

Trademarks

Copyright © PLANET Technology Corp. 2005.

Contents subject to which 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 whose 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 Gigabit Ethernet Switch User's Manual

FOR MODEL: GSD-800S

Rev: 2.0

Part No. 2010-A35040-000

Table of Contents

Chapter 1 Introduction	1
1.1 Package Contents	1
1.2 How to Use This Manual	1
1.3 Product Features	2
1.4 Product Specifications	3
Chapter 2 Installation	5
2.1 Product Description	5
2.2 Installing a 800S	6
Chapter 3 Configuration	8
3.1 Preparing for configuration	8
3.2 General	9
3.3 Commands	12
3.4 Examples	23
Chapter 4 Web Interface	25
4.1 Starting the Web Interface	25
Chapter 5 Troubleshooting	26
5.2 Address Table	26
5.2 Learning	26
5.3 Forwarding & Filtering	26
5.4 Store-and-Forward	26
5.5 Auto-Negotiation	27
Chapter 6 Trouble Shooting	28
APPENDIX A	29
A.1 Switch's RJ-45 Pin Assignments	29
A.2 10/100Mbps, 10/100Base-TX	29

Chapter 1

INTRODUCTION

1.1 Package Contents

Open the box of the Switch and unpack it carefully. The box should contain the following items:

- The Switch
- Power Cord x 1
- RS-232 Cable x 1
- User s Manual x 1

If any item is found missing or damaged, please contact your local reseller for replacement. Please 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

This chapter explains the functions and how to physically install the GSD-800S.

Chapter 3 Configuration

This chapter contains information about the smart function of GSD-800S.

Chapter 4 Web Interface

This chapter contains troubleshooting and specifications of GSD-800S

Chapter 5 Switch Operation

This chapter explains the switch operation of GSD-800S.

Chapter 6 Trouble Shooting

This chapter contains troubleshooting of GSD-800S

Appendices

This chapter contains cable information of GSD-800S.

1.3 Product Features

- Complies with IEEE802.3, 10Base-T, IEEE802.3u, 100Base-TX and IEEE802.3ab, 1000Base-T
- IEEE802.3x, full-duplex flow control compliant; back-pressure, half-duplex flow control
- 10/100/1000Mbps 8-port Ethernet / Smart Switch (RJ-45)
- 144 bytes packet buffer and 8K MAC address table, auto-ageing.
- Per port Auto-MDI, MDI-X detection
- Store and Forward switching architecture
- Non-blocking switch fabric
- Automatic source address learning and aging
- RS-232 console interface for console program management of smart feature
- Port trunking support to optionally increase bandwidth between switches
- VLAN support with up to 8 VLAN groups
- 4 Classes of Service selectable on a per port basis and/or checked by IP ToS header
- Support Port mirroring for port traffic diagnosis with sniffer programs
- 10", 1U height rack mounting size
- 100~240VAC, 50~60Hz universal power input

1.4 Product Specifications

Model	GSD-800S
Hardware Specification	
Network ports	8 10/100/1000Base-T RJ-45 MDI/MDI-X ports
Console port	1 RS-232 DB-9 male
Dimensions	217 x 135 x 43.5 mm (1U height)
Weight	1.1 kg
Power Requirement	100~240 ($\pm 10\%$) VAC, 50-60 (± 3) Hz
Power Consumption	21 Watts maximum / 71 BTU/hr maximum
Switch Specification	
Switch architecture	Store-and-forward
Address Table	8K entries, auto learning/ageing
Flow Control	Back pressure for half duplex, IEEE 802.3x for full duplex
Packet Control	Runt & CRC filtering, Broadcast storm control
Switching Fabric	16Gbps
Switch Management	
Port Config	Configure each port's speed, duplex mode, flow control and priority
Port Status	Show each port's link status and speed, duplex mode
VLAN	Up to 8 VLAN groups
Port Trunking	2 port trunk support
Port Mirroring	Mirroring port's in/out traffic
Traffic Prioritization	4 Classes of Service selectable on a per port basis and / or checked by IP ToS header
Standards Conformance	
Network Standards	IEEE 802.3 (Ethernet) IEEE 802.3u (Fast Ethernet) IEEE 802.3ab IEEE8023x (flow control)
Operating Temperature	0~50°C
Storage Temperature	-40~70°C

Humidity	10% to 90% (Non-condensing)
Regulation Compliance	FCC, CE

Chapter 2

INSTALLATION

This section describes the functionalities of GSD-800S's components and guides how to install it on the desktop or shelf. Basic knowledge of networking is assumed. Please read this chapter completely before continuing.

