

**10/100/1000Mbps
Gigabit Ethernet Smart Swtich**

GSW-601S

User's Manual

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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

**PLANET NOVASwitch User's Manual
FOR MODELS: GSW-601S**

Part No.: EM-GSW6V1

Before Starting

In this User's Manual, "Switch" is used for GSW-601S, "NovaSwitch" for PLANET's 19"-range Ethernet Switch, where "switch" represent the third party switch.

TABLE OF CONTENTS

1. INTROUCTION	7
1.1 CHECKLIST	7
1.2 ABOUT THE SWITCH.....	7
1.3 FEATURES.....	8
1.4 SPECIFICATIONS	10
2. HARDWARE DESCRIPTION.....	11
2.1 FRONT PANEL.....	11
2.2 REAR PANEL	13
2.3 HARDWARE INSTALLATION.....	13
3.CONFIGURATION	17
3.1 CONNECT TO PC.....	17
3.2 MAIN MENU	18
3.3 SUBMENU: (0) PORT SETTING	19
3.4 SUBMENU :(1) VLAN	20
3.5 SUBMENU: (2) TRUNK	21
3.6 SUBMENU: (3) AGING CONTROL	22
3.7 SUBMENU: (4) PORT ENABLE/DISABLE	23
3.8 SUBMENU: (5) PORT MIRRORING.....	24
3.9 SUBMENU: (6) PORT-BASE PRIORITY	25
3.10 SUBMENU: (7) MAC ADDRESS FILTER.....	26
3.11 SUBMENU: (8) CHANGE PASSWORD.....	27
3.12 SUBMENU: (9) RESTORE TO FACTORY DEFAULT	27
4 SWITCH OPERATION.....	28
4 SWITCH OPERATION.....	29
4.1 ADDRESS TABLE.....	29
4.2 LEARNING.....	29
4.3 FORWARDING & FILTERING	29
4.4 STORE-AND-FORWARD	30
4.4 AUTO-NEGOTIATION.....	31
5. TROUBLESHOOTING.....	33

A.1 SWITCH'S RJ-45 PIN ASSIGNMENTS	35
A.2 10/100MBPS, 10/100BASE-TX	35
A.3 RJ-45 CABLE PIN ASSIGNMENT.....	36

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1. INTROUCTION

1.1 Checklist

Check the contents of your package for following parts:

- I GSW-601S.
- I User's manual.
- I Power cord.
- I 19" rack mount brackets.
- I RS-232 cable.

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.

1.2 About the Switch

The Switch GSW-601S 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.

The Switch is equipped with Category 5 copper cable or fiber optic cable for uplinking to a network backbone or network server. It is compatible with all 10Mbps, 100Mbps and 1000Mbps Ethernet environments. The increased speed and extra bandwidth offered by Gigabit Ethernet will support faster and more users applications with generating more traffic.

In addition, the Switch is also support one module slot for 2 Gigabit Ethernet ports to uplink to a server or network backbone. These Switches are designed for Plug and Play installation, allows the network administrator to simply connect the network and power cables and the Switching/bridging functions begin automatically.

The front panel of these Switches provide LEDs for easy recognition of the switch operation status and for troubleshooting. These LEDs display the power status for the system and link/ speed/ collision, full-duplex, transmit and receive status for each port.

The built-in console interface can be used to configure the Switch's setting for VLAN, and Port Trunk Groups, Port Mirroring and Port Speed, Port enable/ disable.

1.3 Features

- w Complies with the IEEE802.3, IEEE802.3u, IEEE802.3z and IEEE802.3ab Gigabit Ethernet standard, IEEE802.1p Priority Queues
- w Provide a module slot for 2-port 10/100/1000Mbps-TX or 1000Mbps-SX option of modules.
- w Features Store-and-Forward mode with wire-speed filtering and forwarding rates
- w Each port can be configured to 10/100Mbps half or full-duplex, or to 1000Mbps full-duplex mode
- w Automatic source address learning and aging.
- w Support up to 8K MAC address
- w Support up to total 512Kbyte packet buffer
- w IEEE802.3x compliant full-duplex flow control, HOL blocking prevention
- w Broadcast storm control, runt and CRC Filtering eliminates erroneous packets to optimize the network bandwidth

- w Support to handle up to 1522 bytes packet
- w LED indicators for simple diagnostics and management
- w Provide a reset switch in front panel
- w Internal power supply
- w Auto MDI/ MDI-X on each port
- w Smart function for advanced configuration:
 - Support one console port for switch configuration change,
 - Support per port Port-based VLAN and L2 Trunking with link redundancy, load balancing
 - Support four Class of Service (CoS) queues per egress port
 - Support per port setting, enabled/ disabled
 - Support port mirroring
 - Support 24 MAC address filtering
 - Support password setting

