

**10/100Mbps**  
**Fast Ethernet Switch**

FSD-805/FSD-805SC/FSD-805ST/FSD-805S15

User's Manual

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## Revision

PLANET 8-Port 10/100Mbps Fast Ethernet Switch User's Manual  
For Models: FSD-805 / FSD-805SC / FSD-805ST / FSD-805S15

Revision: 1.1 (February, 2009)

Part No: EM\_FSD805v1.1 (2350-A31150-001)

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# **1. INTRODUCTION**

## **1.1 Package Contents**

Check the contents of your package for following parts:

- Fast Ethernet Switch x 1
- User's manual x 1
- Power cord x 1
- Rubber feet x 4

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 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**

This Fast Ethernet Switch User Manual is structured as follows:

### **Chapter 2 Installation**

The chapter explains the feature, functionality and the physical installation of the Switch.

### **Chapter 3 Switch operation**

The chapter explains the Fast Ethernet Switch transmit operation.

### **Chapter 4 Troubleshooting**

The chapter explains the troubleshooting of the Fast Ethernet Switch.

### **Appendix A**

This chapter contains cable information of the Fast Ethernet Switch.

### 1.3 Product Features

- Complies with the IEEE 802.3 Ethernet and IEEE 802.3u Fast Ethernet standard
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- Support 2K MAC address table
- Support to handle up to 1522 bytes packet size
- LED indicators for simple diagnostics and management
- Hardware based 10/100Mbps auto-negotiation
- Full / Half-Duplex capability on every TX ports, total bandwidth is up to 200Mbps per port
- IEEE 802.3x PAUSE frame flow control for full duplex operation
- Backpressure flow control for half duplex operation
- One shared 100Base-FX interface for up to 2km (multi-mode fiber 50/125 $\mu$ m) on FSD-805SC / FSD-805ST
- One shared 100Base-FX interface for up to 15km (single-mode fiber 9/125 $\mu$ m) on FSD-805S15
- Automatic source address learning and aging
- Internal power adapter 100-240V AC, 50/60Hz, 0.2A
- FCC, CE class A compliant

## 1.4 Product Specifications

Product	FSD-805	FSD-805SC	FSD-805ST	FSD-805S15
<b>Hardware Specification</b>				
10/100Base-TX Ports	8	8	8	8
100Base-FX SC Port	-	1		1
100Base-FX ST Port	-	-	1	-
Dimensions (W x D x H)	191 mm x 85 mm x 26 mm			
Weight	325g			
Power Requirement	Internal power 100-240V AC, 50/60Hz, 0.2A			
Power Consumption / Dissipation	4.3 watts / 14.6 BTU			
<b>Switch Specification</b>				
Switch Processing Scheme	Store-and-Forward			
Address Table	2K entries			
Share data Buffer	1Mbit on-chip frame buffer			
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex			
Switch fabric	1.6Gbps			
Throughput (packet per second)	11.9Mpps			
Network cables	10/100Base-TX: 2-Pair UTP Cat. 3, 4, 5 (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.) 100Base-FX: Multi-mode optic fiber 62.5/125µm, 50/125µm (FSD-805SC / FSD-805ST. 2km, max.). Single-mode optic fiber 9/125µm (FSD-805S15. 15km, max.)			
<b>Standards Conformance</b>				
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3x Full-duplex Flow control			
Temperature	Operating: 0~50 Degree C Storage: -40~70 Degree C			
Humidity Operating	Operating: 5% to 90%, Storage: 5% to 90% (Non-condensing)			
Regulation Compliance	FCC Part 15 Class A, CE			

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## **2. INSTALLATION**

This section describes the functionalities of the Fast Ethernet Switch's components and guides how to install it on the desktop. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

In the following section, the term "Switch" means the Four Switches, i.e. FSD-805, FSD-805SC / FSD-805ST and FSD-805S15; term of "switch" can be any third part switches.

### **2.1 Product Description**

The PLANET FSD-805 / FSD-805SC / FSD-805ST and FSD-805S15 are 10/100Mbps Fast Ethernet Switches in a compact housing for easily desktop placement. With 8 ports respectively and it's Auto-negotiation capability, all the RJ-45 ports can be configured to speeds of 10/20Mbps or 100/200Mbps automatically; With increasing bandwidth requirements for local area networks, the Switch provide non-blocking wire-speed performance and 1.6Gbps internal switching fabric, it is the ideal option to alleviate bottlenecks in client/ server and peer-to-peer environments in a cost-effective way.

The FSD-805SC / FSD-805ST and FSD-805S15 provide one shared 100Base-FX port with port 1, TP / Fiber port Selection through the DIP switch.

All RJ-45 copper interfaces support 10/100Mbps Auto-Negotiation for optimal speed detection through RJ-45 Category 6, 5 or 5e cables. Support is standard for Auto-MDI/MDI-X that can detect the type of connection to any Ethernet device without requiring special straight or crossover cables.

The Flow Control function allows your Fast Ethernet Switch supported routers and servers to directly connect to this Switch for fast, reliable data transfer.

