



**TP-LINK®**

## **User's Guide**

**TL-SG2109WEB**

**9-port Gigabit Web Smart Switch**

**TL-SL2210WEB**

**8+2G Gigabit Web Smart Switch**

**TL-SL2218WEB**

**16+2G Gigabit Web Smart Switch**

**TL- SL2428WEB**

**24+4G Gigabit Web Smart Switch**

**TL-SL2452WEB**

**48+4G Gigabit Web Smart Switch**

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## FCC STATEMENT

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 in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to

which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received, including interference that may cause undesired operation.

## **EC DECLARATION OF CONFORMITY (EUROPE)**

In compliance with the EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, this product meets the requirements of the following standards:

- EN55022
- EN55024
- EN60950

## **SAFETY NOTICES**



### **Caution:**

Do not use this product near water, for example, in a wet basement or near a swimming pool.

Avoid using this product during an electrical storm. There may be a remote risk of electric shock from lightning.

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## Package contents

The following contents should be found in your box:

- One Web Smart Switch
- One AC power cord
- User Guide
- Two mounting brackets and other fittings



**Note:**

If any of the listed contents are damaged or missing, please contact the retailer from whom you purchased the TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web Smart Gigabit Switch Family for assistance.



## Chapter 1: Introduction

Thanks for choosing the TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web Smart Gigabit Switch Family! The switch family provides friendly management interface and excellent performance.

### 1.1 Intended Audience

This guide is intended for network administrators familiar with IT concepts and network terminology.

### 1.2 Agreement

Due to the similarity in function of the TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web Smart Gigabit Switch Family, the TL-SL2210WEB model is selected to illustrate the usage of this switch family. The “switch” referred in this guide indicates the TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/ TL-SL2452WEB Web Smart Gigabit Switch Family.

### 1.3 Guide Overview

This user guide is divided into the following sections to provide concise information for configuring, and managing the TP-Link device:

Section 1: Introduction.

Section 2: Device Description -- Provides an overview about the switch family.

Section 3: Mounting Device -- Describes the mounting procedure of the switch.

Section 4: Function Description -- Describes the functions supported by the

switch family and presents the network concepts referred in this guide.

Section 5: WEB Management -- Give an explanation to the terms in WEB interface and describes the configuring suggestions of the switch.

Appendix A: Pin Explain For RJ-45 Connector

Appendix B: Table of Factory Defaults

Appendix C: Table of Function Differences of Switch Family

## Chapter 2: Device Description

### 2.1 Introduction to the Device

The TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web Smart Gigabit Switch Family is compliant with the IEEE802.3 Ethernet protocols. The EIA-standardized framework and smart configuration capacity can provide flexible solutions for variable scale of networks.

This switch family is equipped with powerful management interface, via which system, port, network, VLAN, truck and priority can be configured.

The TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web Smart Gigabit Switch Family provides 0/8/16/24/48 10/100M Fast Ethernet ports, 8/1/1/2/2 10/100/1000M Gigabit Ethernet ports and 1/1/1/2/2 SFP ports respectively, which extends the connecting area and increases the networking flexibility.

### 2.2 Features and Technical Specifications

#### 2.2.1 Features

- Compliant with IEEE802.3, IEEE802.3u, IEEE802.3ab and IEEE802.3z Standards
- IEEE 802.3x flow control for full-duplex
- Back pressure flow control for half-duplex
- Store-and-Forward switching method
- (0/8/16/24/48) 10/100BASE-TX Fast Ethernet ports (Auto MDI/MDI-X support)
- (8/1/1/2/2) 1000BASE-T Gigabit Ethernet ports (Auto MDI/MDI-X support)

- (1/1/1/2/2) SFP ports
- Support N-Way adaptive mode
- Support up to 200 meters of Cat. 5 cables at the transmission speed of 10M
- Support MAC address table of 8K entries
- Support MAC address learning and aging time
- Support port-based VLAN and IEEE802.1Q tag VLAN
- Support trunks
- Support management via WEB browser
- Support port-based priority and IEEE 802.1p priority
- Support static MAC address and filtering MAC address
- Support dynamic binding of MAC address
- Support port security, storm control and port monitoring
- Support virtual cable test
- Support static switch IP address and dynamic switch IP address through DHCP client
- Support system upgrading, configuration uploading and backup through TFTP server

## 2.2.2 Technical Specifications

Standards	IEEE802.3 10Base-T Ethernet
	IEEE802.3u 100Base-TX Fast Ethernet
	IEEE802.3ab 1000Base-T Gigabit Ethernet
	IEEE802.3z 1000Base-X Gigabit Ethernet
	IEEE802.3x Flow Control
Port	RJ-45 ports, which support MDI/MDIX, and some SFP ports are provided (Appendix C can be referred for details)
VLAN Mode	IEEE802.1Q Tag VLAN Mode
	Port-based VLAN Mode
	MTU VLAN Mode

Transmission Medium		10Base-T: UTP/STP of Cat. 3 or above
		100Base-TX: UTP/STP of Cat. 5
		1000Base-X: MMF or SMF SFP Module (OPTIONAL)
LED	Power	Indicates whether power is supplied or not
	Port	10/100Mbps RJ-45 port: Link/Act LED and 10/100Mbps LED
		10/100/ 1000Mbps RJ-45 port: Link/Act and 10/100/1000Mbps LED
		SFP port: 1000Mbps Link/Act LED
Dimensions (L×W×H)		294mm×180mm×44mm (TL-SG2109WEB/TL-SL2210WEB)
		440mm×180mm×44mm (TL-SL2218WEB)
		440mm×180mm×44mm (TL-SL2428WEB)
		440mm×260mm×44mm (TL-SL2452WEB)
Operating Environment		Operating Temperature: 0°C ~ 40°C
		Storage Temperature: -40°C ~ 70°C
		Operating Humidity: 10% ~ 90% RH
		Storage Humidity: 5% ~ 95% RH
Power Supply		AC 100-240V~ 50-60Hz

## Chapter 3: Mounting Device

### 3.1 Install the Device

Installation Precautions:

1. Ensure the surface on which the device is placed is adequately secured to prevent it from becoming unstable and/or falling over.
2. Ensure the power outlet is placed within 1.5 m (5 feet) of the device.
3. Ensure the device is connected safely to the power outlet with the AC power cable.
4. Ensure the device is placed in a ventilated environment.

#### 3.1.1 Desktop or Shelf Installation

1. Place the switch on the desktop with its bottom upturned.
2. Attach the supplied rubber feet on the bottom at each corner of the switch.
3. Turnover the switch and place it on the desktop.

#### 3.1.2 Rack Installation

The device can be mounted in an EIA standard-sized, 19-inch rack, which can be placed in a wiring closet with other equipment.

1. Install the supplied rack-mounting bracket on each side of the device, using the supplied screws. The following figure illustrates where to mount the brackets.

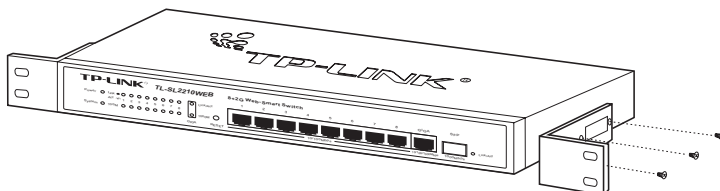


Figure 3-1 Mounting Brackets

2. Insert the switch into the rack.
3. Fix the switch to the rack with the rack screws (not provided).

### 3.1.3 AC Power

The switch can be used with AC power supply 100 to 240V AC,50 to 60Hz. The switch's power supply will adjust to the local power source automatically.

## 3.2 Switch Aspect Description

### 3.2.1 Front Panel

The front panel of TL-SL2210WEB is configured as follows:

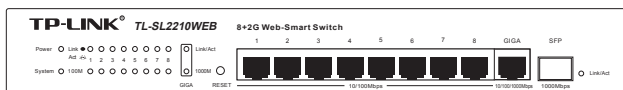


Figure 3-2. TL-SL2210WEB Front Panel

- **8 10/100Mbps RJ-45 ports:** designed to connect to the device with the bandwidth of 10M or 100M. Each port has a corresponding Link/Act and 10/100Mbps LED.
- **1 10/100/1000Mbps RJ-45 ports:** designed to connect to the device with the bandwidth of 10M, 100M or 1000M. It has a corresponding Link/Act and 10/100/1000Mbps LED.
- **1 SFP ports:** designed to install SFP module. It has a corresponding 1000Mbps Link/Act LED.
- **Reset Button:** Press this button for three seconds to the reset software setting back to factory default setting.
- **LEDS**

- 1) LEDs lie at the left side of the panel (1000Mbps Link/Act LED of the SFP lie at right side of the SFP).
- 2) **Power LED**: solid red when power is supplied to the switch and is operating normally.
- 3) **System LED**: flashing green when CPU of the switch works normally.
- 4) **10/100Mbps LED**: When a 10/100Mbps port connect to a 100Mbps device, the corresponding LED turns on in solid green; When the port connects to a 10Mbps device, the LED turns off.
- 5) **10/100/1000Mbps LED**: When a 10/100/1000Mbps port connect to a 1000Mbps device, the corresponding LED turns on in solid green; When the port connect to a 10/100Mbps device, the LED turns off.
- 6) **Link/Act LED**: Solid green when a valid link is established on the port; Flashes green when packet transmission or reception is occurring on the port. (SFP port has Link/Act LED only and must connect to 1000Mbps device.)

