

## User's Manual

**FGSW-4840S**

**48-Port 10/100Mbps + 4G  
Web Smart Ethernet Switch**



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## Revision

PLANET 48-Port 10/100Mbps + 4G Web Smart Switch User's Manual

FOR MODEL: FGSW-4840S

REVISION: 2.1 (November.2007)—For Hardware version:2.0

Part No. 2081-A81050-001

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# 1. INTRODUCTION

## 1.1 Package Contents

Check the contents of your package for following parts:

- Web Smart Ethernet Switch x1
- CD-ROM user's manual x1
- Quick installation guide x1
- 19" rack mounting kit x1
- Power cord x1
- 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 48-10/100Mbps+4G Ethernet Web Smart Switch User Manual is structured as follows:**

- Section 2, **Installation**  
It explains the basic function of FGSW-4840S and how to physically install the FGSW-4840S.
  - Section 3, **Configuration**  
It contains information about the Smart function of FGSW-4840S.
  - Section 4, **Switch operation**  
It contains information about the Switch operation of FGSW-4840S.
  - Section 5, **Troubleshooting**  
It contains troubleshooting guide of FGSW-4840S.
  - **Appendix A**  
It contains cable information of FGSW-4840S.
- In the following section, the term "**Switch**" means the FGSW-4840S; term of "**switch**" can be any third part switches.

## 1.3 Product Features

- Complies with IEEE 802.3, 10Base-T, IEEE 802.3u, 100Base-TX and IEEE 802.3ab, 1000Base-T
- 48-Port 10/100Mbps Ethernet ports
- 2 10/100/1000Mbps ports and 2-SFP mini-GBIC interfaces
- 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
- IEEE802.3x flow control for full duplex operation and backpressure for half duplex operation
- Remote Web management interface
- Port Bandwidth Control
- Port-based VLAN, IEEE 802.1Q Tag VLAN, Trunk, QoS support
- Supports backup and restore current configuration
- The configuration function of Port Security, Broadcast Storm Control and Port Mirror
- Static MAC address and filtering MAC address management
- Virtual Cable Test
- Static Port Priority and IEEE 802.1p Class of Service (CoS) with 4-level priority queuing

- Supports Auto-MDI/MDI-X function
- Support CSMA/CD protocol
- 100~240VAC, 50~60Hz universal Power input
- FCC, CE class A compliant

## 1.4 Product Specifications

Model	FGSW-4840S
<b>Hardware Specification</b>	
10/100Base-TX ports	48
10/100/1000Mbps ports	2
SFP-Mini-GBIC interfaces	2
Switch architecture	Store-and-Forward
Switch throughput	10Mpps
Switch fabric	13.6Gbps
Address Table	8K entries
Flow Control	Back pressure for half duplex, IEEE 802.3x Pause Frame for full duplex
Dimensions (mm)	440 x 260 x 44 mm (1U height)
Weight	3.4kg
Power Requirement	100-240V AC, 50-60 Hz 0.6A
Power Consumption	24 watts Max, 81 BTU Max
<b>Standards Conformance</b>	
Network Standards	IEEE 802.3 (Ethernet), IEEE 802.3u (Fast Ethernet) IEEE 802.3ab (Gigabit Ethernet) IEEE 802.3z (Gigabit Ethernet) IEEE 802.3x (Full-duplex flow control) IEEE 802.1Q VLAN
Operating Temperature	0~40°C
Storage Temperature	-40~70°C
Humidity	5% to 90% (Non-condensing)
Regulation Compliance	FCC Part 15 Class A, CE

## 2. INSTALLATION

This section describes the functionalities of FGSW-4840S'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 FGSW-4840S is a Web Smart Ethernet Switch provides 48 10/100Base-TX ports respectively with 2 10/100/1000Base-T ports and 2-SFP Mimi-GBIC interfaces. The FGSW-4840S can handle extremely large amounts of data in a secure topology linking to a backbone or high capacity servers. The FGSW-4840S has an 8K MAC Address table. The FGSW-4840S offers wire-speed packet transfer performance without risk of packet loss. The high data throughput of the Switch makes it ideal for most Gigabit environments, especially network upgrades to a Gigabit environment.

#### 2.1.1 Product Overview

PLANET FGSW-4840S is a Web Smart Ethernet Switch with 48 Fast Ethernet ports and 2 Gigabit Ethernet ports support 10/100Mbps and 10/100/1000Mbps Auto-Negotiation for optimal speed detection through RJ-45 Category 6, 5 or 5e cables. Also, all the ports support Auto-MDI/MDI-X that can detect the type of connection to any Ethernet device without requiring special straight or crossover cables. The FGSW-4840S also provides 2 SFP Mini-GBIC interfaces for fiber extension to uplink to a server or a network backbone.

This 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, FGSW-4840S could recognize up to 8K different MAC address and enables filtering and forwarding at full wire speed.

#### 2.1.2 FGSW-4840S Front Panel

Figure 2-1 shows a front panel of FGSW-4840S.

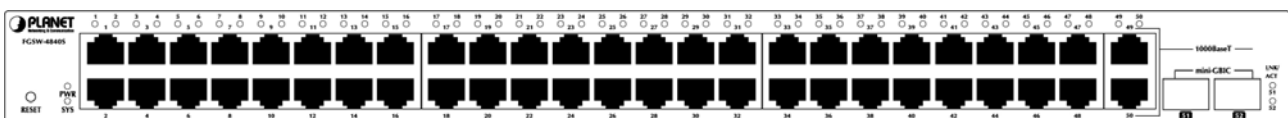


Figure 2-1 PLANET FGSW-4840S Front Panel

**Note:** To press the **RESET** button on no power, then power on to wait for the Sysytem LED light three times and release the button. The FGSW-4840S will back to the factory default mode. Be sure that you backup the current configuration of FGSW-4840S; else the entire configuration will be erased when pressing the "RESET" button.

#### 2.1.3 LED Indicators

##### System

LED	Color	Function
PWR	Red	Lights to indicate that the Switch has power.
SYS	Green	Lights and blinking to indicate the CPU is working.

##### Per 10/100Mbps port

LED	Color	Function
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.

**Per 1000Base-T port**

LED	Color	Function
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.

**Per SFP-Mini-GBIC port**

LED	Color	Function
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 FGSW-4840S 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 FGSW-4840S

**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 FGSW-4840S**

This section describes how to install your FGSW-4840S Web Smart Ethernet Switch and make connections to the Switch. Please read the following topics and perform the procedures in the order being presented. PLANET FGSW-4840S Web Smart Ethernet Switch do not need software configuration. To install your FGSW-4840S on a desktop or shelf, simply complete the following steps.

**2.2.1 Desktop Installation**

To install a Switch 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 Switch on a desktop or shelf near an AC power source.

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, and Specification.*

Step4: Connect your Switch to network devices.

- A. Connect one end of a standard network cable to the 10/100 or 10/100/1000 RJ-45 ports on the front of the 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 Switch requires UTP Category 5 network cabling with RJ-45 tips. For more information, please see the Cabling Specification in Appendix A.*

Step5: Supply power to the Switch.

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



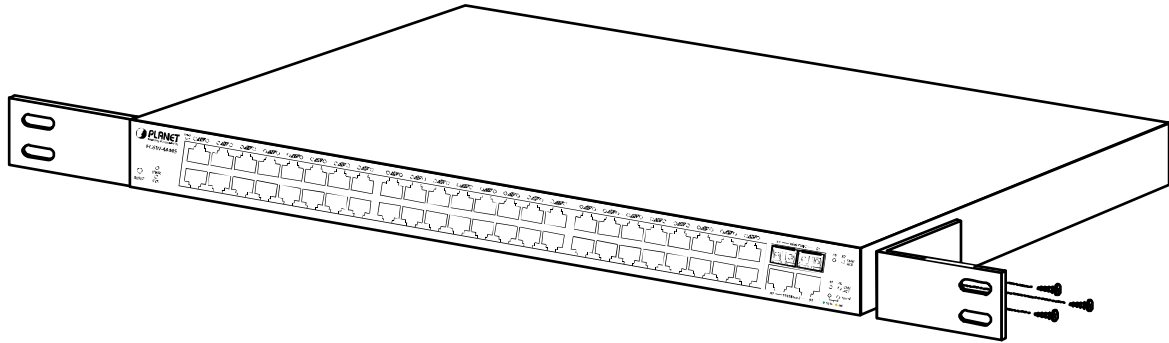
When the Switch receives power, the Power LED should remain solid Green.

