

# **SOHOConnect Series**

**FSD-8080/FSD-1600**

**8/16-port 10/100Mbps Ethernet Switch**

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## FCC Warning

This device has been tested and found to comply with 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 user's manual, may cause interference in which case 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.

## Revision

The information in this manual is subject to change without notice. User's manual for PLANET SOHOConnect Series Switch

Model: **FSD-8080/FSD-1600**

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# General Introduction

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## Checklist

Check the contents of your package for following parts:

- ◆ The Fast Ethernet Switch
- ◆ Power Supply or Power Cord
- ◆ Accessory Pack
- ◆ User's Manual

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.

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## Introduction

The FSD-8080/1600, 8/16-port 10/100Mbps Ethernet Switch is designed to allow simultaneous transmission of multiple packets

via an internal high-speed data channel. This means that it can partition a network more efficiently than bridges or routers in most environments.

In the following sections, the term “Switch” will represent Planet’s FSD switch, and “switch” for third part Ethernet switches. This Switch is a highly reliable network switch and is the ideal device for bridging Ethernet to Fast Ethernet workgroups or networks. Simple and cost-effective, the Switch complies to IEEE802.3u, IEEE802.3, 100Base-TX, and 10Base-T. Therefore, the Switch will be the fast being recognized as one of the most important building blocks for today networking technology.

Compact in size and designed for Plug and Play installation, the Switch allows the network administrator to simply connect the network and power cables and the switching/bridging functions begin automatically. No hardware or software configurations are required.

The front panel of the Switch provides LED indicators for easy recognition of the switch operation status and for troubleshooting. These LED indicators display the power status for the system and link, speed, full-duplex, and receive status for each port.

With 8-port Fast Ethernet Switching designed specifically for connecting workgroup devices and desktops, companies no longer have to invest in expensive and inflexible switches engineered primarily for backbone implementations. Instead, companies can deploy scaleable, affordable switches that increase the aggregate bandwidth of the network by boosting throughput to the workgroups that need it most.

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## Features

- ◆ 8/16-port 10/100base-TX Auto-Negotiation Ethernet Switching Hub
- ◆ Complies with the IEEE802.3 Ethernet and IEEE802.3u Fast Ethernet standard
- ◆ Features Store-and-Forward architectures with wire-speed filtering and forwarding rates
- ◆ Full/Half-Duplex capability on every TX ports, total bandwidth is up to 200Mbps/port
- ◆ Support up to 4K Uni-cast address, Layer 2 address resolution-Self Learning
- ◆ Broadcast storm control
- ◆ IEEE802.3x compliant full-duplex flow control
- ◆ Half-duplex flow control

- ◆ Runt and CRC Filtering eliminates erroneous packets to optimize the network bandwidth
- ◆ Provide external power supply
- ◆ LED indicators for simple diagnostics and management
- ◆ Port#1 provides an extra port for MDI and MDI-X mode PC or hub uplink.
- ◆ Plug and Play



## Hardware Description

This section describes the hardware features of the Switch. 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 hub, read this chapter carefully.

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### Front Panel

The unit front panel provides a simple interface monitoring the Switch. It includes a power indicator for each port.

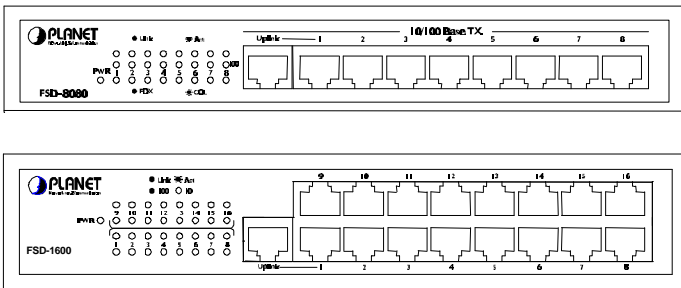


Figure 1. Front Panel of FSD-8080



## LED indicators

<b>LED Function</b>	<b>Color</b>	<b>Description</b>
Power (PWR)	Green	This indicator lights green when the hub is receiving power, otherwise, it is off.
Link/ Act	Green	This indicator green when the port is connected to a either 10Mbps Ethernet or 100Mbps Fast Ethernet station , If the station to which the hub is connected is powered off, or if there is a problem with the link, the LED will remain off. And the indicator blinking green when the data will be received to all other connected ports.
100	Green	This indicator green when the port is connected to a 100Mbps Fast Ethernet station. If the station to which the hub is connected is powered off, a 10Mbps Ethernet station, or if there is a problem with the link, the LED will remain off.
FDX/COL	Amber	Lit: Full duplex operation Unlit: Half duplex operation Blink: indicates data collisions on the respective Ethernet segment of this port. Whenever a collision is detected, the respective COL indicator will briefly blink

