



## ES-5208P

# User Manual

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## **Chapter 1 Product Introduction**

Thank you for purchasing an Edimax PoE Web Smart Ethernet Switch. Before you install and use the product, please read this manual carefully to make the best use of the product's functions.

### **1.1 Product Overview**

The Edimax ES-5208P is a web-smart switch with 8 Fast Ethernet PoE+ ports and 2 Gigabit Combo ports. Designed for small or medium network environments to strengthen the network connection, its standard 13-inch rack-mount brackets allow for integration with the most widely used mounting systems on the market.

### **1.2 Features**

- Supports 8 10/100Mbps Fast Ethernet PoE+ ports and 2 10/100/1000Mbps combo ports
- Support IEEE 802.3af/at PoE compliant to simplify deployment and installation
- Support PoE up to 30W per port With 160W total power budget
- Automatically detects power devices(PD) and power consumption levels
- IEEE 802.1Q VLAN allows network segmentation to enhance performance and security
- Switch capacity:2.8Gbps, Forwarding rate:35.7Mbps
- Support IGMP Snooping V1 / V2
- Support 4K MAC address table
- 13-inch rack-mountable metal case

### **1.3 Hardware Description**

#### **1.3.1 Front Panel**

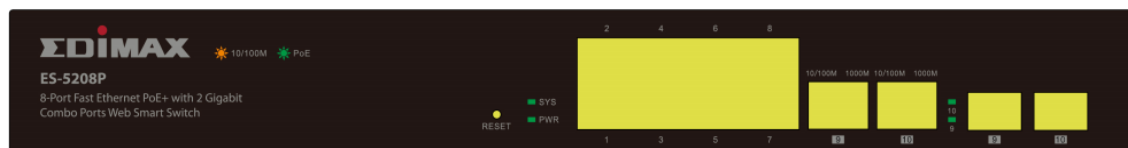


Front Panel

The following table describes the interface of the ES-5208P.

Interface/Button	Description
1~8	8 x RJ-45 Ethernet interfaces, 10 M/100 M self-adaptive.
9, 10	Two groups of fiber-copper combo ports. The copper ports are 10 M/100 M/1000 M self-adaptive Ethernet ports and the fiber ports are SFP optical module ports. If the combo ports are preferred to serve as fiber ports, that is, if the ports connect to a fiber port, the copper port is disabled.
Reset	Keep the device powered on and push a paper clip into the hole. Press down the button for about 5 seconds. The system restores the factory default settings.

The following table describes the twenty-seven LED indicators of the PF108C.



Power: Green LED

- Off: power off or fail
- On: power on

10/100Mbps port LED: 2 LEDs per port, on RJ45 jack

Link/Activity: Amber LED

- Off: port disconnected or link fail
- On: port connected
- Blinking: sending or receiving data

PoE status: Green LED

- Off: PoE power off
- On: PoE power on

10/100/1000Mbps copper port: 2 LEDs, on RJ45 jack

- Off: port disconnected or link fail
- Green on: 1000Mbps connected
- Amber on: 10/100Mbps connected
- Blinking : sending or receiving data
- 

SFP: Green LED

- Off: port disconnected or link fail
- on: 1000FX connected
- Blinking : sending or receiving data

---

### 1.3.2 Rear Panel

The rear panel of the switch features the AC power connector:



Rear Panel

Interface	Description
100-240VAC 50/60Hz	The power interface. The power input is 100 V ~ 240 V AC, 50 Hz ~ 60Hz.

#### AC Power Connector:

Power is supplied through an external AC power adapter. Supports AC 100 – 240V, 50-60Hz

## 1.4 Package Contents Preparation Before Installation

### 1.4.1 Package Contents

Before you start using this product, please check if there is anything missing in the package, and contact your dealer to claim the missing item(s):

- ES-5208P POE Web Smart Switch
- Quick Installation Guide
- CD
- Power Cord
- Rack-Mount Kit

### 1.4.2 Optional Accessories and Tools

- Screwdriver
- ESD straps
- Ethernet crimping pliers, 8P8C crystal heads
- Ethernet (either crossover or straight through) cable

---

### 1.4.3 Choosing the Installation Location

The ES-5208P can be installed in either of the following ways as required:

- On the work platform
- on a rack

#### 1.4.3.1 Installing the ES-5208P on the Work Platform

The common way is to install the ES-5208P on a clean work platform. Pay attention to the following precautions:

- Ensure that the work platform is flat and stable.
- Ensure good ventilation of air ports on both sides of the device.
- Do not put heavy objects on the device.

#### 1.4.3.2 Installing the ES-5208P on a Rack

Before installing the ES-5208P on a rack, you need to install the provided L- Clamps on both sides of the ES-5208P

## 1.5 Electrical Setup

### 1.5.1 Setting Up the Power Interface

After placing the ES-5208P to a flat and stable surface, insert the supplied power cable to the power socket, and connect the other end of the cable to the power interface of ES-5208P.

### 1.5.2 Setting Up the Ethernet Interfaces

The ES-5208P provides twenty-four auto-MDI/MDI-X Ethernet service interfaces of standard RJ45 connectors. You can use either the crossover or straight through cable to connect an interface.

**Note:** To ensure good quality of the data signal, the length of the network cable connected to the Ethernet interface should be shorter than 100m.

## 1.6 Device Startup

### 1.6.1 Check Before Power-On

Before powering on the device, check the following:

- Whether the voltage of the power supply is consistent with the power requirement of the device.
- Whether the power cable is correctly connected.
- Whether the device is correctly connected to the ground on the rear side.

---

## **1.6.2 Powering On the Device**

After connecting the power cable, turn on the power switch. When the Power indicator turns on, the system starts to initialize. When other indicators blink three times and the Power indicator is always on in green, the power works normally.

## **1.7 Device Upgrade**

You can upgrade software through any Ethernet port for ES-5208P. After software upgrade is complete, the system reboots automatically.



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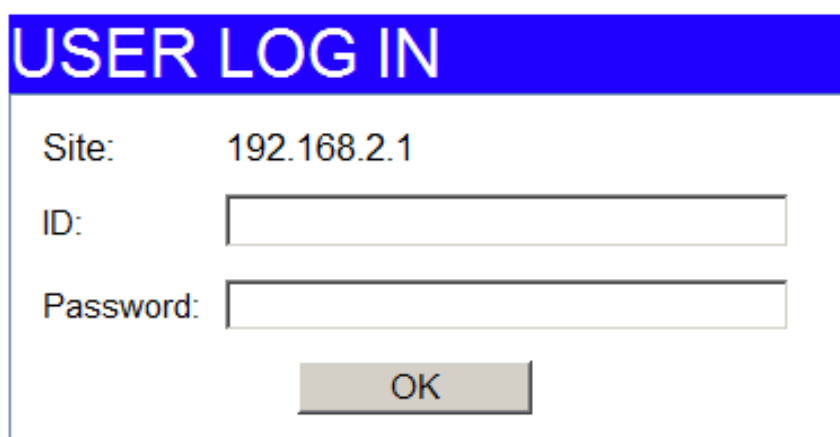
If the PC can read the MAC address of the switch and can ping through the maintenance IP address of the switch, that means the communication of the PC and the switch is normal.