## 2.2.2 Rack Mounting

To install the switch in a **19-inch** standard rack, follow the instructions described below.

Step1: Place your Switch on a hard flat surface, with the front panel positioned towards your front side.

Step2: Attach a rack-mount bracket to each side of the Switch with supplied screws attached to the package. **Figure 2-3** shows how to attach brackets to one side of the Switch.



**Figure 2-3** Attaching the brackets to the FGSW-4840S

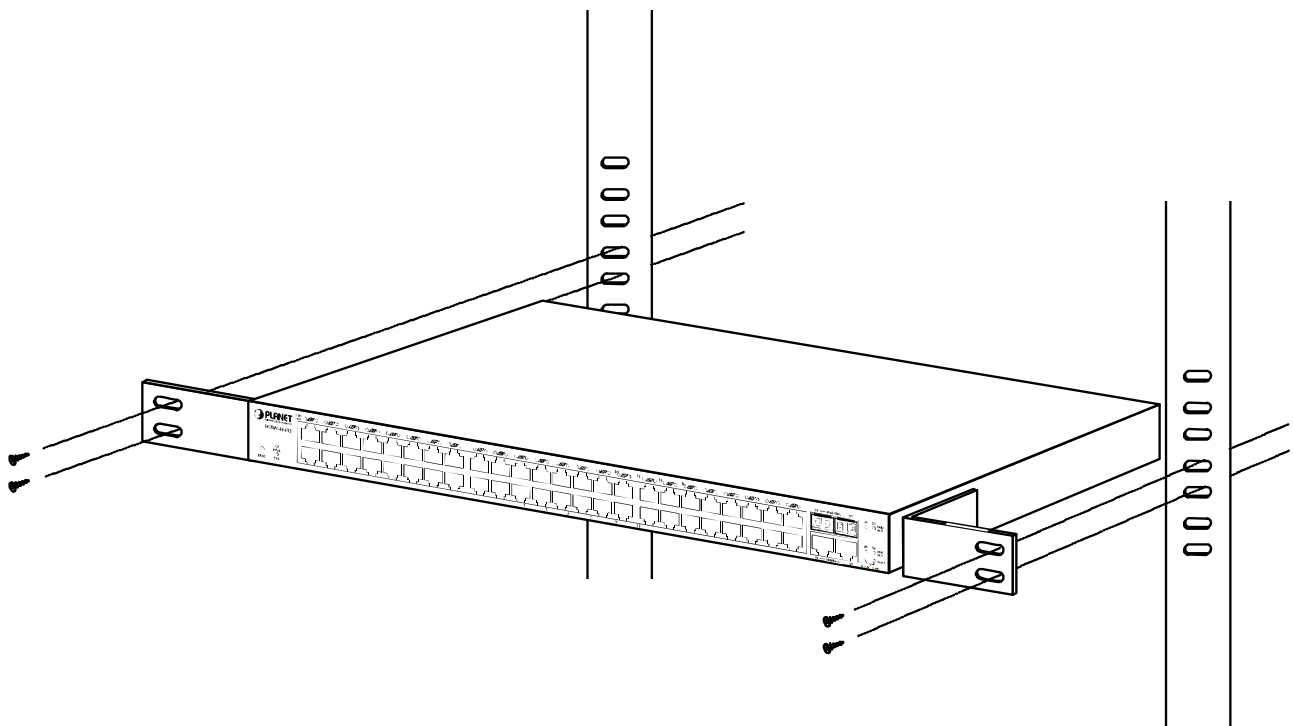
**Caution:**

You must use the screws supplied with the mounting brackets. Damage caused to the parts by using incorrect screws would invalidate your warranty.

Step3: Secure the brackets tightly.

Step4: Follow the same steps to attach the second bracket to the opposite side.

Step5: After the brackets are attached to the Switch, use suitable screws to securely attach the brackets to the rack, as shown in **Figure 2-4**



**Figure 2-4** Mounting the Switch in a Rack

Step6: Proceed with the steps 4 and steps 5 of session **2.2.1 Desktop Installation** to connect the network cabling and supply power to your Switch.

## 3. CONFIGURATION

Unlike the unmanaged switch (Dumb switch), FGSW-4840S performs series smart functions that make the Switch operate more effectively. This Chapter will describe the common usage of the Switch's Smart Configuration.

### 3.1 Web configuration

The FGSW-4840S Web Smart Ethernet Switch provide Web interface for Switch smart function configuration. The FGSW-4840S can be configured through the Web Browser. A network administrator can manage and monitor the FGSW-4840S from the local LAN. This section indicates how to configure the Switch to enable its smart function. The smart functions are shown as below:

- ◆ System Setting
- ◆ Port Setting
- ◆ Network Setting
- ◆ VLAN Setting
- ◆ Port Trunking
- ◆ Priority Setting
- ◆ Port Mirroring
- ◆ Virtual Cable Test

### 3.2 Login the Switch

Before you start configure the FGSW-4840S, please note the FGSW-4840S is configured through an Ethernet connection, make sure the manager PC must be set on same the **IP subnet address**. For example, the default IP address of the FGSW-4840S is **192.168.0.100**, then the manager PC should be set at 192.168.0.x (where x is a number between 1 and 254, except 100 ), and the default subnet mask is 255.255.255.0. Use Internet Explorer 5.0 or above Web browser. Enter IP address **http://192.168.0.100** (the factory-default IP address) to access the Web interface.

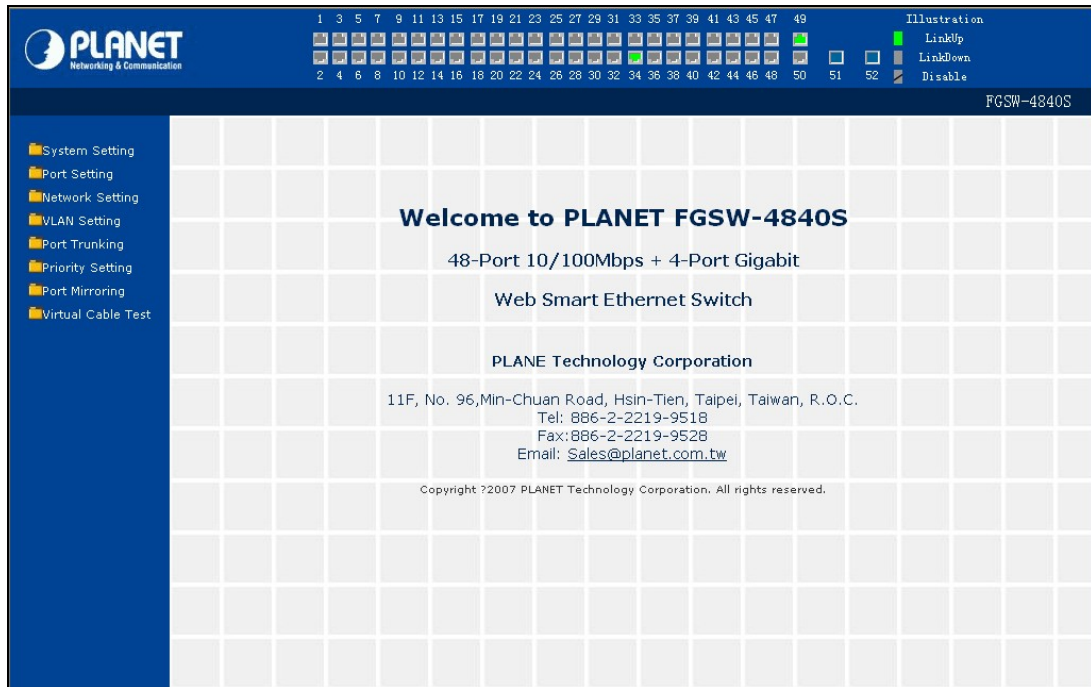
When the following login screen appears, please enter the default user name and password "**admin**" to enter the main screen of FGSW-4840S. The login screen in **Figure 3-1** appears.



Figure 3-1 Login screen

### 3.3 Main Menu

After entering the password, the main screen appears, the main screen displays the Switch status. The screen in **Figure 3-2** appears.



**Figure 3-2** Web Main screen

## 3.4 System Setting

The System setting menus include the tree sub-menus:

- System Information
- File Transfer
- Reboot & Reset
- User

### 3.4.1 System information

The System information includes the Hardware Version, Software Version, System Description, System Name, System Location, Contact Information and Run time. The screen in **Figure 3-3** appears.