2.1 Product Description

The PLANET GSD-800S provides 8 Gigabit Ethernet Switch ports. The PLANET GSD-800S delivers eight ports worth of high-performance, feature-rich integrated Gigabit Ethernet switching over traditional copper cabling. The GSD-800S is capable of smart functions, such as VLAN, Port trunking and Port mirroring. GSD-800S can be configured by out-of-band channel via the console port (RS232) directly. Each port supports 10Mbps, 100Mbps, and 1000Mbps as well as half/full mode and can be easily connected to corporate backbones and servers.

2.1.1 Product Overview

PLANET GSD-800S is a gigabit Ethernet switch with 8 RJ-45 10/100/1000 Mbps ports for high-speed network connectivity. GSD-800S 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 can handle large amounts of data transmission in a secure topology linking to a backbone or high-power servers.

This product 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, GSD-800S could recognize up to 8K different MAC address and enables filtering and forwarding at full wire speed.

2.1.2 GSD-800S Front Panel

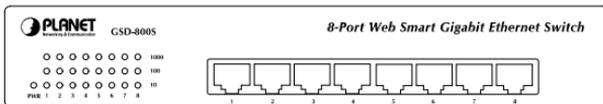


Figure 2-1 shows the front panel of GSD-800S

2.1.3 LED Indicators

LED	Color	Function
PWR	Green	Light: Power on
1000	Green	Light: The port is operation at 1000Mbps speed
100	Green	Light: The port is operation at 100Mbps speed
10	Green	Light: The port is operation at 10Mbps speed

2.1.4 GSD-800S rear panel

The rear panel of the Switch indicates an AC inlet power socket, which accepts input power from 100 to 240VAC, 50-60Hz.



Figure 2-2 Rear Panel of GSD-800S

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.

2.2 Installing a GSD-800S

This part describes how to install your GSD-800S Gigabit Ethernet Switch and make connections to the switch. Please read the following topics and perform the procedures in the order being presented.

PLANET GSD-800S Gigabit Ethernet Switch do not need software configuration. To install your GSD-800S on a desktop or shelf, simply complete the following steps.

2.2.1 Desktop Installation

To install a GSD-800S on a desktop or shelf, simply complete the following steps:

Step1: Attach the rubber feet to the recessed areas on the bottom of the switch.

Step2: Place the GSD-800S on a desktop or shelf near an AC power source.

 NOTE:

Optional rack-ear for 10-inch cabinet rack mounting (RKE-10A) and 19-inch cabinet rack mounting (RKE-10B) is available upon request.

Step3: 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 4, Product Specification.

Step4: Connect your GSD-800S to network devices

-
- A. Connect one end of a standard network cable to the 10/100/1000 RJ-45 ports on the front of the GSD-800S.
 - B. 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 Section 4, Specification.

Step5: Supply power to the Switch.

- A. Connect one end of the power cable to the GSD-800S
- B. Connect the power plug of the power cable to a standard wall outlet.

When the GSD-800S receives power, the Power LED should remain solid Green.

Chapter 3

CONFIGURATION

Unlike the unmanaged switch, GSD-800S performs series smart functions that make the switch operate more effectively. This section will describe the common usage of the Switch Smart Configuration.

3.1 Preparing for configuration

3.1.1 Connecting a PC or Terminal to the RS-232 Port

When you are ready to configure the smart functions of the switch, make sure you had connected the supplied RS-232 serial cable to the RS-232 port at the front panel of your GSD-800S Switch and your PC.

3.1.2 Terminal Emulation Setup Program

In Windows 98/2000/XP, launch "HyperTerminal", create a new connection, and adjust settings as below:

- Emulation: VT-100 compatible
- Baud per second: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow Control: None

To gain a demo, please see the Figure 3-1.

