TP-LINK® | Enterprise Networking Solution

User Guide

Gigabit Uplink Web Smart Switch

TL-SL2210WEB/TL-SL2218WEB
TL-SL2428WEB/TL-SL2452WEB

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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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE Mark Warning

This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

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Related Document

This User Guide is also available in PDF on our website. To obtain the latest product information, please visit the official website:

http://www.tp-link.com

About this User Guide

This User Guide describes the hardware characteristics, installation methods and the points that should be attended to during installation. This User Guide is structured as follows:

Chapter 1 Introduction. This chapter describes the external components of the Switch.

Chapter 2 Installation. This chapter illustrates how to install the Switch.

Chapter 3 Lightning Protection. This chapter illustrates how to prevent lightning damage.

Chapter 4 Connection. This chapter illustrates how to do the physical connection of the Switch.

Chapter 5 Function Description. This chapter describes the functions supported by the switch family and presents the network concepts referred in this Guide.

Chapter 6 Web Management. This chapter gives an explanation to the terms in WEB interface and describes the configuring suggestions of the Switch.

Appendix A Troubleshooting.

Appendix B Table of Factory Defaults.

Appendix C Table of Funtion Differences of Switch Family.

Appendix D Hardware Specifications.

Appendix E Technical Support.

Audience

This User Guide is for:

Network Engineer

Network Administrator

Conventions

Due to the similarity in structure of TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/ TL-SL2452WEB Gigabit Uplink Web Smart Switch series, in this User Guide we take TL-SL2210WEB as an example to illustrate Chapter 2 Installation, Chapter 3 Lightning Protection, Chapter 4 Connection and Chapter 6 WEB Management.

This Guide uses the specific formats to highlight special messages. The following table lists the notice icons that are used throughout this guide.

⚠	Remind to be careful. A caution indicates a potential which may result in device damage.
✎	Remind to take notice. The note contains the helpful information for a better use of the product.
☞	Remind to get further information. The further information provides you more details about the product.

Contents

Chapter 1 Introduction

1.1   Product Overview

The TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB Gigabit Uplink Web Smart Switch 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-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TLSL2452WEB Gigabit Uplink Web Smart Switch provides 8/16/24/48 10/100Mbps Fast Ethernet ports, 1/1/2/2 10/100/1000Mbps Gigabit Ethernet ports and 1/1/2/2 SFP ports respectively, which extends the connecting area and increases the networking flexibility.

1.2   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

➢ Support N-Way adaptive mode

➢ Support up 200 meters of Cat. 5 cables at the transmission speed of 10Mbps

➢ 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

1.3 Appearance

■ Front Panel

The front panel of TL-SL2210WEB is shown as the following figure.

LEDs
RESET
10/100Mbps RJ45 Port
10/100/1000Mbps RJ45 Port
SFP Port
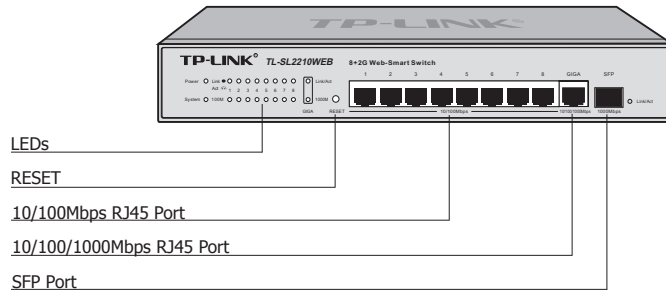
Figure 1-1   Front Panel of TL-SL2210WEB

The front panel of TL-SL2218WEB is shown as the following figure.

LEDs
RESET
10/100Mbps RJ45 Port
10/100/1000Mbps RJ45 Port
SFP Port
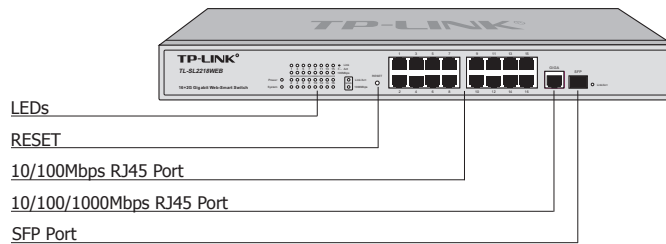
Figure 1-2   Front Panel of TL-SL2218WEB

The front panel of TL-SL2428WEB is shown as the following figure.

LEDs
10/100Mbps RJ45 Port
10/100/1000Mbps RJ45 Port
SFP Port
Reset
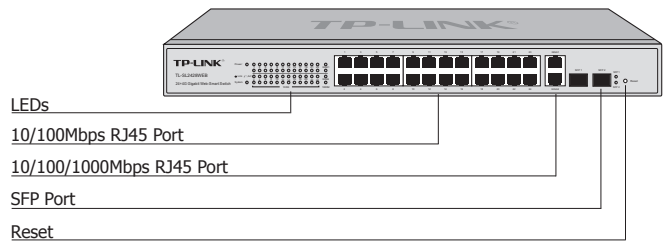
Figure 1-3   Front Panel of TL-SL2428WEB

The front panel of TL-SL2452WEB is shown as the following figure.

RESET
LEDs
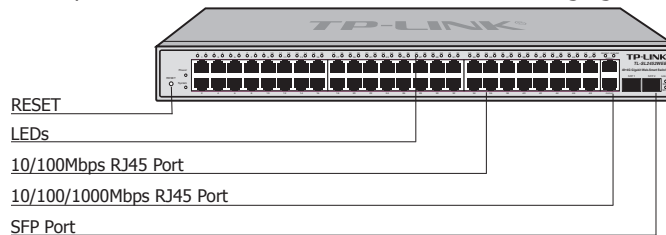10/100Mbps RJ45 Port
10/100/1000Mbps RJ45 Port
SFP Port

Figure 1-4   Front Panel of TL-SL2452WEB

RESET

Press this button for three seconds to reset the software setting back to factory default setting.

