1. Introduction

1.1 Package Contents

Check the contents of your package for the following parts:

- Gigabit Ethernet Switch x 1
- User's Manual x 1
- Power Cord x 1
- Rubber Feet x 4

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.

In the following section, the term **"Gigabit Ethernet Switch"** means the GSD-805.

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

- Complies with IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3ab 1000BASE-T
- 8-port 10/100/1000Mbps Gigabit Ethernet
- 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 and back-pressure for half duplex operation
- Integrated address look-up engine, supporting 8K absolute MAC addresses
- 1Mbit on-chip frame buffer
- 9K jumbo packet Feature
- 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 Specifications	
Hardware Version	2
10/100/1000BASE-T Ports	8
Dimensions (W x D x H)	191 x 85.7 x 26.3 mm
Weight	430g

Power Requirement	Internal power 100-240V AC, 50/60Hz, 0.2A
Power Consumption/ Dissipation	8.6 watts/29 BTU
Switch Specifications	
Switch Processing Scheme	Store-and-Forward
Address Table	8K entries
Shared 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/non-blocking
Throughput (packet per second)	11.9Mpps@64 bytes
Network Cables	Cat 3, 4, 5, 5e, 6 UTP cable (100 meters, max.) EIA/TIA-568 100-ohm STP (100 meters, max.)
Standards Conformance	
Regulatory Compliance	FCC Part 15 Class A, CE
Standards Compliance	IEEE 802.3 Ethernet IEEE 802.3u Fast Ethernet IEEE 802.3ab Gigabit Ethernet IEEE 802.3x Full-duplex flow control
Environment	
Operating	Temperature: 0 ~ 45 degrees C Relative Humidity: 5 ~ 90% (non-condensing)
Storage	Temperature: -40 ~ 70 degrees C Relative Humidity: 5 ~ 90% (non-condensing)

2. Installation

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

2.1 Product Description

PLANET GSD-805 is a Gigabit Ethernet Switch with non-blocking wire-speed performance and its metal housing is suitable for desktop deployment for SOHO application.

With 16Gbps internal switching fabric and 9K jumbo frame, the Gigabit Ethernet Switch can handle extremely large amounts of data in a secure topology linking to a backbone or high capacity servers. The high data throughput of the device makes it ideal for most Gigabit environments, especially network upgrades to a Gigabit environment.

All RJ45 copper interfaces support 10/100/1000Mbps auto-negotiation for optimal speed detection through RJ45 Category 5, 5e or 6 cables. It supports an auto-MDI/MDI-X feature which can detect the type of connection to any Ethernet device without requiring special straight-through or crossover cables.

The flow control function allows the Gigabit Ethernet Switch supported routers and servers to directly connect to this device for a fast, reliable data transfer.

2.1.1 Product Overview

PLANET Gigabit Ethernet Switch can also automatically identify and determine the correct transmission speed of half/full duplex mode. 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 8K different MAC addresses and enables filtering and forwarding at full wire speed.

2.1.2 Switch Front Panel

Figure 2-1 shows the front panel of the GSD-805.

Figure 2-1: GSD-805 Front Panel

2.1.3 LED Indicators

System

LED	Color	Function
PWR	Green	**Light:** Indicate that the Switch has power.

Per 10/100/1000BASE-T RJ45 Port

LED	Color	Function
1000	Green	**Light:** Indicate that 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	**Light:** Indicate the link through that port is successfully established. **Blink:** Indicate that the Switch is actively sending or receiving data over that port.

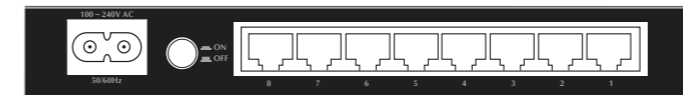### 2.1.4 Switch Rear Panel

Figure 2-2 shows the rear panel

Figure 2-2: GSD-805 Rear Panel

> **Power Notice**
> 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 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 steps below:

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 10/100/1000Mbps RJ45 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.