1.4 Specifications

Standard	IEEE802.3, IEEE802.3u, IEEE802.3ab, IEEE802.3x
Network Media:	10Base-T,UTP/STP category 3 or 5 cable 100Base-TX,UTP/STP category 5 cable 1000Base-T,UTP/STP category 5e cable, 4 pairs 1000Base-SX,Multi-mode 62.5/125µm, 50/125µm fiber optic cable
Connector	STP RJ-45 port for 10/100/1000MbpsTX SC connector for 1000Mbps SX
LED indicators	Power, Smart Individual port (copper)—1000,100,10 FDX/COL, TX, RX Individual port (fiber) —Link, Activity
Dimension	440mm(L) x 245mm(W) x 45mm(H)
Temperature	Operating —0°C to 40°C Storage—20°C to 70°C
Humidity:	Operating — 10% to 90%RH Storage — 5% to 90%RH
Input Power Requirement	100-240VAC,50-60Hz,Auto-sensing
Registrations	FCC Class A,CE,CUL,TUV,LVD

*After module installed

2. HARDWARE DESCRIPTION

This product series provide three different running speed – 10Mbps, 100Mbps, and 1000Mbps in the same switch and automatically distinguish the speed of incoming connection.

This section describes the hardware features of these Switches. 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 switch, read this chapter carefully

There are two choice of different module for expansion:

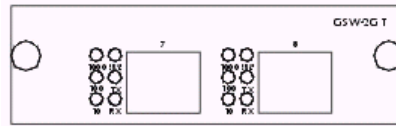
- I 2port Copper module
- I 2port Fiber module

2.1 Front Panel

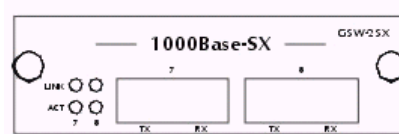
The unit front panel provides a simple interface monitoring the switching hub. It includes a power smart and port indicator for each port.



GSW-601S Switch front panel



GSW-2GT module front panel



GSW-2SX module front panel

LED indicators

GSW-601S and GSW-2GT		
PWR	Green	Lit: Power on
SMART	Green	Lit: CPU initial completed
10/100/1000	Green	Lit: indicate link status and traffic Speed (10 for 10M, 100 for 100M, 1000 for 1000M)
TX/ RX	Green	Lit: indicate data traffic status (TX for transmitting, RX for receiving)
FDX/ COL	Green	Lit: Full-Duplex Blink: Half-Duplex/ Collision Off: Half-duplex or not connected
GSW-2SX		
LINK	Green	Lit: indicate link status and traffic speed
ACT	Green	Blink: activity

Reset button

At the right side of front panel, the reset button is designed for reconfiguring the switch without turn off and on the power.

2.2 Rear Panel

The rear panel of the Switch indicates a AC inlet power socket, which accepts input power from 100 to 240VAC, 50-60Hz. And a RS-232 console port for setting up the switch via a connection to a terminal or PC using a terminal emulation program.

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.

2.3 Hardware Installation

2.3.1 Connecting end node or hub or switch

1. Place the Switch on a smooth surface or fasten the mounting brackets with the provided screws in a standard 19" rack.
2. Connect switch or PC to one port of the Switch using Category 3/4/5 UTP/STP cabling.
3. Connect another switch or PC to the other port of Switch by following the same process as described in Step3.

Notice:

Cable distance for Switch

The cable distance between Ethernet Switch and hub/PC should not exceed 100 meter for UTP/STP cable, 220m for 62.5/125 fiber cable and 500m for 50/125 fiber cable.

Make sure the wiring is correct

It can be used Category 3/4/5 cable in 10 Mbps operation. To reliably operate your network at 100Mbps and 1000Mbps, 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.

2.3.2 Connecting to Network Backbone or Server

Connect to the Gigabit Ethernet ports with Category 5 copper cable or fiber optic cable for uplinking to a network backbone or network server. These ports operate at 1000Mbps in full-duplex mode. A valid connection is indicated when the Link LED is light. The following sections describe the function of LEDs on the front panel

CPU LED

Color	Green
Label	Smart

Function: The LED light up steadily means CPU completed to initial the switch.

Power LED

Color	Green
Label	PWR

Function: The LED light up steadily means Power turned on.