## 2.2 Logging In to the Switch

To login to the web management interface and configure the switch's settings, connect a computer to the switch using an Ethernet cable. Open a web browser and go to the switch's IP address. The default IP address is **192.168.2.1**. Your computer's IP address must be in the same subnet as the switch. For the default IP address this is any IP address in the range **192.168.2.x (x = 2 – 254)**. You can modify the IP address of your computer if you need.

<b>Default IP address</b>	<b>192.168.2.1</b>
<b>Default user name(ID)</b>	<b>admin</b>
<b>Default password</b>	<b>1234</b>

1. Enter the switch's IP address (**192.168.2.1**) in the URL bar of a web browser. IE 7 or above is recommended.
2. At the following screen login with the default username "**admin**" and password "**1234**".



**USER LOG IN**

Site: 192.168.2.1

ID:

Password:

OK

After logging in to the switch successfully, the following page appears.

**EDIMAX**  
NETWORKING PEOPLE TOGETHER

ES-5208P

2 4 6 8  
1 3 5 7 9 10

**8-Port Fast Ethernet PoE+ with 2 Gigabit Combo Ports Web Smart Switch**

**Advanced Features**

- Bandwidth control
- Port based & Tag based VLAN
- Statistics Counter
- Firewall
- VLAN Uplink
- L2 ~ L4 Class of Service

**Basic Features**

- Embedded HTTP web Management
- Configuration Backup/Recovery
- TFTP Firmware upgradeable
- Secure Management
- User name/Password security

**Administrator**

- ▶ PoE
- ▶ Port Management
- ▶ VLAN Setting
- ▶ Per Port Counter
- ▶ QoS Setting
- ▶ Security
- ▶ Spanning Tree
- ▶ Trunking
- ▶ DHCP Relay Agent
- ▶ Backup/Recovery
- ▶ Miscellaneous
- ▶ SNMP Settings
- ▶ Logout

## 2.3 System Management

Choose **Administrator**, and the sub-menus of **Administrator** are shown as below.

**Administrator**

- Authentication Configuration
- System IP Configuration
- System Status
- Load default setting
- Firmware Update
- Reboot Device

### 2.3.1 Authentication Configuration

Choose **Administrator > Authentication Configuration**, and the following page appears. Read the **Note** in the page, and change the user name and password. After proper configuration, click **Update** to apply the settings and then **Reboot** the device for the changes to take effect.

#### Authentication Configuration

Setting	Value
Username	<input type="text" value="admin"/> max:15
Password Confirm	<input type="password" value="•••••"/> max:15 <input type="password" value="•••••"/>
<input type="button" value="Update"/>	

**Note:**

Username & Password can only use "a-z", "A-Z", "0-9", "\_", "+", "-", "=".

### 2.3.2 System IP Configuration

Choose **Administrator > System IP Configuration**, and the following page appears. In this page, you can set the maintenance IP address of the switch, subnet mask, and gateway. After proper configuration, click **Update** to apply the settings and then **Reboot** the device for the changes to take effect.

#### System IP Configuration

Setting	Value
IP Address	192 . 168 . 2 . 1
Subnet Mask	255 . 255 . 255 . 0
Gateway	192 . 168 . 2 . 254
IP Configure	<input checked="" type="radio"/> Static <input type="radio"/> DHCP
<input type="button" value="Update"/>	

### 2.3.3 System Status

Choose **Administrator > System Status**, and the following page appears. In this page, you can view the MAC address, number of ports, and system version. You can also set a comment.

#### System Status

MAC Address	10:f0:13:f0:18:26
Number of Ports	8+2
Comment	<input type="text" value="switch"/> MAX:15
System Version	IP1826D_WebCtrl_IP210L3.95_PoEPD69100_v108.19
<input type="checkbox"/> Idle Time Security	Idle Time: <input type="text" value="0"/> (1~30 Minutes) <input type="radio"/> Auto Logout(Default). <input type="radio"/> Back to the last display.
<input type="button" value="Update"/>	

Note:  
Comment name only can use "a-z","A-Z","\_","+","-","0-9"

### 2.3.4 Loading Default Settings

Choose **Administrator > Load default setting** and the following page appears. In this page, click **Load** to load the default settings that do not include IP address, user name, and password.

#### Load Default Setting

recover switch default setting excluding the IP address, User name and Password

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### 2.3.5 Firmware Update

Choose **Administrator > Firmware Update**, and the following page appears. In this page, enter the login password. Then click **Update**. A pop up page will appear asking you to select new file for updating the firmware.

Firmware Update	
Please input the password to continue the Firmware Update process.	
Password	<input type="password"/>
ReConfirm	<input type="password"/>
<input type="button" value="Update"/>	

Notice:

After clicking the "UPDATE" button, IF the firmware update webpage is not redirected correctly or is shown as "Webpage not found".  
Please connect to <http://192.168.2.1>

**Caution** : When firmware update is in progress, do not shut down the switch.

### 2.3.6 Reboot the Device

Choose **Administrator > Reboot Device**, and the following page appears. In this page, click **Confirm** to reboot the device.

Reboot Device:

Click "Confirm" to Reboot the Device

## 2.4 POE

Choose **POE**, and the submenus of **POE** are shown as below.



### 2.4.1 PoE Status

Choose PoE > PoE Status and the following page appears.

## PoE Status

Max available Power	<input type="text" value="130"/> Watt <input type="button" value="Update"/>
System operation status	On
Main Power consumption	0(Watt)
Device Temperture	
Device #1	47 (C)

### 2.4.2 PoE Setting

Choose PoE > PoE Setting and the following page appears.

## PoE Setting

Function	Status	Priority	Power Budget
	<input type="text" value="----"/> ▾	<input type="text" value="3"/> (Critical-1;High-2;Low-3)	<input type="text" value="30"/> (Watt MAX:36W)
Port No.	01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/>		
<input type="button" value="Update"/>			

Port Status <input type="button" value="Refresh"/>					
Port	Status	Class	Priority	Power Consumption(Watt)	Power Budget (Watt)
1	Disable	----	3	0.00	30
2	Enable	----	3	0.00	30
3	Enable	----	3	0.00	30
4	Enable	----	3	0.00	30
5	Enable	----	3	0.00	30
6	Enable	----	3	0.00	30
7	Enable	----	3	0.00	30
8	Enable	----	3	0.00	30

### 2.4.3 PoE Power Delay

Choose PoE > PoE Power Delay and the following page appears.

## PoE Power Delay

Function	Delay Mode	Delay Time (0~300)
	<input type="text" value="----"/> ▾	<input type="text" value="0"/> second
Port No.	01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/>	
<input type="button" value="Update"/>		

Port	Delay Mode	Delay Time (second)
1	Disable	0
2	Disable	0
3	Disable	0
4	Disable	0
5	Disable	0
6	Disable	0
7	Disable	0
8	Disable	0

## 2.4.4 PoE Scheduling

Choose PoE > PoE Scheduling and the following page appears.

### PoE Scheduling

Schedule on Port	01
Schedule Mode	Disable
Schedule AM/PM	A. M.

Select all

Hour	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.	Sun.
00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
06	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
07	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
08	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## 2.4.5 NTP Setting

Choose PoE > NTP Setting and the following page appears

### NTP Setting

System Time	17:18:44
NTP Server	#1 210.0.235.14
	#2 59.124.196.85
Time Zone	UTC 0:00
<input type="button" value="Update"/>	

## 2.5 Port Management

Choose **Port Management**, and the submenus of **Port Management** are shown as below.



