Air Live®
Powered by OvisLink Corp.

POE-FSH8PW

8 Port 24V Passive POE Web Smart Switch

User's Manual

www.airlive.com

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FCC Statement

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 the FCC Rules.

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

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

FCC Caution

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

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. For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

IMPORTANT NOTE

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Table of Contents

1 Introduction

1.1 Overview

The **POE-FSH8PW** is a Power Control Passive POE Switch. It was designed for easy installation and high performance in an environment where traffic is on the network and the number of users increases continuously.

It consists of 8 PSE/PoE ports. That can solve the limitation of the power outlet location and offer the system designer a flexible solution to locate the network device everywhere.

By the default, the PoE port's power is turned off, you must turn on the power through web management. This switch does not work with 802.3af and 802.3at PoE devices, please make sure your device's PoE port can accept 24V passive PoE power, and 12V passive PoE kit will not work with this switch.

The compact rigid desktop size was specifically designed for small to medium workgroups. It can be installed where space is limited; moreover, it provides smooth network migration and easy upgrade to network capacity. The switch does not include the optional rack mount kit, it must be purchased separately.

This user's manual will help you to uncover most functions of the POE-FSH8PW with step-by-step instructions presented by high quality illustrations. Thank you for choosing OvisLink's product.

***Note:**

- This switch does not work with 802.3af and 802.3at PoE devices. It uses 24V passive PoE standard
- Please make sure your device's PoE port can accept 24V passive PoE power.

1.2 Guide to the Chapters

- **Chapter 1:** Introduction and Quick Setup guide. All the essential information including IP Address and Password information are in the Quick Setup section.
- **Chapter 2:** Detail installation instruction including how to make Cat. 5 Cable
- **Chapter 3:** LED indicators
- **Chapter 4:** Detail information on Web management including how to setup remote management.

1.3 Quick Setup

This section provides the essential information for experienced users to operate the switch immediately. For detailed installation instruction, please see chapter 2 for more information.

Power-On the switch

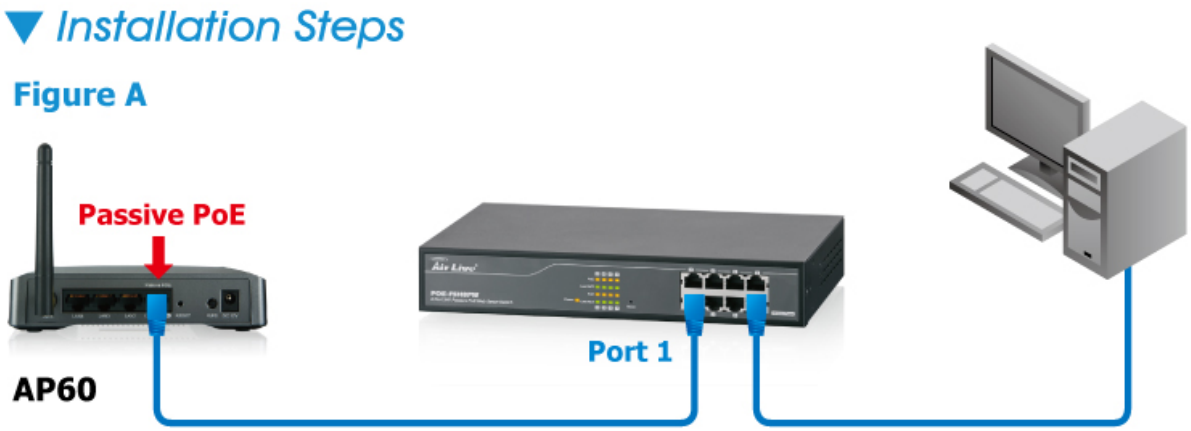
- The POE-FSH8PW has a built-in power supply to operate with 100 ~ 240V AC, 50 ~ 60Hz power source.
- The AC power cord connector is located at the rear of the unit and the On/Off switch is next to the connector.
- After the Switch is powered on, it will perform "**self-diagnostic**" test. This process takes about 5 seconds to complete.

LED Table

LED	Status	Description
PoE	On	The POE function is enabled.
	Off	The POE function is disabled.
Power	On	Power is on.
	Off	Power is off.
Link/ACT	On	Port is for connection.
	Off	No connection.
	Flashing	Data is transmitting or receiving

1.4 Installation Steps

This section lists the installation procedures in steps. Each step's instruction is thoroughly explained in the subsequent sections of following chapter.



Step1. Connect your device's passive PoE port to the switch's LAN port

Step2. Connect your PC to the switch.

Step3. Set your PC's IP address to 192.168.2.50.

Step4. Open your web browser and enter **"192.168.2.1"** to get into the switch's web management.

Step5. Enter "**admin**" for username and "**airlive**" for password.

Step6. Go to **"Port Management"**, and then select "PoE".

Step7. Turn on the port number where you connect the device.

Figure B

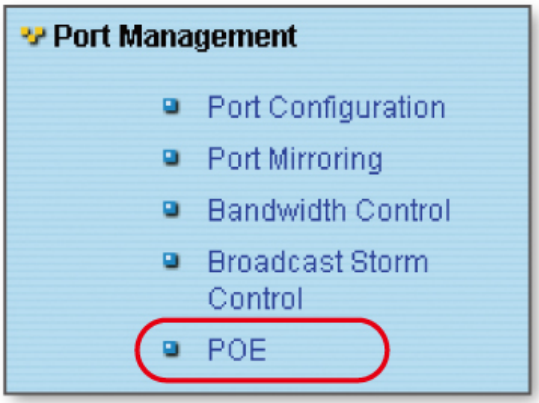
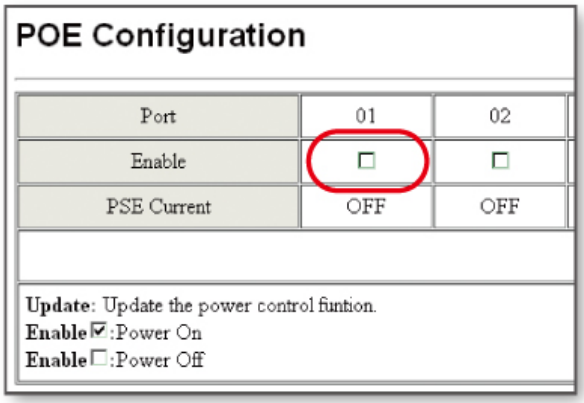


Figure C



Step8. If you want to install the switch on the 19" rack, please install the mounting kit (optional).

Step9. Please see Chapter 4 for further configurations.

2 Installation of the Switch

This chapter provides the detailed instructions for installation of the switch. For concise installation instruction, the previous chapter's "**Quick Setup**" section provides all the important information including IP address, password, and LED table for user's reference.

2.1 Unpack the Package

Before you begin the installation of **POE-FSH8PW** Management Switch, make sure that you have all the necessary accessories that come with your package. Follow the steps below to unpack your package contents:

1. Clear out an adequate space to unpack the package carton.
2. Open the package carton and take out the contents carefully.
3. Put back all the shipping materials such as plastic bag, padding and linings into the package carton and save them for future transport need.

After unpacking and taking out the entire package contents, you should check whether you have got the following items:

- POE- FSH8PW
- One AC Power Cord
- Quick Install Guide
- Support CD-ROM (The PDF version of this User's Manual can be found within)

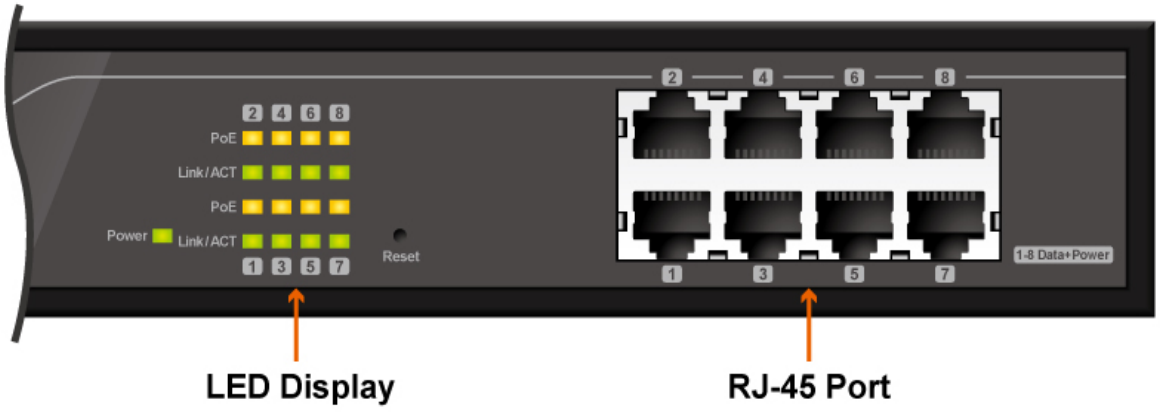
If any of these above items is missing or damaged, please contact your local dealer for replacement.

***Note:** The switch does not include the optional rack mount kit, it must be purchased separately

2.2 Hardware Overview

Front Panel

The front panel of the web smart switch consists of 8 10/100Base-TX RJ-45 ports. The LED Indicators are also located on the front panel.



LED Indicators:

Comprehensive LED indicators display the status of the switch and the network (see the LED Indicators chapter below).

100BASE-TX Fast Ethernet PoE Ports (Port 1~8):

These ports are PoE enable ports. These PoE ports will be automatically activated when a compatible terminal is identified, and the PoE port will supply power to the connected PoE device.

For legacy devices that are not yet compatible, the PoE port will not offer the power to these devices. This feature allows users to freely and safely mix legacy and Power over Ethernet compatible devices on their network.

These ports support network speeds of either 10Mbps or 100Mbps, and can operate in half- and full- duplex transfer modes. These ports also support the automatic MDI/MDIX crossover detection function, providing true "**plug and play**" capability. Just plug-in the network cable to the hub directly and regardless if the end node is a NIC (Network Interface Card) or switch and hub.

Reset:

The Reset button is to reset all the setting back to the factory default.

***Note:** Be sure that you recorded the setting of your device, else all the setting will be erased when pressing the "**Reset**" button.

The Rear Panel

The 3-pronged power plug is placed at the rear panel of the switch right side shown as below.