## Rear Panel

The rear panel of the Switch indicates a DC-jack power socket, which accepts exactly DC 12V, 1A power from the output of the AC adapter connected to your local AC power outlet. And one

100~240VAC Power inlet for FSD-1600.

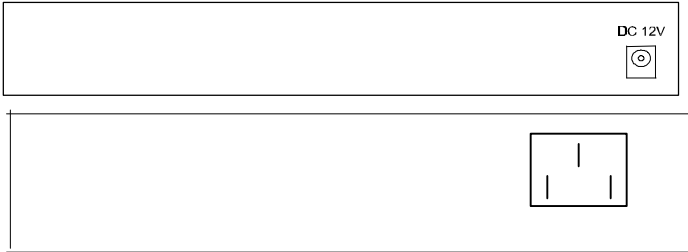


Figure 2. Rear Panel of FSD-8080/1600

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## Hardware Installation

1. Place the Switch on a smooth surface
2. Connect the output cord of power supply to the DC-jack.
3. Connect hub or PC to one port of the Switch using Category 3/4/5 UTP/STP cabling.
4. Connect another hub or PC to the other port of Switch by following the same process as described in Step 3.

### Notice:

#### **Cable distance for FSD-8080/1600**

The cable distance between the Switch and hub/PC should not exceed 100 meter.

#### **Make sure the wiring is correct**

It can be used Category 3/4/5 cable in 10Mbps 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 cable may initially seem to work, it will soon cause data loss.

All kinds of hub/PC can connect to switch by using straight-through wires. The hub provides one additional RJ45 connector which is converted from port 1, labeled “Uplink” port. Either port 1 or Uplink port can be used at one time.

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## **Configuration**

### **100Mbps Server to 10Mbps Hub**

Plug one end of the Category 5 UTP Cable into any one port of the Switch, and the other end of this cable into the RJ-45 of Fast Ethernet Adapter in the server. The cable length between these 2 connecting points should not exceed 100 meters.

Plug one end of the Category 3 UTP Cable into “Uplink” port of the Switch, and the other end of this cable into any port of the 10Mbps Ethernet hub. The cable length between these 2 connecting points should not exceed 100 meters.

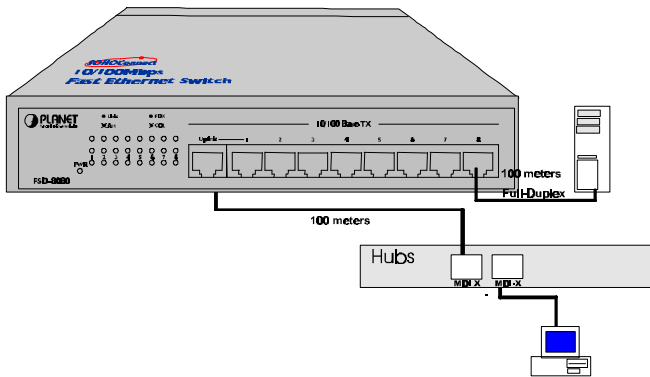


Figure 3. 100Mbps File server to Hubs Connection

### 10Mbps Hub to 100Mbps Hub

Plug one end of the Category 5 UTP Cable into one port of the Switch, and the other end of this cable into “Uplink” port of the 100Mbps Fast Ethernet Hub. The cable length between these 2 connecting points should not exceed 100 meters.

Plug one end of the Category 3 UTP Cable into one port of the Switch, and the other end of this cable into “Uplink” port of the 10Mbps Ethernet Hub. The cable length between these 2 connecting points should not exceed 100 meters.