The screenshot shows a web interface titled "System Information". It displays the following information:

- Hardware Version: FGSW-4840S 2.0
- Software Version: 1.3.5 Build 20070621 Rel. 41721
- System Description: 48FE+4G Web-Smart Switch
- System Name: [Input field]
- System Location: [Input field]
- Contact Information: [Input field]
- Run Time: 0 Day - 16 Hour - 23 Min - 42 Sec

A notice at the bottom states: "Notice: At most 31 letters or numbers can be held in system name, system location and contact information." Below the notice are two buttons: "Submit" and "Refresh".

**Figure 3-3** System information screen

### 3.4.2 File Transfer

This function allows upgrade system, backup and restores the current configuration of FGSW-4840S. The screen in **Figure 3-4** appears.

The screenshot shows a web interface titled "File Transfer". It contains the following fields and buttons:

- Transfer Type: System Upgrading (dropdown menu)
- File Name: sysFGSW-4840S.bin (input field)
- TFTP Server IP: 192.168.0.105 (input field)

At the bottom are two buttons: "Submit" and "Help".

**Figure 3-4** File Transfer screen

Press the "Submit" button to upgrade system, backup and restores the current configuration in manager workstation. The following screens in **Figure 3-5 & 3-6 & 3-7** appear.

**File Transfer**

Transfer Type: System Upgrading

File Name: sysFGSW-4840S.bin

TFTP Server IP: 192.168.0.105

Submit Help

Figure 3-5 system upgrading screen

**File Transfer**

Transfer Type: Configuration Backup

File Name: confFGSW-4840S.dat

TFTP Server IP: 192.168.0.105

Submit Help

Figure 3-6 configuration backup screen

**File Transfer**

Transfer Type: Configuration Loading

File Name: confFGSW-4840S.dat

TFTP Server IP: 192.168.0.105

Submit Help

Figure 3-7 configuration loading screen

### 3.4.3 Reboot & Reset

This function provides administrator to reboot or reset to default. See the screen in **Figure 3-8**.

**Reboot & Reset**

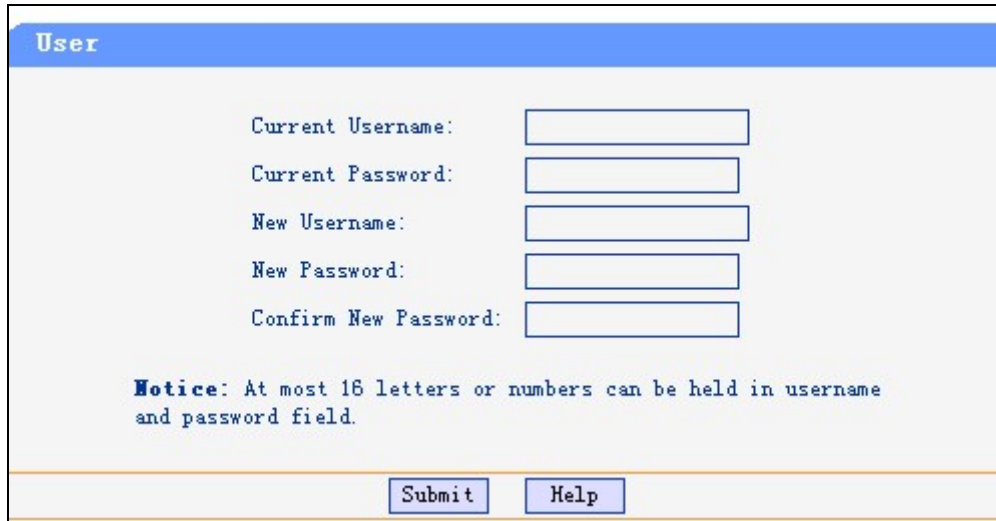
**Notice:** After soft-resetting, the configuration (except IP address) will restore to default and current settings will be cleared.

Reboot Soft-reset

Figure 3-8 Reboot &amp; Reset screen

### 3.4.4 User

This function provides administrator to secure FGSW-4840S. After to setup completed. Press “**Summit**” button to execute the setting. The screen in **Figure 3-9** appears.



User

Current Username:

Current Password:

New Username:


New Password:

Confirm New Password:

**Notice:** At most 16 letters or numbers can be held in username and password field.

Figure 3-9 User screen

---

 **Note:** *Up to 16 characters is allowed for the password. After change the default password, if you forget the password. Please press and release the “Reset” button in the front panel of FGSW-4840S, the current setting includes VLAN, will be lost and the FGSW-4840S will restore to the default mode.*

---

## 3.5 Port Setting

The System setting menus include the tree sub-menus:

- Port Parameter
- Port Statistic
- Port Status
- Rate Limiting
- Storm Control
- Port Description

### 3.5.1 Port Parameter


This function allows displaying each port's parameter, like Port status, Port Security, Flow Control and Duplex Mode. The screen in **Figure 3-10** appears.

Port Parameter					
Port	Trunk	Port Status	Port Security	Flow Control	Duplex Mode
1	--	Enable	Disable	Disable	Auto
2	--	Enable	Disable	Disable	Auto
3	--	Enable	Disable	Disable	Auto
4	--	Enable	Disable	Disable	Auto
5	--	Enable	Disable	Disable	Auto
6	--	Enable	Disable	Disable	Auto
7	--	Enable	Disable	Disable	Auto
8	--	Enable	Disable	Disable	Auto
9	--	Enable	Disable	Disable	Auto
10	--	Enable	Disable	Disable	Auto
11	--	Enable	Disable	Disable	Auto
12	--	Enable	Disable	Disable	Auto
13	--	Enable	Disable	Disable	Auto
14	--	Enable	Disable	Disable	Auto
15	--	Enable	Disable	Disable	Auto
16	--	Enable	Disable	Disable	Auto
17	--	Enable	Disable	Disable	Auto
18	--	Enable	Disable	Disable	Auto
19	--	Enable	Disable	Disable	Auto
20	--	Enable	Disable	Disable	Auto

**Figure 3-10** Port Parameter screen

Object	Description
Port	The Switch port number.
Trunk	If the port is a Trunk member, it indicates which Trunk it belongs to. In the parameter field it list the parameters of the Trunk which it belongs to, the parameters of the Trunk is set by default value and can't be modified.
Port status	Indicates whether the port is operational or non-operational. "Enable" Indicates the port is operational and "Disable" Indicates the port is non-operational. If a port is unused for a long time, we can set it to be non-operational to cut down the energy cost.
Port security	"Enable" Indicates the port will not learn new MAC address and only transmit the frames from the MAC address it has learned. "Disable" Indicates it will learn new MAC address. Notice: if you haven't set the static MAC address, you can't set all of the port security to be enable, which will cause to not able to manage the Switch.
Flow control	This setting determines whether or not the Switch will be handling flow control. Set Flow Control to enable for avoiding data transfer overflow. Or it sets to disable; there is either no flow control or other hardware/software management. When the port is set to forced mode, then the flow control will automatically set to disable.
Duplex mode	Possible field values are : Auto, 10M HD, 10M FD, 100M HD, 100M FD and 1000M FD, "HD" stands for half-duplex and "FD" stands for full-duplex.
All ports	By operating on this field expediently, you can set the values of all ports in the corresponding field.

---

 **Note:** *When set each port to run at 100M Full, 100M Half, 10M Full, and 10M Half-speed modes. The Auto-MDIX function will disable.*

---

### 3.5.2 Port Statistic

The Statistic screen displays the status of packet count from each port. Press "Refresh" to renew the posted information. The statistics screen in **Figure 3-11** appears.