2.3 Installation Site Preparation

You can mount POE-FSH8PW either on desktop or on a 19-inch rack. If you plan to mount the switch on desktop, please choose a steady, level surface in a well-ventilated area that is free from excessive dust. In any case, the installation site chosen for your switch has to comply with the following requirements:

- The surface where you want to mount the switch must be able to sustain at least 1.5kg.
- Do not place heavy objects (more than 3kg) on top of the switch.
- The location must preferably be free from excessive dust, away from heat vent, hot-air exhaust and direct sunlight.
- The switch should not be placed near large electric motors or other strong electromagnetic sources. As a reference, the strength of the electromagnetic field on site should not exceed the (RFC) standards for IEC 801-3, Level 2(3V/M) field strength.
- The air temperature in the location should be within a range of 0 to 65°C.
- The relative humidity in the location should not exceed 90% non-condensing humidity.
- The distance between the RJ-45 port and the standard network interface should not exceed 100 meters.
- Adequate space should be allowed in front of all the ports, so that each port is easily accessible for cable connections.
- Leave at least 10cm(4 inch) of space around the switch to allow heating dissipation

2.4 Rack Mounting

The POE-FSH8PW can be mounted on a standard size 19-inch rack, which can in turn be placed in a wiring closet with other equipments.

Before you can mount the switch on the rack, first you must attach the mounting brackets on both sides of the switch with screws, and then mount it as a unit on the rack.

To mount the unit on a rack, please follow the steps below:

Step 1. First, align the holes on the bracket with the holes on both side of the switch.

Step 2. Insert screws into the holes and then fasten the bracket on one side of the switch with a screwdriver.

Step 3. Repeat Step 1 and 2 to fasten the bracket on the other side of the switch.

Step 4. Mount the unit on the rack and align the notches on both brackets with mounting holes on the rack, and then secure the unit with suitable screws.

Fastening the brackets on the switch

Attaching the Switch to a 19-inch rack

2.5 Desktop Installation

The POE-FSH8PW has four rubber pads attached on each corner of its underside. These pads serve as cushioning against vibration and prevent the switch from sliding off its position. They also allow adequate ventilation space when you place the switch on top of another device.

Desktop installation

- The location you choose to install your switch and the way you configure your network may greatly affect its performance. Please see the previous section for “installation site” preparation.
- Do not place more than 1.5kg (6.6lbs) of weight on the top of the switch.
- Leave at least 10cm of space around the switch to allow proper heating dissipation.

2.6 Cabling Requirements

For 100BASE-TX ports

The 8 RJ-45 station ports require Cat. 5 twisted-pair UTP/STP cable for connection. When configuring within the 10/100 BASE-T cabling architecture, the cable distance should be within 100m.

The following table summarizes the cable requirement for 10/100BASE-TX connection:

10BASE-T	100 ohm Category 3, 4, 5 UTP/STP cable
100BASE-TX	100 ohm Category 5 UTP/STP cable

Auto MDI/MDI-X function

The POE-FSH8PW is equipped with Auto-MDI/MDI-X function, which allows you to use straight-thru cable even when connecting to another switch/hub. Simply use the straight-through cable for all types of 10/100BASE-TX connections, either to a PC or to a networking device such as other hub or switch.

Connection / Specification	10 /100Base-TX
Interface	RJ-45
Cable to Use	
To an end station	Straight-through twisted-pair cable
To a hub/switch	Straight-through twisted-pair cable
Maximum Distance	100 meters

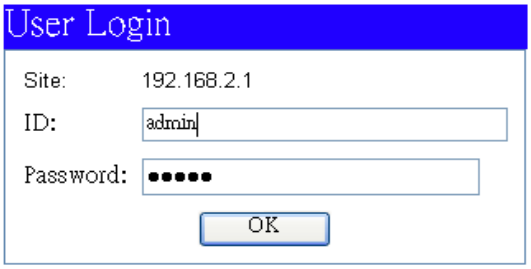
2.7 Connecting to Power

POE-FSH8PW features a universal auto-select power supply unit, which allows a power connection to a wide range of input voltages from 100 to 240VAC @ 50 ~ 60Hz.
To establish its power connection, simply plug the female end of the power cord into the power connector on the rear of the switch and the male end of the power cord into a suitable power outlet. Once you have correctly plugged in the power, you can then turn on the Power Switch to activate the switch.

2.8 Reset to Default

When you forgot your IP or password, please use the reset button for the factory default setting? Please take the following steps to reset the Web Smart Switch back to the original default:

Step 1. Turn on the POE-FSH8PW.
Step 2. Press and hold the reset button continuously for 10 seconds and release the reset button.
Step 3. The switch will reboot for 5 seconds and the configuration of switch will back to the default setting.



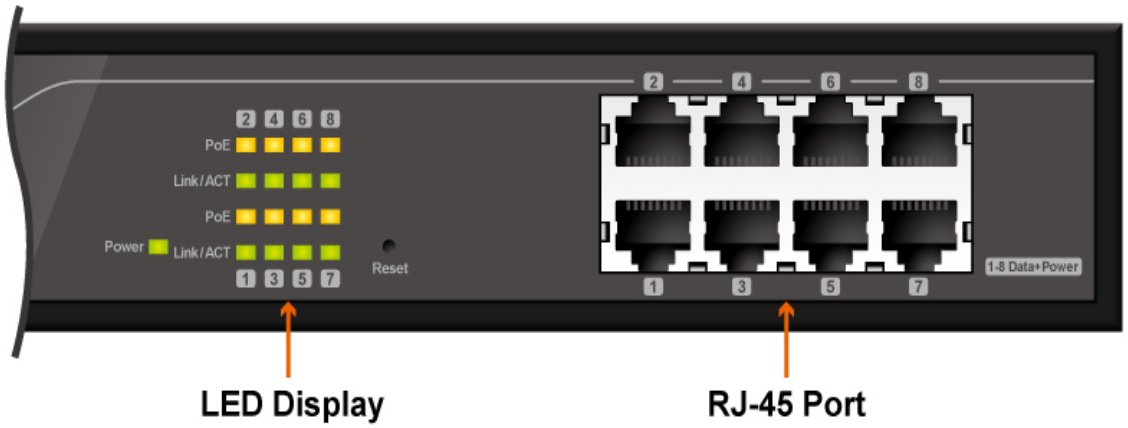
Key in the user ID and the password to pass the authentication; the default ID and Password is as below,

IP Address: 192.168.2.1
ID: **admin**
Password: **airlvie**

3 LED Indicators

Before connecting any network device to POE-FSH8PW, you should take a few minutes to look over this chapter and get familiar with the front panel LED indicators of your Switch.

3.1 Comprehensive LEDs



3.2 LED Table

LED	Status	Description
PoE	On	The POE function is enabled.
	Off	The POE function is disabled.
Power	On	Power is on.
	Off	Power is off.
LINK/ACT	On	Port is for connection.
	Off	No connection.
	Flashing	Data is transmitting or receiving

4 Web Management

The POE-FSH8PW can be configured by web based interface, including administrator, port management, VLAN setting, per port counter, trunk setting, QoS setting, security filter, configuration/ backup/recovery, miscellaneous, log out, and so on. The device based smart switch supports main stream browsers, such as IE 6.0~7.0, Firefox 2.0~3.0, to configure the device function. All functions are illustrated below.

4.1 Setup your computer for Web management

The Concept of Subnet

Under the TCP/IP environment, network devices must be on the same subnet in order to see each other. This means before you can configure the switch through web browser, your must set your computer to the same subnet as the switch. For two network devices to be on the same subnet, they must have the following 2 criteria:

- Their IP address must be on the same subnet. For example, if one IP address is 192.168.2.1. The other's IP address must be 192.168.2.x (x is any number between 2 and 254) for Class C subnet. To find out the IP address information for your computer. Under WinNT/2000/XP, please open Command Line window and type "**ipconfig**". Under Win9x, please run "**winipcfg**".
- They must have the same subnet mask. For example, if one machine is 255.255.255.0. The other machine must also set to the same 255.255.255.0 mask.

Configure your computer's IP

Before accessing the switch through web browser, please follow the instruction below to configure your computer's IP to the same subnet as the switch. If your switch's IP has not been changed, it should have the following factory default value:

The switch's Default IP

IP Address: 192.168.2.1
Subnet Mask: 255.255.255.0

Now if your computer's IP is not in the same subnet as the switch, please follow the steps below to change the computer's IP:

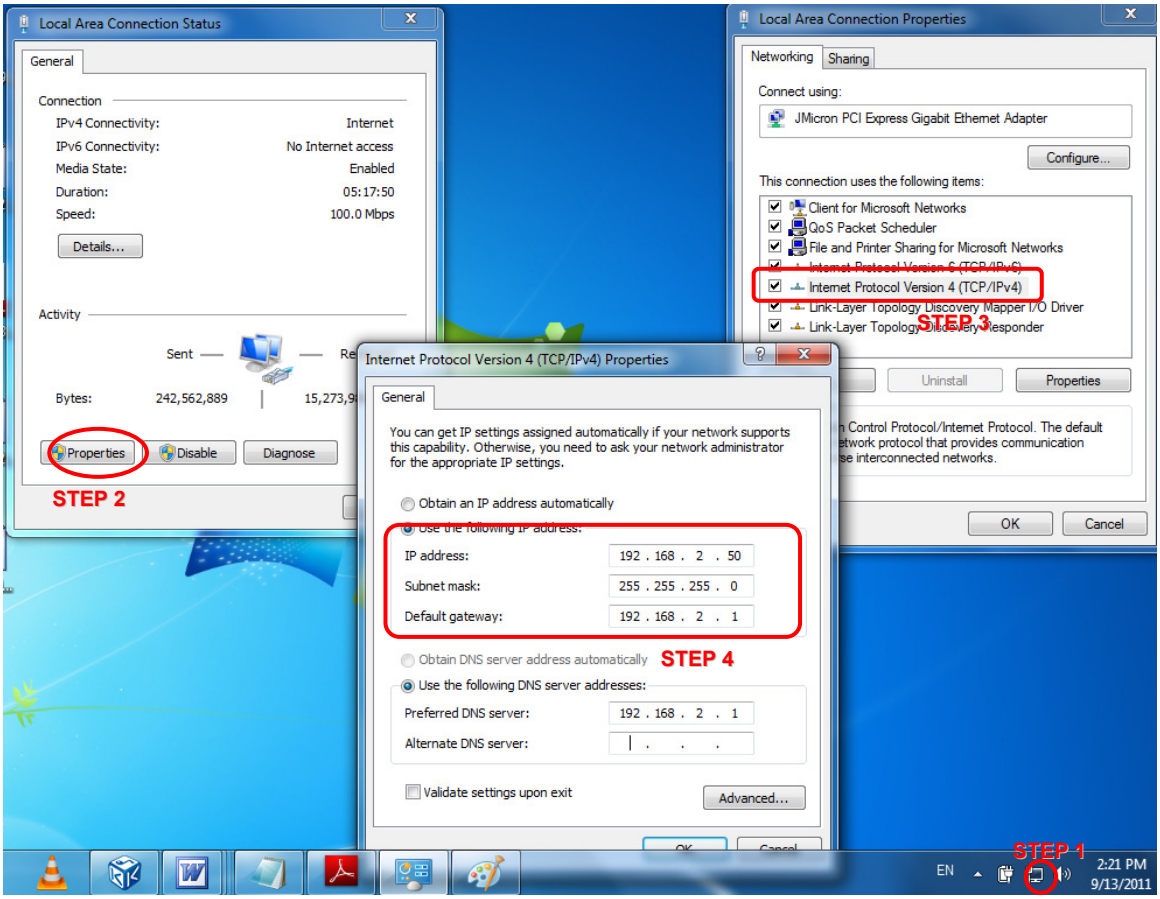


Figure 4-1 Manual IP setting

Step 1. Double click on the network connection status icon on the task bar. This should bring up a window showing the status of the current network connection. If there is no network status icon on the task bar, please go to the "**Start** -> **Settings** -> **Network** -> **Local Connection**" of the task bar's Start menu.

Step 2. Clock on the "**property**" icon.

Step 3. Double click on the "Internet Protocol (TCP/IP)

Step 4. Click on "**Use the following IP address**" button and enter the computer's address manually. This IP address must be on the same subnet as the switch but different from the switch's IP. Please make sure the IP is not used by other network device. If the switch's IP address is of factory's default value. We recommend enter the following for computer's IP:

IP Address: 192.168.2.50
Subnet Mask: 255.255.255.0
Gateway: 192.168.2.1

Click "**Ok**" after finish entering the IP.

***Note1:** An alternative method is to change the switch's IP to the same subnet as the computer. Please use console-port management to change switch's IP.

***Note2:** If IP address of the switch is lost, please use console port management to find the switch's IP address.

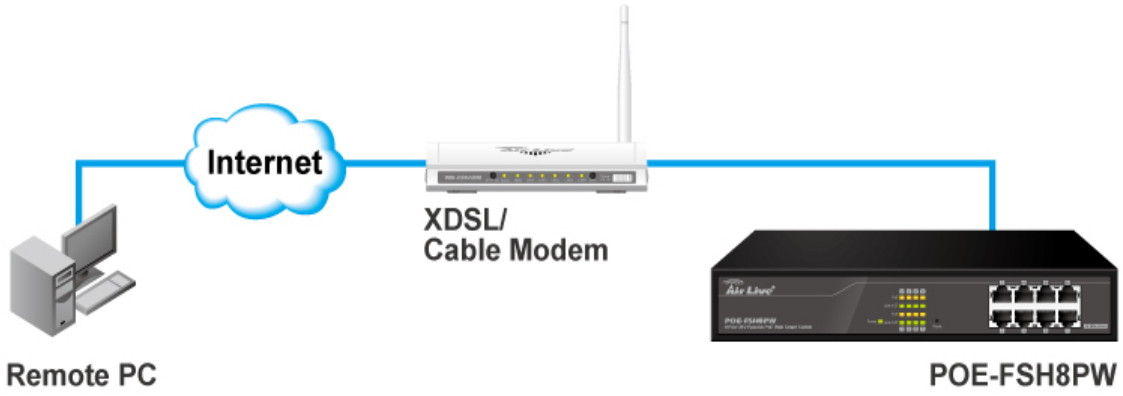
***Note3:** The POE-FSH8PW has DHCP client ability. This allows DHCP server (or router) to assign IP automatically. However, we do not recommend turning on the DHCP client because the DHCP server assign the IP randomly. The DHCP client should be used only when connecting directly to Cable Modem (for remote management) whose service provider uses DHCP for IP assignment.

Now, you will be able to access the switch by typing in the switch's IP address on the web browser.

4.2 Remote Management

In this section, you will learn how to setup your computer and the router for remote web management. Remote management allows MIS to manage a switch from outside of the switch's IP domain or from Internet. Depending on the type of Internet connection you have, there are two ways to setup the switch to be available through Internet.

Direct Connection to Internet



Remote PC

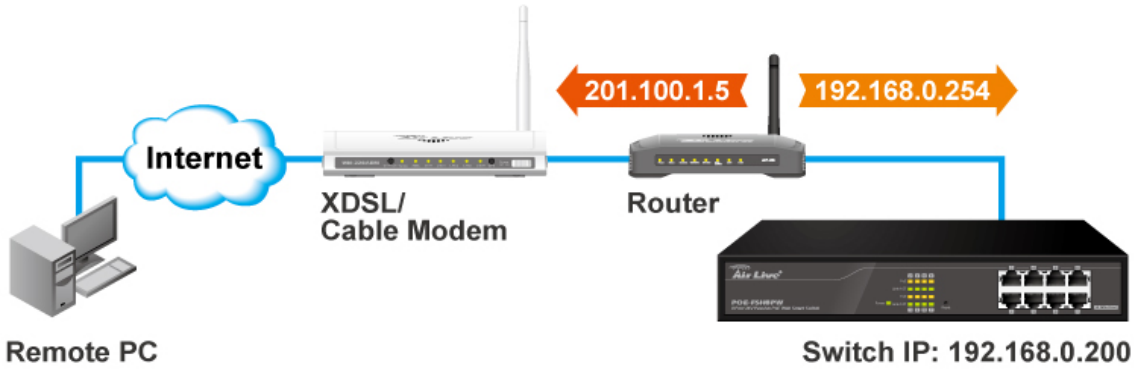
If you have a fixed IP xDSL account or cable modem account, and there is no router in the network, you can connect your switch directly to Internet via xDSL modem/Cable Modem. However, this method is not recommended as the LAN will be directly exposed to the Internet.

- **Fixed IP:** If your ISP has assigned you a fixed IP. Please go to the Switch's IP configuration and enter the IP address, Subnet Mask, and Gateway information offered by your ISP. If your ADSL connection is PPPoE or PPTP type, you have to connect through a router for remote management.

- **Cable Modem:** If your Cable service provider uses DHCP for IP assignment, please turn on the DHCP function under IP configuration. Make sure there is no DHCP server in the network. Then the Cable provider will assign the switch with a IP and Gateway. Go to the console port management to find out what IP has been assigned to the switch.

When the configuration is finished, the Remote PC can access the switch by typing the switch's IP address on the web browser.

Connect through Broadband Router



If you have an IP sharing router in the network, you can open a virtual server on the router to allow the switch to be managed through Internet. This method is more recommended as the broadband router provides natural fire wall protector from hackers.

In the diagram above, the router has the WAN (given by the ISP) port IP address "**201.100.1.5**" and LAN port address "**192.168.0.254**". The switch's IP is "**192.168.0.200**". Please follow the instruction below to setup the router and switch for remote access:

On the Switch

- On the IP setting, set the gateway to Router's LAN port address 192.168.0.254
- Please make sure the subnet mask is the same as the router's.
- On the Router
- Go to router's Virtual Server setting and open the Web port (TCP Port 80) to the switch's IP address 192.168.0.200
- If your router require enter the beginning and ending Port (from PortX to PortX), enter 80 for both.

Now the Remote PC will be able to access your switch by entering "**201.100.1.5**" in the Web browser's address field.

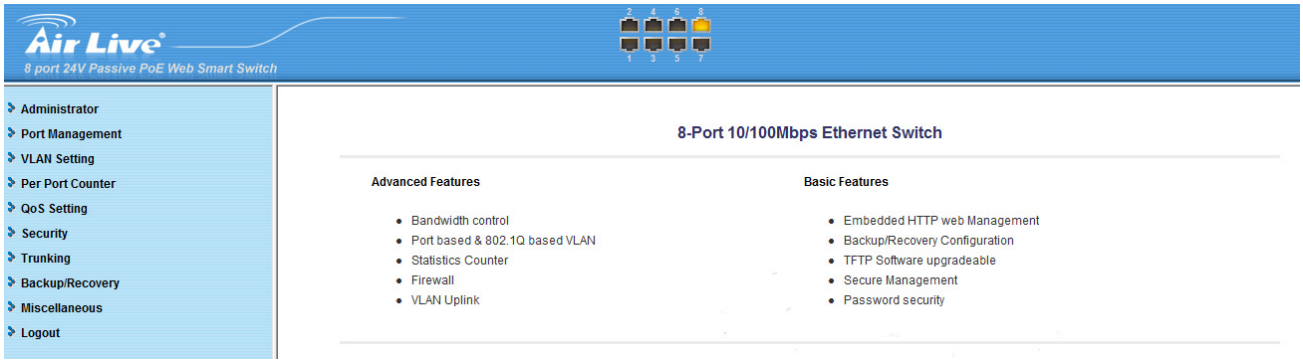
4.3 Get Into the Web management

After you have properly configured the computer and switch's IP, you can get into the web management by the following steps:

Step 1. Open the Internet Explorer
Step 2. Enter the switch's IP address in the Address field and press enter.
Step 3. When prompt for User's name and Password, enter the following information:

- User's Name: **admin**
- Password: **airlive**

You should see the following welcome screen after the process is completed:



Menu Bar

On the left side of the screen is the Menu bar where you and click to configure management functions. Most configuration functions are under the "**Administrator**" menu. We will explain the menu items in the remaining section of this chapter.

Top Switch Image

The switch's image on the upper portion of the screen gives the quick overview of the port connection status. When a port is plugged in, the switch's image will show a "**plug**" on the corresponding port. Click on a port will show the quick port status.