LEDs

LED	Status	Indication
Power	On	The Switch is powered on
	Off	The Switch is powered off or power supply is abnormal
System	On	The Switch works properly
	Off	The Switch works improperly
Link/Act	On	A valid link is established on the port
	Flashing	Data is being transmitted or received. (SFP port has Link/Act LED only and must connect to 1000Mbps device.)
	Off	No device is connected to the corresponding port
100Mbps	On	The corresponding port is running at 100Mbps
	Off	There is no device linked to the corresponding port or the port is running at 10Mbps
1000Mbps	On	The corresponding port is running at 1000Mbps
	Off	There is no device linked to the corresponding port or the port is running at 100Mbps

Port Feature

Model	10/100Mbps RJ45 Port	10/100/1000Mbps RJ45 Port	SFP Port
TL-SL2210WEB	8	1	1
TL-SL2218WEB	16	1	1
TL-SL2428WEB	24	2	2
TL-SL2452WEB	48	2	2

10/100Mbps RJ45 Port

Designed to connect to the device with the bandwidth of 10Mbps or 100Mbps. Each port has a corresponding Link/Act and 100Mbps LED.

10/100/1000Mbps RJ45 Port

Designed to connect to the device with the bandwidth of 10Mbps, 100Mbps or 1000Mbps. It has a corresponding Link/Act and 1000Mbps LED.

SFP Port

Designed to install SFP module. It has a corresponding Link/Act LED.

■ **Rear Panel**

The rear panel of TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TL-SL2452WEB is shown as the following figure.
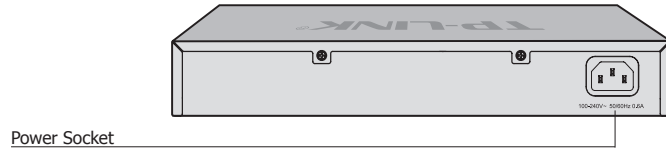

Power Socket

Figure 1-5   Rear Panel

Power Socket
Connect the female connector of the power cord here, and the male connector to the AC power outlet. Please make sure the voltage of the power supply meets the requirement of the input voltage.

⚠ **Caution:** Please use the provided power cord.

Chapter 2 Installation

2.1 Package Contents

Make sure that the package contains the following items. If any of the listed items is damaged or missing, please contact your distributor.

One Gigabit Uplink Web Smart Switch	One AC Power Cord
This User Guide	Two Mounting Brackets and the Fittings
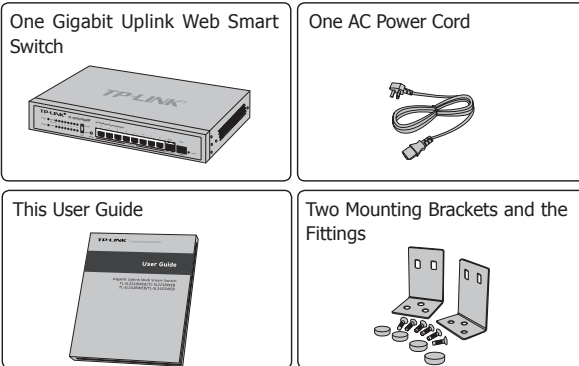
2.2 Safety Precautions

To avoid any device damage and bodily injury caused by improper use, please observe the following rules.

■ Safety Precautions

- Keep the power off during the installation.

- Wear an ESD-preventive wrist strap, and make sure that the wrist strap has a good skin contact and is well grounded.

- Use only the power cord provided with the Switch.

- Make sure that the supply voltage matches the specifications indicated on the rear panel of the Switch.

- Ensure the vent hole is well ventilated and unblocked.

- Do not open or remove the cover of the Switch.

- Before cleaning the device, cut off the power supply. Do not clean it by the waterish cloth, and never use any other liquid cleaning method.

■ Site Requirements

To ensure normal eperation and long service life of the device, please install it in an environment that meets the requirements described in the following subsection.

Temperature/Humidity

Please keep a proper temperature and humidity in the equipment room. Too high/low humidity may lead to bad insulation, electricity leakage, mechanical property changes and corrosions. Too high temperature may accelerate aging of the insulation materials and can thus significantly shorten the service life of the device. For normal temperature and humidity of the device, please check the following table.

Environment	Temperature	Humidity
Operating	0℃ ~ 40℃	10% ~ 90%RH Non-condensing
Storage	-40℃ ~ 70℃	5% ~ 90%RH Non-condensing

Clearness

The dust accumulated on the Switch can be absorbed by static electricity and result in poor contact of metal contact points. Some measures have been taken for the device to prevent static electricity, but too strong static electricity can cause deadly damage to the electronic elements on the internal circuit board. To avoid the effect of static electricity on the operation of the Switch, please attach much importance to the following items:

- Dust the device regularly, and keep the indoor air clean.

- Keep the device well grounded and ensure static electricity has been transferred.

Electromagnetic Interference

Electronic elements including capacitance and inductance on the device can be affected by external interferences, such as conducted emission by capacitance coupling, inductance coupling, and impedance coupling. To decrease the interferences, please make sure to take the following measures:

- Use the power supply that can effectively filter interference from the power grid.

- Keep the device far from high-frequency, strong-current devices, such as radio transmitting station.

- Use electromagnetic shielding when necessary.

Lightening Protection

Extremely high voltage currents can be produced instantly when lightning occurs and the air in the electric discharge path can be instantly heated up to 20,000℃. As this instant current is strong enough to damage electronic devices, more effective lightning protection measures should be taken.

- Ensure the rack and device are well earthed.

- Make sure the power socket has a good contact with the ground.

- Keep a reasonable cabling system and avoid induced lightning.

- Use the signal SPD (Surge Protective Device) when wiring outdoor.

Note: For detailed lightning protection measures, please refer to **Chapter 3 Lightning Protection**.

Installation Site

≤1.5m
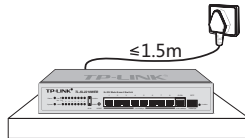
When installing the device on a rack or a flat workbench, please note the following items:

- The rack or workbench is flat and stable, and sturdy enough to support the weight of 5.5kg at least.

- The rack or workbench has a good ventilation system. The equipment room is well ventilated.

- The rack is well grounded. Keep the power socket less than 1.5 meters away from the device.

2.3 Installation Tools

- Phillips screwdriver
- ESD-preventive wrist wrap
- Cables

Note: These tools are not provided with our product. If needed, please self purchase them.