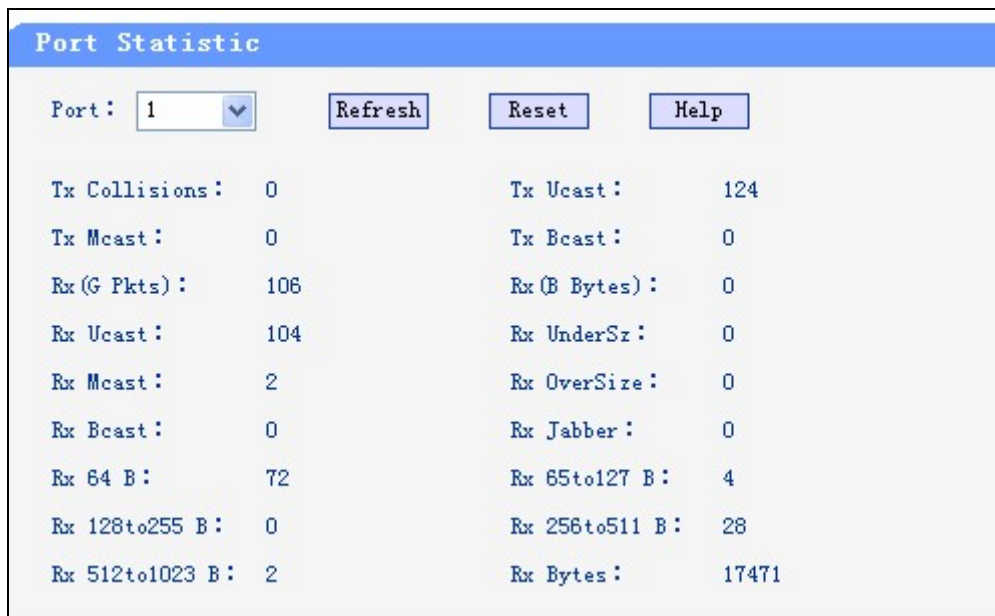


Figure 3-11 Statistics screen



### 3.5.3 Port Status

Click on the “**Port Status**” to present the Switch status on this screen, it display the Port Status, Speed, Duplex Mode and Flow control. The Port Status in the screen displays the current connection speed and duplex mode; else this function will show “**Linkdown**” when the port is disconnected. Press the “**Refresh**” button to renew the screen. The Status screen in **Figure 3-12** appears.

Port Status				
		<input type="button" value="Refresh"/>		
Port	Port Status	Speed(Mbps)	Duplex Mode	Flow Control
1	Linkup	100	Full Duplex	Disable
2	Linkdown	--	--	--
3	Linkdown	--	--	--
4	Linkdown	--	--	--
5	Linkdown	--	--	--
6	Linkdown	--	--	--
7	Linkdown	--	--	--
8	Linkdown	--	--	--
9	Linkdown	--	--	--
10	Linkdown	--	--	--
11	Linkdown	--	--	--
12	Linkdown	--	--	--
13	Linkdown	--	--	--
14	Linkdown	--	--	--
15	Linkdown	--	--	--
16	Linkdown	--	--	--
17	Linkdown	--	--	--

**Figure 3-12** Status screen

### 3.5.4 Rate Limiting

This page configures the rate limiting on each port. Ingress limit and egress limit can be configured independently. The screen in **Figure 3-13** appears.

Rate Limiting					
Port	Trunk	Ingress Limiting	Ingress BandWidth	Egress Limiting	Egress BandWidth
1	--	Disable	64K	Disable	64K
2	--	Disable	64K	Disable	64K
3	--	Disable	64K	Disable	64K
4	--	Disable	64K	Disable	64K
5	--	Disable	64K	Disable	64K
6	--	Disable	64K	Disable	64K
7	--	Disable	64K	Disable	64K
8	--	Disable	64K	Disable	64K
9	--	Disable	64K	Disable	64K
10	--	Disable	64K	Disable	64K
11	--	Disable	64K	Disable	64K
12	--	Disable	64K	Disable	64K
13	--	Disable	64K	Disable	64K
14	--	Disable	64K	Disable	64K
15	--	Disable	64K	Disable	64K
16	--	Disable	64K	Disable	64K
17	--	Disable	64K	Disable	64K
18	--	Disable	64K	Disable	64K
19	--	Disable	64K	Disable	64K

Figure 3-13 Rate limiting screen

Object	Description
Port	The Switch port number.
Trunk	If the port is a Trunk member, it indicates which Trunk it belongs to. Trunk members do not support rate limiting.
Ingress Limiting	Enable or disable the ingress rate limiting.
Ingress Bandwidth	Value of the ingress bandwidth.
Egress Limiting	Enable or disable the egress rate limiting.
Egress Bandwidth	Value of the egress bandwidth.
All port	By operating on this field expediently, you can set the values of all ports in the corresponding field.

**Note:** If storm control is enabled on a port, the ingress rate limiting is not available on this port. 100M port could not set the bandwidth value as 100M or greater.

### 3.5.5 Storm Control

A BroadcastStorm is a result of an excessive amount of broadcast messages simultaneously transmitted across a network by a single port. Forwarded message responses are heaped onto the network, straining network resources or causing the network to time out.

The system measures the incoming Broadcast and Multicast frame rate separately on each port, and discard frames when the rate exceeds a user-defined rate.

The Storm Control page provides fields for enabling and configuring Storm Control. The screen in **Figure 3-14** appears.

Port	Trunk	Broadcast Control	Multicast Control	UL Control	Limit Rate
1	--	Disable	Disable	Disable	64K
2	--	Disable	Disable	Disable	64K
3	--	Disable	Disable	Disable	64K
4	--	Disable	Disable	Disable	64K
5	--	Disable	Disable	Disable	64K
6	--	Disable	Disable	Disable	64K
7	--	Disable	Disable	Disable	64K
8	--	Disable	Disable	Disable	64K
9	--	Disable	Disable	Disable	64K
10	--	Disable	Disable	Disable	64K
11	--	Disable	Disable	Disable	64K
12	--	Disable	Disable	Disable	64K
13	--	Disable	Disable	Disable	64K
14	--	Disable	Disable	Disable	64K
15	--	Disable	Disable	Disable	64K
16	--	Disable	Disable	Disable	64K
17	--	Disable	Disable	Disable	64K
18	--	Disable	Disable	Disable	64K

Figure 3-14 Storm control screen

Object	Description
<b>Port</b>	The Switch port number.
<b>Trunk</b>	If the port is a Trunk member, it indicates which Trunk it belongs to. In the parameters field it list the parameters of the Trunk which it belongs to and can't be modified here, you can configure the parameters of the Trunk in the Port Trunking page.
<b>Broadcast Control</b>	Enable or disable the broadcast control.
<b>Multicast Control</b>	Enable or disable the multicast control, enabling multicast control will also enable broadcast control.
<b>UL Control</b>	Enable or disable the UL control, enabling UL control will also enable broadcast control and multicast control.
<b>Limit Rate</b>	Indicates the maximum rate(kilobytes per second)at which the controlled packets configured above are forwarded. For the 1000M port , if set the value of 64K , the actual value is about 70Kbps.
<b>All port</b>	By operating on this field expediently, you can set the values of all ports in the corresponding field.

### 3.5.6 Port Description

This function provides administrator can type word to indicate the port. The screen in **Figure 3-15** appears.

The screenshot shows a web interface titled "Port Description". It contains a table with two columns: "Port" and "Description". The table has 10 rows, with port numbers 1 through 10 listed in the "Port" column and empty text input boxes in the "Description" column. Below the table, there is a notice: "Notice : At most 15 letters or numbers can be held in the Description field." At the bottom of the screen, there are four buttons: "Submit", "Previous", "Page 1" (with a dropdown arrow), and "Next".

Port	Description	Port	Description
1	<input type="text"/>	2	<input type="text"/>
3	<input type="text"/>	4	<input type="text"/>
5	<input type="text"/>	6	<input type="text"/>
7	<input type="text"/>	8	<input type="text"/>
9	<input type="text"/>	10	<input type="text"/>

**Notice :** At most 15 letters or numbers can be held in the Description field.

Submit Previous Page 1 Next

Figure 3-15 Port description screen

## 3.6 Network Setting

The System setting menus include the tree sub-menus:

- Switch IP Address
- Static MAC Address
- Filtering MAC Address
- Dynamic Binding
- Bound MAC Address
- Aging Time
- Ping

### 3.6.1 Switch IP Address

This function provides administrator to configure interface of IP Address, net mask and default gateway and support DHCP client. The screen in **Figure 3-16** appears.

**Figure 3-16** IP address screen

### 3.6.2 Static MAC Address

A static MAC address table entry contains a MAC address and its corresponding switch port. All the packets taking that MAC address as their destination will be forwarded to the corresponding switch port.

The static MAC address won't age, which differs from the dynamic MAC address. The static MAC address table entry is always valid before it is deleted.