4.4 Administrator

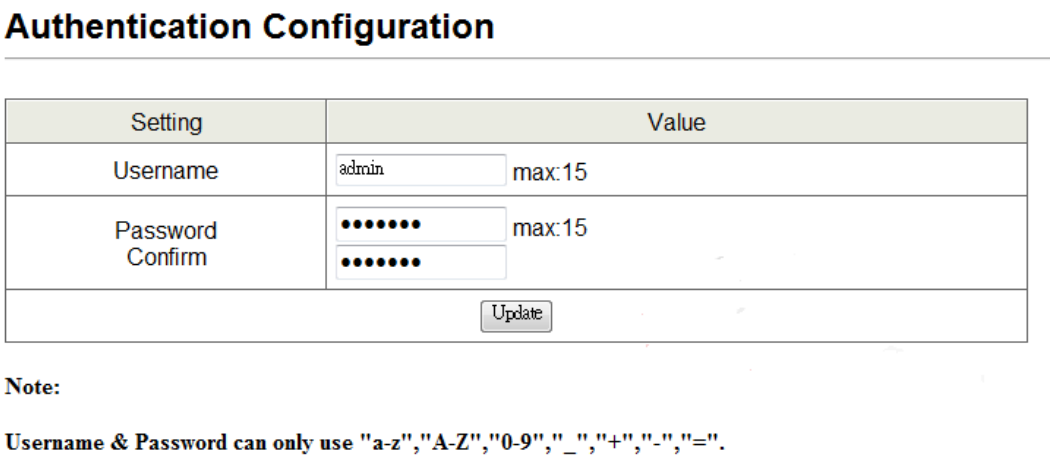
There are many management functions can be set or performed if you click the Administrator on Home Page, including:

- Authentication Configuration
- System IP Configuration
- System Status
- Load Default Setting
- Firmware Update
- Reboot Device

In the following sessions, we will talk in detail about the management functions under the Administrator menu.

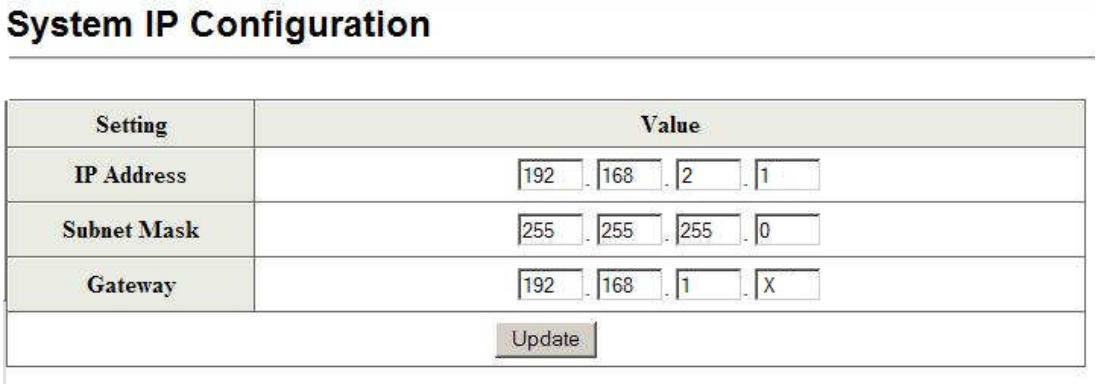
4.4.1 Authentication Configuration

This page shows authentication configuration information. User can set new Username and Password in this page.



4.4.2 System IP Configuration

This page shows system configuration including the current IP address and sub-net mask and gateway.



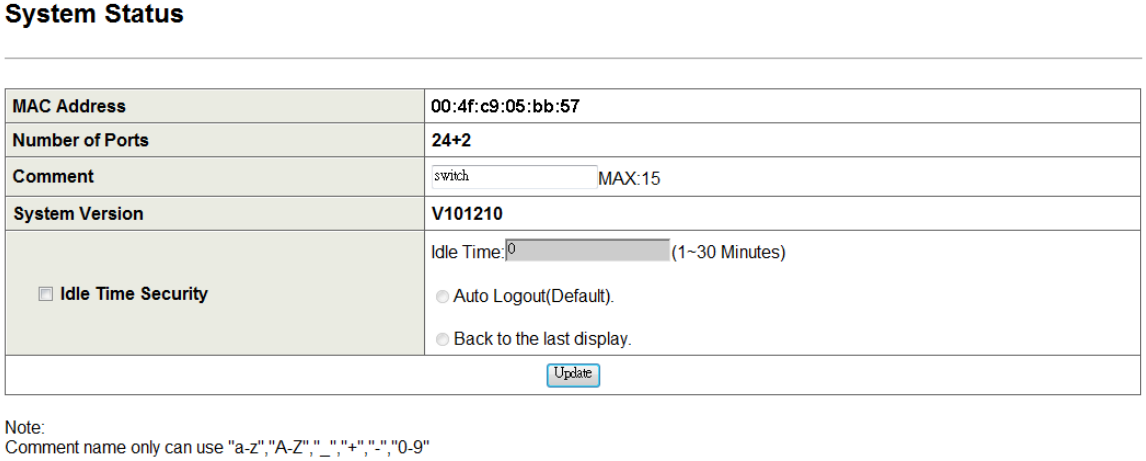
User can configure the IP settings, Subnet Mask, Gateway as below:

- **IP address:** Manually assign the IP address that the network is using. The default IP is 192.168.2.1
- **Subnet Mask:** Assign the subnet mask to the IP address.
- **Gateway:** Assign the network gateway for industrial switch.

If you change the IP address of this switch and then press Update. It will show "**update successfully**" then press Reboot button. It will enter user login screen automatically.

4.4.3 System Status

This page is used to check the status of switch, including Switch MAC address and software version. The comment field allows the network administrator to input an easy-to-remember nickname for this switch. The legal characters are "**a~z**" and "**A~Z**", "**_**", "**-**", "**+**", "**0 ~9**", excluding special character.



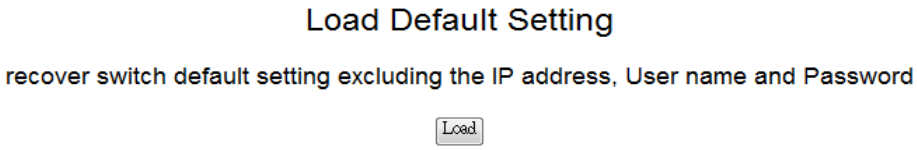
- **MAC Address:** Displays the unique hardware address assigned by manufacturer (default).
- **Number of Ports:** Displays number of ports in the switch.
- **Comment:** You can type some comment for the switch.
- **System Version:** Displays the switch's firmware version.

And then click **Update** button.

4.4.4 Load Default Setting

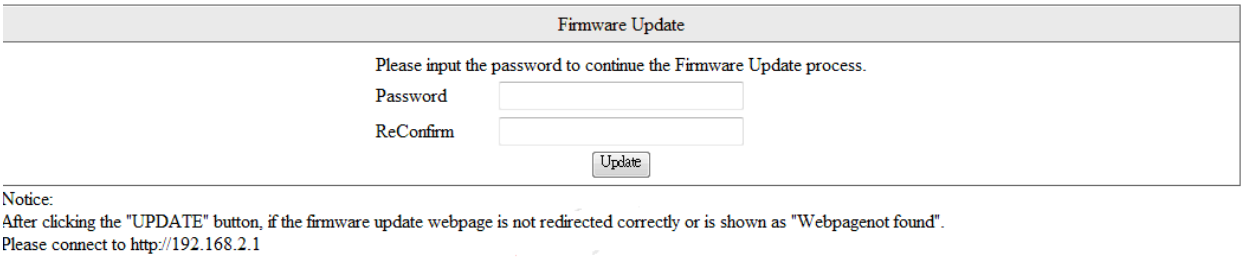
Configuration Clicking the "**Load**" button will make the switch being set to the original configuration.

***Note:** This change only concerns the switch behavior, excluding the change for user name, password and IP configuration. After Load Default is executed, the all settings will be restored to default setting.



4.4.5 Firmware Update

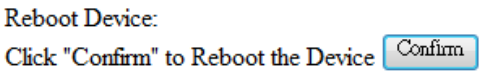
Before the firmware update procedure is executed, you should enter the password twice and then press Update button. The smart switch will erase the flash memory. There is a self-protection mechanism in the Boot Loader, so the Boot Loader will keep intact. Even though the power is turned off or the cable link fails during the firmware update procedure, the Boot loader will restore the code to firmware update page.



After pressing Update button, the old web code will be erased. Then you can select the image file and press “**Update**” button to update the firmware you need.

4.4.6 Reboot Device

Click **“Confirm**" button to reboot the device.



***Note:** The reboot is for software base instead of hardware base

4.5 Port Management

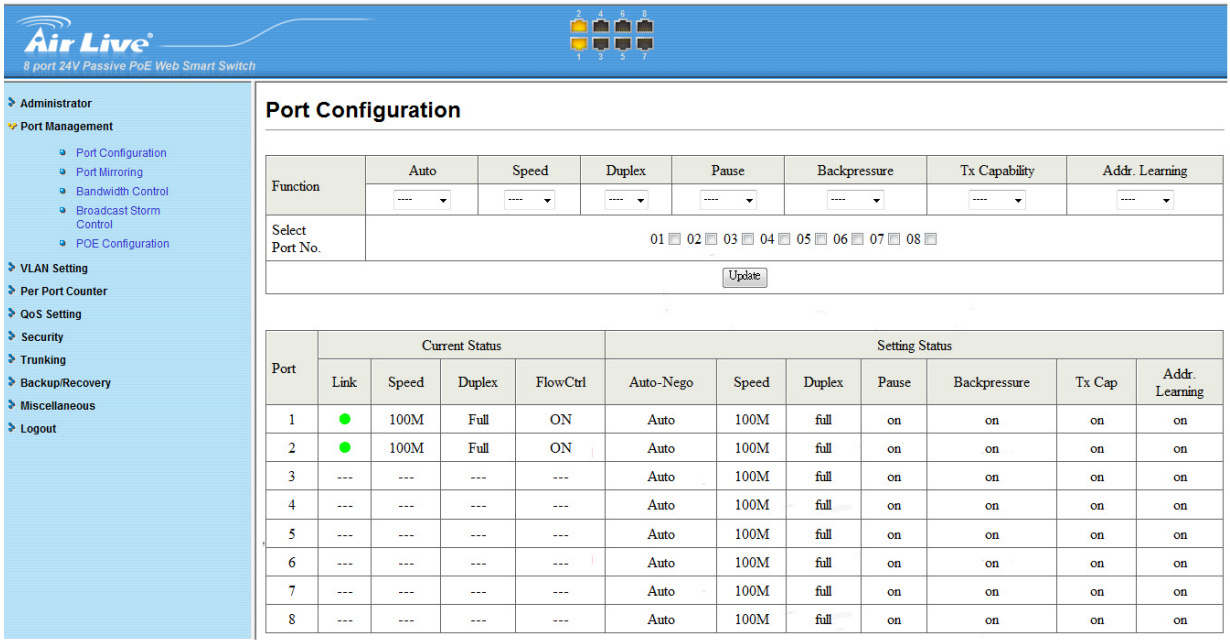
There are many management functions can be set or performed if you click the Port Management on Home Page, including:

- Port Configuration
- Port Mirroring
- Bandwidth Control
- Broadcast Storm Control
- POE

In the following sessions, we will talk in detail about the management functions under the Port Management menu.