2.4 Product Installation

■ Desktop Installation

To install the device on the desktop, please follow the steps:

1. Set the device on a flat surface strong enough to support the entire weight of the device with all fittings.

2. Remove the adhesive backing papers from the rubber feet.

3. Turnover the device and attach the supplied rubber feet to the recessed areas on the bottom at each corner of the device.
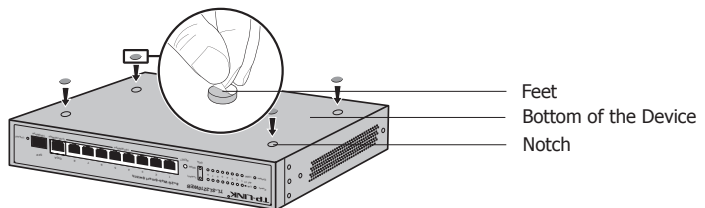

Feet
Bottom of the Device
Notch

Figure 2-1   Desktop Installation

■ Rack Installation

To install the device in an EIA standard-sized, 19-inch rack, follow the instructions described below:

1. Check the grounding and stability of the rack.

2. Secure the supplied rack-mounting brackets to each side of the device with supplied screws, as illustrated in the following figure.
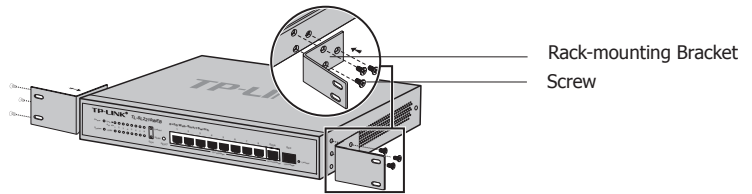
Figure 2-2   Bracket Installation

3. After the brackets are attached to the device, use suitable screws (not provided) to secure the brackets to the rack, as illustrated in the following figure.
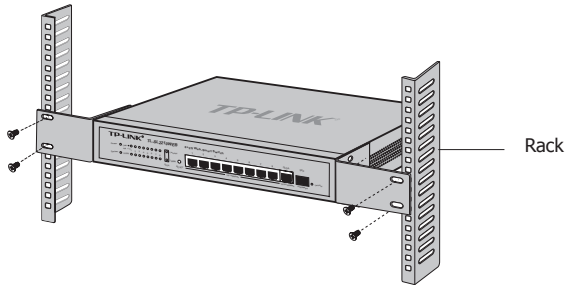
Figure 2-3   Rack Installation

Caution:
▪ Please set 5~10cm gaps around the device for air circulation.
▪ Please avoid any heavy thing placed on the device.
▪ Please mount devices in sequence from the bottom to top of the rack and ensure a certain clearance between devices for the purpose of heat dissipation.

Chapter 3 Lightning Protection

3.1 Cabling Reasonably

In the actual network environment, you may need cable outdoors and indoors, and the requirements for cabling outdoors and indoors are different. A reasonable cabling system can decrease the damage of induced lightning to devices.

Note: It's not recommended using Ethernet cables outdoors. When cabling outdoors, please use a signal lightning arrester.
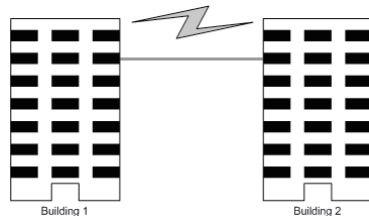
■ Requirements for Cabling Outdoors

- Aerial cabling without safeguard is not allowed.

- It's not allowed cabling down the building to connect network devices in different floors.
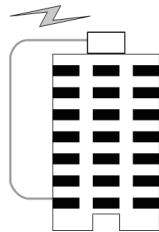
- Outdoor cables should be buried and paved to the indoor through basement. A piece of steel wire should be paved underground along the pipe and connected to the lightning protection terminal of the building for shielding. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.

- When an aerial cable is set up, the cable should be through a metal pipe (15m long at least) before coming into the building. The two ends of this metal pipe should be grounded. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.

- It's not necessary to pave STP cables through pipes. The shielded layer of STP cable should be well grounded. Before connecting the cable to the device, install a signal lightning arrester on the corresponding port.

▪ **Requirements for Cabling Indoors**

When cabling indoors, keep a certain distance away from the devices that may cause high-frequency interferences, such as down-conductor cable, powerline, power transformer and electromotor.

- The main cable should be paved in the metal raceway of the access shaft. When cabling, keep the loop area formed by the cable itself as small as possible.

- Requirements for the distance between Ethernet cable and other pipelines are shown in the table.

Other Pipelines	Ethernet Cable	
	Min Parallel Net Length L (mm)	Min Parallel-overlapping Net Height H (mm)
Down-conductor	1000	300
PE	50	20
Service pipe	150	20
Compressed air pipe	150	20
Thermal pipe (not wrapped)	500	500
Thermal pipe (wrapped)	300	300
Gas pipe	300	20

The two diagrams below demonstrate parallel net length and parallel-overlapping net height.
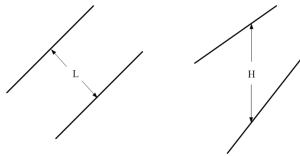
Note: The above minimum net length/height is required when metal raceway is not used. If any requirements cannot be met, you can add a steel tube or metal raceway for shielding.

- Requirements for the distance between Ethernet cable and high-power electric devices are in following tables.

Cable	Pave Way	Min Parallel Length (mm)
<2kVA powerline	Parallel cabling	130
	One is in the grounded metal raceway or metal pipe	70
	The both are in the grounded metal raceway or metal pipe	10

2~5kVA powerline	Parallel cabling	300
	One is in the grounded metal raceway or metal pipe	150
	The both are in the grounded metal raceway or metal pipe	80
>5kVA powerline	Parallel cabling	600
	One is in the grounded metal raceway or metal pipe	300
	The both are in the grounded metal raceway or metal pipe	150

Device	Min Distance (m)
Switch case	1.00
Transformer room	2.00
Elevator tower	2.00
Air-conditioner room	2.00

3.2 Connect to Ground

Connecting the device to ground is to quickly release the lightning over-voltage and over-current of the device, which is also a necessary measure to protect the body from electric shock.

In different environments, the device may be grounded differently. If the device is installed in the normal environment, the device can be grounded via the PE (Protecting Earth) cable of the AC power supply as shown in the following figure.

① Switch (Rear Panel)   ② AC Power Cord (with PE cable)
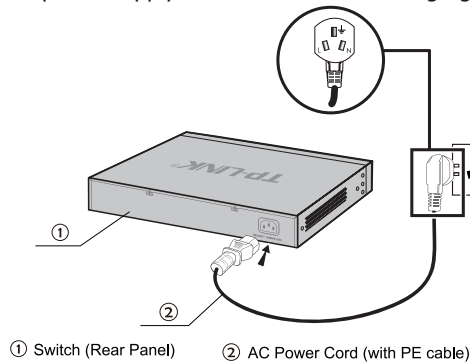
Figure 3-1   Connecting to the Ground

Note:
- The figure is to illustrate the application and principle. The power plug you get from the package and the socket in your situation will comply with the regulation in your country, so they may differ from the figure above.
- If you intend to connect the device to the ground via the PE (Protecting Earth) cable of AC power cord, please make sure the PE (Protecting Earth) cable in the electrical outlet is well grounded in advance.