Link/Speed LED

Color	Green
Label	10/100/1000
Function	The LED light up steadily to indicate the transmitting speed
10	light up steadily to indicate link up at speed 10M
100	light up steadily to indicate link up at speed 100M
1000	Light up steadily to indicate link up at speed 1000M

Full/ Half Duplex and Collision LED

Color	Green
Label	FDX / COL

Function: The indicator LED flash up whenever there is a collision between a directly attached end node and any other node, and light up steadily for Full-duplex mode.

TX Activity

Color	Green
Label	TX

Function: Each RJ45 station port on the switch is assigned one LED for transmitting the data.

RX Activity

Color	Green
Label	RX

Function: Each RJ45 station port on the switch is assigned one LED for receiving the data.

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3.CONFIGURATION

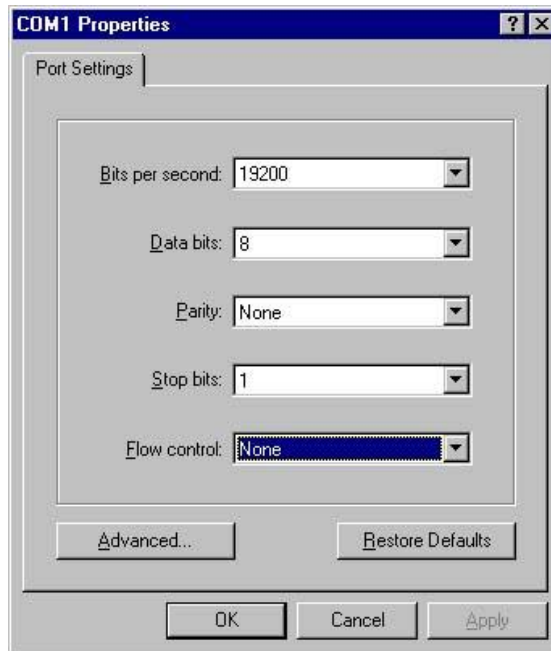
3.1 CONNECT TO PC

RS-232 serial cable

Prepare a RS-232 serial cable. Attach the 9-pin female connector to the male connector on the switch. Plug the other side of this cable to your PC.

Hyper Terminal

In Windows 95/98/2000/XP, launch "HyperTerminal", create a new connection, and adjust settings as below:



3.2 Main Menu

Launch the new terminal you just set up, and then, turn on the switch. See the following messages for successful connection.

```
PLANET GSW-601S Gigabit Ethernet Smart Switch
Configuration menu [ver. :x.xx]
(0) Port Setting
(1) VLAN
(2) Trunk Port
(3) Aging Control
(4) Port Enable/Disable
(5) Port Mirroring
(6) Port-base priority
(7) Mac address filter
(8) Change password
(9) Restore to Factory Default
Select :>>
```

To enter any of the submenus, simply type the number on the command line.

3.3 Submenu: (0) Port Setting

```
[Port Setting]
      [1] [2] [3] [4] [5] [6] [7] [8]
Auto Neg.  0  0  0  0  0  0  0  0
Speed      1000 1000 1000 1000 1000 1000 1000 1000
Duplex     F  F  F  F  F  F  F  F
Flow Control 0  0  0  0  0  0  0  0
```

[Tab] : Move to next item

[Space Bar] : Toggle item

[S] : Save & Exit

[Q] : Quit

[U]:Up, [L]:Left

[D]:Down, [R]:Right

Use Tab or "U","D","L","R" to move the item which to be change, press space bar to change it, "S" for save this configuration.

3.4 Submenu :(1) VLAN

	[Port base VLAN]							
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
[Group 1]	0	0	0	0	0	0	0	0
[Group 2]	x	x	x	x	x	x	x	x
[Group 3]	x	x	x	x	x	x	x	x
[Group 4]	x	x	x	x	x	x	x	x
[Group 5]	x	x	x	x	x	x	x	x
[Group 6]	x	x	x	x	x	x	x	x
[Group 7]	x	x	x	x	x	x	x	x
[Group 8]	x	x	x	x	x	x	x	x

member port of trunk group must belong to same VLAN

[Tab] : Move to next item
[Space Bar] : Toggle item
[S] : Save & Exit
[Q] : Quit
[U]:Up, [L]:Left
[D]:Down, [R]:Right

O enables the port you select

X disables the port you select

Use Tab or "U","D","L","R" to move the item which to be change,
press space bar to change it, "S" for save this configuration

3.5 Submenu: (2) TRUNK

```
[TRUNK]
      [1] [2] [3] [4] [5] [6] [7] [8]
[GROUP 1]  x  x  x  x  x  x  x  x
[GROUP 2]  x  x  x  x  x  x  x  x
[GROUP 3]  x  x  x  x  x  x  x  x
[GROUP 4]  x  x  x  x  x  x  x  x

      member port of trunk group must belong to same VLAN

[Tab]      : Move to next item
[Space Bar] : Toggle item
[S]        : Save & Exit
[Q]        : Quit

[U]:Up,    [L]:Left
[D]:Down,  [R]:Right
```

O enables the port you select

X disables the port you select

Trunk port members must belong to same VLAN group.