4.5.1 Port Configuration

In Port Configuration, you can set and view the operation mode for each port.



Port	Current Status				Setting Status						
	Link	Speed	Duplex	FlowCtrl	Auto-Nego	Speed	Duplex	Pause	Backpressure	Tx Cap	Addr. Learning
1	●	100M	Full	ON	Auto	100M	full	on	on	on	on
2	●	100M	Full	ON	Auto	100M	full	on	on	on	on
3	---	---	---	---	Auto	100M	full	on	on	on	on
4	---	---	---	---	Auto	100M	full	on	on	on	on
5	---	---	---	---	Auto	100M	full	on	on	on	on
6	---	---	---	---	Auto	100M	full	on	on	on	on
7	---	---	---	---	Auto	100M	full	on	on	on	on
8	---	---	---	---	Auto	100M	full	on	on	on	on

- **Auto:** Enable and Disable. Being set as '**Enable'**, the Speed, Duplex mode, Pause, Backpressure, TX Capability and Address Learning are negotiated automatically. When you set it as '**Disable'**, you have to assign those items manually.
- **Speed:** When the Auto-Negotiation column is set as Disable, users have to set the connection speed to the ports ticked.
- **Duplex:** When the Auto-Negotiation column is set as Disable, users have to set the connection mode in Half/Full to the ports ticked.
- **Pause:** Flow Control for connection at speed of 10/100Mbps in Full-duplex mode.
- **Backpressure:** Flow Control for connection at speed of 10/100Mbps in Half-duplex mode.
- **TX Capability:** When the Auto-Negotiation column is set as Disable, users have to set this column as Enable or Disable.
- **Addr. Learning:** When the Auto-Negotiation column is set as Disable, users have to set this column as Enable or Disable.
- **Select Port No.:** Tick the check boxes beside the port numbers being set.
- Click "**Update**" to have the configuration take effect.

- **Current Status:** Displays current port status.
- **Setting Status:** Displays current status.

Click "**Update**" to make the configuration effective

4.5.2 Port Mirroring

The port mirroring function is accomplished by setting the following items.

- **Destination port:** Theoretically it's possible to set more than one destination port in a network. Actually the port mirroring function will lower the network throughput, and therefore it's recommended to set "**only one**" destination port in a network.
- **Monitored packets:**

  (1) **Disable:** means this function is disabled.

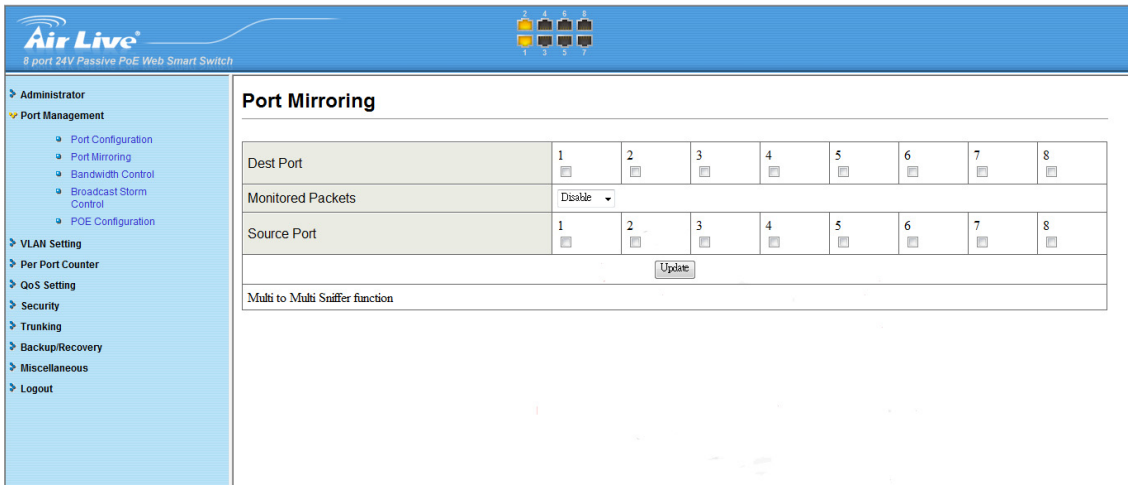
  (2) **RX:** means copy the incoming packets of the selected source port to the selected destination port.

  (3) **TX:** means copy the outgoing packets of the selected source port to the selected destination port.

  (4) **Rx & Tx:** means the combination of Rx and Tx.

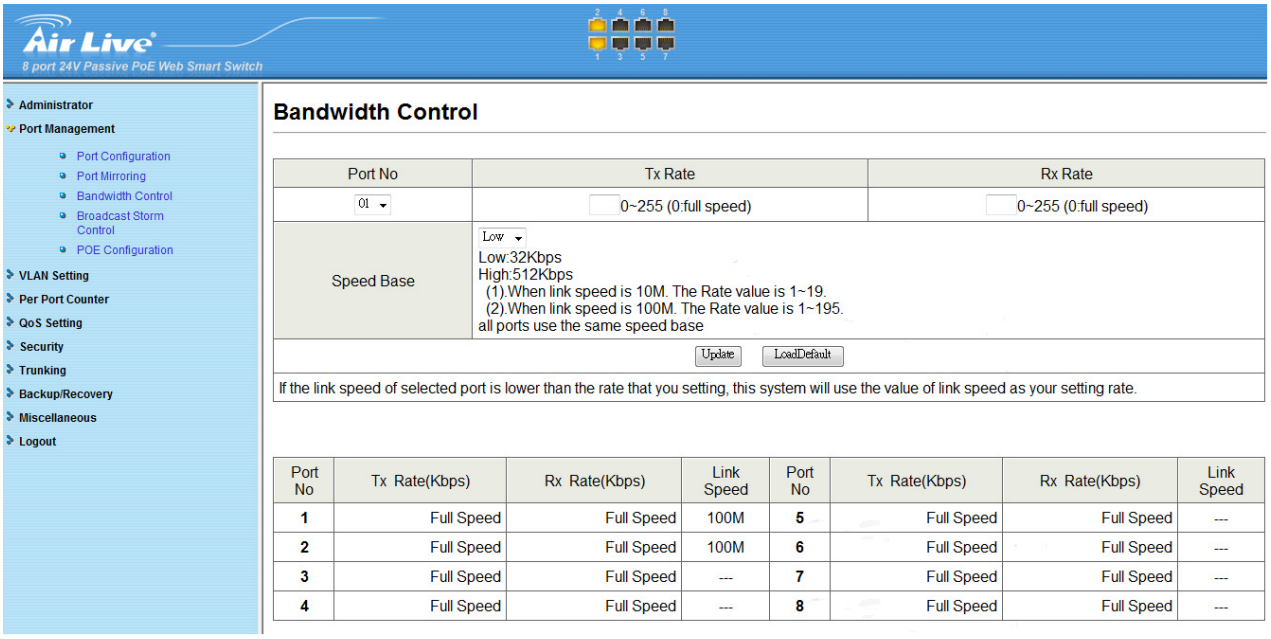
- **Source port:** the traffic source that will be copied to the destination port.

Take the following configuration as an example.
(a) **Source port:** Port 1 ~ Port 4.
(b) **Destination Port:** Port 5 ~Port 8.
(c) **Mirrored packet:** Rx.
This means all packets received at port 1 ~port 4 will be copied to port 5, port 6, port 7 and port 8.Care should be taken that the more source ports and destination ports is set, the lower network throughput is available for normal traffic.

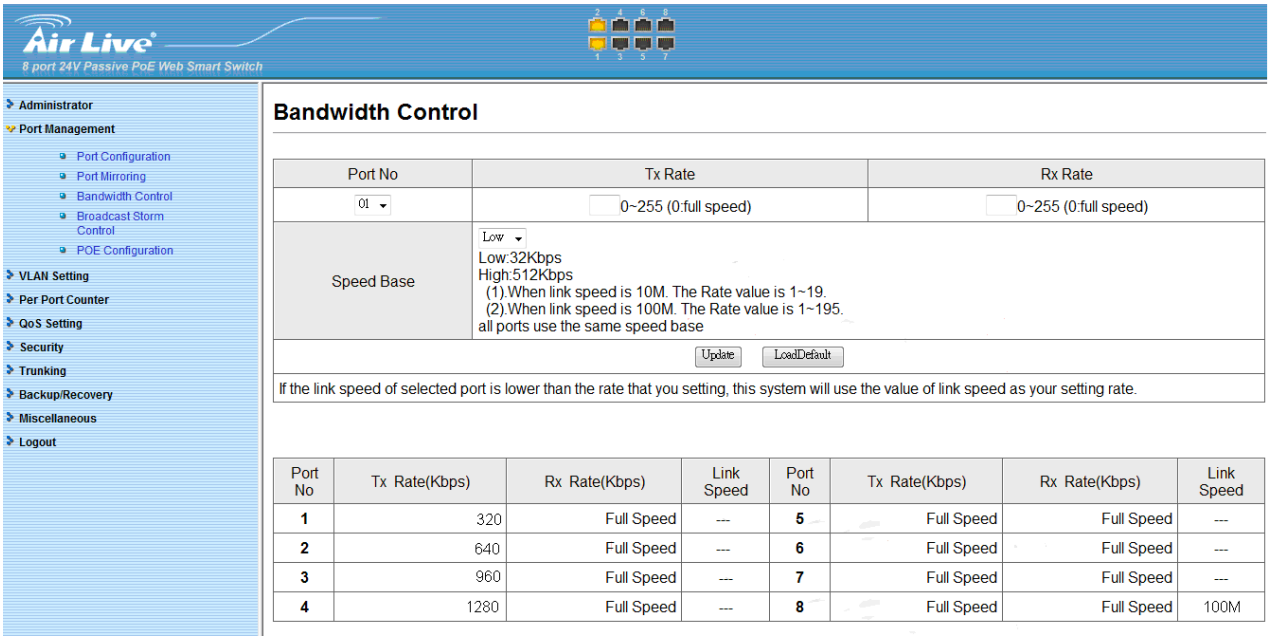


4.5.3 Bandwidth Control

This page allows the setting of the bandwidth for each port. The TX rate and Rx rate can be filled with the number ranging from 1 to 255. This number should be multiplied by the selected bandwidth resolution to get the actual bandwidth.