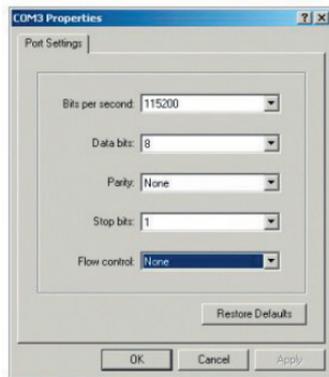


Figure 3-1 Console Configuration

3.1.3 Login

Login is required to access the command console after the system start up successfully. The factory default password is "admin". You may change it in the Console command group. To access to the Console interface, please always enter the correct password. (See Figure 3-2)



```
Booting ...image 1
Password: admin
Press ? or help to get help. The help depends on the context:
- At top level, a list of command groups will be shown.
- At group level, a list of the command syntaxes will be shown.
- If given after a command, the syntax and a description of the
  command will be shown.
>_
```

Figure 3-2 GSD-800S Login Screen

3.2 General

3.2.1 Command Hierarchy

The CLI is hierarchical with two levels: a top level and a group level. The group level consists of the following groups:

- System
- Console
- Port
- MAC
- VLAN
- Aggr
- QoS
- Mirror
- IP

At top level you may enter a command and by giving the full command string, including group, or you may change context into a group by entering the name of the group.

At group level you may enter commands for the particular group you have chosen without specifying the group name or you may return to the top level by entering the up command. The current level and group is indicated by the prompt. If you are at the top level, the prompt will be:

>

If you are at group level, the prompt will display the actual group, e.g.

System>

At group level you also have the option of using the slash (/) key to refer to a context relative to the top level. E.g. you may be in the system group and enter a /console command into the console group.

3.2.2 Login/Logout Procedures

To get access to the CLI you must login by entering a password. You will automatically be queried about the password. The password is configurable. The password check may be disabled by setting the password to an empty string , in which case any password entered during login will be accepted.

You may logout at any time and at any context level using the exit command.

3.2.3 Help Utility

You may get help by pressing the ? key or entering help. The help info depends on the context:

- At top level, a list of command groups is displayed.
- At group level, a list of the command syntaxes for the current group is displayed.
- If the help command is issued for a specific command, the command syntax and a description of the command are shown.

3.2.4 Example

The command hierarchy and the help utility is demonstrated in the following example:

```
> ? <enter>
```

Commands at top level:

System – System commands

Console – Console commands

Port – Port commands

MAC - MAC table commands

VLAN – VLAN commands

Aggregation – Aggregation/Trunking commands

QoS – QoS commands

Mirror – Mirror commands

IP – IP commands

console <enter>

Console> ? <enter>

Commands at Console level:

Console Configuration

Console Password [<password>]

Console Timeout [<timeout>]

Console Prompt [<prompt string>]

Up

Console> password ?

Syntax:

Console Password [<password>]

Description:

Set or display console password. The empty string ("") disables the password check.

[<password>]: Password string of up to 16 characters.

Console>

3.2.6 Terminology

The following table shows general parameter types used in command syntaxes and descriptions.

<port>	Port identifier: Any number in the range 1-8.
<portlist>	Comma and/or dash separated port list. This type can be used for specifying individual ports or a range of ports. The keyword <code>none</code> can be used to specify an empty port list. The keyword <code>all</code> can be used to specify all ports. Example: 1,3,8-12
<macaddress>	MAC Address; format: hh-hh-hh-hh-hh-hh , hh:hh:hh:hh:hh:hh or hhhhhhhhhhhh . The hh is Hexadecimal number in the range 0x00 to 0xFF. Example: 00-00-24-F1-02-03

<vid>	VLAN ID: Decimal number in the range 1-8. The keyword all can be used to specify all VLAN IDs.
<vidlist>	Comma and/or dash separated VLAN ID list. This type can be used for specifying individual VLAN IDs or a range of VLAN IDs. The keyword none can be used to specify an empty VLAN ID list. Example: 1,2,4-6
<class>	Internal class of service.4 queues: low normal medium high

The <portlist> type is very useful when setting up multiple ports in the same mode. For example, the following commands will divide the ports into two untagged VLANs:

```
vlan add 1 1-4
vlan add 2 5-7
vlan pvid 1-4 1
vlan pvid 5-7 2
```

3.3 Commands

3.3.1 System s Commands

System Configuration

Syntax:

```
System Configuration [all]
```

Description:

Show system name, software version, hardware version and management MAC address. Optionally show the full configuration

[all]: Show the total switch configuration (default: System configuration only).

System Restore Default

Syntax:

```
System Restore Default [keepIP]
```

Description:

Restore factory default configuration.

[keepIP]: Preserve IP configuration (default: Not preserved).

System Name

Syntax:

System Name [<name>]

Description:

Set or show the system name. The empty string () clears the system name.

[<name>]: String of up to 16 characters (default: Show system name).

System Reboot

Syntax:

System Reboot

Description:

Reboot the switch.