The following shows the front panel of TL-SG2109WEB, TL-SL2218WEB, TL-SL2428WEB and TL-SL2452WEB:



Figure 3-3 TL-SG2109WEB Front Panel



Figure 3-4 TL-SL2218WEB Front Panel



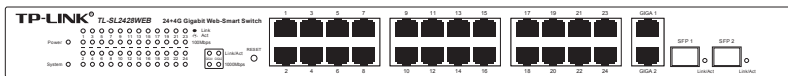


Figure 3-5 TL-SL2428WEB Front Panel



Figure 3-6 TL-SL2452WEB Front Panel

### 3.2.2 Back Panel

The back panel of the switch is configured as follows:



Figure 3-7 TL-SG2109WEB/SL2210WEB Back Panel



Figure 3-9 TL-SL2218WEB/SL2428WEB/SL2452WEB Back Panel

- **AC Power Connector:** This is a three-pronged connector that supports the power cable. Plug in the female connector of the provided power cable into this connector, and the male into a power outlet.

### 3.2.3 SFP Module

The SFP port accommodates a standard SFP module. Small Form Factor Pluggable (SFP) Optical Show as follow.

SFP module support hot-plugging, plug the SFP module into the SFP port and

the switch can identify it automatically.

### 3.3 Note

- The surface on which the switch is placed should be adequately secured to prevent it from becoming unstable and/or falling over.
- Ensure the power source circuits are properly grounded.
- Ensure the power cable, extension cable, and/or plug is not damaged.
- Ensure the switch is not exposed to water.
- Ensure the switch is not exposed to radiators and/or heat sources.
- Do not push foreign objects into the switch, as it may cause a fire or electric shock.
- Allow the switch to cool before removing covers or touching internal equipment.
- Use the switch only with approved equipment. If the switch is connected to other network devices with UTP cable, ensure that the cable is not more than 100 meters .

## Chapter 4: Function Description

This section presents the network concepts referred in switch function description.

### 4.1 System Setting

System setting contains the following topics: displaying and configuring the switch information, upgrading firmware, backing up and loading configuration, rebooting and soft-resetting, configuring username and password.

#### 4.1.1 System Information

The system information contains hardware version, software version, system description, system name, system location, contact information and run time.

#### 4.1.2 File Transfer

TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web-Smart Switch Family is equipped with the function of configuration backup, configuration loading and system upgrading.

The configuration file and executive file are transferred in TFTP protocol. TFTP (Trivial File Transfer Protocol) is dedicated to transferring files between two network stations. It's based on UDP protocol.

#### 4.1.3 Reboot & Reset

The "Reset" indicates "Soft-reset" here. Soft-resetting restores the switch configuration to default except the switch IP address.

#### 4.1.4 User

The username and password can be modified in order to exclude illegal users.

## 4.2 Port Setting

### 4.2.1 Port Parameter

#### 4.2.1.1 Duplex Mode

Ports have the duplex modes: 10M HD, 10M FD, 100M HD, 100M FD and 1000M FD (Giga port support).

The First part indicates the transmission rate and the second part indicates the duplex mode.

- **HD:** half-duplex, the port supports transmission between the device and the client in only one direction at a time.
- **FD:** full-duplex, the port supports transmission between the device and its link partner in both directions simultaneously.

Switch support auto negotiation is a protocol between two link partners that enables a port to advertise its transmission rate and duplex mode to its partner.

#### 4.2.1.2 Flow Control

Flow control enables lower speed devices to communicate with higher speed devices. This is implemented by the higher speed device refraining from sending packets.

#### 4.2.1.3 Port Security

If the port security is enabled, it will not learn new MAC address and only transmit the frames from the MAC address list in the port's static MAC address table.

## 4.2.2 Port Statistic and Port Status

Port Statistic calculates the statistics of each port, such as how many frames, error frames, broadcast frames it has received, and so on.

Port Status indicates whether the port is linked, not linked or disabled, what speed and duplex mode it is working on, and whether flow control is enabled or disabled.

## 4.2.3 Storm Control

Storm control limits the amount of multicast, broadcast and UL (the address hasn't been learned) frames accepted and forwarded by the device. When Layer 2 frames are forwarded, broadcast, multicast and UL frames are flooded to all ports on the relevant VLAN. This occupies bandwidth, and loads all nodes on all ports.

A Storm is a result of an excessive amount of these frames 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. Storm control is enabled for all ports by defining the packet type and the rate at which the packets are transmitted. The system measures the incoming defined frame rates on each port, and discards the frames when the rate exceeds a user-defined rate.

## 4.2.4 Port Description

Use a description word to indicate the port.

## 4.3 Network Setting

The network module provides the function of setting switch IP address, dynamic binding and aging time, configuring static MAC address and filtering MAC address, displaying dynamic bound address and ping.

### 4.3.1 Switch IP Address

An IP address is indispensable for a switch to be accessed. The TL-SG2109WEB/TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Web-Smart Switch Family provides the configuration interface of IP address, netmask and default gateway.

DHCP (Dynamic Host Configuration Protocol) is dedicated for the DHCP client to obtain IP configuration information from the DHCP server. Two types of information are included in IP configuration information. One type is specific configuration information; another is IP address parameter. DHCP is based on client-server mode. The network station that offers the IP configuration information is called DHCP server.

Make sure that a DHCP server is correctly connected to the network, enable the DHCP client function of the switch, then the switch will automatically obtain IP address, netmask and default gateway from the DHCP server.

If more than one DHCP servers are available in the network, the switch will choose one according to a specific algorithm.

**Notice:**

If no DHCP server is present in the network, the DHCP client fails to get IP configuration information, the switch then restores the IP parameters to default in several minutes to ensure a valid IP address being equipped.

### 4.3.2 Aging Time and Dynamic Address Table

A dynamic MAC address table is maintained inside the switch. A MAC address is the physical address of a network device; it is six-bytes long and should be hole in a subnet. A network device can be identified by its MAC address.

A dynamic address table entry contains two items: MAC address and its corresponding switch port. The dynamic address table is volatile. The dynamic address entry begins to age once it has been added; it will be purged if isn't renewed in a specified length of time, which is defined as aging time.

The aging time ranges from 0 to 3825 seconds for this switch family.

The default value is 300 seconds. Dynamic address table entry won't age if 0 is set. The aging time precision is 15 seconds.

### 4.3.3 Static MAC Address Table

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 is 000AEB000001 and corresponding port number is 1, is added to the static MAC address table. All the packets routing to the address of 000AEB000001 egress for the switch port 1. This static entry obliges the device of 000AEB000001 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. Appendix C lists the difference.

#### **4.3.4 Filtering MAC Address Table**

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.

#### **4.3.5 Dynamic Binding**

A switch port in dynamic binding state can bind a specified number of MAC address. Once the specified number is reached, the port transfers into secure state automatically and stops binding MAC addresses. The bound MAC addresses won't age, they can be removed by disabling the dynamic binding or rebooting the switch.

The function of dynamic binding causes the switch port to acknowledge the devices connecting to it after startup, and stores the connections (through



binding MAC addresses) in static state. This enhances the efficiency of packets forwarding and limits the connecting device number of the switch port. Reboot the switch after configuring the dynamic binding function. The switch will acknowledge and bind the latest connecting devices. If the switch is managed through remote connection, please add the MAC address of the management computer or that of the default gateway to the static MAC address table; otherwise, the management channel may break down.

### 4.3.6 Ping

The ping function is to test the connectedness of the link between the switch and destination.

## 4.4 VLAN Setting

VLANs are logical subgroups with a Local Area Network (LAN) that combine user stations and network devices into a single unit, regardless of the physical LAN segment to which they are attached. VLANs allow network traffic to flow more efficiently within subgroups.

VLANs use software to reduce the amount of time it takes for network changes, additions, and moves to be implemented.

VLANs can be created per unit, per device, or through any other logical connection combination, since they are software-based and not defined by physical attributes. VLANs function at Layer 2. Since VLANs isolate traffic within the VLAN, a Layer 3 router working at a protocol level is required to allow traffic flow between VLANs. Layer 3 routers identify segments and coordinate with VLANs. VLANs are Broadcast and Multicast domains. Broadcast and Multicast traffic is transmitted only in the VLAN in which the

traffic is generated.