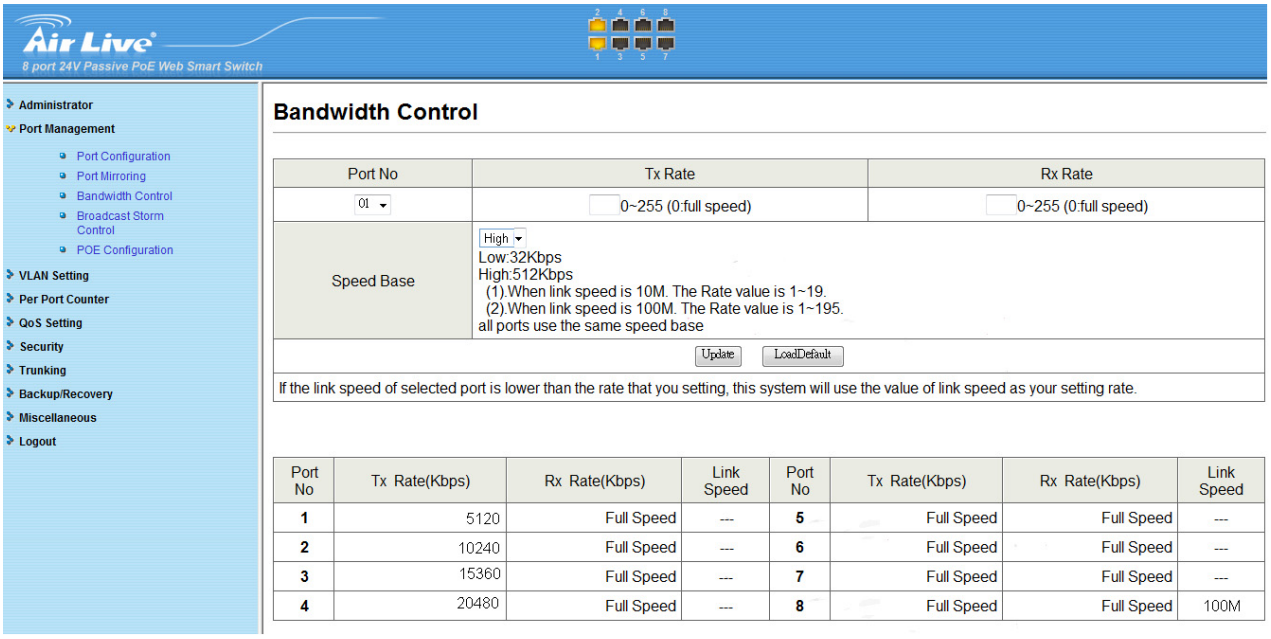
(a) Low bandwidth for TX



Example 1:

The TX number of the port1~4 is set to 10, 20, 30, 40 respectively, and Speed base is set to "**low**". The real bandwidth comes from the formula of 32Kbps*10, 32Kbps*20, 32Kbps*30 and 32Kbps*40 respectively. After the "update" button is executed, the real bandwidth will show up in TX fields.

(b) High bandwidth for TX

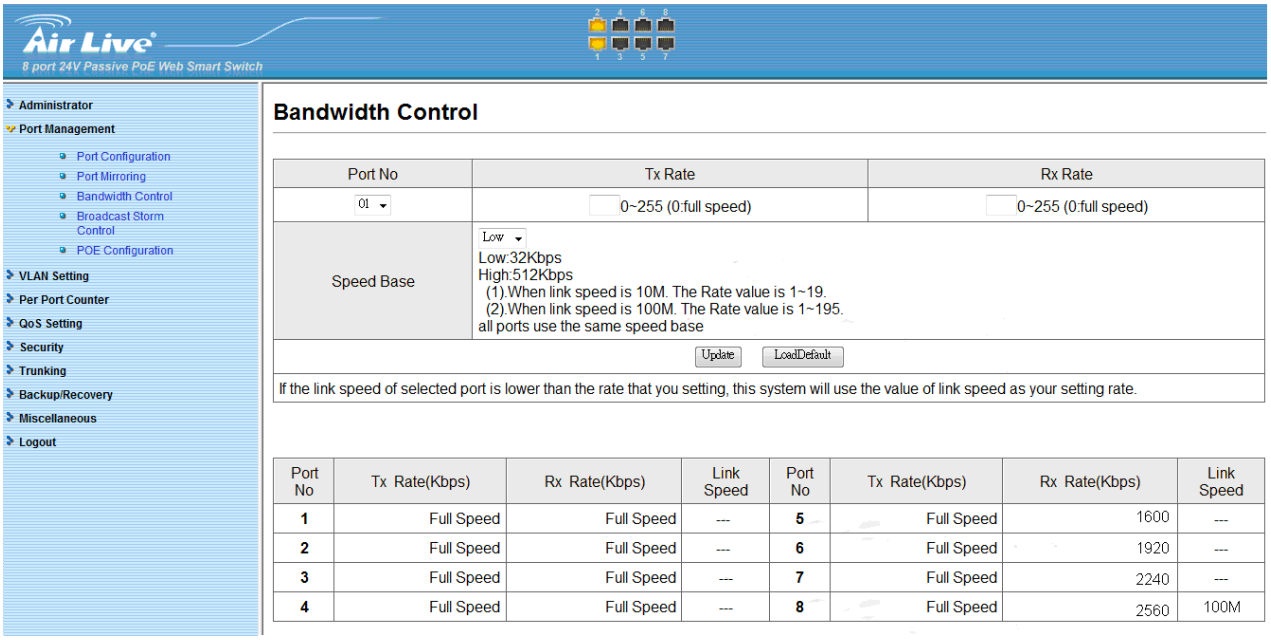


Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed	Port No	Tx Rate(Kbps)	Rx Rate(Kbps)	Link Speed
1	5120	Full Speed	---	5	Full Speed	Full Speed	---
2	10240	Full Speed	---	6	Full Speed	Full Speed	---
3	15360	Full Speed	---	7	Full Speed	Full Speed	---
4	20480	Full Speed	---	8	Full Speed	Full Speed	100M

Example 2:

The TX number of the port1~4 is set to 10, 20, 30, 40 respectively, and Speed base is set to "**High**". The real bandwidth comes from the formula of 512Kbps*10, 512Kbps*20, 512Kbps*30 and 512Kbps*40 respectively. After the "**update**" button is executed, the real bandwidth will show up in TX fields.

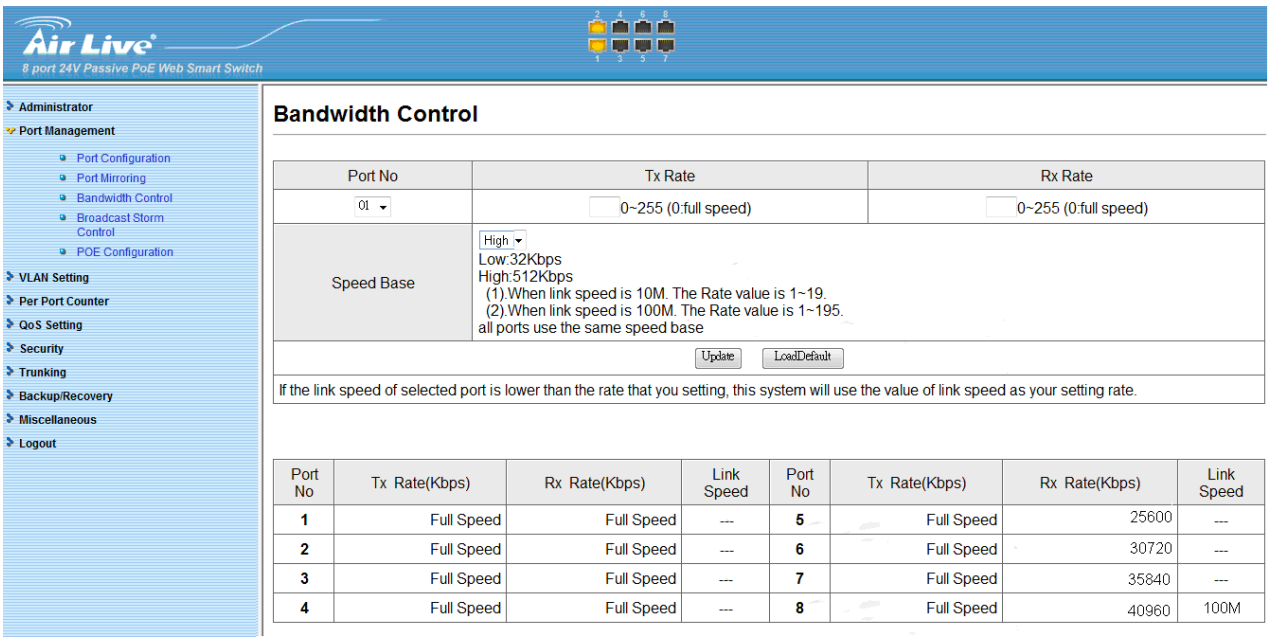
(c) Low bandwidth for Rx



Example 3:

The RX bandwidth number of the port 5~ port 8 is set to 50, 60, 70, 80 respectively, and Speed base is set to "**low**". The real bandwidth comes from the formula of 32Kbps*50, 32Kbps*60, 32Kbps*70 and 32Kbps*80 respectively after the "**update**" button is executed, the real bandwidth will show up in RX fields.