Use Tab or "U", "D", "R", "L" to move the item which to be change, press

space bar to change it, "S" for save this configuration

3.6 Submenu: (3) Aging Control

```
[Port aging]
aging time  [1] [2] [3] [4] [5] [6] [7] [8]
/minutes/   10  10  10  10  10  10  10  10
[Tab]       : Move to next item
[Space Bar] : Toggle item
[S]         : Save & Exit
[Q]         : Quit
```

Use Tab or “L”, “R” to move the item which to be change, press space bar to change it, “S” for save this configuration

3.7 Submenu: (4) Port Enable/Disable

```
[Port Enable/Disable]
[1] [2] [3] [4] [5] [6] [7] [8]
Port Status    0  0  0  0  0  0  0  0
[Tab]          : Move to next item
[Space Bar]   : Toggle item
[S]           : Save & Exit
[Q]           : Quit
```

O enables the port you select

X disable the port you select, any packet cannot be transmitted to this port

Use Tab or “L”, “R” to move the item which to be change, press space bar to change it, “S” for save this configuration

3.8 Submenu: (5) Port Mirroring

[Port Mirroring]								
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Monitoring Port	X	X	X	X	X	X	X	X
Egress Port	X	X	X	X	X	X	X	X
Ingress Port	X	X	X	X	X	X	X	X

Egress Port : the packets out -going this port
will be duplicate to Monitoring Port

Ingress Port: the packets in -coming this port
will be duplicate to Monitoring Port

[Tab] : Move to next item

[Space Bar] : Toggle item

[S] : Save & Exit

[Q] : Quit

[U]:Up, [L]:Left

[D]:Down, [R]:Right

Use Tab or "L","R" to move the item which to be change,
press space bar to change it, "S" for save this configuration

3.9 Submenu: (6) Port-base Priority

```
[Port -base priority]
[1] [2] [3] [4] [5] [6] [7] [8]
level      T  T  T  T  T  T  T  T

/ T : the priority depend on 802.1p /
/ 1 : lowest ingress priority /
/ 4 : highest ingress priority /

[Tab]      : Move to next item
[Space Bar] : Toggle item
[S]        : Save & Exit
[Q]        : Quit
```

Use Tab or "L","R" to move the item which to be changed, press space bar to change it, "S" for save this configuration

3.10 Submenu: (7) Mac address filter

```
[Mac address filter]
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00
00-00-00-00-00-00 00-00-00-00-00-00 00-00-00-00-00-00

Packets with source Mac address not equal to
00-00-00-00-00-00 will be discarded
[Tab]      : Move to next item      [U]:Up,    [L]:Left
[Space Bar]: Modify Mac Address    [D]:Down,  [R]:Right
[S]        : Save & Exit
[Q]        : Quit
```

Use Tab or "U", "D", "L", "R" to move the item which to be change, press space bar or enter key to modify MAC address, "S" for save this configuration

3.11 Submenu: (8) Change password

```
/ 6 characters max. /  
/ Enter key to delete password /  
new password : ****  
reconfirm   : ****
```

User can set password for security, press enter key to disable password checking when system boot.

3.12 Submenu: (9) Restore to Factory Default

This item will restore configuration to such setting

1. Port with auto-negotiation, 1000M, full duplex, flow-control enables
2. All ports assigned to one VLAN
3. Disable trunk setting
4. Enable transmit and receive packets capability of all ports
5. Enable address aging capability to 10 minutes
6. Disable port-mirroring capability
7. Priority of all port depend on 802.1p
8. Disable password checking when system boot

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4 SWITCH OPERATION

4.1 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.

4.2 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.

4.3 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

4.4 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. A 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, 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.

4.4 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. 1000Base-T and 1000Base-SX can only connected in Full-duplex mode.

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5. TROUBLESHOOTING

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

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

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APPENDIX A

A.1 Switch's RJ-45 Pin Assignments

1000Mbps,1000Base T

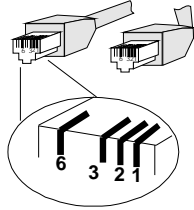
Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

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

Contact	MDI	MDI-X
1	1	3
2	2	6
3	3	1
6	6	2

A.3 RJ-45 cable pin assignment



EM-GSW6V1



ISO9002