#### 4.4.1 VLAN Mode

There are 3 types of VLAN mode support in the switch:

##### 1) Port VLAN

VLANs are divided basic on ports.

##### 2) IEEE802.1Q Tag VLAN

The IEEE802.1Q protocol define a new format of the frame, it add a tag header in the original Ethernet frame, as follow:

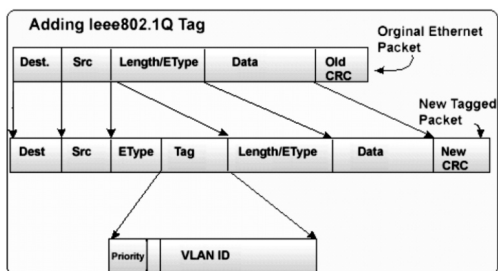


Figure 4-1. IEEE802.1Q frame

IEEE802.1Q Tag VLAN is divided by VLAN ID (VID). On receiving a frame, switch check the VID in the tag header of the frame to decide which VLAN it belongs to. If the receiving frame doesn't contain the tag header, switch will assign a tag to the frame, using the PVID of the port as its VID.

##### 3) MTU VLAN

MTU VLAN(Multi-Tenant Unit VLAN)define an uplink port, the uplink port 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.

## 4.5 Port Trunking

Trunk is Link Aggregation. It optimizes port usage by linking a group of ports together to form a single trunk (aggregated groups). Bandwidth of the Trunk is the sum of bandwidth of its member port.

There are some rules on using Trunk:

- 1) Before setting the Trunk, its member ports should be divided to the same VLAN, and have the same PVID and drop untagged frame rule. Change of the Trunk setting will not affect the VLAN setting. Trunks can not be set if the switch is in MTU VLAN mode
- 2) The Trunk member ports can't enable port security and can't be set as mirror or mirrored port.
- 3) All of the Trunk member ports should be connected correctly; otherwise some ports will not be able to work.

## 4.6 Priority Setting

The priority mode of the switch can be set to "Disable", "Port-Based" or "IEEE802.1p".

### 4.6.1 Priority Mode

Three priority modes (disable, port-based and IEEE802.1p) are provided for this switch family.

The priority rule can be set to "Weighted" or "Fixed". When priority rule is

configured as "weighted", a 1,2,4,8 weighting is applied to forward 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.

### **4.6.2 Port-Based Priority**

Four priority classes (lowest, lower, higher and highest) are available for a switch port in port-based priority mode. The priority class of the port is applied to the all packets entering from the port.

### **4.6.3 Port Default Priority**

If IEEE802.1p priority mode is configured, when a 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.

### **4.6.4 802.1p Priority**

In IEEE802.1p 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.

## **4.7 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 enables switch performance monitoring.

Network administrators can configure port mirroring by selecting a specific port from which to copy all packets, and other ports to which the packets copied.

## 4.8 Virtual Cable Test

The virtual cable test feature uses Time Domain Reflectometry (TDR) to test the quality of the cables connected to the port. Some of the possible problems that can be diagnosed include opens, shorts, cable impedance mismatch, bad connectors, termination mismatch, and bad magnetics. It can also test the distance to the problem location, with the precision of  $\pm 1$  meter.

## Chapter 5: WEB Management

### 5.1 Overview

The Web-Smart switch is managed via WEB pages. The smart and friendly interfaces make the switch management an easy job.

### 5.2 Connecting to the Device

#### 5.2.1 Getting Started

Before connecting to the WEB server (switch), the installation of WEB browser, which supports JavaScript, must be completed in the computer.

Due to the difference of parsing syntax, the WEB page display may differ between variable WEB browsers. Microsoft Internet Explorer of version 5.0 or higher is recommended. If Netscape is selected, please ensure the latest version. To obtain excellent display quality, a screen resolution of 1024 x 768 or higher is necessary.

The appropriate configuration of WEB browser must be ensured before switch management. An example of configuration using IE on Windows XP is given below.

Firstly, select "Tool->Internet Options" on the menu, a dialog will pop up:

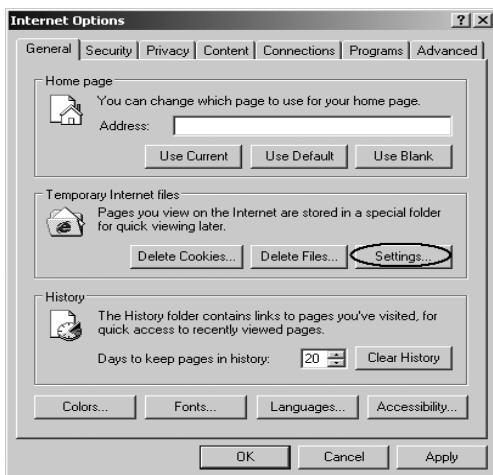


Figure 5-1 Internet Options Dialog

Secondly, click the “Settings” button hinted in figure 5-1, a new dialog will display:

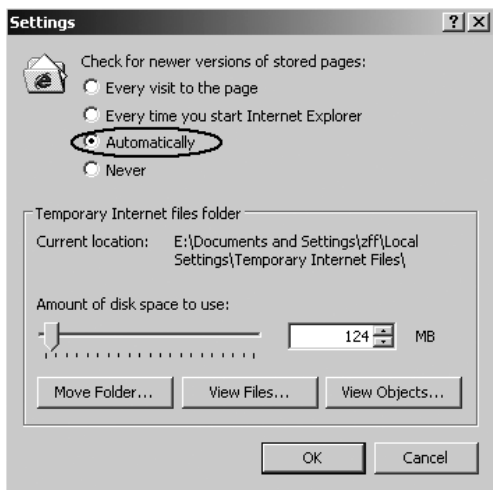


Figure 5-2 Settings Dialog

In the case of IE5.0, please check the option “Every visit to the page”; otherwise, some wrong information may display in WEB pages. If the IE version is 6.0, “Every visit to the page” or “Automatically” are both appropriate.

Click the “OK” button and complete this setting.

Thirdly, click the “Security” label of “Internet Options” dialog; press the “Custom Level” button hinted in figure 5-3.

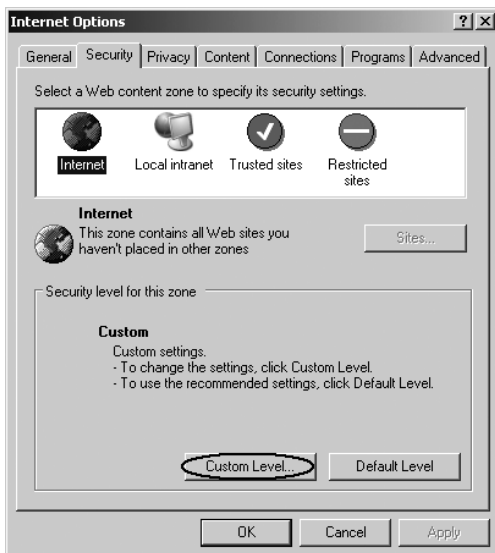


Figure 5-3 Internet Options Dialog

A dialog will display as below.



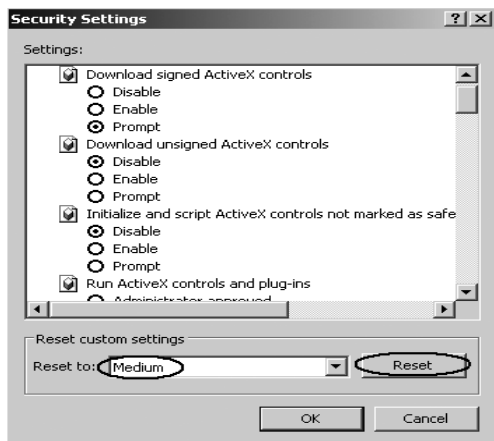


Figure 5-4 Security Settings

Fourthly, Select the “Medium” option of the combo box indicated in figure 5-4, click the “Reset” button, and click “OK” to quit.

Fifthly, right-click the mouse on desktop, select the “Display Properties” in the popup menu, a new dialog will display:

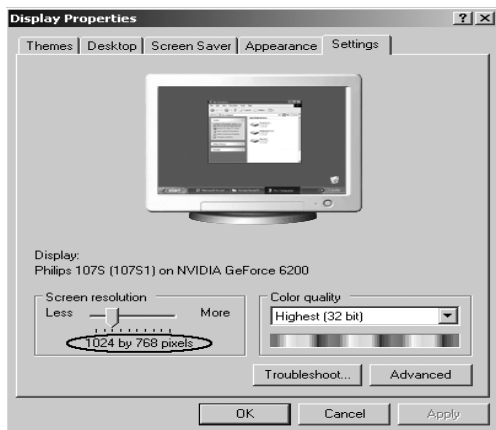


Figure 5-5 Resolution Settings

Click the "Settings" label, set the screen resolution to 1024 x 768 and click "OK". All the necessary IE configuration is completed.