(d) High bandwidth for RX



Example 4:

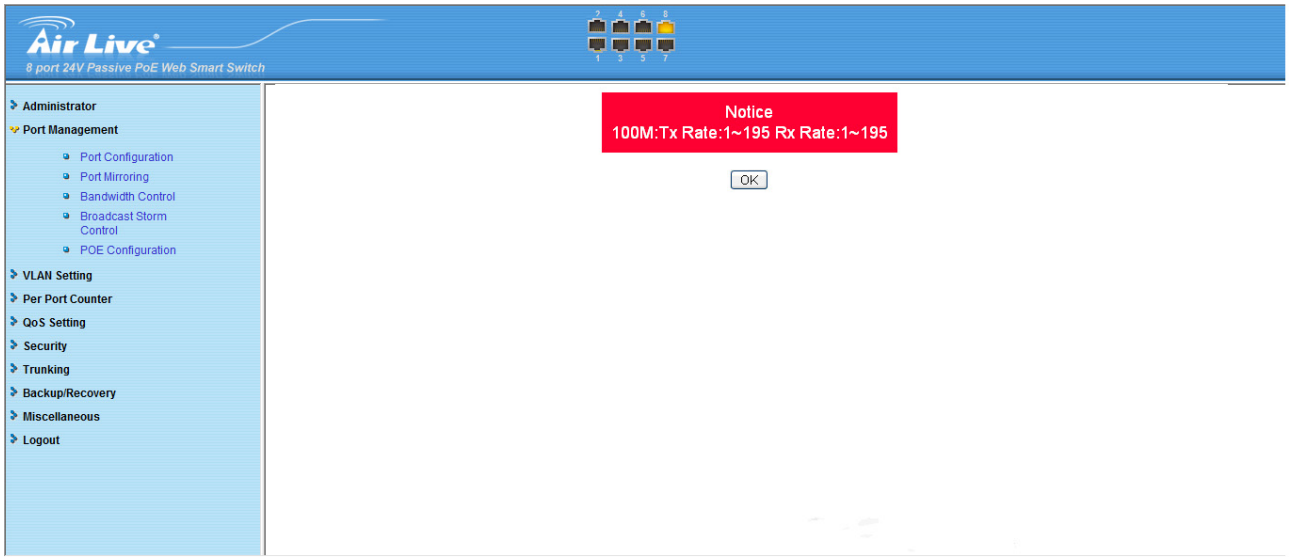
The RX bandwidth number of the port 5~ port 8 is set to 50, 60, 70, 80 respectively, and Speed base is set to “high”. The real bandwidth comes from the formula of 512Kbps*50, 512Kbps*60, 512Kbps*70 and 512Kbps*80 respectively. After the “**update**” button is executed, the real bandwidth will show up in RX fields.

The limitation of the bandwidth control

The actual bandwidth should be less than the cable link speed. For 100Mbps link speed, the bandwidth setting should be less than 196 if the bandwidth is set to “**high**”. For 10Mbps link speed, the bandwidth setting should be less than 20 if the bandwidth base is set to “**high**”.

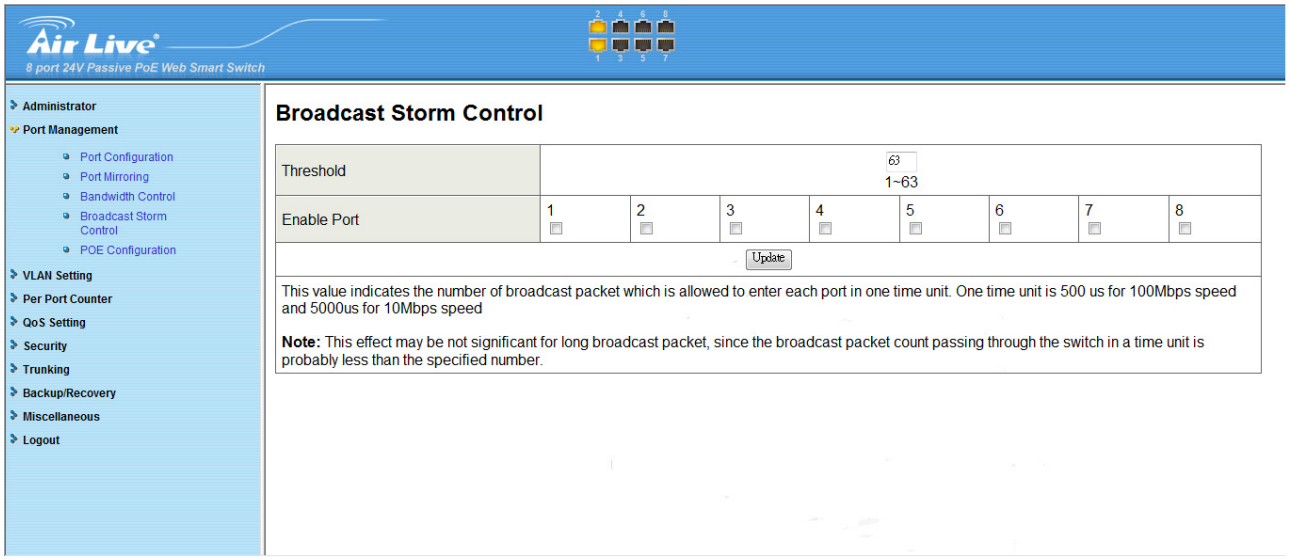
Setting the bandwidth to “0” will make the switch running at the full speed.

The warning message will show up if bandwidth setting is higher than maximum rate (100Mbps).



4.5.4 Broadcast Storm Control

The switch implements a broadcast storm control mechanism. Tick the check boxes to have them beginning to drop incoming broadcast packets if the received broadcast packet counts reach the threshold defined. Each port's broadcast storm protection function can be enabled individually by ticking the check boxes.



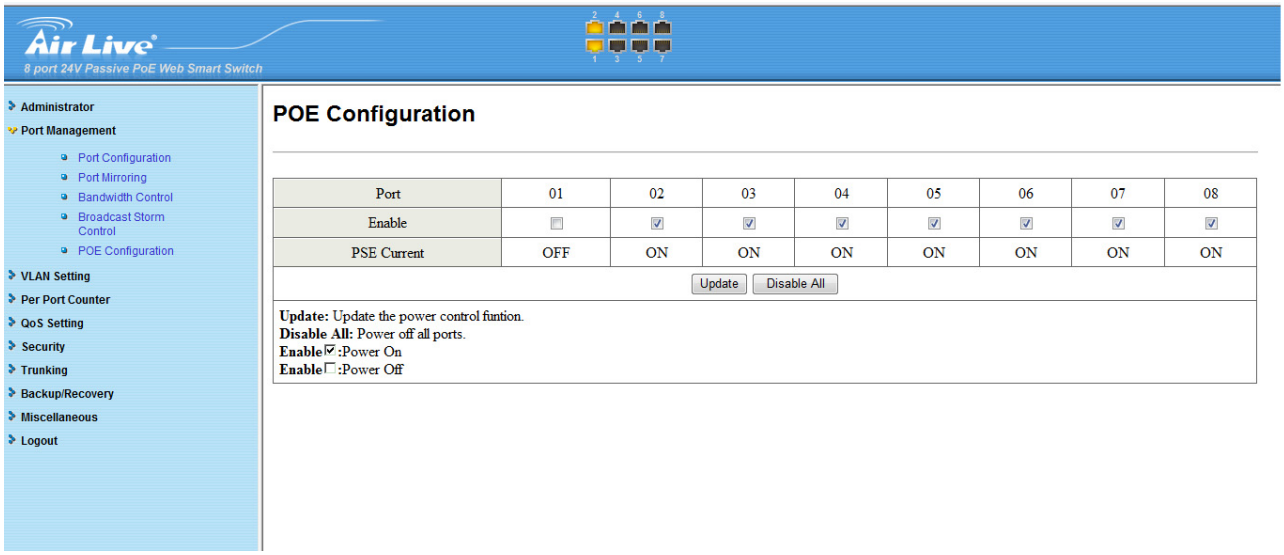
The broadcast packet is only checked at the selected port and the number of broadcast packets is counted in every time unit. One time unit is 500 us for 10Mbps speed and 5ms for 100Mbps. The excessive broadcast packet will be discarded. For those broadcast packets incoming from the un-selected port, the switch treats it as the normal traffic.

- Threshold: Type in the threshold in the range between 1 and 63 to limit the maximum byte counts, which a port can send or receive in a period of time.
- Enable Port: Having ticked the boxes, the port will stop transmitting or receiving data when their sending byte counts or receiving byte counts reach the defined threshold.

Click Update to have the configuration take effect.

4.5.5 POE

User could know per PoE port out power status in this page and also enable or disable per port.



4.6 VLAN Setting

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which would allow you to isolate network traffic, so only the members of the same VLAN will receive traffic from the ones of the same VLAN. Basically, creating a VLAN from a switch is logically equivalent of reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically.

