

**8-Port 10/100/1000Mbps  
Gigabit Ethernet Switch**

**GSD-805**

**User's Manual**

## **Trademarks**

Copyright © PLANET Technology Corp. 2008.

Contents subject to revision without prior notice.

PLANET is a registered trademark of PLANET Technology Corp. All other trademarks belong to their respective owners.

## **Disclaimer**

PLANET Technology does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose.

PLANET has made every effort to ensure that this User's Manual is accurate; PLANET disclaims liability for any inaccuracies or omissions that may have occurred.

Information in this User's Manual is subject to change without notice and does not represent a commitment on the part of PLANET. PLANET assumes no responsibility for any inaccuracies that may be contained in this User's Manual. PLANET makes no commitment to update or keep current the information in this User's Manual, and reserves the right to make improvements to this User's Manual and/or to the products described in this User's Manual, at any time without notice.

If you find information in this manual that is incorrect, misleading, or incomplete, we would appreciate your comments and suggestions.

## **FCC Warning**

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.

## **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.

## **WEEE Warning**



To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

## **Revision**

PLANET 8-Port 10/100/1000Mbps Gigabit Ethernet Switch User's Manual

For Model: GSD-805

Revision: 1.0 (July, 2008)

Part No: EM\_GSD805v1.0 (2350-A33230-000)

# TABLE OF CONTENTS

1. INTRODUCTION.....	6
1.1 Package Contents .....	6
1.2 How to Use This Manual .....	6
1.3 Product Features.....	7
1.4 Product Specifications.....	8
2. INSTALLATION.....	10
2.1 Product Description .....	10
2.1.1 Product Overview .....	11
2.1.2 Switch Front Panel .....	11
2.1.3 LED Indicators .....	12
2.1.4 Switch Rear Panel .....	12
2.2 Installing the Switch .....	13
2.2.1 Desktop Installation .....	13
3. Switch Operation .....	15
3.1 Address Table .....	15
3.2 Learning.....	15
3.3 Forwarding & Filtering .....	15
3.4 Store-and-Forward .....	16
3.5 Auto-Negotiation.....	17
4. TROUBLESHOOTING.....	18
APPENDIX A: NETWORKING CONNECTION .....	19
A.1 Switch's RJ-45 Pin Assignments .....	19
A.2 RJ-45 cable Pin Assignments .....	20

---

# **1. INTRODUCTION**

## **1.1 Package Contents**

Check the contents of your package for following parts:

- Gigabit 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 Gigabit Ethernet Switch User Manual is structured as follows:

### **Chapter 2 Installation**

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

### **Chapter 3 Switch operation**

The chapter explains the Gigabit Ethernet Switch transmit operation.

### **Chapter 4 Troubleshooting**

The chapter explains the troubleshooting of the Gigabit Ethernet Switch.

### **Appendix A**

This chapter contains cable information of the Gigabit Ethernet Switch.

---

## 1.3 Product Features

- Comply with IEEE 802.3, 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T Ethernet standard
- 8-Port 10/100/1000Mbps Gigabit Ethernet ports
- Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- Hardware based 10/100Mbps, half / full duplex and 1000Mbps full duplex mode, flow control and auto-negotiation
- IEEE 802.3x flow control for full duplex operation and Back pressure for half duplex operation
- Integrated address look-up engine, support 4K absolute MAC addresses
- 1Mbit on-chip frame buffer
- 9K Jumbo packet support
- Automatic address learning and address aging
- Supports Auto MDI/MDI-X function
- Support CSMA/CD protocol
- Internal power adapter 100-240V AC, 50/60Hz, 0.2A
- FCC, CE class A compliant

## 1.4 Product Specifications

Product	GSD-805
Hardware Specification	
10/100/1000Base-T Ports	8
Dimensions (W x D x H)	191 mm x 85 mm x 26 mm
Weight	390g
Power Requirement	Internal power 100-240V AC, 50/60Hz, 0.2A
Power Consumption / Dissipation	9.6 watts / 32 BTU
Switch Specification	
Switch Processing Scheme	Store-and-Forward
Address Table	4K 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	16Gbps
Throughput (packet per second)	11.9Mpps
Network cables	10/100/1000Base-T: Cat. 3, 4, 5, 5e, 6 UTP cable (100meters, max.) EIA/TIA-568 100-ohm STP (100meters, max.)



Standards Conformance	
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit 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

---

## **2. INSTALLATION**

This section describes the functionalities of the Gigabit 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 "Gigabit Ethernet Switch" means the GSD-805.

### **2.1 Product Description**

The PLANET GSD-805 is 8-Port 10/100/1000Mbps Gigabit Ethernet Switch with non-blocking wire-speed performance and new metal shape for easily desktop deployment in compact housing or SOHO application.

With a 16Gbps internal switching fabric, the Gigabit Ethernet Switch can handle extremely large amounts of data in a secure topology linking to a backbone or high capacity servers.