Chapter 4 Connection

4.1 Ethernet Port

Please connect the Ethernet port of the Switch to the network devices by RJ45 cables as the following figure shown.
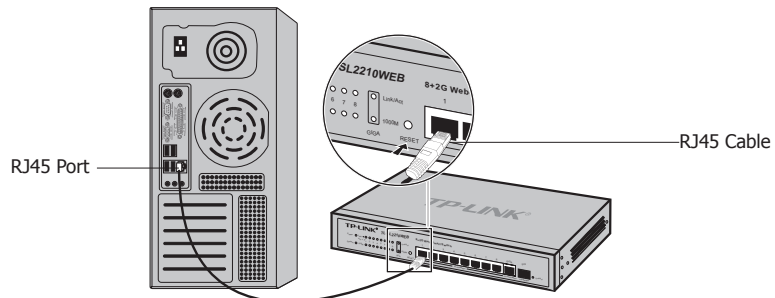
Figure 4-1 Connecting the RJ45 Port

4.2 SFP Port

Connect the SFP port to a SFP module. If an SFP transceiver(purchased separately) is installed in a slot and has a valid link on the port, the associated RJ45 port will be disabled and cannot be used.
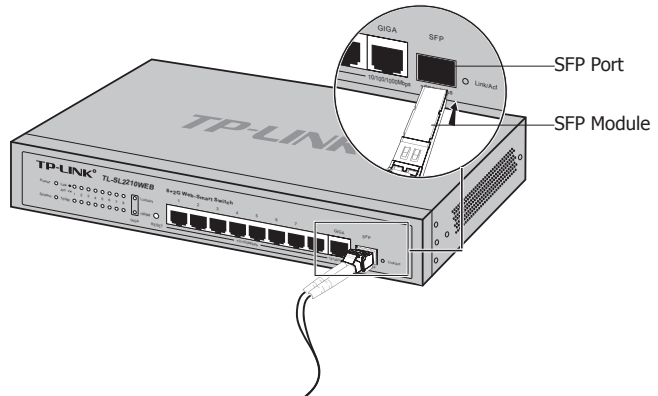

Figure 4-2 Inserting the SFP Module

Note: SFP module supports hot-plugging, plug the SFP module into the SFP port and the switch can identify it automatically. The SFP port must connect to 1000Mbps device.

4.3 Verify Installation

After completing the installation, please verify the following items:

- There are 5~10cm of clearance around the sides of the device for ventilation and the air flow is adequate.

- The voltage of the power supply meets the requirement of the input voltage of the device.

- The power socket, device and rack are well grounded.

- The device is correctly connected to other network devices.

4.4 Power On

Plug in the negative connector of the provided power cord into the power socket of the device, and the positive connector into a power outlet as the following figure shown.
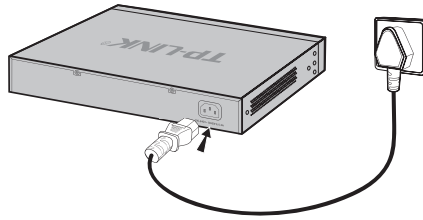
Figure 4-3   Connecting to Power Supply

Note: The figure is to illustrate the application and principle. The power plug you get from the package and the socket in your situation will comply with the regulation in your country, so they may differ from the figure above.

Chapter 5 Function Description

5.1 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.

5.1.1 System Setting

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

5.1.2 File Transfer

TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TLSL2452WEB Gigabit Uplink Web Smart Switch 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.

5.1.3 Reboot & Reset

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

5.1.4 User

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

5.2 Port Setting

5.2.1 Port Parameter

5.2.1.1 Duplex Mode

Ports have the duplex modes: 10Mbps HD, 10Mbps FD, 100Mbps HD, 100Mbps FD and 1000Mbps 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.

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

5.2.1.2 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.

5.2.1.3 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.

5.2.2 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.

5.2.3 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.

5.2.4 Port Description

Use a description word to indicate the port.

5.3   Network Setting

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

5.3.1   Network Setting

An IP address is indispensable for a switch to be accessed. The TL-SL2210WEB/TL-SL2218WEB/TL-SL2428WEB/TLSL2452WEB Gigabit Uplink Web Smart Switch 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, the other 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 so as to activate the DHCP client function of the switch firstly, 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.

Note: 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.

5.3.2   Aging Time and Dynamic Address Table

A dynamic MAC address table is maintained inside the switch. MAC address is the physical address of a network device; it is six-bytes long and should be within 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 it 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.

5.3.3 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 and it 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 capacity of static MAC address table capacity differs among different switches. Appendix C lists the difference.

5.3.4 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.

5.3.5 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.

5.3.6 Ping

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

5.4   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.

5.4.1   VLAN Mode

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

1) Port VLAN

VLANs are divided based on ports.

2) IEEE802.1Q Tag VLAN

The IEEE802.1Q protocol defines a new format of the frame. It adds a tag header in the original Ethernet frame, as follows:
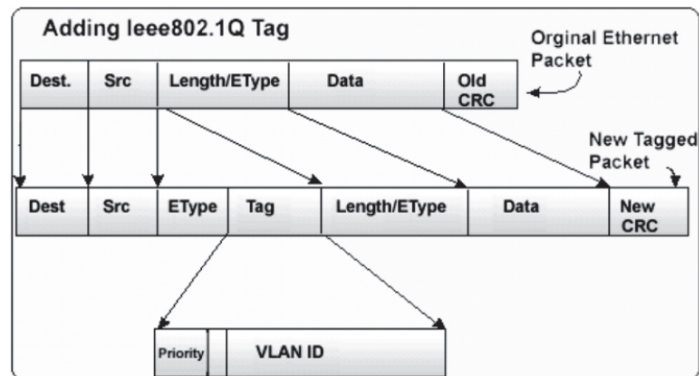

Figure 5-1   IEEE802.1Q frame

IEEE802.1Q Tag VLAN is divided by VLAN ID (VID). When receiving a frame, the switch checks 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, the 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) defines an uplink port. The uplink port will build up 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.