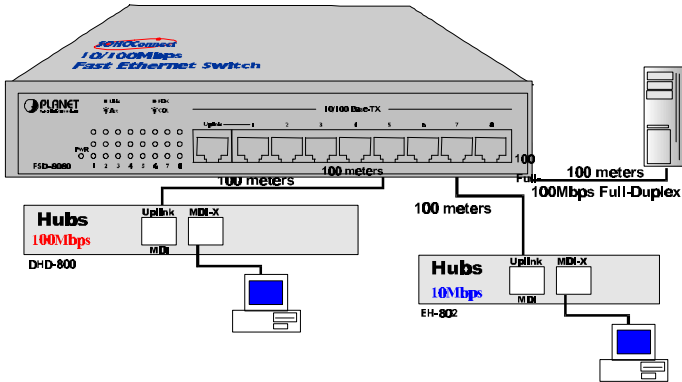


Figure 4. Ethernet to Fast Ethernet connection

## Switch Operation

### 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. The information comes from the learning process of Ethernet Switch.

### Learning

When one packet comes in from any port. The Ethernet Switch will record the source address, port no. and the other related information in address table. These information will be used to

decide either forwarding or filtering for future packets.

## **Forwarding & Filtering**

When one packet comes from some port of the Ethernet Switch, it will also check the destination address besides the source address learning. The Ethernet Switch 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 Switch 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, when this packet will be filtered. Thereby increasing the network throughput and availability

## **Store-and-Forward**

Store-and-Forward is one type of packet-forwarding techniques. A Store-and-Forward Ethernet Switch 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 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 Switch 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 switch, 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.

## Auto-Negotiation

The STP ports on the 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). This is done by detect the modes and speeds at the second of both device is connected and capable of. Both 10Base-T and 100Base-TX devices can connect with the 100Base-TX port in either Half- or Full-Duplex mode.

<b>If attached device is:</b>	<b>100Base-TX port will set to:</b>
• 10Mbps, no auto-negotiation	10Mbps
• 10Mbps, with auto-negotiation	10/20Mbps (10Base-T/Full-Duplex)
• 100Mbps, no auto-negotiation	100Mbps
• 100Mbps, with auto-negotiation	100/200Mbps (100Base-TX/Full-Duplex)

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# Troubleshooting

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

### **The Link LED is not Lit**

Solution:

Make sure the switch configuration is consistent with the connecting device

Check the cable connections.

### **Performance is bad**

Solution:

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

### **Some stations can not talk to other stations located on the other port**

Solution:

The address table may contain older information than of the address table of that node. Please power down to refresh the address information.

## Specifications:

<b>General (Ethernet)</b>	
Standards:	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100 Base-TX Fast Ethernet ANSI/IEEE Std 802.3 N-way auto-negotiation IEEE 802.3 Frame types: Transparent IEEE 802.3 MAC layer frame size: 64 - 1518 Bytes
Protocol:	CSMA/CD
Data Transfer Rate:	Ethernet:                      Fast Ethernet: 10Mbps (half duplex)      100Mbps (half duplex) 20Mbps (full duplex)      200Mbps (full duplex)
Topology:	Star
<b>General (Cabling)</b>	
Network Cables:	10Base-T: 2-pair UTP Cat. 3,4,5 (100 m, maximum) EIA/TIA- 568 100-ohm STP (100 m, maximum) 100Base-TX: 2-pair UTP Cat. 5 (100 m, maximum) EIA/TIA-568 100-ohm STP (100 m, maximum)
Number of Ports:	8/16 - STP ports
Media Interface Exchange:	Cascade RJ-45 shared with port#1
<b>Hardware Physical /Environmental Specification</b>	
DC inputs	12V DC unregulated, 1A maximum (8-port)  100~240VAC, 50~60Hz (16-port)
Power Consumption	12/25 watts maximum
LED Indication	System : Power Port: 3 LED Indicators per port (LINK/ACT, 100, FDX/ COL)
Operating Temperature	0 ~ 50 degree C

<b>General (Ethernet)</b>	
Storage Temperature	-20 ~ 70 degree C
Humidity	10% ~ 90% non-condensing
Dimensions	220 x 130 x 29 mm 220 x 130 x 44 mm
EMI	FCC Class A, CE Mark Class A
<b>Performance</b>	
Transmission Method	Store-and-forward
Filtering Address Table	4 K entries / device
Packet Filtering/Forwarding Rate	148,800pps per port (for 100Mbps) 14,880pps per port (for 10Mbps)
MAC Address Learning	Automatic update / Max age: fixed