Supposing an entry, whose MAC address **00304F000001** and corresponding port number is 1, it is added to the static MAC address table. All the packets routing to the addresses of **00304F000001** egress for the switch port 1. The static entry obliges the devices of **00304F000001** to be connected to port 1; otherwise, that device cannot be accessed. Static MAC addresses are free of MAC learning, which enhances the efficiency of packets forwarding. The MAC addresses already configured in static MAC address table cannot be added to filtering MAC address table.

The static MAC address table capacity of different types of switches may be different. The screen in **Figure 3-17** appears.

Figure 3-17 MAC address screen

### 3.6.3 Filtering MAC Address

A filtering MAC address excludes a device from being accessed through the Switch. All the packets taking the filtering MAC address as their destination will be discarded. The filtering MAC address is applicable to all the switch ports. The configured filtering MAC address can neither be added to static MAC address table, nor be bound by switch ports. The screen in Figure 3-18 appears.

Figure 3-18 Filtering MAC address screen

### 3.6.4 Dynamic Binding

The Dynamic Address Table contains the MAC addresses learned by monitoring the source address for traffic entering the switch. When the destination address for inbound traffic is found in the database, the packets intended for that address are forwarded directly to the associated port. Otherwise, the traffic is flooded to all ports.

The Dynamic Address screen (see figure 3-19) contains parameters for querying information in the Dynamic MAC Address Table, including the interface type, MAC addresses, VLAN, and table storing. The Dynamic MAC Address table contains information about the aging time before a dynamic MAC address is erased, and includes parameters for querying and viewing the Dynamic MAC Address table. The Dynamic MAC Address table contains address parameters by which packets are directly forwarded to the ports. The Dynamic Address Table can be sorted by interface, VLAN, and MAC Address.

Dynamic Binding				
Port	Binding	Number of MAC Address to Bind	Number of Bound MAC Address	State
1	Disable	5	0	Free Port
2	Disable	5	0	Free Port
3	Disable	5	0	Free Port
4	Disable	5	0	Free Port
5	Disable	5	0	Free Port
6	Disable	5	0	Free Port
7	Disable	5	0	Free Port
8	Disable	5	0	Free Port
9	Disable	5	0	Free Port
10	Disable	5	0	Free Port
11	Disable	5	0	Free Port
12	Disable	5	0	Free Port
13	Disable	5	0	Free Port
14	Disable	5	0	Free Port
15	Disable	5	0	Free Port
16	Disable	5	0	Free Port
17	Disable	5	0	Free Port
18	Disable	5	0	Free Port
19	Disable	5	0	Free Port

Figure 3-19 Dynamic binding screen

### 3.6.5 Bound MAC Address

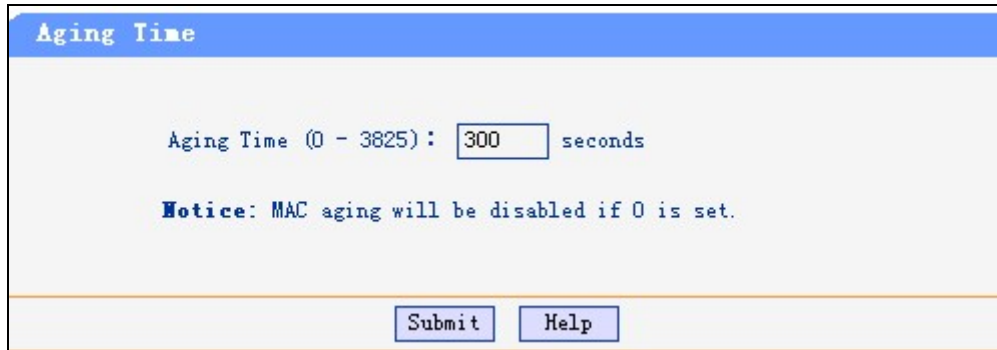
This page shows the MAC addresses bound to the switch ports. The screen in **Figure 3-20** appears.

Bound MAC Address		
MAC Address (Format:00-0A-EB-00-00-01):	<input type="text"/>	<input type="button" value="Search"/>
<input type="button" value="First"/>	<input type="button" value="Previous"/>	<input type="button" value="Next"/>
	<input type="button" value="Help"/>	Page 1
<input type="button" value="Index"/>	<input type="button" value="MAC Address"/>	<input type="button" value="Port"/>

Figure 3-20 Bound MAC Address screen

### 3.6.6 Aging Time

When the Switch learns a new MAC address, it will be added to the dynamic MAC address table and a relative timer will be generated immediately. If no packet taking the MAC address as its source passes through the Switch in a specified time length, that MAC address will be purged from the MAC address table. This process is called "**aging**", and the specified time length referred above is called "**aging time**". The aging time ranges from 0 to 3825 seconds; the default value is 300 seconds. Dynamic address table entry won't age if 0 is set. The aging time precision is 15 seconds. The screen in **Figure 3-21** appears.



Aging Time

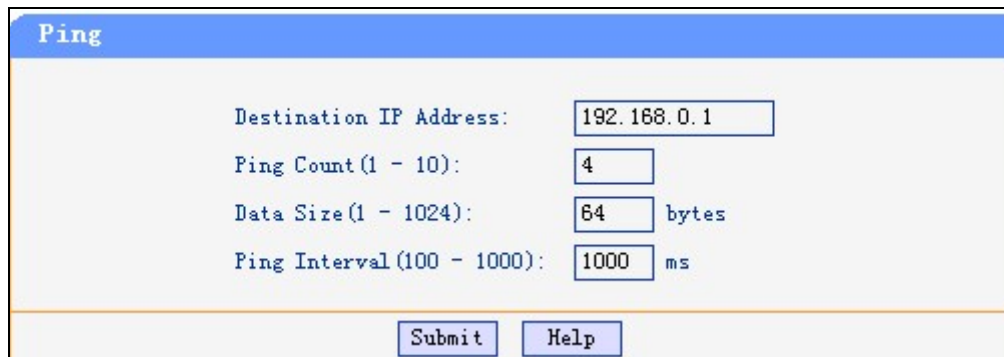
Aging Time (0 - 3825):  seconds

**Notice:** MAC aging will be disabled if 0 is set.

Figure 3-21 Aging time screen

### 3.6.7 Ping

This function provides administrator to test the connectedness of the link between the switch and destination. The screen in **Figure 3-22** appears.



Ping

Destination IP Address:

Ping Count (1 - 10):

Data Size (1 - 1024):  bytes

Ping Interval (100 - 1000):  ms

Figure 3-22 Ping screen



## 3.7 VLAN Setting

The System setting menus include the tree sub-menus:

### ■ VLAN Mode

The VLAN mode had three modes:

- Port VLAN (Port-Based VLAN)
- Tag VLAN (802.1Q Tag VLAN)
- MTU VLAN

This function group individual ports into a small “Virtual” network of their own to be independent of the other ports. The screen in **Figure 3-23** appears.

VLAN Mode

VLAN Mode:

VLAN Disable

Port VLAN (Port-based VLAN)

Tag VLAN (802.1Q Tag VLAN)

MTU VLAN

**Notice:** MTU VLAN mode is not able to be set if any Trunk has been set.

Submit Help

Figure 3-23 VLAN Setting screen

### 3.7.1 Port VLAN Setting

The page displays when the switch is in Port VLAN mode, the screen in **Figure 3-24** appears. it contains the following fields:

Port	Member	Description	Port	Member	Description
1	<input checked="" type="checkbox"/>	----	2	<input checked="" type="checkbox"/>	----
3	<input checked="" type="checkbox"/>	----	4	<input checked="" type="checkbox"/>	----
5	<input checked="" type="checkbox"/>	----	6	<input checked="" type="checkbox"/>	----
7	<input checked="" type="checkbox"/>	----	8	<input checked="" type="checkbox"/>	----
9	<input checked="" type="checkbox"/>	----	10	<input checked="" type="checkbox"/>	----
11	<input checked="" type="checkbox"/>	----	12	<input checked="" type="checkbox"/>	----
13	<input checked="" type="checkbox"/>	----	14	<input checked="" type="checkbox"/>	----
15	<input checked="" type="checkbox"/>	----	16	<input checked="" type="checkbox"/>	----
17	<input checked="" type="checkbox"/>	----	18	<input checked="" type="checkbox"/>	----
19	<input checked="" type="checkbox"/>	----	20	<input checked="" type="checkbox"/>	----
21	<input checked="" type="checkbox"/>	----	22	<input checked="" type="checkbox"/>	----
23	<input checked="" type="checkbox"/>	----	24	<input checked="" type="checkbox"/>	----
25	<input checked="" type="checkbox"/>	----	26	<input checked="" type="checkbox"/>	----
27	<input checked="" type="checkbox"/>	----	28	<input checked="" type="checkbox"/>	----
29	<input checked="" type="checkbox"/>	----	30	<input checked="" type="checkbox"/>	----
31	<input checked="" type="checkbox"/>	----	32	<input checked="" type="checkbox"/>	----
33	<input checked="" type="checkbox"/>	----	34	<input checked="" type="checkbox"/>	----
35	<input checked="" type="checkbox"/>	----	36	<input checked="" type="checkbox"/>	----

Figure 3-24 Port VLAN Setting screen

Object	Description
<b>VLAN</b>	The VLAN number. Select the number of the VLAN you want to configure here.
<b>Port</b>	The switch port number.
<b>Member</b>	Select the member of the VLAN here. If this field is checked, it indicates the port belongs to the current VLAN.
<b>Member Description</b>	Displays the user-defined port description.
<b>ALL VLAN</b>	Displays all defined VLANs.
<b>Select All</b>	Select all ports to be the VLAN members.
<b>Clean Up</b>	Clean up all members of the VLAN.
<b>Submit</b>	Submit to buildup a VLAN with the selected members.