5.5 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 ports. 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.

5.6 Priority Setting

5.6.1 Priority Mode

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

The priority rule can be set to be"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.

5.6.2 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 all the packets entering from the port.

5.6.3 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.

5.6.4 802.1p 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.

5.7 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 performs 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.

5.8 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 then 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 ±1 meter.

Chapter 6 WEB Management

6.1 Overview

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

6.2 Connecting to the Device

6.2.1 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 shows 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:
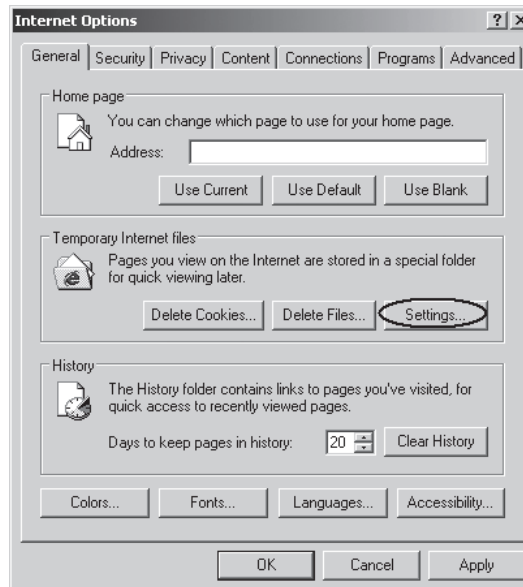

Figure 6-1   Internet Options Dialog

Secondly, click the "Settings" button hinted in Figure 6-1, a new dialog will appear:
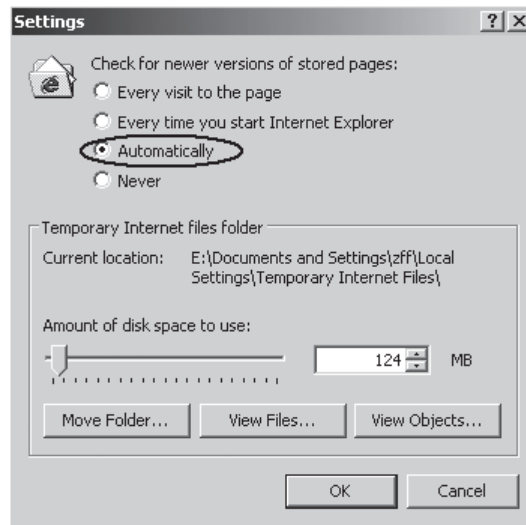

Figure 6-2   Settings Dialog

In the case of IE5.0, please check the option "Every visit to the page"; otherwise, some wrong information may show 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.

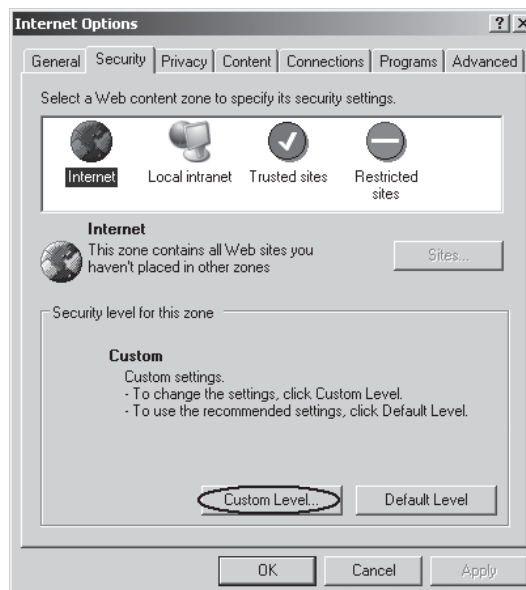Thirdly, click the "Security" label of "Internet Options" dialog; press the "Custom Level" button hinted in Figure 6-3.

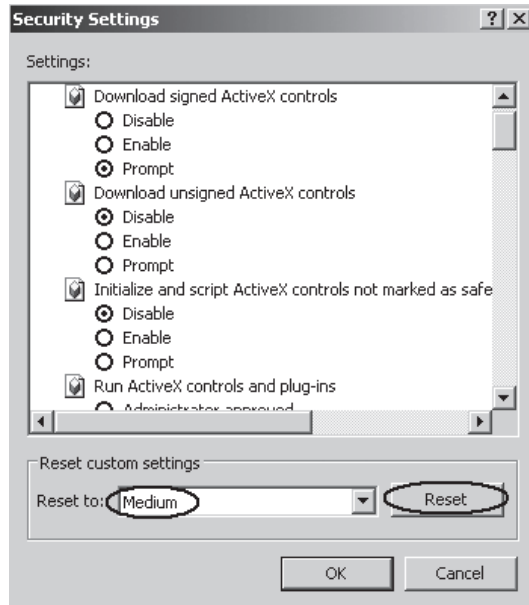Figure 6-3   Internet Options Dialog

A dialog will pop up as below.

Figure 6-4   Security Settings

Fourthly, Select the "Medium" option of the combo box indicated in Figure 6-4, 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 show:
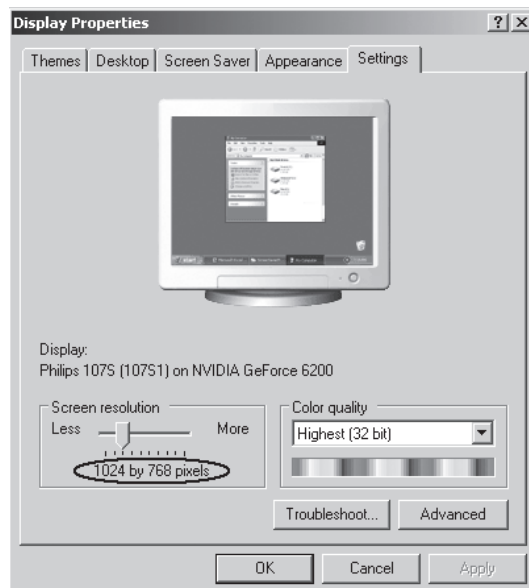