### 2.5.1 Port Configuration

Choose **Port Management > Port Configuration**, and the following page appears. In this page, you can set **Tx/Rx Ability, Auto-Negotiation, Speed, Duplex, Pause, Backpressure, and Addr. Learning** of port.

12	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	OFF
----	-----	-----	-----	-----	----	------	------	------	----	----	-----

#### Port Configuration

Function	Tx/Rx Ability	Auto-Negotiation	Speed	Duplex	Pause	Backpressure	Addr. Learning
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Select Port No.	01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/>						
<input type="button" value="Update"/>							

22	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	OFF
----	-----	-----	-----	-----	----	------	------	------	----	----	-----

Port	Current Status				Setting Status							
	Link	Speed	Duplex	FlowCtrl	Tx/Rx Ability	Auto-Nego	Speed	Duplex	Pause	Backpressure	Addr. Learning	
1	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
2	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
3	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
4	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
5	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
6	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
7	---	---	---	---	ON	AUTO	100M	FULL	ON	ON	ON	
8	●	100M	FULL	ON	ON	AUTO	100M	FULL	ON	ON	ON	
9	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON	
10	---	---	---	---	ON	AUTO	1G	FULL	ON	ON	ON	

## 2.5.2 Port Mirroring

Choose **Port Management > Port Mirroring**, and the following page appears. In this page, you can enable port mirroring service. The packets from source port transmit to destination port.

Port Mirroring										
Dest Port	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>	10 <input type="checkbox"/>
Monitored Packets	Disable ▾									
Source Port	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>	10 <input type="checkbox"/>
Update										
Multi to Multi Sniffer function										

## 2.5.3 Bandwidth Control

Choose **Port Management > Bandwidth Control** and the following page appears.

### Bandwidth Control

Port No	Tx Rate	Rx Rate
01 ▾	(0~255) <input type="text"/> (0:Full Speed)	(0~255) <input type="text"/> (0:Full Speed)
Speed Base	Low: <input type="text"/> ▾ (1)32Kbps Tx/Rx bandwidth resolution for port 1~ port 10. Actual Tx/Rx bandwidth=Rate value x 32 kbps. The rate value is 1~255. High: (1)256Kbps Tx/Rx bandwidth resolution for port 1~ port 8. Actual Tx/Rx bandwidth=Rate value x 256Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~39. (2)the bandwidth resolution is 2048Kbps for port 9, port 10. Actual Tx/Rx bandwidth=Rate value x 2048Kbps. The rate value is 1~255. When link speed is 10MB. The rate value is 1~4. When link speed is 100MB. The rate value is 1~48.	
Update    LoadDefault		
If the link speed of selected port is lower than the rate that you setting, this system will use the value of link speed as your setting rate.		

Port No.	Tx Rate	Rx Rate	Link Speed	Port No.	Tx Rate	Rx Rate	Link Speed
1	Full Speed	Full Speed	---	6	Full Speed	Full Speed	---
2	Full Speed	Full Speed	---	7	Full Speed	Full Speed	---
3	Full Speed	Full Speed	---	8	Full Speed	Full Speed	100M
4	Full Speed	Full Speed	---	9	Full Speed	Full Speed	---
5	Full Speed	Full Speed	---	10	Full Speed	Full Speed	---

After proper configuration, click **Update** to apply the settings. Click **Load Default** to restore the default settings.

## 2.5.4 Broadcast Storm Control

Choose **Port Management > Broadcast Storm Control** and the following page appears.

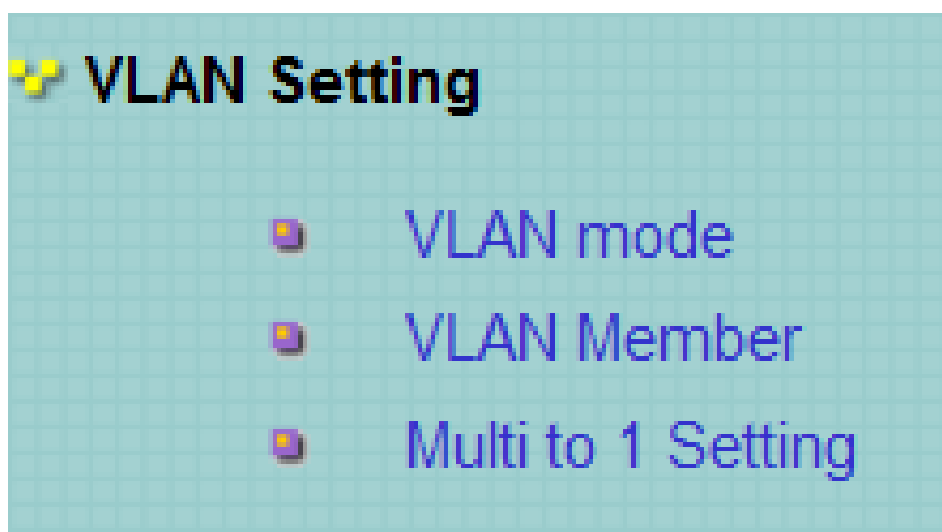
Broadcast Storm Control											
Threshold	<input type="text" value="63"/> 1~63										
Enable Port	1	2	3	4	5	6	7	8	9	10	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="button" value="Update"/>											
<p>This value indicates the number of broadcast packet which is allowed to enter each port in one time unit. One time unit is 50us for Gigabit speed, 500 us for 100Mbps speed and 5000us for 10Mbps speed</p> <p><b>Note:</b> This effect may be not significant for long broadcast packet, since the broadcast packet count passing through the switch in a time unit is probably less than the specified number.</p>											

## 2.6 VLAN Setting

In large networks, routers are used to isolate broadcast traffic for each subnet into separate domains. This switch provides a similar service at Layer 2 by using VLANs to organize any group of network nodes into separate broadcast domains. VLANs confine broadcast traffic to the originating group, and can eliminate broadcast storms in large networks. This also provides a more secure and cleaner network environment.

The system supports VLAN based on port and VLAN based on tag. You can change the VLAN mode in the **VLAN Mode** page.

Choose **VLAN Setting**, and the sub-menus of **VLAN Setting** are shown as below.







Field	Description
VID	Select the Vlan ID to be assigned to the VLAN and click on Add to enter the VID. Once the VID is added it will appear in the drop down list.
VLAN Member Port	Select the VID from the Dropdown list and then select the desired member ports from the Table.
Port VID MAP	Port VID map shows the Port number corresponding to the VID to which the same is assigned.

When the port receives the packets without tag, the system can check the VLAN table according to the port VID. The system can add the tag according to the VID found in the VLAN table.

To add vlan, enter a VID and select vlan member for this entry from vlan member list. Now select “Add” button to add vlan entry to the table. Vlan entry can be modified by selecting VID from the list and then select “Update” button.

To delete an entry from the vlan table, select VID from the drop-down list and select “Delete” to remove the corresponding entry from the table.

### 2.6.3 Multi to 1 Setting Configuration

Choose **VLAN Setting > Multi to 1 setting**, and the following page appears. This feature can disable communication between ports in order to improve the security.