## 5.2.2 Login the Switch

Supposing the switch IP address is set as 192.168.0.1, open a web browser and enter `http://192.168.0.1` in the address location, and then the following dialog page appears:



Figure 5-6 Login Dialog

Enter username and password (default value are both "supervisor") to login the switch configuration main page.

## 5.3 Setting the Device

After logging into the switch, the main page appears as the following. It contains three parts:

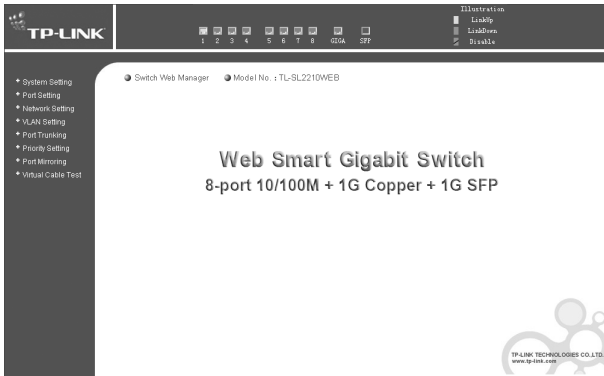


Figure 5-7 TL-SL2210WEB Main Page

- 1) The main part of the page is the main window to display the configuration page.
- 2) The Port Led Indicator table lies at the top of the page. It provides a visual representation of the ports on the switch front panel to display the status of the ports. The ports, signed with number are the normal ports, signed with GIGA are the Giga ports, signed with SFP are the SFP ports. The green icon indicates that the port is linked; the gray icon indicates that the port is not linked; a gray icon with a black bar indicates that the port is disabled; for the SFP port, a blue icon indicates that the SFP module hasn't been installed.



Figure 5-8 Port Led Indicator Table (SFP uninstalled)



Figure 5-9 Port Led Indicator Table (SFP installed)

Click on the icon of the port to open a new window, which shows the status details of the port, as shown below:

Port ID :	1
Port Status :	Linkup
Port Speed :	100Mbps
Duplex Mode :	FD
Flow Control :	Disable

Figure 5-10a Port Status Table

Port ID :	SFP
Port Status :	--
Port Speed :	--
Duplex Mode :	--
Flow Control :	--
Moudle Type :	Not install

Figure 5-10b SFP Status Table (uninstalled)

Port ID :	SFP
Port Status :	Linkup
Port Speed :	1000Mbps
Duplex Mode :	FD
Flow Control :	Disable
Moudle Type :	Company : TP-LINK Model : TL-SM311LM

Figure 5-10c SFP Status Table (installed)

- 3) On the left side of the page is the menu table. It contains 8 main menus. Each menu has some submenu. Click on a menu, it will open its submenu and the main window display the configuration page of the submenu list first, click on the submenu you want to configure to open the corresponding configuration page. The menu structure is as follows:

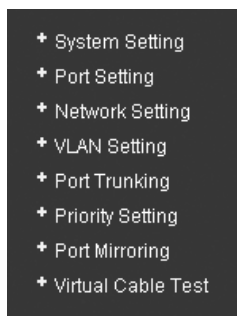


Figure 5-11 Main Menu

- **System Setting:** System Information, File Transfer, Reboot & Reset, and User.
- **Port Setting:** Port Parameter, Port Statistic, Port Status, Storm Control, and Port Description.
- **Network Setting:** Switch IP Address, Static MAC Address, Filtering MAC Address, Dynamic Binding, Bound MAC Address, Aging Time, and Ping.
- **VLAN Setting:** VLAN Mode, Port VLAN Setting, Tag VLAN Global Setting, Tag VLAN Setting, and MTU VLAN Setting.
- **Port Trunking:** Port Trunking.
- **Priority Setting:** Priority Mode, Port-Based Priority, Port Default Priority, and 802.1p Priority Class.
- **Port Mirroring:** Port Mirroring.
- **Virtual Cable Test:** Virtual Cable Test.

The following shows main page of the TL-SG2109WEB, TL-SL2218WEB, TL-SL2428WEB and TL-SL2452WEB:



Figure 5-12 TL-SG2109WEB Main Page

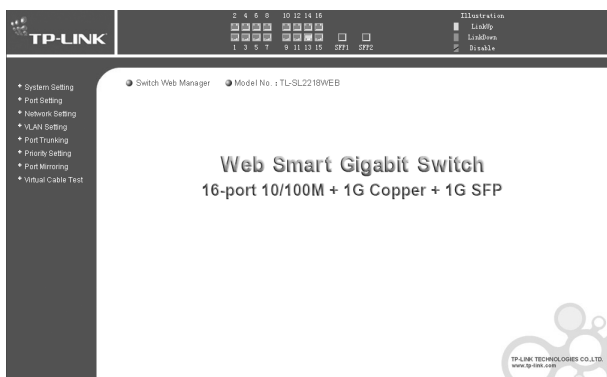


Figure 5-13 TL-SL2218WEB Main Page

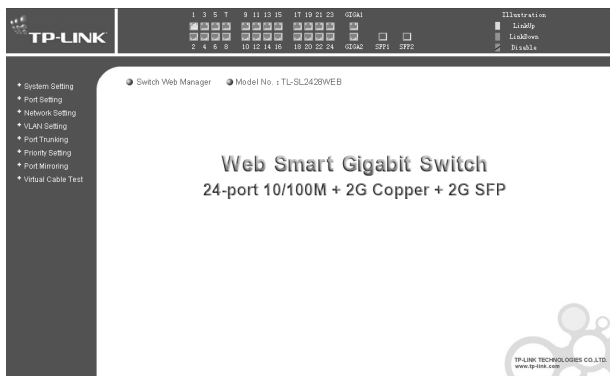


Figure 5-14 TL-SL2428WEB Main Page

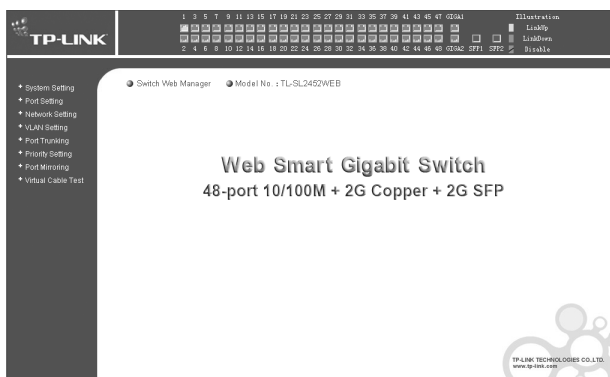


Figure 5-15 TL-SL2452WEB Main Page

### 5.3.1 System Setting

System setting contains four topics: system information, file transfer, reboot & reset and user.

#### 5.3.1.1 System Information

This page contains the following fields:

System Information

Hardware Version: TL-SL2210WEB 1.0  
Software Version: 1.1.0 Build 20051114 Rel. 53763  
System Description: 8FE+2G Web-Smart Switch  
System Name:   
System Location:   
Contact Information:   
Run Time: 0 Day - 0 Hour - 49 Min - 9 Sec

**Notice:** At most 31 letters or numbers can be held in system name, system location and contact information.

Figure 5-16 System Information

- **Software Version:** Displays the installed software version number.
- **Hardware Version:** Displays the installed device hardware version number.
- **System Description:** Displays the device model number and name.
- **System Name:** Defines the user-defined device name.
- **System Location:** Defines the location where the system is currently running.
- **Contact Information:** Defines the contact information of switch manager.
- **Run time:** Shows the run time since last startup.

### 5.3.1.2 File Transfer

This page contains the following fields:

File Transfer

Transfer Type:   
File Name:   
TFTP Server IP:

Figure 5-17 File Transfer



- **Transfer Type:** Lists three types of file transfer supported by the switch.
- **File Name:** Identifies the file to be loaded or to be backed up on TFTP server.
- **TFTP Server IP:** Indicates the IP address of TFTP server.



### Further explanation

File transfer types:

- **System Upgrading:** Means downloading the executable file from TFTP server to switch and upgrading the system.
- **Configuration Backup:** Means backing up the current configuration of the switch to TFTP server.
- **Configuration Loading:** Means downloading the configuration from TFTP server to the switch and update it.



### Notice:

- 1) Please make sure the target file exists on TFTP server before downloading.
- 2) Please make sure the TFTP server in operation.
- 3) Breaks should be avoided during file transfer; otherwise, the switch may get damaged.

### 5.3.1.3 Reboot & Reset

This page is showed as below.

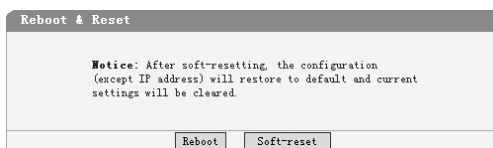


Figure 5-18 Reboot & Reset

A prompt will display if a button is pressed. For example, if the button "Soft-reset" is pressed, a message box will be activated as showed in figure 5-19.