The Gigabit Ethernet Switch has 4K MAC Address table and offers wire-speed packets transfer performance without risk of packet loss. The Gigabit ports with 9K jumbo packet support can handle large amounts of data transmission in a secure topology linking to a backbone or high-power servers. The high data throughput of the device makes it ideal for most Gigabit environments, especially network upgrades to a Gigabit environment.

All RJ-45 copper interfaces support 10/100/1000Mbps Auto-Negotiation for optimal speed detection through RJ-45 Category 6, 5 or 5e cables. Support 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 Gigabit Ethernet Switch

supported routers and Servers to directly connect to this device for fast, reliable data transfer.

### 2.1.1 Product Overview

The PLANET Gigabit Ethernet Switch with 8 RJ-45 10/100/1000Mbps ports for high-speed network connectivity. The Gigabit Ethernet Switch can also automatically identify and determine the correct transmission speed and half/full duplex mode of the attached devices with its 8 ports. The Gigabit port with 9K jumbo frame feature supported, can handle extremely large amounts of data transmission in a secure topology linking to a backbone or high-power servers.

The Gigabit Ethernet 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 Gigabit Ethernet Switch could recognize up to 4K different MAC address and enables filtering and forwarding at full wire speed.

### 2.1.2 Switch Front Panel

Figure 2-1 shows a front panel of GSD-805



Figure 2-1 GSD-805 front panel

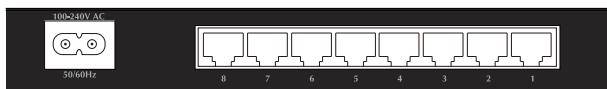
## 2.1.3 LED Indicators

### GSD-805

LED	Color	Function
PWR	Green	Lit: indicate the Switch has power.
1000	Green	Lit: indicate the Switch is successfully connecting to the network at 1000Mbps. Off: indicate that the Switch is successfully connecting to the network at 10Mbps or 100Mbps.
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 2-2 shows a rear panel of GSD-805.



**Figure 2-2** GSD-805 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 down-time.
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.

## 2.2 Installing the Switch

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



#### Note

This Gigabit Ethernet Switch does not need software configuration.

### 2.2.1 Desktop Installation

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

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

- A. Connect one end of a standard network cable to the 10/100/1000 RJ-45 ports on the Back of the Gigabit Ethernet Switch.
- B. Connect the other end of the cable to the network devices such as printer servers, workstations or routers...etc.



Note

Connection to the Gigabit Ethernet 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 Gigabit Ethernet Switch.

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

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

---

## **3. Switch Operation**

### **3.1 Address Table**

The Gigabit Ethernet 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 Gigabit Ethernet Switch.

### **3.2 Learning**

When one packet comes in from any port. The Gigabit Ethernet 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 Gigabit Ethernet Switch, it will also check the destination address besides the source address learning. The Gigabit 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 Gigabit 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, 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 Gigabit 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 Gigabit 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 Gigabit 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 Gigabit Ethernet 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 Gigabit Ethernet 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 detecting the modes and speeds at the second of both devices is connected and capable of, both 10Base-T and 100Base-TX devices can connect with the port in either Half- or Full-Duplex mode. 1000Base-T can be only connected in Full-duplex mode.

---

## **4. TROUBLESHOOTING**

This chapter contains information to help you solve issues. If the Gigabit Ethernet Switch is not functioning properly, make sure the Gigabit 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 Gigabit Ethernet Switch.

### **Performance is bad**

#### **Solution:**

Check the speed duplex mode of the partner device. The Gigabit Ethernet Switch is run at Auto-negotiation mode and if the partner is set to half duplex, then the performance will be poor.

### **Per port 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 Gigabit Ethernet Switch doesn't connect to the network**

#### **Solution:**

Check per port LED on the Gigabit Ethernet Switch. Try another port on the Gigabit Ethernet 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

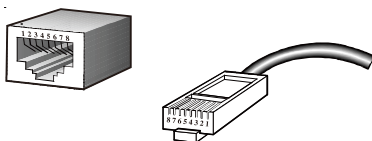
1000Mbps, 1000Base-T

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-

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	

## 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:

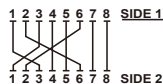
### Straight Cable



SIDE 1  
 1 = White/Orange  
 2 = Orange  
 3 = White/Green  
 4 = Blue  
 5 = White/Blue  
 6 = Green  
 7 = White/Brown  
 8 = Brown

SIDE 2  
 1 = White/Orange  
 2 = Orange  
 3 = White/Green  
 4 = Blue  
 5 = White/Blue  
 6 = Green  
 7 = White/Brown  
 8 = Brown

### Cross Over Cable



SIDE 1  
 1 = White/Orange  
 2 = Orange  
 3 = White/Green  
 4 = Blue  
 5 = White/Blue  
 6 = Green  
 7 = White/Brown  
 8 = Brown

SIDE 2  
 1 = White/Green  
 2 = Green  
 3 = White/Orange  
 4 = Blue  
 5 = White/Blue  
 6 = Orange  
 7 = White/Brown  
 8 = Brown

**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.