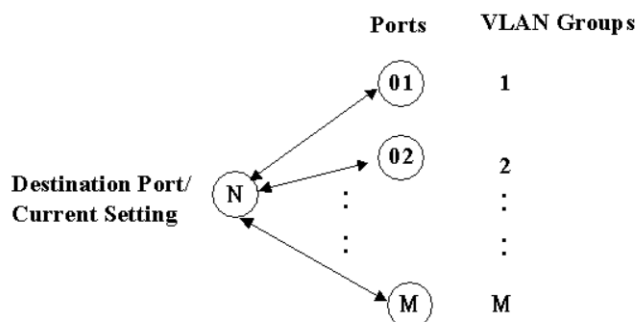
- After setting the multi to 1 setting, the VLAN original setting will be cleared. If the VLAN is configured again, the multi to 1 setting will be cleared.
- Multi to 1 Settings take effect only when “VLAN based on port” mode is selected.

In this page, select the current port from the drop-down list. Then select the port from the check box to isolate from the current port.

#### Multi to 1 Setting

Destination PortNo.	01									
Current Setting	Port:-									
Disable Port	01	02	03	04	05	06	07	08	09	10
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Note: “Disabled port” defines the switch physical port which is disabled.										
Update										

1. A example for Multi-to-1 structure

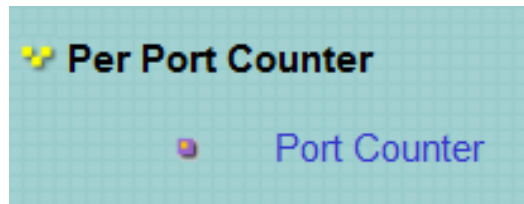


2. The original setting of the VLAN Group will be cleared and replaced by this special structure if you enable this function. On the other hand, If you set the VLAN Group again, this special structure will be cleared and replaced by your newest setting.

3. This configuration is port base VLAN only.

## 2.7 Per Port Counter

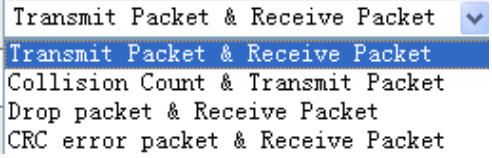
Choose **Per Port Counter**, and the **Port Counter** submenu is shown as below.



Choose **Per Port Counter > Port Counter** and the following page appears. In this page, you can view the packet quantity.

### Counter Category

Counter Mode Selection: <span>Transmit Packet &amp; Receive Packet</span> <input type="button" value="Update"/>			
Port	Transmit Packet		Receive Packet
01	0		0
02	0		0
03	0		0
04	0		0
05	0		0
06	0		0
07	0		0
08	14096		19229
09	0		0
10	0		0

Field	Description
Counter Mode Selection	Select it from the drop-down list:  Click <b>Update</b> to view the corresponding packet quantity.
Refresh	Click the button to refresh the counter information.
Clear	Click the button to clear the counter information.

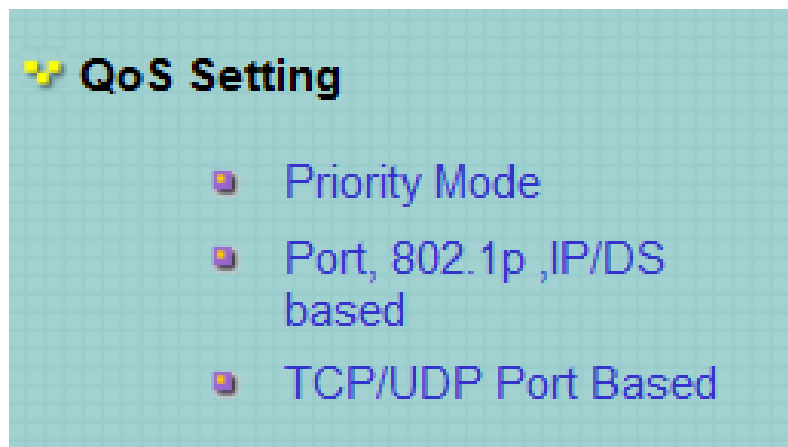
---

## 2.8 QoS Configuration

All switches or routers that access the Internet, rely on class information to provide the same forwarding treatment to packets in the same class. Class information can be assigned by end hosts, or switches or routers along the path. Priority can then be assigned based on a general policy, or a detailed examination of the packet. However, note that detailed examination of packets should take place close to the network edge so that core switches and routers are not overloaded.

Switches and routers along the path can use class information to prioritize the resources allocated to different traffic classes. The manner in which an individual device handles traffic is called per-hop behavior. All devices along a path should be configured in a consistent manner to construct a consistent end-to-end Quality of Service (QoS) solution.

Choose **QoS Setting**, and the sub-menus of **QoS Setting** are shown as below.



### 2.8.1 Priority Mode

Choose **QoS Setting > Priority Mode**, and the following page appears. In this page, you can set the priority mode.

#### Priority Mode

---

Priority Mode	
Mode	<input checked="" type="radio"/> First-In-First-Out <input type="radio"/> All-High-before-Low <input type="radio"/> Weight-Round-Robin. Low weight: <input type="text" value="0"/> High weight: <input type="text" value="0"/>
<input type="button" value="Update"/>	
<p><b>Note:</b> When the queue weight is set to "0", it will be treated as "8". The "low weight" and "high weight" means the ratio of the packet in the transmit queue. For example, if "low weight" and "high weight" are set to "3" and "5", the ratio of the transmit packet for the low priority to high priority is 3/5.</p>	

The system supports the following three priority modes.

- First-In-First-Out
- All-High-before-Low
- Weight-Round-Robin

Low weight: You can select 0 ~ 7 from the drop-down list.

High weight: You can select 0 ~ 7 from the drop-down list.

## 2.8.2 Class of Service Configuration - 1

Choose **QoS Setting > Port, 802.1p, IP/DS based**, and the following page appears.

Class of Service Configuration							
<input checked="" type="checkbox"/> =Enable High Priority							
Port No.\Mode	Port Base	VLAN Tag	IP / DS	Port No.\Mode	Port Base	VLAN Tag	IP / DS
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="button" value="Update"/>							
As long as any of three COS schemes(802.1p,IP TOS/DS or Port Base) is mapped to "high", the data packet will be treated as the high priority.							

The COS of port supports the following mode.

- Based on port
- Based on 802.1p: The priority is determined according to the value of **802.1p** (bit [15:13]) in the VLAN Tag. Packets in which values of **802.1p** (bit [15:13]) are 000-011 map to lower priority. Packets in which values of **802.1p** (bit [15:13]) are 100-111 map to higher priority.
- Based on IP / DS:  
For IPv4 packets, the priority is determined according to the value of **TOS [5:0]** in the header. Packets in which values of **TOS [5:0]** are 101110, 001010, 010010, 011010, and 11x000 map to high priority. Packets in which **TOS [5:0]** are other values map to lower priority.

## 2.8.3 Class of Service Configuration - 2

Choose **QoS Setting > TCP/UDP Port Based** and the following page appears. COS based on TCP/UDP port specifies the priority queues of packets or discards designated protocol packets according to the application layer protocols of packets received at the port. COS supports classifying packets into corresponding priority queues or discards packets according to the port in the range of ports 1-65535, besides certain known protocols, such as FTP, telnet, and SNMP.