**Note:**

1. **If any Trunk has been set, the Trunk can be configured as a VLAN member and member ports of the Trunk is not able to be configured.**
2. **For the first time the Port VLAN mode is set, a default VLAN, which is indexed as NO.1 and contains all switch ports.**

### 3.7.2 Tag VLAN

This mode will see the two setting page: "Tag VLAN Global Setting" and "Tag VLAN Setting".

The global setting of the ports will affect all Tag VLANs. The screen in **Figure 3-25** appears. It contains the following fields:

Tag VLAN Global Setting					
Port	PVID	Untag Frame	Port	PVID	Untag Frame
1	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	2	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
3	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	4	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
5	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	6	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
7	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	8	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
9	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	10	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
11	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	12	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
13	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	14	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
15	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	16	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
17	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	18	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
19	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	20	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
21	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	22	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
23	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	24	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
25	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	26	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
27	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	28	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
29	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	30	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
31	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	32	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
33	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	34	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
35	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	36	<input type="text" value="1"/>	Pass <input type="button" value="v"/>
37	<input type="text" value="1"/>	Pass <input type="button" value="v"/>	38	<input type="text" value="1"/>	Pass <input type="button" value="v"/>

**Figure 3-25** Tag VLAN Global Setting screen

Object	Description
<b>Port</b>	The switch port number.
<b>PVID</b>	While receiving an untag frame from the port, the switch will assign a tag to the frame, using the PVID of the port as its VID.
<b>Untag Frame</b>	The solution to the untag frame received. "Drop" will drop the frame and "Pass" will transmit the frame in the VLAN with the VID the same as the PVID of the port.
<b>All Ports</b>	By operating on this field expediently, you can set the values of all ports in the corresponding field.

 **Note:** *If any Trunk has been set, the Trunk can be configured, but member ports of the Trunk is not able to be configured and in the field it display the parameters of the Trunk they belong to.*

The Tag VLAN setting page is affected by the global setting of the ports, the screen in **Figure 3-26** appears. It contains the following fields:

Port	Member	Egress Frame	Description
1	<input checked="" type="checkbox"/>	Drop Tag	----
2	<input checked="" type="checkbox"/>	Drop Tag	----
3	<input checked="" type="checkbox"/>	Drop Tag	----
4	<input checked="" type="checkbox"/>	Drop Tag	----
5	<input checked="" type="checkbox"/>	Drop Tag	----
6	<input checked="" type="checkbox"/>	Drop Tag	----
7	<input checked="" type="checkbox"/>	Drop Tag	----
8	<input checked="" type="checkbox"/>	Drop Tag	----
9	<input checked="" type="checkbox"/>	Drop Tag	----
10	<input checked="" type="checkbox"/>	Drop Tag	----
11	<input checked="" type="checkbox"/>	Drop Tag	----
12	<input checked="" type="checkbox"/>	Drop Tag	----
13	<input checked="" type="checkbox"/>	Drop Tag	----
14	<input checked="" type="checkbox"/>	Drop Tag	----
15	<input checked="" type="checkbox"/>	Drop Tag	----
16	<input checked="" type="checkbox"/>	Drop Tag	----
17	<input checked="" type="checkbox"/>	Drop Tag	----
18	<input checked="" type="checkbox"/>	Drop Tag	----

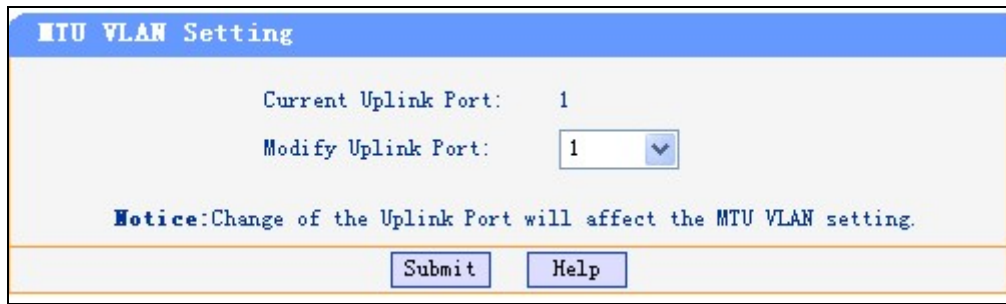
**Figure 3-26** Tag VLAN Setting screen

Object	Description
<b>VLAN</b>	The VLAN number. Select the number of the VLAN you want to configure here.
<b>VLAN ID</b>	Configure the VLAN ID.
<b>Port</b>	The switch port number.
<b>Member</b>	Select the member of the VLAN here. If this field is checked, it indicates the port belongs to the current VLAN.
<b>Egress Frame</b>	The solution to the egress frame. "Drop Tag" indicates drop the tag header before sending the frame. "Add Tag" indicates add the tag header before sending the frame. "Unmodify" indicates do not modify the tag header before sending the frame.
<b>All Ports</b>	By operating on this field expediently, you can set the values of all ports in the corresponding field.
<b>ALL VLAN</b>	Displays all defined VLANs.
<b>Select All</b>	Select all ports to be the VLAN members.
<b>Clean Up</b>	Clean up all members of the VLAN.
<b>Submit</b>	Submit to buildup a VLAN with the selected members.

 **Note:** *If any Trunk has been set, the Trunk can be configured, but member ports of the Trunk is not able to be configured and in the field it display the parameters of the Trunk they belong to.*

### 3.7.3 MTU VLAN

This page, which is designed to configure the uplink port, displays when the Switch is in MTU VLAN mode. The screen in **Figure 3-27** appears.



**Figure 3-27** MTU VLAN Setting screen

On setting the MTU VLAN mode, you should select the uplink port to complete the MTU VLAN setting. The uplink ports will buildup several VLANs with each of the other ports. Each VLAN contains two ports, the uplink port and one of the other ports in the switch, so the uplink port can communicate with any other ports but other ports can't communicate with each other.