Figure 6-5   Resolution Setting

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

6.2.2 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:
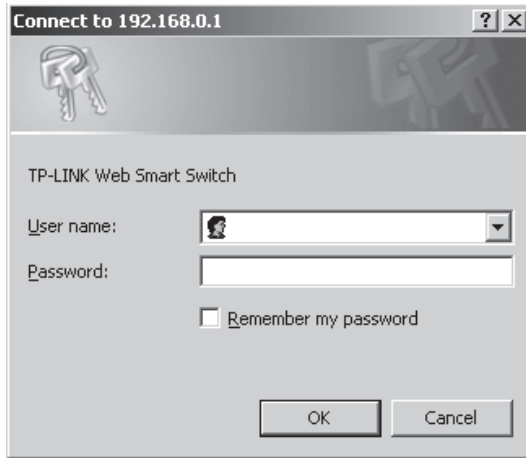

Figure 6-6 Login Dialog

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

6.3   Setting the Device

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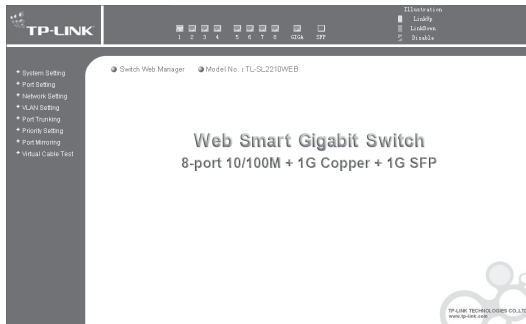

Figure 6-7   TL-SL2210WEB Main Page

1. The main part of the page is the main window to display the configuration page.

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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 6-8 Port LED Indicator Table (SFP uninstalled)

Figure 6-9 Port LED Indicator Table (SFP installed)

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

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

Figure 6-10 Port Status Table

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

Figure 6-11 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 6-12 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 submenus. Click on a menu, it will open its submenu and the main window displays 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:
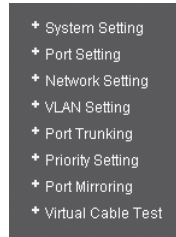

Figure 6-13 Main Menu

➢ **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 the main page of the TL-SL2218WEB, TL-SL2428WEB and TL-SL2452WEB:
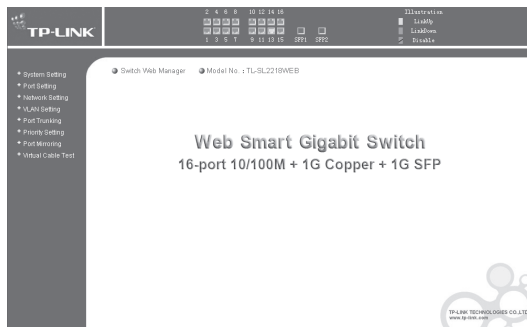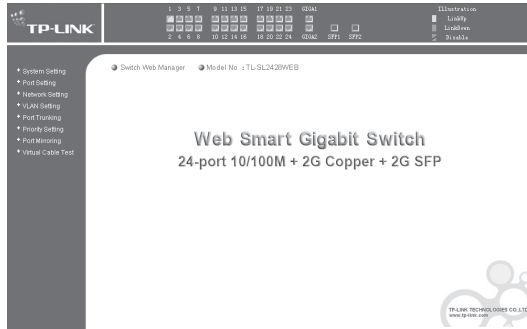

Figure 6-14 TL-SL2218WEB Main Page

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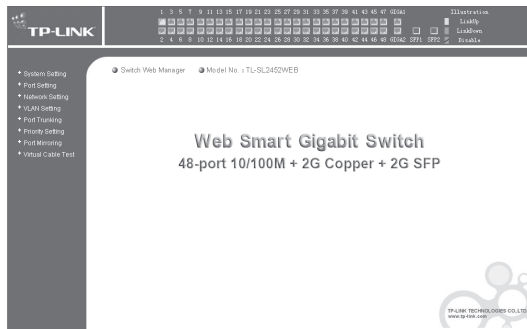Figure 6-15 TL-SL2428WEB Main Page

Figure 6-16 TL-SL2452WEB Main Page

6.3.1 System Setting

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

6.3.1.1 System Information

This page contains the following fields:

Figure 6-17 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.

6.3.1.2　File Transfer
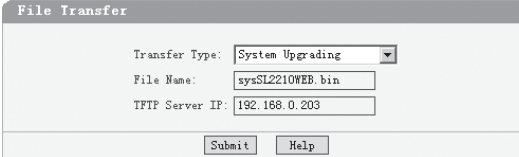
This page contains the following fields:

Figure 6-18 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.

⚠ **Caution:**
- ▪ Please make sure the target file exits on TFTP server before downloading.
- ▪ Please make sure the TFTP server is in operation.
- ▪ Breaks should be avoided during file transfer; otherwise, the switch may get damaged.

6.3.1.3 Reboot & Reset
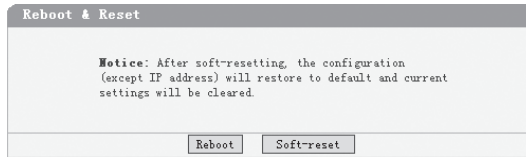
This page is shown as below.

Figure 6-19 Reboot & Reset

A prompt is displayed if a button is pressed. For example, if the button "Soft-reset" is pressed, a message box will be activated as shown in Figure 6-20.
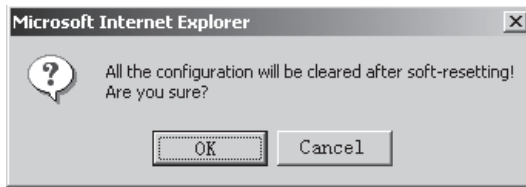

Figure 6-20 Message Box

6.3.1.4 User

This page provides the interface of configuring username and password.

Figure 6-21 User Configuration

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

> **Note:**
> ▪ 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.
> ▪ The initial username and password is supervisor/supervisor.

6.3.2 Port Setting

6.3.2.1 Port Parameter

This page contains the following fields:

Figure 6-22 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 to be non-operational to cut down energy costs.

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

> **Port Security:** "Enable" indicates the port will not learn new MAC address and only transmits the frames from the MAC address it has learned. "Disable" indicates it will learn new MAC address.

Caution: 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 field values are Auto, 10Mbps HD, 10Mbps FD, 100Mbps HD, 100Mbps FD and 1000Mbps FD (Giga port support), "HD" stands for halfduplex and "FD" stands for full-duplex. "Auto" means auto negotiation.

Further explanation:
- 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.
- 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 6-22 for example). For SFP, the Duplex Mode is set to "1000Mbps FD" and cannot be modified.