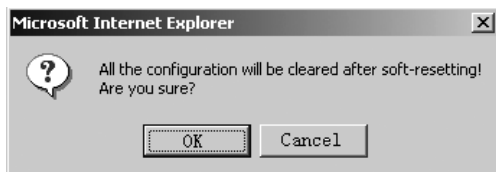


Figure 5-19 Message Box

#### 5.3.1.4 User

This page provides the interface of configuring username and password.

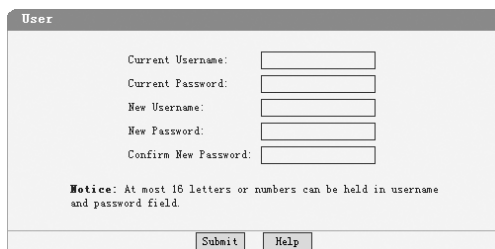


Figure 5-20 User Configuration

You are kindly suggested to retype the new password in "Confirm new password" box instead of copying in order to avoid typing mistakes.



**Notice:**

- 1) Only letters, numbers and punctuations can be input into username and password field, the other characters are considered illegal. The length of username and password ranges from 1 to 16 characters.
- 2) The initial username and password is supervisor/supervisor.

## 5.3.2 Port Setting

### 5.3.2.1 Port Parameter

This page contains the following fields:

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	T2	Enable	Disable	Disable	Auto
6	T2	Enable	Disable	Disable	Auto
7	--	Enable	Disable	Disable	Auto
8	--	Enable	Disable	Disable	Auto
GIGA	--	Enable	Disable	Disable	Auto
SFP	--	Enable	Disable	Disable	1000M FD
All Ports	--	--	--	--	--

Figure 5-21 Port Parameter

- **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, it can be set it to be non-operational to cut down energy costs.



#### Notice:

You can't manage the switch via the port, which is non-operational, please set the value of the management port to "enable".

- **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 enable all of the port security, which will result in an inability to manage the switch.

- **Flow Control:** Indicates whether the flow control is enabled or disabled.
- **Duplex Mode:** Possible filed values are Auto, 10M HD, 10M FD, 100M HD, 100M FD and 1000M FD (Giga port support), "HD" stands for half-duplex and "FD" stands for full-duplex. "Auto" means auto negotiation.



### Further explanation:

- 1) By operating on fields in the All Ports line expediently, you can set the values of all ports in the corresponding field. Some other setting pages offer the same function.
- 2) Parameters of Trunk member ports are configured with default value (see the Appendix B table) and cannot be configured here (see port 5 and 6 in the figure for example). For SFP, the Duplex Mode is set to "1000M FD" and cannot be modified.

## 5.3.2.2 Port Statistic

This page displays the port statistic, it contains the following entries:

Port Statistic	
Port :	1 <input type="button" value="Refresh"/> <input type="button" value="Reset"/> <input type="button" value="Help"/>
Tx Collisions :	0
Tx Mcast :	14
Rx (G Pkts) :	1335
Rx Ucast :	1321
Rx Mcast :	0
Rx Bcast :	14
Rx 64 B :	848
Rx 128to255 B :	33
Rx 512to1023 B :	30
Tx Ucast :	2271
Tx Bcast :	89
Rx (B Bytes) :	0
Rx UnderSz :	0
Rx OverSize :	0
Rx Jabber :	0
Rx 65to127 B :	88
Rx 256to511 B :	12
Rx Bytes :	456859

Figure 5-22 Port Statistic

- **Tx Collisions:** The number of collision events seen by the MAC. This counter is applicable in half-duplex only.
- **Tx Ucast:** The number of frames sent that have a unicast destination MAC address.
- **Tx Mcast:** The number of frames sent that have a multicast destination MAC address.
- **Tx Bcast:** The number of frames sent that have a broadcast destination MAC address.
- **Rx (G Pkts):** The number of good frames received.
- **Rx Ucast:** The number of frames received that have a unicast destination MAC address.
- **Rx Mcast:** The number of frames received that have a multicast destination MAC address.
- **Rx Bcast:** The number of frames received that have a broadcast destination MAC address.
- **Rx (B Bytes):** The sum of bytes of frames received with an invalid length. The frames with the length more than 1522 octets are counted as 1522 octets ones.
- **Rx UnderSz:** Total frames received with a length of less than 64 octets but with a valid FCS.
- **Rx OverSize:** Total frames received with a length of more than max size octets but with a valid FCS.
- **Rx Jabber:** Total frames received with a length of more than max size octets but with an invalid FCS.
- **RX64 B:** Total frames received with a length of exactly 64 octets, including those with errors.
- **RX 65 to 127 B:** Total frames received with a length of between 65 and

- 127 octets inclusive, including those with errors.
- **RX 128 to 255 B:** Total frames received with a length of between 128 and 255 octets inclusive, including those with errors.
  - **RX 256 to 511 B:** Total frames received with a length of between 256 and 511 octets inclusive, including those with errors.
  - **RX 512 to 1023 B:** Total frames received with a length of between 512 and 1023 octets inclusive, including those with errors.
  - **RX Bytes:** The sum of bytes of frames received, not including those with errors.



#### Notice:

Each statistic counter has the max numerical value of about  $1.8e+19$ , in excess of this value, the counter will reset to zero. You can also click on the “Reset” button to reset all of the statistic counters to zero.

### 5.3.2.3 Port Status

This page display the port status, it contains the following fields:

Port Status				
Port	Port Status	Speed(Mbps)	Duplex Mode	Flow Control
1	Linkdown	---	---	---
2	Linkup	100	Full Duplex	Disable
3	Linkup	100	Full Duplex	Disable
4	Linkup	100	Full Duplex	Enable
5	Linkup	100	Full Duplex	Enable
6	Linkup	100	Full Duplex	Enable
7	Linkup	100	Full Duplex	Disable
8	Linkup	100	Full Duplex	Disable
GIGA	Linkup	1000	Full Duplex	Enable
SFP	Linkup	1000	Full Duplex	Enable

Figure 5-23 Port Status

- **Port Status:** Indicates whether the port is linked, not linked, or disabled.
- **Speed (Mbps):** Indicates the port speed with the unit of Mbps.
- **Duplex Mode:** Indicates the port duplex mode.
- **Flow Control:** Indicates whether flow control of the port is enable or disable.

### 5.3.2.4 Storm Control

This page contains the following fields:

Storm Control					
Port	Trunk	Broadcast Control	Multicast Control	UL Control	Limit Rate
1	--	Enable	Enable	Enable	128K
2	--	Enable	Enable	Enable	64K
3	--	Enable	Enable	Enable	64K
4	--	Enable	Disable	Enable	64K
5	T2	Enable	Disable	Enable	64K
6	T2	Enable	Disable	Enable	64K
7	--	Enable	Disable	Disable	64K
8	--	Disable	Disable	Enable	128K
GIGA	--	Disable	Enable	Disable	128K
SFP	--	Enable	Disable	Enable	64K
All Ports	--	--	--	--	--

Figure 5-24 Storm Control

- **Broadcast Control:** Enable or disable the broadcast control to limit the broadcast frames.
- **Multicast Control:** Enable or disable the multicast control to limit the multicast frames, enabling multicast control will also enable broadcast control.
- **UL Control:** Enable or disable the UL control to limit the UL packets, enabling UL control will also enable broadcast control and multicast control.

- **Limit Rate:** 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.



#### Notice:

Parameters of Trunk member ports display the parameters of the Trunk they belong to and cannot be configured here (see port 5 and 6 in the figure for example). You can configure parameters of the Trunk in the “Port Trunking” page.

### 5.3.2.5 Port Description

This page configures the description to indicate the ports.

Input description words in the Description filed for each port. Notice that at most 15 letters or numbers can be held in each field.

Port Description			
Port	Description	Port	Description
1	<input type="text"/>	2	<input type="text"/>
3	TP-Link	4	<input type="text"/>
5	<input type="text"/>	6	<input type="text"/>
7	<input type="text"/>	8	<input type="text"/>
GIGA	<input type="text"/>	SFP	<input type="text"/>

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

Figure 5-25 Port Description

### 5.3.3 Network Setting

This page contains the following topics: switch IP address, static MAC address, filtering MAC address, dynamic binding, bound MAC address, aging time and ping.



### 5.3.3.1 Switch IP Address

This page is showed as below:

Switch IP Address

MAC Address: 00-0A-EE-00-13-01

DHCP Client:  Disable  Enable

IP Address:

Netmask:

Default Gateway:

**Notice:** Switch may be disconnected after changing the IP address. Please make sure the switch IP address within the same subnet with your computer.