## Class of Service Configuration

Protocol	Option			
FTP(20,21)	F-I-F-O			
SSH(22)	F-I-F-O			
TELNET(23)	F-I-F-O			
SMTP(25)	F-I-F-O			
DNS(53)	F-I-F-O			
TFTP(69)	F-I-F-O			
HTTP(80,8080)	F-I-F-O			
POP3(110)	F-I-F-O			
NEWS(119)	F-I-F-O			
SNTP(123)	F-I-F-O			
NetBIOS(137~139)	F-I-F-O			
IMAP(143,220)	F-I-F-O			
SNMP(161,162)	F-I-F-O			
HTTPS(443)	F-I-F-O			
MSN(1863)	F-I-F-O			
XRD_RDP(3389)	F-I-F-O			
QQ(4000,8000)	F-I-F-O			
ICQ(5190)	F-I-F-O			
Yahoo(5050)	F-I-F-O			
BOOTP_DHCP(67,68)	Low			
User_Define_a	F-I-F-O			
User_Define_b	F-I-F-O			
User_Define_c	F-I-F-O			
User_Define_d	F-I-F-O			
User_Define Port number (1~65535) Mask(0~255)	User_Define_a Port: <input type="text"/> Mask: <input type="text"/>	User_Define_b Port: <input type="text"/> Mask: <input type="text"/>	User_Define_c Port: <input type="text"/> Mask: <input type="text"/>	User_Define_d Port: <input type="text"/> Mask: <input type="text"/>
<p><b>Note:</b>The mask defines which bit is ignored within the IP address bit 0 ~ bit 7. For example, UDP/TCP port = 65535 and mask = 5, this means 65530, 65531, 65534 and 65535 are all taken into account. UDP/TCP port = 65535 and mask = 0, this means only 65535 is taken into account.</p> <p><b>TCP/UDP port QoS function</b> <input type="button" value="Not Override"/></p> <p><b>Note:</b>When the "override" item is selected, the Port_based, Tag_based, IP TOS_based, CoS listed above will be ignored.</p>				
<input type="button" value="Update"/>				
<p>The Class of Service for TCP/UDP port number allows the network administrator to assign the specific application to a priority queue.</p> <p><b>F-I-F-O:</b> The incoming packet will be forwarded in first-in-first-out scheme.</p> <p><b>Discard:</b> The incoming packet will be discarded at the source port.</p> <p><b>High:</b> The incoming packet will be forwarded with the high priority.</p> <p><b>Low:</b> The incoming packet will be forwarded with the Low priority.</p>				

Field	Description
Option	<p>You can select it from the drop-down list:</p> <div style="border: 1px solid black; padding: 2px;"> <p>F-I-F-O</p> <p style="background-color: #e0e0e0;">F-I-F-O</p> <p>Discard</p> <p>Low</p> <p>High</p> </div>
User_Define	<ul style="list-style-type: none"> <li>Port: The valid range is 1 ~ 65535.</li> <li>Mask: The valid range is 0 ~ 255.</li> </ul>
TCP/UDP port QoS function	<ul style="list-style-type: none"> <li>Override: When the "override" item is selected, the Port_based, Tag based, IP TOS_based, CoS listed previous will be ignored.</li> <li>Not Override</li> </ul>



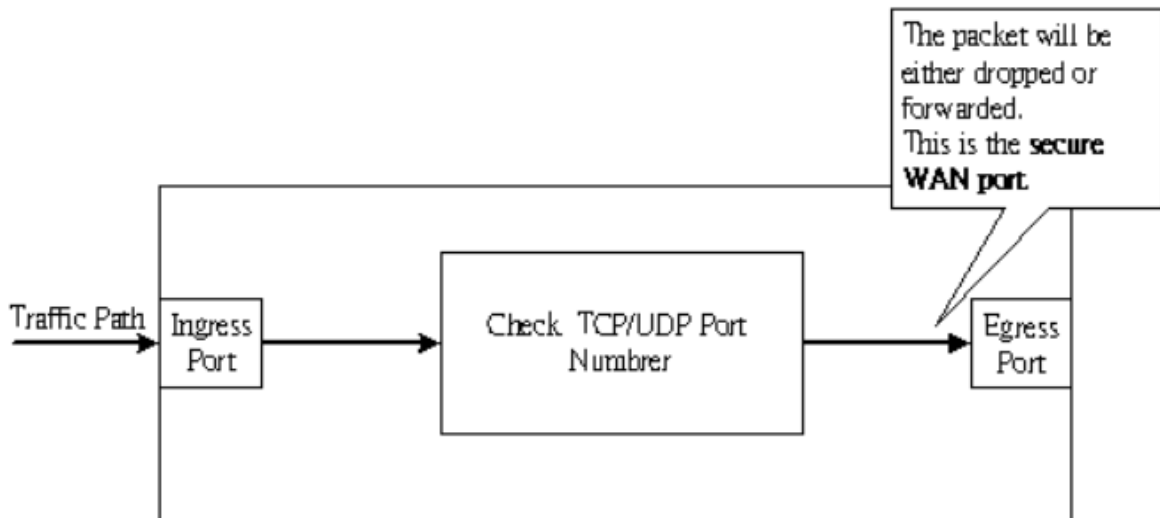
## 2.9.2 TCP/UDP Filter

Choose **Security > TCP/UDP Filter** and the following page appears. TCP/UDP port filter discards the set protocol packets at the secure WAN port. All ports can be set to secure WAN ports, and the available protocols include FTP, HTTP, and TELNET.

### TCP\_UDP Filter Configuration

Function Enable	<input type="text" value="Disable"/>					
Port Filtering Rule	<input type="text" value="negative"/> Note: (1) The outgoing packet with selected protocol will be either forwarded or dropped at secure WAN port as (2) "negative" means the selected protocol will be dropped and other protocols will be forwarded. "positive" means the selected protocol will be forwarded and other protocol will be dropped.					
Protocol	<input type="checkbox"/> FTP (20, 21)	<input type="checkbox"/> SSH (22)	<input type="checkbox"/> TELNET (23)	<input type="checkbox"/> SMTP (25)	<input type="checkbox"/> DNS (53)	<input type="checkbox"/> TFTP (69)
	<input type="checkbox"/> NEWS (119)	<input type="checkbox"/> SNMP (123)	<input type="checkbox"/> NetBIOS (137~139)	<input type="checkbox"/> IMAP (143, 220)	<input type="checkbox"/> SNMP (161, 162)	<input type="checkbox"/> HTTPS (443)
	<input type="checkbox"/> User_Define_a	<input type="checkbox"/> User_Define_b	<input type="checkbox"/> User_Define_c	<input type="checkbox"/> User_Define_d		
Note: These User-defined A/B/C TCP/UDP settings use the same port number settings as the Users-defined A/B/C Port number settings.						
Secure WAN port	<input type="checkbox"/> Port01	<input type="checkbox"/> Port02	<input type="checkbox"/> Port03	<input type="checkbox"/> Port04	<input type="checkbox"/> Port05	<input type="checkbox"/> Port06
	<input type="checkbox"/> Port09	<input type="checkbox"/> Port10				