System SNMP

Syntax:

System SNMP [enable|disable]

Description:

Activate or deactivate SNMP.

[enable|disable]: Enable/disable SNMP (default: Show SNMP mode).

3.3.2 Console Commands

Console Configuration

Syntax:

Console Configuration

Description:

Show configured console password and timeout.

Console Password

Syntax:

Console Password [<password>]

Description:

Set or show the console password. The empty string () disables the password check.

[<password>]: Password string of up to 16 characters.

Console Timeout

Syntax:

Console Timeout [<timeout>]

Description:

Set or show the console inactivity timeout in seconds. The value zero disables timeout.

[<timeout>]: Timeout value in seconds, 0, 60-10000.

Console Prompt

Syntax:

Console Prompt [<prompt_string>]

Description:

Set or show the console prompt string. The empty string () clears the prompt string.

[<prompt_string>]: Command prompt string of up to 10 characters.

3.3.3 Port Commands

Port Configuration

Syntax:

Port Configuration [<portlist>]

Description:

Show the configured and current speed, duplex mode, flow control mode and state for the port.

<portlist>: Port list (Default: All ports).

Port Mode

Syntax:

Port Mode [<portlist>] [<mode>]

Description:

Set or show the speed and duplex mode for the port.

<portlist>: Port list (Default: All ports).

<mode> : Port speed and duplex mode (Default: Show configured and current mode).

10hdx: 10 Mbit/s, half duplex.

10fdx: 10 Mbit/s, full duplex.

100hdx: 100 Mbit/s, half duplex.

100fdx: 100 Mbit/s, full duplex.

1000fdx: 1 Gbit/s, full duplex.

auto: Auto negotiation of speed and duplex.

Port Flow Control

Syntax:

```
Port Flow Control [<portlist>] [enable|disable]
```

Description:

Set or show flow control mode for the port.

<portlist>: Port list (default: All ports).

[enable|disable]: Enable/disable flow control (default: Show flow control mode).

Port State

Syntax:

```
Port State [<portlist>] [enable/disable]
```

Description:

Set or show the state for the port.

<portlist>: Port list (default: All ports).

[enable|disable]: Enable or disable port state (default: Show state).

Port MaxFrame

Syntax:

```
Port MaxFrame [<portlist>] [<framesize>|reset]
```

Description:

Set or show the maximum frame size in bytes (including FCS) for frames received on the port. Tagged frames are allowed to be 4 bytes longer than the maximum frame size. Use the reset option to return to the default setting.

<portlist> : Port list (default: All ports).

<framesize>|reset]: Maximum frame size or reset to 9600 bytes (default: Show

maximum frame size).

Port Statistics

Syntax:

Port Statistics [<portlist>] [clear]

Description:

Show or clear statistics for the port.

<portlist>: Port list (default: All ports).

[clear] : Clear port statistics (default: Show statistics).

3.3.4 MAC Table Commands

MAC Configuration

Syntax:

MAC Configuration

Description:

Show the permanently stored MAC table and the MAC ageing timer.

MAC Add

Syntax:

MAC Add <macaddress> <portlist>|none [<vid>]

Description:

Add a static MAC address table entry and VLAN ID on ports.

<macaddress>: MAC address, 12-digit hex string, optionally separated with dashes or colons (e.g. 010203ABCDEF or 01-02-03-AB-CD-EF or 01:02:03:AB:CD:EF).

<portlist> : Port list. Use `none` to specify no ports.

[<vid>] : VLAN ID, 1-8 (default: 1).

Note: Maximum 16 MAC addresses can be added.

MAC Delete

Syntax:

MAC Delete <macaddress> [<vid>]

Description:

Delete MAC address and VLAN ID.

<macaddress>: MAC address, 12-digit hex string, optionally separated with dashes or colons (e.g. 010203ABCDEF or 01-02-03-AB-CD-EF or 01:02:03:AB:CD:EF).

[<vid>] : VLAN ID (default: 1).

MAC Lookup

Syntax:

MAC Lookup <macaddress> [<vid>]

Description:

Lookup MAC address and VLAN ID.

<macaddress>: MAC address, 12-digit hex string, optionally separated with dashes or colons (e.g. 010203ABCDEF or 01-02-03-AB-CD-EF or 01:02:03:AB:CD:EF).

[<vid>] : VLAN ID, 1-8 (default: 1).

MAC Flush

Syntax:

MAC Flush

Description:

Removes non-static MAC address table entries.