Figure 5-26 Switch IP Address

- **MAC Address:** Is firmed into switch in the manufacturing process; it is sole and unchangeable.
- **DHCP Client:** Indicates whether the DHCP function is enabled. If DHCP client is enabled, the switch will obtain the IP address, netmask and default gateway from the DHCP server automatically; otherwise, these three items should be configured manually.
- **IP Address:** Is necessary for switch management. The configuration of switch IP address must be compliant with the subnet layout.
- **Default Gateway:** Serves as the default destination when a packet whose destination IP address is not within the switch's subnet is to be forwarded.



**Notice:**

- 1) When DHCP client is enabled, the IP parameters are obtained automatically from the DHCP server, so the "IP Address", "Netmask" and "Default Gateway" fields are disabled. These parameters can be queried on the DHCP server.
- 2) The initial state of DHCP client is disabled and the initial IP address is 192.168.0.1.

### 5.3.3.2 Static MAC Address

This page provides the function of adding, searching a static MAC address and changing the entry state, as shown in figure 5-27.

Index	MAC Address	Port	State	Operation
1	00-0A-EB-00-00-01	1	Enabled	Disable Delete

Figure 5-27 Static MAC address

A MAC address and its corresponding switch port should be provided when adding a static MAC address entry.

- **Search:** Input the MAC address in “Mac Address” field and click “Search” button. If that MAC address exists, the following page will display:

Index	MAC Address	Port	State	Operation
1	00-0A-EB-00-00-01	1	Enabled	Disable Delete

Figure 5-28 A Successful Searching

- **Index:** Stands for entry index of the MAC address in the table.
- **Port:** Stands for the switch port number.
- **State:** Indicates the entry in enabled state or disabled state.
- **Operation:** Provides the function of enabling, disabling or deleting an entry.
- **Return:** Return to the “Static MAC Address” page.

A searching can be also executed in this page.

If the static MAC address doesn't be found in a searching, then the following page will display:

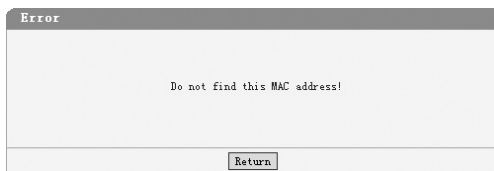


Figure 5-29 A Failed Searching

- **Add:** Input the MAC address in “MAC Address” field and select a port number in “Corresponding Port” combo box, click the “Add” button, that MAC address is added to the static MAC address table if the following conditions are met:
- 1) That MAC address doesn't exist in static MAC address;
  - 2) That MAC address doesn't exist in filtering MAC address;
  - 3) There is enough space in static MAC address table (the capacity of the static MAC address table is shown in “Appendix C”).

The static MAC address table is divided into several pages. At most 10 entries can be held in one page. The buttons “First”, “Previous” and “Next” can be used to browse the whole table.



**Notice:**

- 1) The capacity of the static MAC address is showed in “Appendix C”.
- 2) If an incorrect port number is selected when adding an entry, or the port number is modified unexpectedly later, then the entries must be renewed; otherwise, the packets cannot be forwarded correctly.
- 3) If a device, whose MAC address is added to static MAC address table, it is connected to a wrong switch port (not the port configured in static MAC

address entry), all the packets routing to the device cannot reach the device.

- 4) A MAC address cannot be added to static MAC address table and filtering MAC address table simultaneously.

### 5.3.3.3 Filtering MAC Address

All the packets taking the filtering MAC address as their destination are discarded by the switch no matter which port they enter from.

This page provides the function of adding, searching a filtering MAC address and changing the entry state. The filtering MAC address entry is applicable to all switch ports. The operating instruments, which are similar to “Static MAC Address”, are omitted here.

Index	MAC Address	State	Operation
1	00-0A-EB-00-00-02	Enabled	Disable Delete

Figure 5-30 Filtering MAC Address

- Index: Indicates the entry index of filtering MAC address table.
- MAC Address: Indicates the filtering MAC address to be configured or to be searched.
- State: Indicates the entry in enabled state or disabled state.



**Notice:**

The capacity of filtering MAC address table is showed in “Appendix C”.

### 5.3.3.4 Dynamic Binding

This page provides the function of enabling or disabling dynamic binding.

If dynamic binding is disabled, the switch port learns MAC address unlimitedly (at most 8000 entries can be learned).

A switch port with dynamic binding enabled can bind a specified number of MAC address. The MAC addresses bound by the switch port are always valid and won't age. If the specified number is reached, the port stops binding and transfers into secure state.

The bound MAC addresses can be queried in the "Bound MAC Address" page.

If the dynamic binding is disabled or the switch restarts, the bound MAC address entries are cleared.

There are 5 items in this page:

Port	Binding	Number of MAC Address To Bind	Number of Bound MAC Address	State
1	Enable	4	0	Binding
2	--	0	0	Secure Port
3	--	0	0	Secure Port
4	--	0	0	Secure Port
5	Enable	0	0	Binding
6	Enable	0	0	Binding
7	Enable	0	0	Binding
8	Enable	0	0	Binding
GIGA	Enable	0	0	Binding
SFP	Enable	0	0	Binding
All Ports	disable			

**Notice:** If dynamic binding is disabled, the port learns MAC address freely, otherwise, the port is restrained to learn(bind) the specified number of MAC address at most. If the bound number reaches the specified number, the port automatically transfers into secure state.

Submit Refresh Help

Figure 5-31 Dynamic Binding

- **Port:** Indicates switch port number.
- **Binding:** Three options are available. A further explanation is stated below.
- **Number of MAC Address to Bind:** Indicates the max number of MAC addresses that one switch port can bind.
- **Number of Bound MAC Address:** Indicates the number of MAC addresses that already bind to a switch port.
- **State:** Indicates the switch port state that may be binding, free port, secure port, unplugged or "--". A further explanation is stated below.



#### Further explanation

Options of dynamic binding:

- 1) **Disable:** Cause this port to learn MAC address freely.
- 2) **Enable:** Cause the port to bind MAC addresses until the specified number is reached.
- 3) **--:** This option is available only if the port is in a secure state, when this option is selected, the port state keeps unchanged.

Port states:

- 1) **Free Port:** The binding function is disabled, and the port can learn MAC address freely.
- 2) **Binding:** The port is in binding state, and its bound MAC address number is still less than the max number.
- 3) **Secure Port:** The port has already bound the max number of MAC address in dynamic binding mode, or it was set to secure port manually in "Port Parameter" page.
- 4) **Unplugged:** The port is a SFP port and unplugged. The dynamic binding function cannot be configured now.

- 5) --: The port is a trunk member and its binding function cannot be configured.



### Further Explanation

- 1) If the port is set to secure port manually in "Port Parameter " page, the dynamic binding cannot be configured here. If the port with dynamic binding enabled transfers into secure state automatically because the port has bound the specified number MAC address, the dynamic binding function of the port can be enabled or disabled again.
- 2) The combo box in "All Ports " entry is used to change the selections of corresponding combo boxes of all ports simultaneously.
- 3) A "Refresh" button is provided to look up the latest number of bound MAC address.



### Notice:

If the switch port is a trunk member or an unplugged SFP port, the binding function of the port cannot be configured here.

### 5.3.3.5 Bound MAC Address

This page is shown below:

Index	MAC Address	Port
1	00-0F-EA-25-D8-CA	1

Figure 5-32 Bound MAC Address

- **Index:** Indicates the entry index in dynamic binding MAC address table.

- **MAC Address:** Indicates MAC addresses already bound to the switch ports.
- **Port:** Indicates the switch port number corresponding to the bound MAC address.



### Further Explanation

- 1) The bound MAC address table contains all the MAC addresses bound by the switch ports. Every entry contains one MAC address and its corresponding port number.
- 2) The bound MAC address table is divided into several pages. At most 10 entries can be held in one page. The buttons "First", "Previous" and "Next" can be used to browse the whole table.

### 5.3.3.6 Aging Time

This page is showed as below:

Aging Time

Aging Time (0-3825):  seconds

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

Figure 5-33 Aging Time

- **Aging Time (0~3825):** When a new MAC address is learned by the switch, 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 length of time, that MAC address will be removed from the MAC address table. This process is called "aging", and the specified time length referred above is called



"aging time".



### Further Explanation

- 1) The aging time ranges from 0 to 3825 seconds. An appropriate aging time should be configured here. An aging time that is too long lengthens the time of the dynamic MAC address being deleted and further causes the packets to be forwarded incorrectly. An aging time that is too short causes the table entries to be deleted quickly. Some packets have to be broadcasted because no corresponding entries can be abided by. The efficiency of packet forwarding is reduced.
- 2) The MAC addresses in static MAC address table, filtering MAC address table and bound MAC address table are free of the aging time.

### 5.3.3.7 Ping

The ping function is to test the connectedness of the link between the switch and destination. This page is showed as below:

Destination IP Address:	<input type="text" value="192.168.0.1"/>
Ping Count (1 - 10):	<input type="text" value="4"/>
Data Size (1 - 1024):	<input type="text" value="64"/> bytes
Ping Interval (100 - 1000):	<input type="text" value="1000"/> ms

Figure 5-34 Ping

- **Destination IP Address:** Indicates the IP Address of the test destination.
- **Ping Count:** Indicates the ping times in one submission.
- **Data Size:** Indicates the data field length of ping packet.
- **Ping Interval:** Indicates the time interval between two continuous pings.