**Note:** The description of Secure WAN port is shown below.

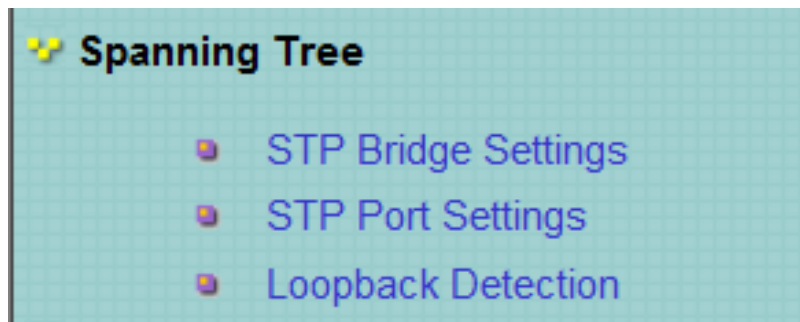


The configuration procedure:

1. Select **Enable** from the drop-down list to enable the TCP/UDP filter service.
2. Select port filtering rule. Negative means the selected protocol will be dropped and other protocols will be forwarded. Positive means the selected protocol will be forwarded and other protocol will be dropped.
3. Select the protocol from the check box in the right area.
4. Select the secure WAN port.
5. Click **Update** to apply the settings.

## 2.10 Spanning Tree

Choose **Spanning Tree**, and the sub-menus of **Spanning Tree** are shown as below.



### 2.10.1 STP Bridge Settings

Choose **Spanning Tree > STP Bridge Settings**, and the following page appears.


#### STP Bridge Settings

Spanning Tree Settings				
STP Mode	Bridge Priority	Hello Time	Max Age	Forward Delay
	(0~61440)	(1~10 Sec)	(6~40 Sec)	(4~30 Sec)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="button" value="Submit"/>				
<p>Note: <math>2 * (\text{Forward Delay} - 1) \geq \text{Max Age}</math>,</p> <p><math>\text{Max Age} \geq 2 * (\text{Hello Time} + 1)</math></p> <p>Bridge Priority must be multiple of 4096</p>				

Note: If you enable the MAC address binding function, the address learning function will be disabled automatically. Then both RSTP/STP and address learning will be affected.

Bridge Status				
STP Mode	Bridge ID	Hello Time	Max Age	Forward Delay
RSTP	32768:00 17 7C 0C 84 59	2	20	15

Root Status			
Root ID	Hello Time	Max Age	Forward Delay
I'm the root bridge!	2	20	15

Field	Description
STP Mode	You can select it from the drop-down list: 
Bridge Priority	The valid range is 0 ~ 61440. The lower integer value for precedence indicates the higher priority. And the integer should be a multiple of 4096.
Hello Time	The valid range is 1 ~ 10. The unit is second. The hello time indicates the interval of transmitting BPDU.
Max Age	The valid range is 6 ~ 40. The unit is second. It is the longest waiting time of the blocking state turning into listening state. Max Age >= 2*(Hello Time+1)
Forward Delay	The valid range is 4 ~ 30. The unit is second. It is the longest waiting time of the listening state turning into learning state or the learning state turning into forwarding state. 2*(Forward Delay-1) >= Max Age

After proper configuration, click **Submit** to apply the settings. In the mean time, you can view the STP bridge status.

## 2.10.2 STP Port Settings

Choose **Spanning Tree > STP Port Settings**, and the following page appears.

STP Port Status						
Port No.	RPC	Priority	State	Status	Designated Bridge	Designated Port
1	Auto:0	0x80	--	Disable	--	--
2	Auto:0	0x80	--	Disable	--	--
3	Auto:0	0x80	--	Disable	--	--
4	Auto:0	0x80	--	Disable	--	--
5	Auto:0	0x80	--	Disable	--	--
6	Auto:0	0x80	--	Disable	--	--
7	Auto:0	0x80	--	Disable	--	--
8	Auto:0	0x80	--	Disable	--	--
9	Auto:0	0x80	--	Disable	--	--
10	Auto:0	0x80	--	Disable	--	--

Field	Description
Port No.	Select it from the drop-down list.
Priority	The valid range is 0 ~ 240. It should be a multiple of 16.
RPC	Root Path Cost. The valid range is 1 ~ 200000000. 0 indicates Auto.

RPC determines the path cost that is from per port to root bridge. It is related with speed. The following table lists the recommended value. You can modify it during actual using.

Speed	IEEE Recommended Value	Recommended Range
10Mbps	100	50~600
100Mbps	19	10~60
1000Mbps	4	3~10
10GMbps	2	1~5

After proper configuration, click **Submit** to apply the settings. In the mean time, you can view the STP port status.

### 2.10.3 Loopback Detection:

Choose **Spanning Tree > Loopback Detection** to configure loopback detection on an interface. When loopback detection is enabled and a port receives it's own BPDU, the detection agent drops the loopback BPDU and places the interface in discarding mode. This loopback state can be released automatically.

#### Loopback Detection Settings

Loopback Detect Function	Disable
Auto Wake Up	Disable
Wake-Up Time Interval	10 sec
<input type="button" value="Submit"/>	

Port No.	Status
1	--
2	--
3	--
4	--
5	--
6	--
7	--
8	--
9	--
10	--
11	--
12	--
13	--
14	--
15	--
16	--
17	--
18	--
19	--
20	--
21	--
22	--
23	--
24	--
25	--
26	--

These parameters are displayed:

Field	Description
Loopback Detection Function	Enables/Disables (Default: disable)
Auto Wake Up	Configures the interface for automatic loopback release.
Wake-Up Time interval	Defines the time interval for the port that will be released from the discarding state.

Interface status displays a list of ports with loopback detection status. Select “Reset All Ports” option for manual release.

## 2.11 Trunking

This section describes how to configure static and dynamic trunks.

You can create multiple links between devices that work as one virtual aggregate link. A port trunk offers a dramatic increase in bandwidth for network segments where bottlenecks exist, as well as providing a fault tolerant link between two devices.

The switch supports both static trunking and dynamic Link Aggregation Control Protocol (LACP). Static trunks have to be manually configured at both ends of the link. On the other hand, LACP configured ports can automatically negotiate a trunked link with LACP-configured ports on another device.

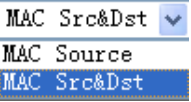
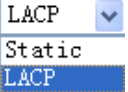
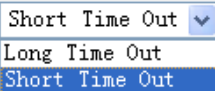
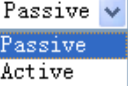
Choose **Trunking**, and the **Link Aggregation Settings** sub-menu is shown as below.



Choose **Trunking > Link Aggregation Settings**, and the following page appears.

	Link Group 1				Link Group 2				Link Group 3	
Member	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	--	--	--	--	--	--	--	--	--	--
State	Disable				Disable				Disable	
Type	LACP				LACP				LACP	
Operation Key	1 (1^65535)				2 (1^65535)				3 (1^65535)	
Time Out	Short Time Out				Short Time Out				Short Time Out	
Activity	Passive				Passive				Passive	
Submit										

Note: If you enable LACP on some specified ports and their link partners are normal port without LACP, these specified ports cannot transmit packet to/receive packet from the link partner.