## 2.1.1 Product Overview

PLANET FSD-805 / FSD-805SC / FSD-805ST and FSD-805S15 are 10/100Mbps Fast Ethernet Switch, with 8 RJ-45 10/100Mbps ports for cost effective high-performance network connectivity. With its 1.6Gbps non-blocking switch fabric, the Switch can also provide a local, high bandwidth. The Switch also supports Store-and-Forward forwarding scheme to ensure low latency and high data integrity, eliminates unnecessary traffic and relieves congestion on critical network paths. With an intelligent address recognition algorithm, the Switch could recognize up to 2K different MAC address and enables filtering and forwarding at full wire speed.

Choice of multi-mode / single mode 100Base-FX SC / ST interface on FSD-805SC / FSD-805ST and FSD-805S15, the fiber transmit distance can be 2km and 15km.

## 2.1.2 Switch Front Panel

Figure 2-1 & 2-2 & 2-3 & 2-4 shows a front panel of FSD-805 / FSD-805SC / FSD-805ST and FSD-805S15.



Figure 2-1 FSD-805 front panel



Figure 2-2 FSD-805SC front panel



Figure 2-3 FSD-805ST front panel



Figure 2-4 FSD-805S15 front panel

### 2.1.3 LED Indicators

FSD-805 / FSD-805SC / FSD-805ST / FSD-805S15

LED	Color	Function
PWR	Green	Lit: indicate the Switch has power.
LNK/ACT	Green	Lit: indicate the link through that port is successfully established. Blink: indicate that the Switch is actively sending or receiving data over that port.

### 2.1.4 Switch Rear Panel

Figure 2-5 shows a rear panel of FSD-805 / FSD-805SC / FSD-805ST and FSD-805S15.

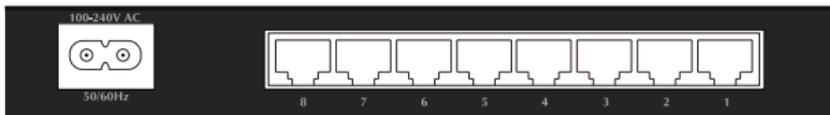


Figure 2-5 FSD-805 / FSD-805SC / FSD-805ST / FSD-805S15 rear panel



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 Switch from being damaged by unregulated surge or current to the Switch or the power adapter.

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## 2.2 Installing the Switch

This part describes how to install your Fast Ethernet Switch and make connections to it. Please read the following topics and perform the procedures in the order being presented.



Note

This Switch does not need software configuration.

### 2.2.1 Desktop Installation

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

- Step 1:** Attach the rubber feet to the recessed areas on the bottom of the Switch.
- Step 2:** Place the Switch on desktop near an AC power source.
- Step 3:** Keep enough ventilation space between the Switch and the surrounding objects.



Note

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

- Step 4:** Connect your Switch to network devices.
- Connect one end of a standard network cable to the 10/100 RJ-45 ports on the Back of the Switch.
  - Connect the other end of the cable to the network devices such as printer servers, workstations or routers...etc.



Note

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

**Step 5:** Supply power to the Switch.

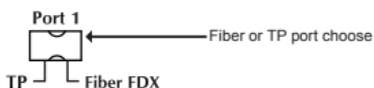
- A. Connect one end of the power cable to the Switch.
- B. Connect the power plug of the power cable to a standard wall outlet.

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



Note

When need use the 100Base-FX port of FSD-805SC / FSD-805ST and FSD-805S15, please changed the DIP Switch on the left side. The DIP Switch control the Port 1 runs at TP or Fiber operation mode.



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## **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 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. There by 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. The 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.

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## 3.5 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 port in either Half- or Full-Duplex mode. For non auto-negotiation devices, the Switch will only run in Half-duplex mode.

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## **4. TROUBLESHOOTING**

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

### **The per port LED is not lit**

Solution:

Check the cable connection of the Switch.

### **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.

## APPENDIX A: NETWORKING CONNECTION

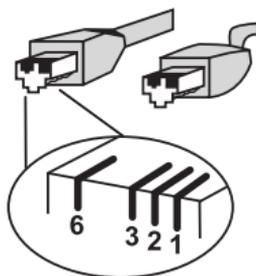
### A.1 Switch's RJ-45 Pin Assignments

■ 10/100Mbps, 10/100Base-TX

RJ-45 Connector pin assignment		
Contact	MDI 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	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	Not used	

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.

### A.2 RJ-45 cable Pin Assignments



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:

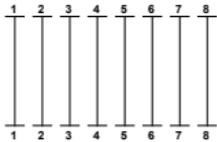
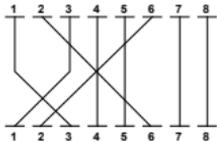
Straight Cable		SIDE 1	SIDE2
	<u>SIDE 1</u>	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown
	<u>SIDE 2</u>		
Crossover Cable		SIDE 1	SIDE2
	<u>SIDE 1</u>	1 = White / Orange 2 = Orange 3 = White / Green 4 = Blue 5 = White / Blue 6 = Green 7 = White / Brown 8 = Brown	1 = White / Green 2 = Green 3 = White / Orange 4 = Blue 5 = White / Blue 6 = Orange 7 = White / Brown 8 = Brown
	<u>SIDE 2</u>		

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.

### A.3 Fiber Optical Cable Connection Parameter

The wiring details are as below:

■ Fiber Optical patch Cables:

Standard	Fiber Type	Cable Specification
100Base-FX (1300nm)	Multi-mode	50/125 $\mu$ m or 62.5/125 $\mu$ m
100Base-FX (1310nm)	Single-mode	9/125 $\mu$ m

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