> **Note**
> Connection to the Gigabit Ethernet Switch requires UTP Category 5 network cabling with RJ45 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 consists of many entries. Each entry is used to store the address information of some nodes in the network, including MAC address, port no, etc. This information comes from the learning process of the 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 and 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 look up 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 coming 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 and does the complete error checking before transmission. Therefore, packets transmitted to the destination are without errors. 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 the overall performance. An Ethernet Switching can be easily configured in any Ethernet network environment to significantly boost bandwidth using conventional cabling and adapters.

Owing 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 will occur for packets. More reliably, it reduces the re-transmission rate and thus, 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 of both devices connected, and both 10BASE-T and 100BASE-TX devices can be connected 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 in auto-negotiation mode and if the partner is set to half duplex, then the performance will be poor.

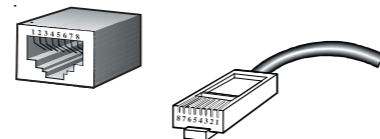**Per port LED is lit, but the traffic is irregular**

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 isn't connected 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 the power again.

Appendix A: Networking CONNECTION

A.1 Switch's RJ45 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

	RJ45 Connector pin assignment	
	MDI	MDI-X
Contact	Media Dependent	Media Dependent
	Interface	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 RJ45 cable 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:
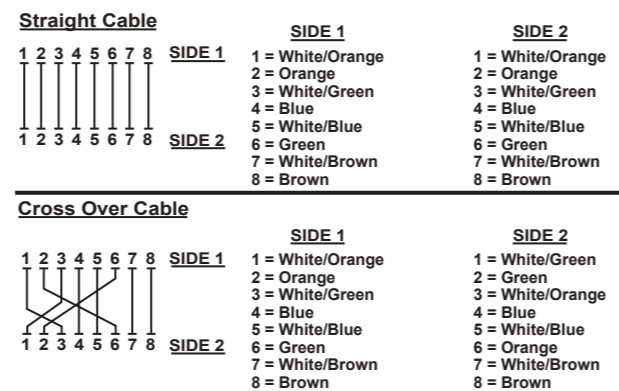
Straight Cable

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

Cross Over Cable

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

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.

Energy Saving Note of the Device

This power required device does not support Standby mode operation. For energy saving, please remove the power cable to disconnect the device from the power circuit. Without removing power cable, the device will still consume power from the power source. In view of Saving the Energy and reducing the unnecessary power consumption, it is strongly suggested to remove the power connection for the device if this device is not intended to be active.

2350-A33230-002

Customer Support

Thank you for purchase PLANET products. You can browse our online FAQ resource at the PLANET Web site first to check if it could solve you issue. If you need more support information, please contact PLANET Media Converter support team.

PLANET online FAQ:
http://www.planet.com.tw/en/support/faq.php?type=3

Media Converter support team mail address:
support_converter@planet.com.tw

EC Declaration of Conformity

For the following equipment:

*Type of Product: 8-Port 10/100/1000Mbps Desktop Gigabit Ethernet Switch (Internal Power)
*Model Number: GSD-805

* Produced by:
Manufacturer's Name : **Planet Technology Corp.**
Manufacturer's Address : 11F, No 96, Min Chuan Road, Hsin Tien, Taipei, Taiwan, R.O.C.

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to Electromagnetic Compatibility Directive on (2004/108/EC).
For the evaluation regarding the EMC, the following standards were applied:

EN55022	(2006, CLASS B)
EN 61000-3-2	(2006)
EN 61000-3-3	(1995, A1: 2001, A2: 2005)
EN55024	(1998, A1: 2001, A2: 2003)
IEC 61000-4-2	(2001)
IEC 61000-4-3	(2006)
IEC 61000-4-4	(2004)
IEC 61000-4-5	(2006)
IEC 61000-4-6	(2007)
IEC 61000-4-8	(2001)
IEC 61000-4-11	(2004)

Responsible for marking this declaration if the:

☒ Manufacturer   ☐ Authorized representative established within the EU

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**
Company Address: **11F, No.96, Min Chuan Road, Hsin Tien, Taipei, Taiwan, R.O.C**

Person responsible for making this declaration

Name, Surname **Kent Kang**

Position / Title : **Product Manager**

Taiwan	29th Aug., 2008	
Place	*Date*	*Legal Signature*

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