## 5.3.4 VLAN Setting

### 5.3.4.1 VLAN Mode

This page selects the VLAN Mode, possible field values are:

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 5-35 VLAN Mode

- **VLAN Disable:** Do not set any VLAN in the switch, all ports of the switch can communicate with each other.
- **Port VLAN (Port-Based VLAN):** Set the Port-Based VLAN mode.
- **Tag VLAN (802.1Q Tag VLAN):** Set the 802.1Q Tag VLAN mode.
- **MTU VLAN:** Set the MTU VLAN mode. This mode cannot be set if any Trunk has been set.

### 5.3.4.2 Port VLAN Setting

This page displays when the switch is in Port VLAN mode, it contains the following fields:

Port VLAN Setting

VLAN: 1

Port Member	Description	Port Member	Description
1 <input type="checkbox"/>	TP-Link	2 <input type="checkbox"/>	----
3 <input type="checkbox"/>	----	4 <input type="checkbox"/>	----
5 <input checked="" type="checkbox"/>	----	6 <input type="checkbox"/>	----
7 <input type="checkbox"/>	----	8 <input type="checkbox"/>	----
GIGA <input type="checkbox"/>	----	SFP <input type="checkbox"/>	----
T1 <input checked="" type="checkbox"/>	----	T2 <input type="checkbox"/>	----

All VLAN Select All Clean Up Submit Help

Figure 5-36 Port VLAN Setting

- **VLAN:** The VLAN number. Select the number of the VLAN you want to configure here.
- **Port:** The switch port number.
- **Member:** Select the member of the VLAN here. If this field is checked, it indicates the port belongs to the current VLAN.
- **Description:** Display the user-defined port description.
- **All VLAN:** Display all defined Port VLANs.

VLAN	Member
1	5, 6, GIGA, SFP, T1,
2	7, 8,

Figure 5-37 All Port VLAN

- **Select All:** Select all ports to be the VLAN member.
- **Clean Up:** Clean up all members of the VLAN.
- **Submit:** Submit to buildup a VLAN with the selected members.

**Notice:**

- 1) Any VLAN cannot be the subset or superset of other VLANs.
- 2) At least two port members should be included to add a VLAN group. (If the page is submitted with 0 VLAN member, it indicates to delete the VLAN.)
- 3) If any Trunk has been set, the Trunk can be configured as a VLAN member, and the member ports of the Trunk cannot be configured (see Port 1 and 2 in the figure for example).
- 4) For the first time the Port VLAN mode is set, a default VLAN, which is indexed as NO. 1 and contains all switch ports, will be built up.
- 5) The ports haven't be assigned to any VLAN manually will be assigned to a hidden VLAN automatically to make sure they can communicate with each

other.

- 6) The number of Port VLAN can be set is the same as the switch port number.

### 5.3.4.3 Tag VLAN Global Setting

This page display when the switch is in Tag VLAN mode, the global setting of the ports will affect all Tag VLANs. It contains the following fields:

Tag VLAN Global Setting					
Port	PVID	Untag Frame	Port	PVID	Untag Frame
1	101	Drop	2	101	Drop
3	1	Pass	4	1	Drop
5	1	Pass	6	1	Pass
7	1	Drop	8	1	Drop
GIGA	1	Pass	SFP	1	Drop
T1	101	Drop	T2	0	--
All Ports		--			
<input type="button" value="Submit"/> <input type="button" value="Help"/>					

Figure 5-38 Tag VLAN Global Setting

- **Port:** The switch port number.
- **PVID:** while receiving an untagged frame from the port, the switch will assign a tag to the frame, using the PVID of the port as its VID.
- **Untag Frame:** The solution to the untagged 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.
- **All Ports:** By operating on this field expediently, you can set the values of all ports in the corresponding field.
- **Notice:** If any Trunk has been set, the Trunk can be configured, but member ports of the Trunk are not able to be configured and in the fields it displays the parameters of the Trunk they belong to.(see port1 and 2 in the figure for example).

### 5.3.4.4 Tag VLAN Setting

This page is displayed when the switch is in Tag VLAN mode, it configures each VLAN and is affected by the global setting of the ports, it contains the following fields:

Port	Member	Egress Frame	Description
1	<input type="checkbox"/>	--	----
2	<input type="checkbox"/>	--	----
3	<input type="checkbox"/>	Drop Tag	----
4	<input type="checkbox"/>	Drop Tag	----
5	<input checked="" type="checkbox"/>	Add Tag	----
6	<input checked="" type="checkbox"/>	Drop Tag	----
7	<input checked="" type="checkbox"/>	Drop Tag	----
8	<input checked="" type="checkbox"/>	Drop Tag	----
GIGA	<input checked="" type="checkbox"/>	Add Tag	----
SFP	<input checked="" type="checkbox"/>	Add Tag	----
T1	<input checked="" type="checkbox"/>	Drop Tag	----
T2	<input type="checkbox"/>	Drop Tag	----

All Ports: --

Buttons: All VLAN, Select All, Clean Up, Submit, Help

Figure 5-39 Tag VLAN Setting

- **VLAN:** The VLAN number. Select the number of the VLAN you want to configure here.
- **VLAN ID:** configure the VLAN ID.
- **Port:** The switch port number.
- **Member:** Select the member of the VLAN here. If this field is checked, it indicates the port belongs to the current VLAN.
- **Egress Frame:** 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 not to modify the tag header before sending the frame.
- **Description:** Display the user-defined port description.

- **All Ports:** By operating on this field expediently, you can set the values of all ports in the corresponding field.
- **All VLAN:** Display all defined Tag VLANs.

All Tag VLAN			
VLAN	VID	Member	
2	22	5, 6, 7, 8, GIGA, SFP, T1,	
10	4000	3, 4,	

Figure 5-40 All Tag VLAN

- **Select All:** Select all ports to be the VLAN member.
- **Clean Up:** Clean up all members of the VLAN.
- **Submit:** Submit to buildup a VLAN with the selected members.

**Notice:**

- 1) VID of the VLAN must be unique and within the range of 1 to 4094.
- 2) At least two port members should be included to add a VLAN group. (If the page is submitted with 0 VLAN member, it indicates to delete the VLAN.)
- 3) If any Trunk has been set, the Trunk can be configured as a VLAN member and member ports of the Trunk cannot be configured (see Port 1 and 2 in the figure for example).
- 4) If the port is connected to a device that doesn't support IEEE802.1Q (e.g. HUB and some network adapter), value of the Egress Frame field should be set to "Drop Tag".
- 5) For the first time the Port VLAN mode is set, a default VLAN, which is indexed as NO. 1 and contains all switch ports, will be built up.
- 6) The ports haven't been assigned to any VLAN manually cannot communicate with each other or other VLAN. That's different from the Port VLAN.

- 7) The number of Port VLAN that can be set depends on the switch type.  
See the Appendix C for details.

### 5.3.4.5 MTU VLAN Setting

This page, which is designed to configure the uplink port, displays when the switch is in MTU VLAN mode.

Figure 5-41 MTU VLAN Setting



#### Notice:

- 1) The uplink port 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 port but other ports can't communicate with each other.
- 2) First time the MTU VLAN mode is set, it set port 1 to be the uplink port by default.

### 5.3.5 Port Trunking

This page contains the following fields:

Trunk	Member	Storm Control			
		Broadcast Control	Multicast Control	UL Control	Limit Rate
1	<input checked="" type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input checked="" type="checkbox"/> 4	Enable	Enable	Enable	128K
2	<input checked="" type="checkbox"/> 5 <input checked="" type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8	Disable	Disable	Disable	64K
All Trunk		--	--	--	--

Figure 5-42 Port Trunking

- **Trunk:** The Trunk number.
- **Member:** Select the member of the Trunk here. Each group has 4 optional ports to compose a Trunk.
- **Storm Control:** configure the storm control for the Trunk here. All member ports of the Trunk share the same settings. Subfield of the Storm Control are the same as that of the port storm control, see phase 5.3.2.4 for details.
- **Select All:** Select all Trunk members in the list.
- **Clean Up:** Clean up the Trunk member list.

**Notice:**

- 1) Each Trunk should contains 2 to 4 ports (If a Trunk is submitted with 0 member port, it indicates to delete the Trunk).
- 2) SFP and 1000M port in TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB, is not able to be the Trunk member.
- 3) Trunks cannot be set if the switch is in MTU VLAN mode.

### 5.3.6 Priority Setting

Priority setting contains four topics: priority mode, port-based priority, port default priority and 802.1p priority.