MAC Age Time

Syntax:

MAC Agetime [<agetime>]

Description:

Set or show the MAC age timer in seconds. The value zero disables ageing.

[<agetime>]: Age timer in seconds, 0 or 10-65535 (default: Show timer).

3.3.5 VLAN Commands

VLAN Configuration

Syntax:

VLAN Configuration [<portlist>]

Description:

Show the VLAN mode, port VLAN ID and accepted frame type for the port and the permanently stored VLAN table.

[<portlist>]: Port list (default: All ports).

VLAN Add

Syntax:

VLAN Add <vidlist> [<portlist>]

Description:

Add VLAN entry and include ports in member set.

<vidlist> : VLAN ID list.

[<portlist>]: Port list (default: All ports).

VLAN Delete

Syntax:

VLAN Delete <vidlist>

Description:

Delete VLAN entry (all ports excluded from member set).

<vidlist> : VLAN ID list.

VLAN Lookup

Syntax:

VLAN Lookup <vidlist>

Description:

Lookup VLAN entry and show port list.

<vidlist> : VLAN ID list.

VLAN PVID

Syntax:

VLAN PVID [<portlist>] [<vid>|none]

Description:

Set or show the port VLAN ID. Untagged frames received on the port will be classified to this VLAN ID. Frames classified to this VLAN ID will be sent un-

tagged on the port.

[<portlist>]: Port list (default: All ports).

[<vid>|none]: Port VLAN ID, 1-8 (default: Show PVID). The none option can be used for trunk links.

3.3.6 Aggregation/trunking Commands

Aggregation Configuration

Syntax:

Aggr Configuration

Description:

Shows the aggregation groups and the aggregation mode.

Aggregation Add

Syntax:

Aggr Add <portlist>

Description:

Add link aggregation group including ports.

<portlist>: Aggregation port list.

Aggregation Delete

Syntax:

Aggr Delete <portlist>

Description:

Delete link aggregation group.

<portlist>: Port list. Aggregations including any of the ports will be deleted.

Aggregation Lookup

Syntax:

Aggr Lookup <portlist>

Description:

Lookup and display link aggregation group.

<portlist>: Port list. Aggregations including any of the ports will be shown.

Aggregation Mode

Syntax:

Aggr Mode [smac|dmac|xor]

Description:

Set or show link aggregation traffic distribution mode.

[smac|dmac|xor]: Aggregation mode, SMAC, DMAC or XOR (default: Show mode).

3.3.7 QoS Commands

QoS Configuration

Syntax:

QoS Configuration [<portlist>]

Description:

Show the configured QoS mode, IP DSCP Precedence priority mapping for the port.

[<portlist>] : Port list (default: All ports).

QoS Mode

Syntax:

QoS Mode [<portlist>] [tag|port|diffserv]

Description:

Set or show the priority mode for the port.

[<portlist>] : Port list (default: All ports).

[tag|port|diffserv]: Enable tag IP differentiated services for the port (default: Show mode).

QoS Default

Syntax:

QoS Default [<portlist>] [<class>]

Description:

Set or show the default class. In tag mode, the default class is used for un-

tagged frames. In port mode, the default class is used as the port priority. In the other modes, the default class is used for non-IP frames and IP frames with options.

[<portlist>]: Port list (default: All ports).

[<class>]: Internal class of service (default: Show class).

QoS Tagprio

Syntax:

QoS Tagprio [<portlist>] [<tagpriolist>] [<class>]

Description:

Set or show the VLAN user priority mapping.

[<portlist>]: Port list (default: All ports).

[<tagpriolist>]: VLAN user priority list, 0-7 (default: All user priorities). [<class>]: Internal class of service (default: Show class).

QoS DiffServ

Syntax:

QoS DiffServ [<dscplist>] [<class>]

Description:

Set or show the IP Differentiated Services mapping.

[<dscplist>]: IP DSCP list, 0-63 (default: All DSCP values).

[<class>]: Internal class of service (default: Show class).

3.3.8 Mirror Commands

Mirror Configuration

Syntax:

Mirror Configuration

Description:

Show the mirror destination port and mirror mode for source ports.

Mirror Port

Syntax:

Mirror Port [<port>]

Description:

Set or show the mirror destination port.

[<port>]: Mirror destination port (default: Show mirror port).

Mirror Source

Syntax:

Mirror Source [<portlist>] [enable|disable]

Description:

Set or show the source port mirror mode.

[<portlist>]: Source port list (default: All ports).