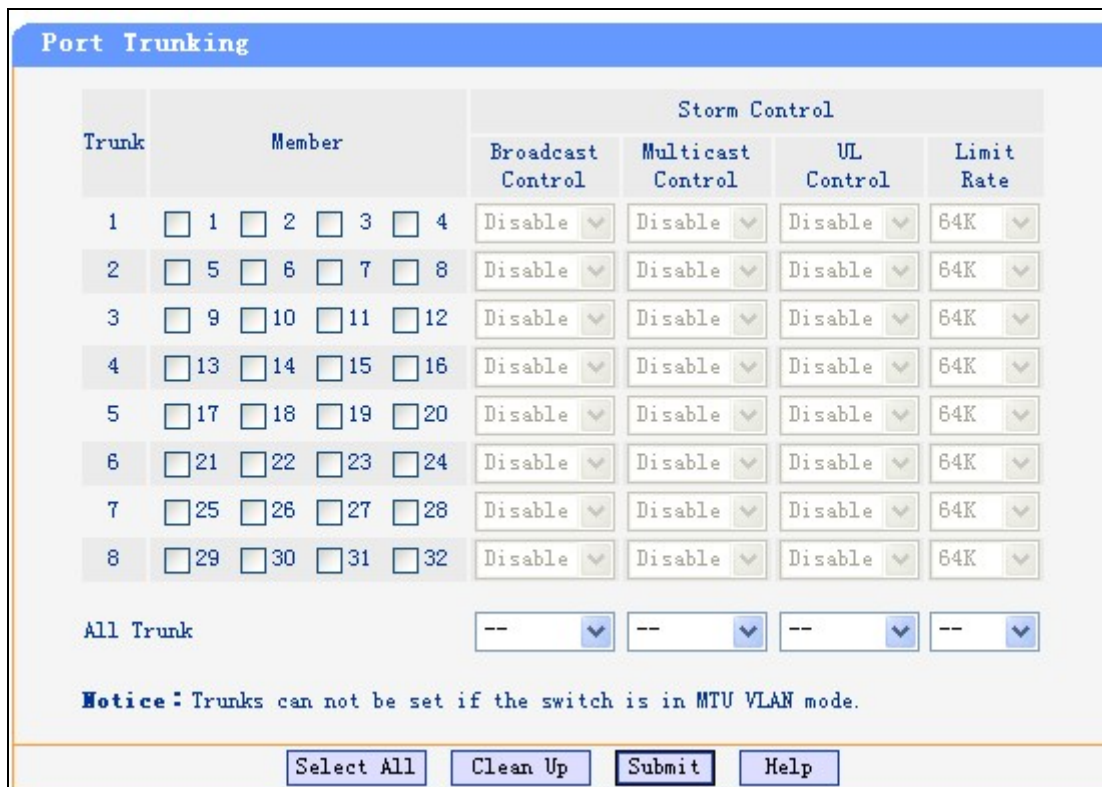
### 3.8 Port Trunking

The System setting menus include the tree sub-menus:

- **Port Trunking**

This function provides to cascade two Switch devices with a double bandwidth. There are eight trunk groups and each group provides four selections for fixed trunk port setting.

The trunking screen in **Figure 3-28** appears.



**Figure 3-28** Trunking Setting screen

Object	Description
<b>Trunk</b>	The Trunk number.
<b>Member</b>	Select the member of the Trunk here.
<b>Storm Control</b>	Configure the storm control for the Trunk here. All member ports of the Trunk share the same setting.
<b>Broad Control</b>	Enable or disable the broadcast control.
<b>Multicast Control</b>	Enable or disable the multicast control, enabling multicast control will also enable broadcast control.
<b>UL Control</b>	Enable or disable the UL control, enabling UL control will also enable broadcast control and multicast control.
<b>Limit Rate</b>	Indicates the maximum rate (kilobytes per second) at which the controlled packets configure above are forwarded. For the 1000M port , if set the value of 64K , the actual value is about 70Kbps .
<b>All Trunk</b>	By operating on this field expediently, you can set the values of all Trunk in the corresponding field.
<b>Select All</b>	Select all Trunk members in the list.
<b>Clean Up</b>	Clean up the Trunk member list.
<b>Submit</b>	Submit to buildup a trunk group with the selected members.

**Note:**

**Be sure that the selected trunk port must connect to the Switch under the same VLAN group**

## 3.9 Priority Setting

The priority setting of the switch can be set to “Disable”, “Port-Based” or “IEEE802.1p”.

The priority setting menus include the tree sub-menus:

- **Priority mode**
- **Port-Based priority**
- **Port Default priority**
- **802.1p Priority class**

### 3.9.1 Priority mode

The switch provided three priority modes: “Disable”, “Port-Based” or “IEEE802.1p”. The priority rule can be set to “Weighted” or “Fixed”.

The switch classifies the ingress packets into four classes: “lowest”, “lower”, “higher” and “highest”. When priority rule is configured as “weighted”, a 1,2,4,8 weighting is applied to forward these packets. When “fixed” is selected, all packets with top priority egress for a switch port until that priority's queue is empty, then the packets with next lower priority.

**Example:** In case of port-based priority mode:

If “weighted” is configured and the priority classes of four switch ports a, b, c and d are configured as lowest, lower, higher and highest respectively, when the packets entering from these four ports are queued at one egress port, the switch then forwards 8 d's packets, 4 c's packets, 2 b's packets and one a's packet at a time.

If “fixed” is configured and the priority classes of four switch ports a, b, c and d are configured as lowest, lower, higher and highest respectively, all d's packets are forwarded first, then c, b, a. The screen in **Figure 3-29** appears.

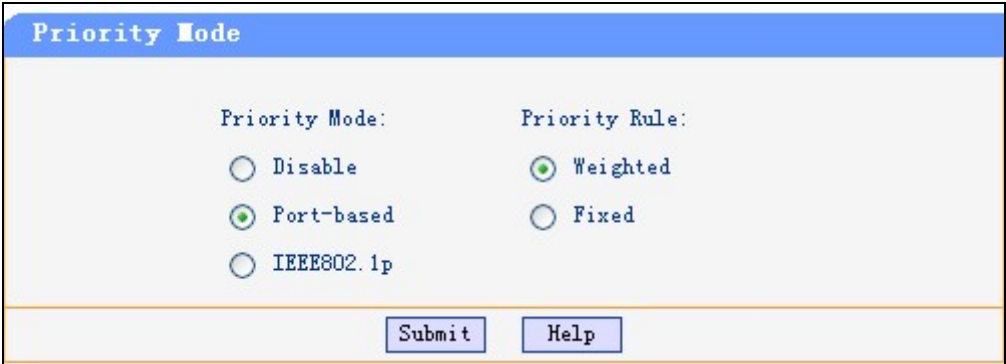


Figure 3-29 Priority mode screen

### 3.9.2 Port-Based priority

The Switch have four priority classes: “lowest”, “lower”, “higher” and “highest” in port-based priority mode. The priority class of the port is applied to the all packets entering from the port. The screen in Figure 3-30 appears.

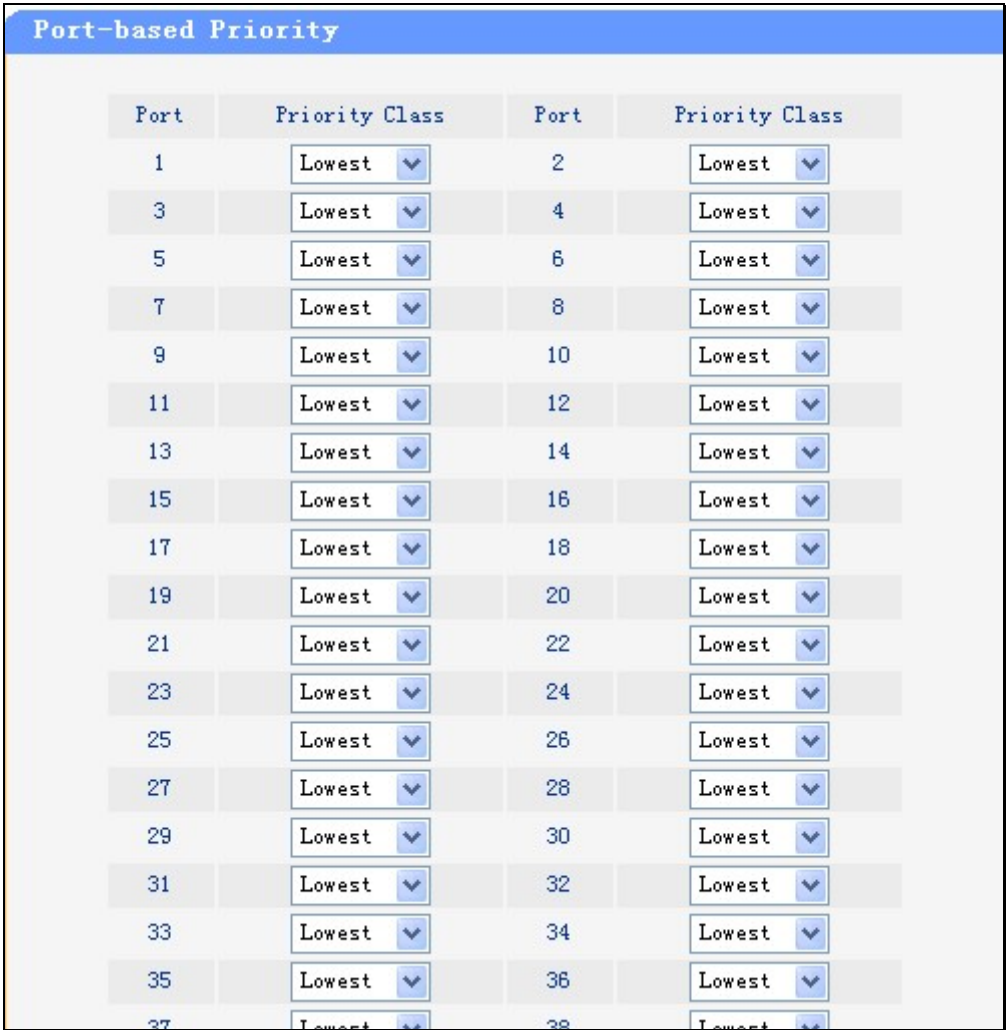


Figure 3-30 Port-based priority setting screen

### 3.9.3 Port Default priority

If IEEE 802.1p priority mode is configured, when the switch port receives an untagged frame (a frame without priority tag), the port's default priority tag will be inserted into the frame before any other process. The screen in **Figure 3-31** appears.