Because dynamic menu is adopted, only the pages corresponding to current priority mode are revealed. If the parameters of other priority modes are to be configured, select the corresponding priority mode in "Priority Mode" page first.

#### 5.3.6.1 Priority Mode

This page is shown below:



Figure 5-43 Priority Mode

- **Priority Mode:** Contains “Disable”, “Port-Based” and “IEEE802.1p”.
- **Priority Rule:** Contains “Weighted” and “Fixed”. If the priority mode is set to “Disable”, the priority rule cannot be configured.

### 5.3.6.2 Port-Based Priority

This page is revealed when the “Port-Based” mode is configured. As shown below.

Port	Priority Class	Port	Priority Class
1	Lower	2	Lower
3	Lower	4	Lower
5	Lower	6	Lower
7	Lower	8	Lower
GIGA	Lower	SFP	Lower

Figure 5-44. Port-Based priority

- **Port:** Indicates the switch port number.
- **Priority Class:** In port-based priority mode, the switch ports are classified into four priority classes: lowest, lower, higher and highest. All the packets entering from the port of the switch are forwarded in the corresponding priority queue.



### Further Explanation

When priority rule is configured as "weighted", a 1,2,4,8 weighting is applied to forward these four classes of packets.

#### 5.3.6.3 Port Default Priority

This page is revealed when the "IEEE802.1p" mode is configured. When a 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.

Port Default Priority			
Port	Default Priority Tag	Port	Default Priority Tag
1	0	2	0
3	0	4	0
5	0	6	0
7	0	8	0
GIGA	0	SFP	0

Figure 5-45 Port Default Priority

- **Port:** Indicates the switch port number.
- **Default Priority Tag:** Indicates 802.1p tag being inserted into untagged frames.

#### 5.3.6.4 802.1p Priority Class

This page is revealed when the "IEEE802.1p" mode is configured as shown below:

Priority tag	Corresponding Priority Class
0	Lowest
1	Lowest
2	Lower
3	Lower
4	Higher
5	Higher
6	Highest
7	Highest

Submit Help

Figure 5-46 802.1p Priority

- **Priority Tag:** The priority tag defined in IEEE802.1p.
- **Corresponding Priority Class:** Indicates the inner priority classes of switch. The tagged frames are classified into four classes inside the switch: lowest, lower, higher and highest. When the “Weighted” priority rule is configured, a 1,2,4,8 weighting is applied to forward these four classes of packets.



### Further explanation

In IEEE802.1p priority mode, when a 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.

## 5.3.7 Port Mirroring

This page contains the following fields:

Mirror Mode: Ingress Mirror Port: 3

Mirrored Port

1  2  3  4  5  6  7  8

GIGA  SFP

Clean Up Submit Help

Figure 5-47 Port Mirroring

- **Mirror Mode:** You can set the mirror mode to monitor the ingress traffic, egress traffic, or both. You can also disable port mirroring.
- **Mirror Port:** Defines the port to monitor the traffic, Trunk member can't be defined here.
- **Mirrored Port:** Indicates the port from which the packets are mirrored, Trunk member can't be defined here. At most 4 ports can be mirrored simultaneously.
- **Clean Up:** Clean Up the Mirrored Port list.

**Notice:**

- 1) Trunk member port can be neither Mirror Port nor Mirrored Port.
- 2) The Mirror Port can't be the Mirrored Port at the same time.
- 3) At most 4 Mirrored Ports can be set.
- 4) While setting the 100M ports as Mirror Port, it's not able to select SFP and 1000M ports in the Mirrored Port list. It's suggested to set the SFP or 1000M ports as Mirror Port.

### 5.3.8 Virtual Cable Test

The virtual cable test feature lets you test the continuity of the cable circuit. It contains the following fields:

Test Report	
Link Status:	Good
Link Length:	110 - 140 m
Fault Distance:	--

Figure 5-48 Virtual Cable Test

- **Test Port:** Select the port you want to test.
- **Link Status:** Reports good status or issues such as cable opens, cable shorts or any impedance mismatch in the cable.
- **Link Length:** Reports the range of the cable length if the link status is good.
- **Fault Distance:** Reports the distance to the open/short location.
- **Test:** Test the cable via the selected port.

**Notice:**

Cable connected to the SFP cannot be tested.

## Appendix A Pin Explain For RJ-45 Connector

The switching port can connect to stations wired in standard RJ-45 Ethernet station mode using straight cables. Transmission devices connected to each other use crossed cables. The following figure illustrates the pin allocation:



Figure RJ-45 connector

The following shows the way to make the cable use to connect switch to network adapter, and cable use to connect switch to switch/hub/bridge.

Pin signal allocation for RJ-45 connector		
Pin	MDI-II	MDI-X
1	TX+ (send)	RX+ (receive)
2	TX- (send)	RX- (receive)
3	RX+ (receive)	TX+ (send)
4	No use	No use
5	No use	No use
6	RX- (receive)	TX- (send)
7	No use	No use
8	No use	No use

Straight cable: use to connect switch (uplink port) or network adapter to switch/hub/other device (normal port).

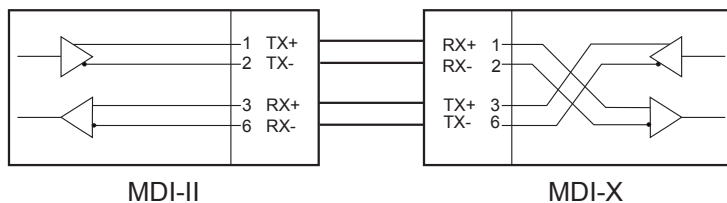


Figure straight cable

Crossed cable: use to connect switch (normal port) to switch/hub/other device(normal port).

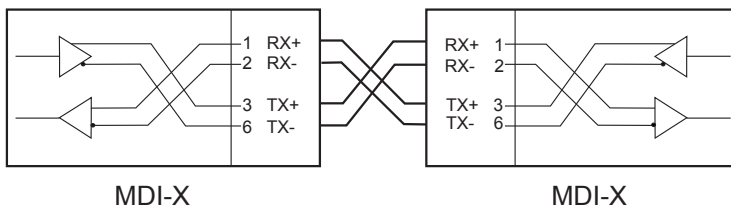


Figure crossed cable

## Appendix B Table of Factory Defaults

Table of Factory Defaults:

System Setting	System Information	System Name	Null
		System Location	Null
		Contact Information	Null
	File Transfer	Transfer Type	System Upgrading
		File Name	SysSL2210WEB.bin
	User	User Name	supervisor
Password		supervisor	
Port Setting	Port Parameter	Port Status	Enable
		Port Security	Disable
		Flow Control	Disable
		Duplex Mode	Auto
	Port Statistic	All	0
	Storm Control	Broadcast Control	Disable
		Multicast Control	Disable
		UL Control	Disable
Limit Rate		64K	
Port Description	Null		
Network Setting	Switch IP Address	DHCP client	Disable
		IP Address	192.168.0.1
		Netmask	255.255.255.0
		Default Gateway	Null
	Static MAC Address	Null	
	Filtering MAC Address	Null	
	Dynamic Binding	Binding	Disable
		Number of MAC Address to Bind	5
Bound MAC Address	Null		



Network Setting	Aging Time	Aging Time	300
	Ping	Destination IP Address	192.168.0.1
		Ping Count	4
		Data Size	64
		Ping Interval	1000
VLAN Setting	VLAN Mode	Disable	
	Port VLAN Setting	All ports belong to VLAN 1	
	Tag VLAN	PVID	1
		Global Setting	Untag Frame
	Tag VLAN Setting	All ports belong to VLAN 1; the VID is 1 and "Egress Frame" is "Drop Tag"	
	MTU VLAN Setting	Uplink port	1
Port Trunking	No configured Trunk		
Priority Setting	Priority Mode	Priority Mode	Disable
		Priority Rule	Weighted
	Port-Based Priority	Priority Class	Lowest
	Port Default Priority	Port Default Priority Tag	0
	802.1P Priority	Priority Tag 0,1	Lowest
		Priority Tag 2,3	Lower
		Priority Tag 4,5	Higher
Priority Tag 6,7		Highest	
Port Mirroring	Port Mirroring	Mirror Mode	Disable
		Mirror Port	1
		Mirrored Port	Null

## Appendix C Table of Function Differences of Switch Family

Table of Function Differences of Switch Family

Function	Models				
	TL-SG2109WEB	TL-SL2210WEB	TL-SL2218WEB	TL-SL2428WEB	TL-SL2452WEB
Port	9	10	18	28	52
Giga Port	9	2	2	4	4
SFP Port	1	1	1	2	2
Trunk	2	2	4	6	8
Port VLAN	9	10	18	28	52
Tag VLAN	64	64	64	128	256
Static MAC	64	64	128	128	128
Filtering MAC	64	64	128	128	128
Dynamic Binding MAC	128	128	256	384	544
Power Consumption	20W MAX	9W MAX	13W MAX	20W MAX	35W MAX



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