6.3.2.2 Port Statistic

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

Figure 6-23 Port Statistic

- ➤ **Tx Collisions**: The number of collision events experienced by the port. 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.

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

6.3.2.3 Port Status

This page displays the port status and it contains the following fields:

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 6-24 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 is in duplex mode.

- ➢ **Flow Control**: Indicates whether flow control of the port is enable or disable.

6.3.2.4 Storm Control

This page contains the following fields:

Figure 6-25 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 1000Mbps port, if set the value of 64Kbps, the actual value is about 70Kbps.

Note: Parameters of Trunk member ports display the parameters of the Trunk they belong to and it cannot be configured here (see port 5 and 6 in Figure 6-25 for example). You can configure parameters of the Trunk in the "Port Trunking" page.

6.3.2.5 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.

Figure 6-26 Port Description

6.3.3 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.

6.3.3.1 Switch IP Address

This page is shown as below:

Figure 6-27 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.
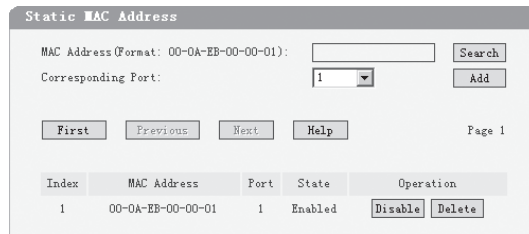
Note:
- When DHCP client is enabled, the IP parameters are obtained automatically from the DHCP server, so the "IP Address", "Netmask" and "Default Gateway" fields are disabled. These parameters can be queried on the DHCP server.
- The initial state of DHCP client is disabled and the initial IP address is 192.168.0.1.

6.3.3.2 Static MAC Address

This page provides the function of adding, searching a static MAC address and changing the entry state, as shown in Figure 6-28.

Figure 6-28 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 appear:
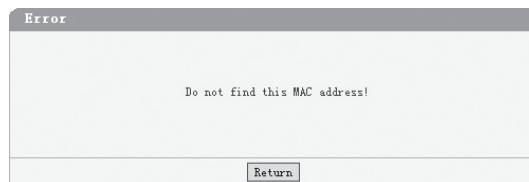
Figure 6-29 A Successful Searching

➢ **Index**: Stands for the 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 cannot be found in a searching, then the following page will pop up:

Figure 6-30 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:

▪ That MAC address doesn't exist in static MAC address;

▪ That MAC address doesn't exist in filtering MAC address;

- There is enough space in static MAC address table.

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.

Note:
- The capacity of the static MAC address is shown in "Appendix C".
- 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.
- If a device, whose MAC address is added to static MAC address table, 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.
- A MAC address cannot be added to static MAC address table and filtering MAC address table simultaneously.

6.3.3.3 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.

Figure 6-31 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 whether the entry is in enabled state or not.

Note: The capacity of filtering MAC address table is shown in "Appendix C".

6.3.3.4 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:

Figure 6-32 Dynamic Binding

➢ **Port**: Indicates switch port number.

➢ **Binding**: Three options of dynamic binding are available. The details are shown below:

- **Disable:** Cause this port to learn MAC address freely.

- **Enable:** Cause the port to bind MAC addresses until the specified number is reached.

- **--:** This option is available only if the port is in a secure state, when this option is selected, the port state keeps unchanged.

➢ **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 "--". The details are shown below:

- **Free Port:** The binding function is disabled, and the port can learn MAC address freely.

- **Binding:** The port is in binding state, and its bound MAC address number is still less than the max number.

- **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.

- **Unplugged:** The port is a SFP port and unplugged. The dynamic binding function cannot be configured now.

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

☞ **Further explanation:**
- 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.
- The combo box in "All Ports " entry is used to change the selections of corresponding combo boxes of all ports simultaneously.
- A "Refresh" button is provided to look up the latest number of bound MAC address.

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

6.3.3.5 Bound MAC Address

This page is shown below:

Figure 6-33 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:**
- 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.
- 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.

6.3.3.6 Aging Time

This page is shown as below:

Figure 6-34 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:**
- 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.
- The MAC addresses in static MAC address table, filtering MAC address table and bound MAC address table are free of the aging time.

6.3.3.7 Ping

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

Figure 6-35 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.

6.3.4 VLAN Setting

6.3.4.1 VLAN Mode

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

Figure 6-36 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.

6.3.4.2 Port VLAN Setting

This page is displayed when the switch is in Port VLAN mode and it contains the following fields:

Figure 6-37 Port VLAN Setting

➢ **VLAN**: The VLAN number. Select the number of the VLAN you want to configure here.

➢ **Port**: The switch port number.

➢ **Member**: Selects the member of the VLAN here. If this field is checked, it indicates the port belongs to the current VLAN.

➢ **Description**: Displays the user-defined port description.

➢ **All VLAN**: Displays all defined Port VLANs.

Figure 6-38 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.

Note:
- Any VLAN cannot be the subset or superset of other VLANs.
- 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.)
- 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 Figure 6-37 for example).
- 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.
- The ports haven't been assigned to any VLAN manually will be assigned to a hidden VLAN automatically to make sure they can communicate with each other.
- The number of Port VLAN can be set is the same as the switch port number.

6.3.4.3 Tag VLAN Global Setting

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

Figure 6-39 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 Figure 6-39 for example).

6.3.4.4 Tag VLAN Setting

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

Figure 6-40 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**: Displays 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**: Displays all defined Tag VLANs.

Figure 6-41 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.

Note:
- VID of the VLAN must be unique and within the range of 1 to 4094.
- 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.)
- 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 Figure 6-40 for example).
- 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".
- 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.
- 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.
- The number of Port VLAN that can be set depends on the switch type. See the Appendix C for details.

6.3.4.5 MTU VLAN Setting

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

Figure 6-42 MTU VLAN Setting

Note:
- 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.
- First time the MTU VLAN mode is set, it set port 1 to be the uplink port by default.

6.3.5 Port Trunking

This page contains the following fields:

Figure 6-43 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 6.3.2.4 for details.

> **Select All**: Select all Trunk members in the list.

> **Clean Up**: Clean up the Trunk member list.

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

6.3.6 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.

6.3.6.1 Priority Mode

This page is shown below:

Figure 6-44 Priority Mode

➢ **Priority Mode**: Contains "Disable", "Port-Based" and "IEEE802.1p".