Port Default Priority			
Port	Default Priority Tag	Port	Default Priority Tag
1	0 <input type="button" value="v"/>	2	0 <input type="button" value="v"/>
3	0 <input type="button" value="v"/>	4	0 <input type="button" value="v"/>
5	0 <input type="button" value="v"/>	6	0 <input type="button" value="v"/>
7	0 <input type="button" value="v"/>	8	0 <input type="button" value="v"/>
9	0 <input type="button" value="v"/>	10	0 <input type="button" value="v"/>
11	0 <input type="button" value="v"/>	12	0 <input type="button" value="v"/>
13	0 <input type="button" value="v"/>	14	0 <input type="button" value="v"/>
15	0 <input type="button" value="v"/>	16	0 <input type="button" value="v"/>
17	0 <input type="button" value="v"/>	18	0 <input type="button" value="v"/>
19	0 <input type="button" value="v"/>	20	0 <input type="button" value="v"/>
21	0 <input type="button" value="v"/>	22	0 <input type="button" value="v"/>
23	0 <input type="button" value="v"/>	24	0 <input type="button" value="v"/>
25	0 <input type="button" value="v"/>	26	0 <input type="button" value="v"/>
27	0 <input type="button" value="v"/>	28	0 <input type="button" value="v"/>
29	0 <input type="button" value="v"/>	30	0 <input type="button" value="v"/>
31	0 <input type="button" value="v"/>	32	0 <input type="button" value="v"/>
33	0 <input type="button" value="v"/>	34	0 <input type="button" value="v"/>
35	0 <input type="button" value="v"/>	36	0 <input type="button" value="v"/>
37	0 <input type="button" value="v"/>	38	0 <input type="button" value="v"/>

**Figure 3-31** Port Default priority screen



### 3.9.4 802.1p priority class

In IEEE 802.1p priority mode, all packets are classified into four priority classes (lowest, lower, higher and highest) according to the embedded priority tag. If an untagged frame is received, the default priority tag of the port will be attached. The screen in **Figure 3-32** appears.

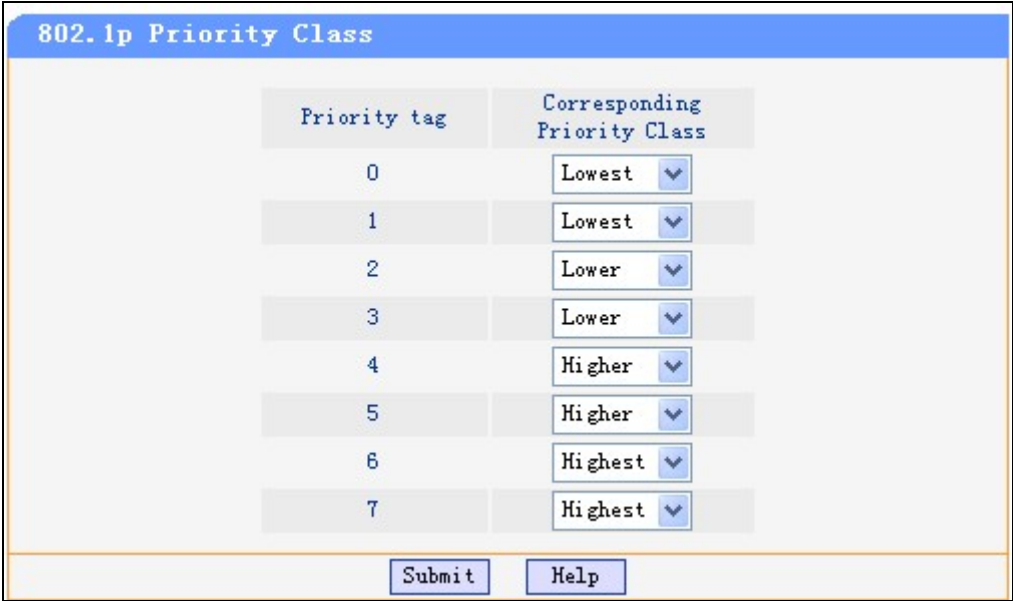


Figure 3-32 802.1p priority class setting screen

### 3.10 Port Mirroring

The System setting menus include the tree sub-menus:

- Port Mirroring

Port mirroring monitors and mirrors network traffic by forwarding copies of incoming and outgoing packets from one port to a monitoring port. Port mirroring can be used as diagnostic tool and/or a debugging feature. Port mirroring also enables switch performance monitoring (refer to **figure 3-33**). Network administrators configure port mirroring by selecting a specific port to copy all packets, and different ports from which the packets are copied.



Figure 3-33 Port mirroring setting screen

### 3.11 Virtual Cable Test

The System setting menus include the tree sub-menus:

- **Virtual Cable Test**

The Cable Test screen (see **figure 3-34**) shows you results from performance tests on copper cables. The maximum cable length that can be tested is 120 meters. Cables are tested when the ports are in the down state, except for the Approximate Cable Length test.

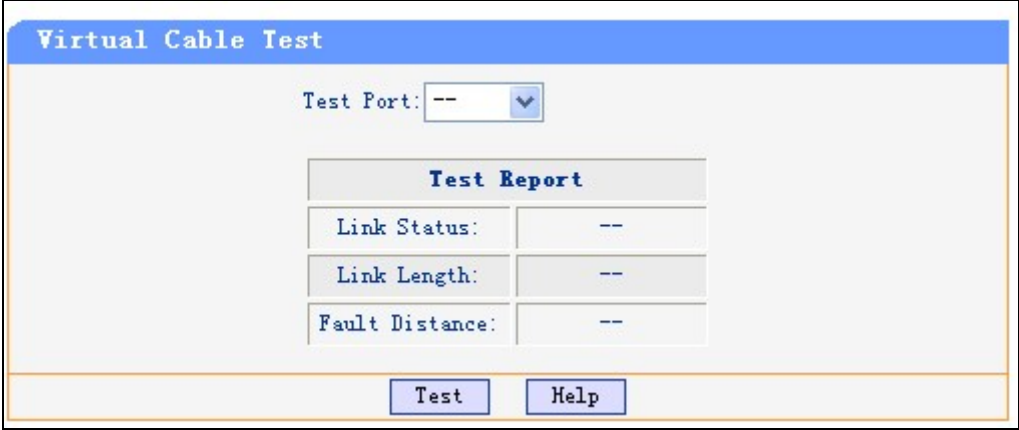


Figure 3-34 Virtual cable test screen

## 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. There by 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. 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, 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.

### 4.5 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. 1000Base-T can be only connected in Full-duplex mode.

## 5. TROUBLESHOOTING

This chapter contains information to help you solve problems. If the 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 its quality.

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

Solution:

Please check the VLAN, port trunking function that may introduce this kind of problem.

The address table may contain older information than of the address table of that node. Please power down to refresh the address information.

### **Performance is bad**

Solution:

Check the full duplex status of the partner Switch or device. The partner switch is run at full duplex and the Switch runs at Auto-Negotiation (half-duplex mode), then the performance will be poor.

### **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

### **Why the LNK/ACT LED of SFP-Mini-GBIC interfaces is not lit?**

Solution:

- Check the fiber connection
- Assure use the correct fiber cable for multi-mode and single-mode
- Check the port setting of this Switch

# APPENDIX A

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

1000Mbps, 1000Base T

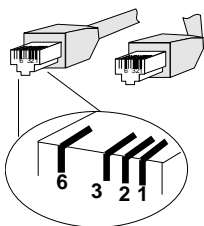
Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

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

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.3 RJ-45 cable pin assignment



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.