Field	Description
System Priority	The valid range is 1 ~ 65535.
Link Aggregation Algorithm	You can select it from the drop-down list: 
Member	The system supports three link groups. <ul style="list-style-type: none"> <li>• Link Group 1: It includes the following ports: 1, 2, 3, 4.</li> <li>• Link Group 2: It includes the following ports: 5, 6, 7, 8.</li> <li>• Link Group 3: It includes the following ports: 9, 10.</li> </ul>
State	You can select <b>Disable</b> or <b>Enable</b> .
Type	You can select it from the drop-down list: 
Operation Key	When the type is LACP, there are some protocol parameters. Such as operation key, transmitting LACP packets interactively or not.
Time Out	You can select it from the drop-down list:  It is the time out of trunking, when the link port does not receive the corresponding LACPDU.
Activity	You can select it from the drop-down list:  One switch should be set to <b>Active</b> between two switches.



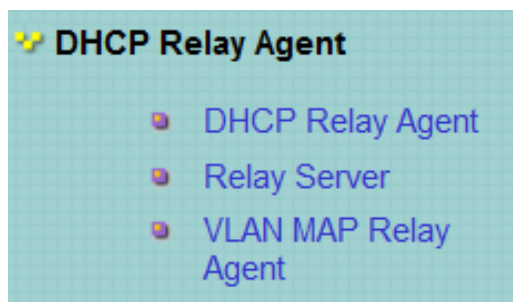
**Note:** When you configure trunking service, you need to disable the Pause and Backpressure of corresponding port in the Port Configuration page in the Port management navigation.

After proper configuration, click Submit to apply the settings. Click Refresh to refresh the state of link group. When the “--” in **Member configuration** turns into “A”, that indicates the trunking service has established between the system and the corresponding end.

---

## 2.12 DHCP Relay Agent

Choose **DHCP Relay Agent** and the submenu shown as below appears.



### 2.12.1 DHCP Relay Agent

#### DHCP Relay Agent

DHCP Relay State :	Disable ▾
DHCP Relay Hops Count Limit (1-16):	Enable Disable
DHCP Relay Option 82 State :	Disable ▾
<input type="button" value="Update"/>	

Field	Description
DHCP relay State	Select Enable or Disable to start or Stop the DHCP relay agent respectively.
DHCP relay Hop count limit	Sets the maximum allowed number in the hops field of the BOOTP/DHCP header.
DHCP relay option 82 State	Select Enable or Disable to start or Stop the DHCP relay option 82 respectively.

### 2.12.2 Relay Server

Choose **Relay Server** and the following page appears.

---

## DHCP Relay Agent

DHCP Server IP	<input type="text"/> . <input type="text"/> . <input type="text"/> . <input type="text"/>	<input type="button" value="Add"/>
----------------	---	------------------------------------

DHCP Server IP List
---------------------

### 2.12.3 VLAN MAP Relay Agent

Choose VLAN MAP Relay Agent

#### DHCP Relay Agent

VLAN ID	<input type="text"/> 1-4094	Map Server IP <input type="button" value="v"/>	<input type="button" value="Add"/>
---------	-----------------------------	--	------------------------------------

#### MAP List

VLAN ID	Server IP	Action
---------	-----------	--------

After proper configuration, click **Submit** to apply the settings. Click **Refresh** to refresh the state of link group.

### 2.13 Configuration Backup and Recovery

Choose Backup/Recovery, and the following page appears. In this page, you can download the switch configuration to PC, or upload the configuration file to switch according to the page attention.

#### Configuration Backup/Recovery

<b>Backup(Switch→PC)</b> Please check "Download" to download EEPROM contents. <input type="button" value="Download"/>
--

<b>Recovery(PC→Switch)</b> Select the image file : <input type="text"/> <input type="button" value="Browse..."/> Password: <input type="text"/> <input type="button" value="Update"/>
--

## 2.14 Miscellaneous Configuration

Choose **Miscellaneous**, and the following page appears. In this page, you can enable Aging, VLAN striding and set VLAN uplink.

### Miscellaneous Setting

Output Queue Aging Time	
Aging time <input type="text" value="Disable"/> ms	The output queue aging function allows the administrator to select the aging time of a packet stored in the output queue. A packet stored in the output queue for a long time will lower the free packet buffer, resulting in the poor utilization of the buffer and the poor switch performance.
VLAN Striding	
VLAN Striding <input type="text" value="Disable"/>	When this function is enabled, the switch will forward a uni-cast packet to the destination port. No matter whether the destination port is in the same VLAN group.
IGMP Snooping V1 & V2	
IGMP Snooping <input type="text" value="Disable"/>	IGMP Snooping V1 & V2 function enable
IGMP Leave Packet <input type="text" value="Disable"/>	Leave packet will be forwarded to IGMP router ports.

VLAN Uplink Setting								
Port 01 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 02 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 03 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 04 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 05 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 06 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 07 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 08 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2	Port 09 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2
Port 10 <input type="radio"/> Uplink1 <input type="radio"/> Uplink2								
<input type="radio"/> Clear Uplink1 <input type="radio"/> Clear Uplink2								
<input type="button" value="Update"/>								

## 2.15 SNMP Settings

Choose **SNMP Settings**, and the following page appears. In this page, you can configure SNMP related parameters.

### SNMP Settings

Community Settings	
Community Name	Access Right
<input type="text" value="public"/>	<input type="text" value="ReadWrite"/>
<input type="text"/>	<input type="text" value="Read Only"/>
<input type="button" value="Update"/>	

SNMP Settings	
System Description	<input type="text" value="DG-FS1526"/>
System Contact	<input type="text" value="DIGISOL"/>
System Location	<input type="text" value="DIGISOL"/>
<input type="button" value="Update"/>	

SNMP Trap Settings	
Trap State	<input type="text" value="Enable"/>
<input type="button" value="Update"/>	

Field	Description
Community Name.	The community name used by SNMP.
Access Right	The right of community name.
System Description System Contact System Location	System related information.
Trap State	Enable/disable SNMP trap.

---

## 2.16 Logout

Choose **Logout**, and the following page appears.



In this page, the system asks you whether to logout. Click **Accept** to logout. Click **Back** to return to the previous page.

---

## **Chapter 3 Troubleshooting**

If a fault occurs, refer to the following table for troubleshooting:

<b>Symptom</b>	<b>Suggested Solution</b>
The <b>Power</b> indicator is not ON after the system is started	<ul style="list-style-type: none"><li>• Check whether the power is correctly connected.</li><li>• Check whether the power switch is turned on.</li></ul>
The <b>Power</b> indicator is ON but the Ethernet indicator is off	<ul style="list-style-type: none"><li>• Check whether the network cable is correctly connected.</li><li>• Check whether the configuration is correct.</li></ul>

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## **Chapter 4 Glossary**

**Auto-negotiation:** Auto-negotiation is an Ethernet procedure by which two connected devices choose common transmission parameters, such as speed, duplex mode, and flow control. In this process, the connected devices first share their capabilities as for these parameters and then choose the highest performance transmission mode they both support.

**Backpressure:** The build-up of data behind an I/O switch if the buffers are full and incapable of receiving any more data; the transmitting device halts the sending of data packets until the buffers have been emptied and are once more capable of storing information.

**Flow-control:** Flow control is the process of managing the pacing of data transmission between two nodes to prevent a fast sender from outrunning a slow receiver. It provides a mechanism for the receiver to control the transmission speed, so that the receiving node is not overwhelmed with data from transmitting node.

