet comes in from any port. The Switch will record the source address, port no. And the other related information in address table. This information will be used to decide either forwarding or filtering for future packets.

### 3.3 Forwarding & Filtering

When one packet comes from some port of the Ethernet Switching, it will also check the destination address besides the source address learning. The Ethernet Switching will lookup the address-table for the destination address. If not found, this packet will be forwarded to all the other ports except the port which this packet comes in. And these ports will transmit this packet to the network it connected. If found, and the destination address is located at different port from this packet comes in, the Ethernet Switching will forward this packet to the port where this destination address is located according to the information from address table. But, if the destination address is located at the same port with this packet comes in, then this packet will be filtered. Thereby increasing the network throughput and availability.

### 3.4 Store-and-Forward

Store-and-Forward is one type of packet-forwarding techniques. A Store-and Forward Ethernet Switching stores the incoming frame in an internal buffer, do the complete error checking before transmission. Therefore, no error packets occurrence, it is the best choice when a network needs efficiency and stability.

The Ethernet Switch scans the destination address from the packet-header, searches the routing table provided for the incoming port and forwards the packet, only if required. The fast forwarding makes the switch attractive for connecting servers directly to the network, thereby increasing throughput and availability. However, the switch is most commonly used to segment existing hubs, which nearly always improves overall performance. An Ethernet Switching can be easily configured in any Ethernet network environment to significantly boost bandwidth using conventional cabling and adapters.

Due to the learning function of the Ethernet switching, the source address and corresponding port number of each incoming and outgoing packet are stored in a routing table. This information is subsequently used to filter packets whose destination address is on the same segment as the source address. This confines network traffic to its respective domain, reducing the overall load on the network.

The Switch performs "Store and forward" therefore, no error packets occur. More reliably, it reduces the re-transmission rate. No packet loss will occur.

### 3.5 Auto-Negotiation

The STP ports on the FSD-804P switch have built-in "Auto-negotiation". This technology automatically sets the best possible bandwidth when a connection is established with another network device (usually at Power On or Reset). Detecting the modes does this and speeds at the second of both devices are connected and capable of, both 10Base-T and 100Base-TX devices can connect with the port in either Half- or Full-duplex mode.

## 4.TROUBLESHOOTING

This chapter contains information to help you solve problems. If the Switch is not functioning properly, make sure the Ethernet Switch was set up according to instructions in this manual.

### **The Link LED is not lit**

Solution:

Check the cable connection and remove duplex mode of the Switch.

### **Performance is bad**

Solution:

Check the full duplex status of the Switch. If the Ethernet Switch is set to full duplex and the partner is set to half duplex, then the performance will be poor.

### **100Base-TX port link LED is lit, but the traffic is irregular**

Solution:

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.

### **Why the Switch doesn't connect to the network**

Solution:

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

### **Why I connect my PoE device to FSD-804P and it cannot power on?**

Solution:

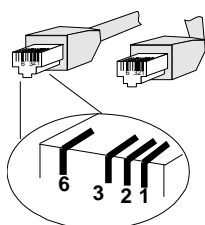
1. Please check the cable type of the connection from FSD-804(port 1 to port 4) to the other end. The cable should be an 8-wire UTP, Category 5 or above, EIA568 cable within 100 meters. A cable with only 4-wire, short loop or over 100 meters, all will affect the power supply.
2. Please check and assure the device that fully complied with IEEE 802.3af standard.

## APPENDIX A NETWORKING CONNECTION

### A.1 Switch's RJ-45 Pin Assignments

Contact	MDI	MDI-X
1	1 (TX +)	3
2	2 (TX -)	6
3	3 (RX +)	1
6	6 (RX -)	2
4, 5, 7, 8	Not used	Not used

### A.2 RJ-45 cable pin assignment



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.