[enable|disable]: Enable/disable mirroring of frames received on port (default: Show mirror mode).

3.3.9 IP Commands

IP Configuration

Syntax:

IP Configuration

Description:

Show configured IP address, mask, gateway, VLAN ID and mode.

IP Setup

Syntax:

IP Setup [ipaddress> [<ipmask> [ipgateway>]]] [<vid>]

Description:

Set or show IP configuration.

[<ipaddress>]: IP address (default: Show IP configuration).

[<ipmask>]: IP subnet mask (default: Subnet mask for address class).

[<ipgateway>]: Default IP gateway (default: 0.0.0.0). [<vid>]: VLAN ID, 1-8 (default: 1).

IP Mode

Syntax:

```
IP Mode [enable|disable]
```

Description:

Activate or deactivate the IP configuration.

[enable|disable]: Enable/disable IP (default: Show IP mode).

3.4 Examples

3.4.1 VLAN configuration

This example shows how to configure two VLANs with the following setup on at GSD-800S:

- VID 1 spans ports 2-8 and VID 2 spans ports 1-3, so port 2 and 3 are members of both VLANs.
- Port 1 is the access port for VID 2, so PVID of port 1 must be set to 2.
- Port 2 is the trunk port for VID 1 and VID 2, so the PVID of port 2 must be set to none and port 2 must be set to accept tagged frames only.
- Port 3 is the hybrid port for VID 1 and VID 2, where VID 1 is the untagged VLAN, so PVID must be set to 1.
- Ports 4-8 are access ports for VID 1.

The following CLI session does the above setup provided that the initial configuration is the default configuration:

```
>vlan
VLAN>delete 1
VLAN>add 1 2-8
VLAN>add 2 1-3
VLAN>pvid 1 2
VLAN>pvid 2 none
VLAN>frame type 2 tagged
VLAN>conf
VLAN Configuration:
Port  Aware  PVID  Frame Type
1:   disabled  2   All
```

Chapter 4

WEB Interface

From the WEB interface it is possible to, among other things:

- Set port mode.
- Enable/disable flow control.
- Configure simple port-based VLAN.
- Configure aggregation groups
- Configure QoS.
- Read and clear statistics counters.
- Upgrade software

All operations are password protected. The password must be entered at login. The password is the same as is being used in the command line interface.

As stated in chapter 3 the IP mode is disabled in the factory default configuration. To be able to use the WEB interface, the IP must be enabled and configured via the command line interface. The IP address, mask and gateway must be set according to your environment. Example on enabling the WEB interface via the command line interface:

```
>ip setup 192.168.0.100 255.255.252.0 192.168.0.254 1
```

```
>ip mode enable
```

4.1 Starting the Web Interface

Follow these steps to bring up the switch Web interface:

1. Enter the IP address of the switch in the Web browser address field.
2. Enter password. The password is the same as the CLI interface. Click on the Apply button.
3. Make your selection by clicking on the item in menu frame.



Chapter 5

SWITCH OPERATION

5.1 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.

5.2 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.

5.3 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.

5.4 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 existence 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 and reduce 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.

5.5 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.

If attached device is:	1000Base-T port will set to:
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)
1000Mbps with auto-negotiation	2000Mbps (1000Mbps/Full-Duplex)

Chapter 6

TROUBLE SHOOTING

This chapter contains information to help you solve problems. If the Ethernet 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 Ethernet Switch

Some stations cannot talk to other stations located on the other port

Solution:

Please check the VLAN settings, trunk settings, or port enabled / disabled status.

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. Please also check the in/out rate of the port.

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

Switch's RJ-45 Pin Assignments

A.1 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-

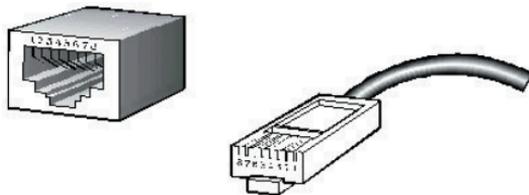
Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.2 10/100Mbps, 10/100Base-TX

When connecting your 10/100Mbps Ethernet Switch to another switch, a bridge or a hub, a straight or crossover cable is necessary. Each port of the Switch supports auto-MDI/MDI-X detection. That means you can directly connect the Switch to any Ethernet devices without making a crossover cable. The following table and diagram show the standard RJ-45 receptacle/ connector and their pin assignments:

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	

The standard cable, RJ-45 pin assignment



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:



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.

Part NO.:2010-A35040-000