➢ **Priority Rule**: Contains "Weighted" and "Fixed". If the priority mode is set to be "Disable", the priority rule cannot be configured.

6.3.6.2 Port-Based Priority

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

Figure 6-45 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 correspondingpriority 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.

6.3.6.3 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.

Figure 6-46 Port Default Priority

➢ **Port**: Indicates the switch port number.

➢ **Default Priority Tag**: Indicates 802.1p tag being inserted into untagged frames.

6.3.6.4 802.1p Priority Class

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

Figure 6-47 802.1p 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.

6.3.7 Port Mirroring

This page contains the following fields:

Figure 6-48 Port Mirroring

- ➢ **Mirror Mode**: 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.

> **Note:**
> ▪ Trunk member port can be neither Mirror Port nor Mirrored Port.
> ▪ The Mirror Port can't be the Mirrored Port at the same time.
> ▪ At most 4 Mirrored Ports can be set.
> ▪ While setting the 100Mbps ports as Mirror Port, it's not able to select SFP and 1000Mbps ports in the Mirrored Port list. It's suggested to set the SFP or 1000Mbps ports as Mirror Port.

6.3.8 Virtual Cable Test

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

Figure 6-49 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.

> **Note:** Cable connected to the SFP cannot be tested.

Appendix A Troubleshooting

Q1. Why does the Power LED work abnormally?

The Power LED should be lit up when the power system works normally. If the Power LED worked abnormally, please take the following steps:

1. Make sure that the power cable is connected properly, and the power contact is normal.

2. Make sure the voltage of the power supply meets the requirement of the input voltage of the Switch.

Q2. What could I do if I could not access the web-based configuration page?

You are recommended to check the following items:

1. Check every port LED on the Switch and make sure the cable is installed properly.

2. Try another port on the Switch and make sure the cable meets the requirement and works normally.

3. Turn off the power. After a while, turn on the power again.

4. Make sure the IP address of your PC is set within the subnet of the Switch.

5. If you still cannot access the configuration page, please restore the Switch to its factory defaults. Then the IP address should be set as 192.168.0.x ("x" is any number from 2 to 254) and Subnet Mask as 255.255.255.0.

Appendix B Table of Factory Defaults

Table of Factory Defaults:

Function	Feature	Default Setting	
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	
	Aging Time	Aging Time	300
	Ping	Destination IP Address	192.168.0.1
		Ping Count	4
		Data Size	64
		Ping Interval	1000

Function	Feature	Default Setting	
VLAN Setting	VLAN Mode	Disable	
	Port VLAN Setting	All ports belong to VLAN 1	
	Tag VLAN Global Setting	PVID	1
		Untag Frame	Pass
	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-SL2210WEB	TL-SL2218WEB	TL-SL2428WEB	TL-SL2452WEB
Port	10	18	28	52
Giga Port	2	2	4	4
SFP Port	1	1	2	2
Trunk	2	4	6	8
Port VLAN	10	18	28	52
Tag VLAN	64	64	128	256
Static MAC	64	128	128	128
Filtering MAC	64	128	128	128
Dynamic Binding MAC	128	256	384	544
Power Consumption	9W MAX	13W MAX	20W MAX	35W MAX

Appendix D Hardware Specifications

Item	Content
Standards and Protocol	IEEE 802.3 10Base-T
	IEEE802.3u 100Base-TX
	IEEE802.3ab 1000Base-T
	IEEE802.3z 1000Base-X
	IEEE802.3x Flow Control
Transmission Medium	10Base-T: UTP/STP of Cat. 3 or above
	100Base-TX: UTP/STP of Cat. 5 or above
	1000Base-X: MMF or SMF SFP Module (Optional)
Safety & Emissions	FCC, CE
Transfer Method	Store-and-Forward
MAC Address Learning	Automatically learning, automatically aging
Frame Forward Rate	10Base-T: 14881pps/Port
	100Base-Tx: 148810pps/Port
LEDs	Power, System, Link/Act, 100Mbps, 1000Mbps
Operating Temperature	0℃~40℃
Storage Temperature	-40℃~70℃
Operating Humidity	10% ~ 90% RH Non-condensing
Storage Humidity	5% ~ 90% RH Non-condensing

Appendix E Technical Support

- For more help, please go to: www.tp-link.com/support/faq.asp
- To download the latest Firmware, Driver, Utility and User Guide, please go to: www.tp-link.com/support/download.asp
- For all other technical support, please contact us by using the following details:

Global	Tel: +86 755 26504400 E-mail: support@tp-link.com Service time: 24hrs, 7 days a week
Singapore	Tel: +65 62840493 E-mail: support.sg@tp-link.com Service time: 24hrs, 7 days a week
UK	Tel: +44 (0) 845 147 0017 E-mail: support.uk@tp-link.com Service time: 24hrs, 7 days a week
USA/Canada	Toll Free: +1 866 225 8139 E-mail: support.usa@tp-link.com Service time: 24hrs, 7 days a week
Australia & New Zealand	Tel: AU 1300 87 5465 NZ 0800 87 5465 E-mail: support@tp-link.com.au Service time: 24hrs, 7 days a week
Malaysia	Tel: 1300 88 875465 (1300 88TPLINK) Email: support.my@tp-link.com Service time: 24hrs, 7 days a week
Turkey	Tel: 444 19 25 (Turkish Service) E-mail: support.tr@tp-link.com Service time: 9:00 AM to 6:00 PM, 7 days a week
Italy	Tel: +39 02 66987799 E-mail: support.it@tp-link.com Service time: 9:00 AM to 6:00 PM, Monday to Friday
Indonesia	Tel: (+62) 021 6259 135 E-mail: support.id@tp-link.com Service time: Monday to Friday 9:00-12:00 ; 13:00-18:00 *Except public holidays
Germany/Austria	Tel: +49 1805 875465 (German Service)/+49 1805 TPLINK E-mail: support.de@tp-link.com Fee: 0.14 EUR/min from the German fixed phone network and up to 0.42 EUR/min from mobile phone Service time: Monday to Friday 9:00 AM to 6:00 PM GMT+ 1 or GMT+ 2 (Daylight Saving Time in Germany) *Except bank holidays in Hesse
Switzerland	Tel: +41 (0)848 800998 (German Service) E-mail: support.ch@tp-link.com Fee: 4-8 Rp/min, depending on rate of different time Service time: Monday to Friday 9:00 AM to 6:00 PM, GMT+ 1 or GMT+ 2 (Daylight Saving Time)

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