**Address Learning:** Address learning is a service that characterizes a learning bridge, in which the source MAC address of each received packet is stored so that future packets destined for that address can be forwarded only to the bridge interface on which that address is located.

**TCP:** The Transmission Control Protocol (TCP) is one of the core protocols of the Internet Protocol Suite. TCP is one of the two original components of the suite, complementing the Internet Protocol (IP), and therefore the entire suite is commonly referred to as TCP/IP. TCP provides reliable, ordered delivery of a stream of bytes from a program on one computer to another program on another computer.

**UDP:** User Datagram Protocol. UDP provides a datagram mode for packet-switched communications. It uses IP as the underlying transport mechanism to provide access to IP-like services. UDP packets are delivered just like IP packets – connection-less datagrams that may be discarded before reaching their targets. UDP is useful when TCP would be too complex, too slow, or just unnecessary.

**FTP:** File Transfer Protocol (FTP) is a standard network protocol used to copy a file from one host to another over a TCP-based network, such as the Internet. FTP is built on client-server architecture and utilizes separate control and data connections between the client and server.

**Http:** The Hypertext Transfer Protocol (HTTP) is a networking protocol for distributed, collaborative, hypermedia information systems.

**TELNET:** Telnet defines a remote communication facility for interfacing to a terminal device over TCP/IP.

**ToS:** Type of Service level, which processes the precedence part of the IP packet ToS (3 bits) as an index to the eight QoS Class values.

**Link-Aggregation:** Link aggregation is a term which describes using multiple network cables/ports in parallel to

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increase the link speed beyond the limits of any one single cable or port, and to increase the redundancy for higher availability.

**COS:** Class of Service is supported by prioritizing packets based on the required level of service, and then placing them in the appropriate output queue. Data is transmitted from the queues using weighted round-robin service to enforce priority service and prevent blockage of lower-level queues. Priority may be set according to the port default, the packet's priority bit (in the VLAN tag), TCP/UDP port number, IP Precedence bit, or DSCP priority bit.

**SNMP:** Simple Network Management Protocol. The application protocol in the Internet suite of protocols which offers network management services.

**QoS:** Quality of Service. QoS refers to the capability of a network to provide better service to selected traffic flows using features such as data prioritization, queuing, congestion avoidance and traffic shaping. These features effectively provide preferential treatment to specific flows either by raising the priority of one flow or limiting the priority of another flow.

**DHCP:** Dynamic Host Control Protocol. Provides a framework for passing configuration information to hosts on a TCP/IP network. DHCP is based on the Bootstrap Protocol (BOOTP), adding the capability of automatic allocation of reusable network addresses and additional configuration options.

**DHCP OPTION 82:** A relay option for sending information about the requesting client (or an intermediate relay agent) in the DHCP request packets forwarded by the switch and in reply packets sent back from the DHCP server. This information can be used by DHCP servers to assign fixed IP addresses, or set other services or policies for clients.



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## Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of 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:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

### FCC Caution

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. 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, and (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 authority to operate equipment.

### Federal Communications Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 2.5cm (1 inch) during normal operation.

### Federal Communications Commission (FCC) RF Exposure Requirements

SAR compliance has been established in the laptop computer(s) configurations with PCMCIA slot on the side near the center, as tested in the application for certification, and can be used in laptop computer(s) with substantially similar physical dimensions, construction, and electrical and RF characteristics. Use in other devices such as PDAs or lap pads is not authorized. This transmitter is restricted for use with the specific antenna tested in the application for certification. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND THE COUNCIL of March 9, 1999 on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

### Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

### EU Countries Intended for Use

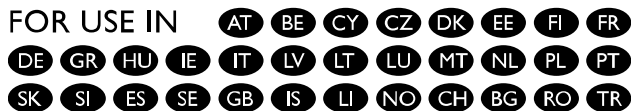
The ETSI version of this device is intended for home and office use in Austria, Belgium, Bulgaria, Cyprus, Czech, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Turkey, and United Kingdom. The ETSI version of this device is also authorized for use in EFTA member states: Iceland, Liechtenstein, Norway, and Switzerland.

### EU Countries Not Intended for Use

None

## EU Declaration of Conformity

- English:** This equipment is in compliance with the essential requirements and other relevant provisions of Directive 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Français:** Cet équipement est conforme aux exigences essentielles et autres dispositions de la directive 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.
- Čeština:** Toto zařízení je v souladu se základními požadavky a ostatními příslušnými ustanoveními směrnic 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.
- Polski:** Urządzenie jest zgodne z ogólnymi wymaganiami oraz szczególnymi warunkami określonymi Dyrektywą UE 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..
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- Magyar:** Ez a berendezés megfelel az alapvető követelményeknek és más vonatkozó irányelveknek (1995/5/EK, 2009/125/EK, 2006/95/EK, 2011/65/EK).
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- Українська:** Обладнання відповідає вимогам і умовам директиви 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Slovenčina:** Toto zariadenie spĺňa základné požiadavky a ďalšie príslušné ustanovenia smerníc 1995/5/ES, 2009/125/ES, 2006/95/ES, 2011/65/ES.
- Deutsch:** Dieses Gerät erfüllt die Voraussetzungen gemäß den Richtlinien 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Español:** El presente equipo cumple los requisitos esenciales de la Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Italiano:** Questo apparecchio è conforme ai requisiti essenziali e alle altre disposizioni applicabili della Direttiva 1995/5/CE, 2009/125/CE, 2006/95/CE, 2011/65/CE.
- Nederlands:** Dit apparaat voldoet aan de essentiële eisen en andere van toepassing zijnde bepalingen van richtlijn 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC..
- Português:** Este equipamento cumpre os requisitos essenciais da Directiva 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Norsk:** Dette utstyret er i samsvar med de viktigste kravene og andre relevante regler i Direktiv 1995/5/EC, 2009/125/EC, 2006/95/EC, 2011/65/EC.
- Svenska:** Denna utrustning är i överensstämmelse med de väsentliga kraven och övriga relevanta bestämmelser i direktiv 1995/5/EG, 2009/125/EG, 2006/95/EG, 2011/65/EG.
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- suomen kieli:** Tämä laite täyttää direktiivien 1995/5/EY, 2009/125/EY, 2006/95/EY, 2011/65/EY oleelliset vaatimukset ja muut asiaankuuluvat määräykset.

FOR USE IN 



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We, Edimax Technology Co., Ltd., declare under our sole responsibility, that the equipment described below complies with the requirements of the European R&TTE directives.

**Equipment:** PoE Web Smart Switch  
**Model No.:** ES-5208P, ES-5216P, ES-5224P

The following European standards for essential requirements have been followed:

### Directives 1999/5/EC

EMC	:	EN55022:2010+AC:2011 Class A EN55024:2010 EN61000-3-2:2014 Class A EN61000-3-3:2013 IEC 61000-4-2:2008 IEC 61000-4-3:2006+A1:2007+A2:2010 IEC 61000-4-4:2012 IEC 61000-4-5:2014 IEC 61000-4-6:2013 IEC 61000-4-8:2009 IEC 61000-4-11:2004
Safety (LVD)	:	EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011+A2:2013

Edimax Technology Co., Ltd.  
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