There are many management functions can be set or performed if you click the VLAN Setting on Home Page, including:

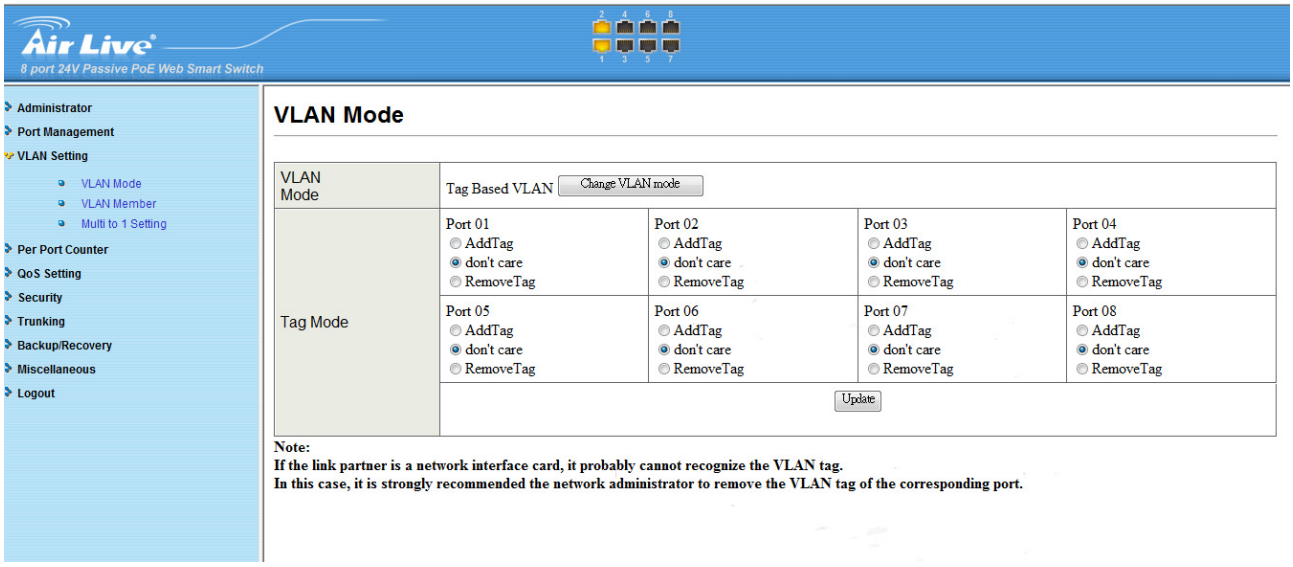
- VLAN Mode
- VLAN Member
- Multi to 1 Setting

In the following sessions, we will talk in detail about the management functions under the VLAN Setting menu.

4.6.1 VLAN Mode

You may select the VLAN Mode of the switch. Port-based VLAN is for separating traffic only on this single switch. There is no handover of network traffic within VLAN groups to other switches. For the handover to other switches use Tag Based VLAN. In VLAN Mode you can switch from Tag to Port Based VLAN. Port Based VLAN is the default mode.

After having switched to Tag Based VLAN Mode, the screen changes. On this screen you can now define and configure your Up- and Downlink ports. These are important since here the handover between the switches of your network takes place.

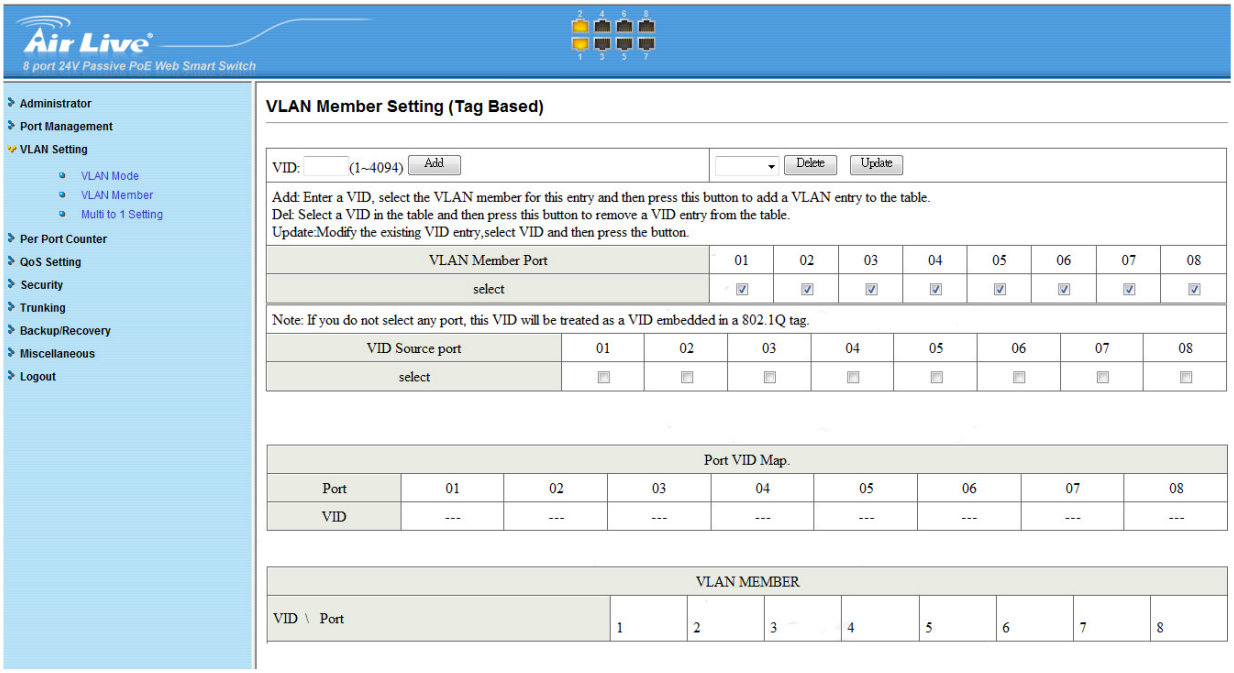


- **VLAN Mode:** Displays VLAN mode: port based/Tag based VLAN. Here you can also switch back to Port Based VLAN Mode
- Add tag means the outgoing packet of the selected port will be inserted a 802.1Q tag. Use this setting for your Up- and Downlink Ports in your VLAN Tagged Network.
- Original means the outgoing packet of the selected port keep the original packet received at the source port. This is the default setting when starting VLAN configuration. You should change to either Add or Remove Tag.
- Remove tag means the 802.1Q tag of the outgoing packet of the selected port will not be sent. Use this setting for your Network Connections to PCs. Only packets of the VLAN Group the Port is member of will be sent.

4.6.2 VLAN Member

The ports need to be made member of your VLAN groups. This is for Tag Based and Port Based VLAN Mode. The screen here looks different whether you run Tag Based or Port Based Mode.

VLAN Member in Port Based Mode



In Port Based Mode you see a matrix of your 8 Ports. Simply select the port on top screen you want to configure, click on Read, and then select or deselect the ports that are on the same VLAN group. In this configuration mode you do not need to worry about defining VLAN groups and VLAN IDs.

VLAN Member in Tag Based Mode

In Tag Based Mode you need to define and configure your VLAN groups. Since you want the handover to other switches take place smoothly, the VLAN IDs (Numbers) need to be like on the rest of your network. On other switches you may have the chance to configure names. These are just for your reference. Only the numbers are important!
There firstly add your VLAN Groups (identified throughout your network by unique and constant numbers). Start with IDs from 100 and up. Keep in mind that some switches use "**1**" as the default, while others use "**4095**" or "**4096**" as default. Starting with 100 gives you enough free room and less compatibility issues.

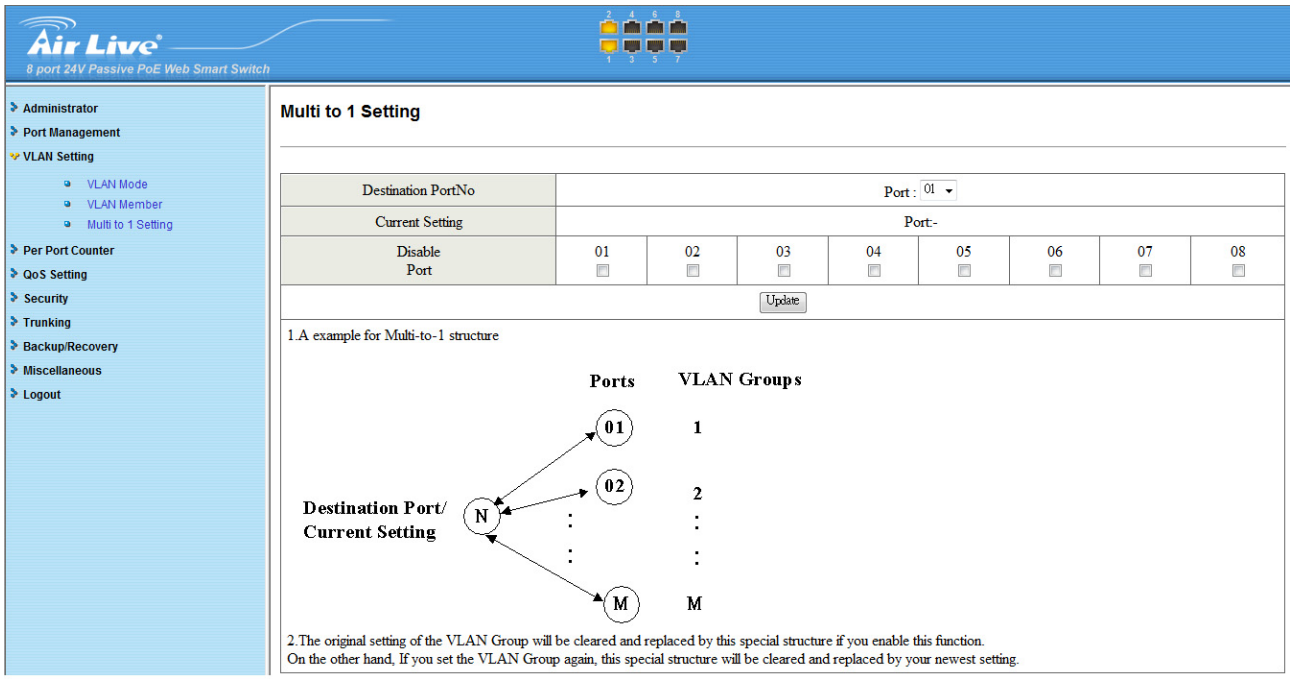
So enter “100” in the field right of VID Setting, then select or deselect which ports are member of that group. Your up- and downlink ports need to member of every existing group! Then click on add. The new group with its setting will be displayed at the bottom of the screen.

With the PVID Setting you define to which VLAN group incoming traffic belongs. Consider the example that Port 1 is member of group 100 and 101. A simple PC is connected to Port 1. If that PC is now sending out data, with PVID you define if that data is for group 100 or 101.

4.6.3 Multi to 1 Setting

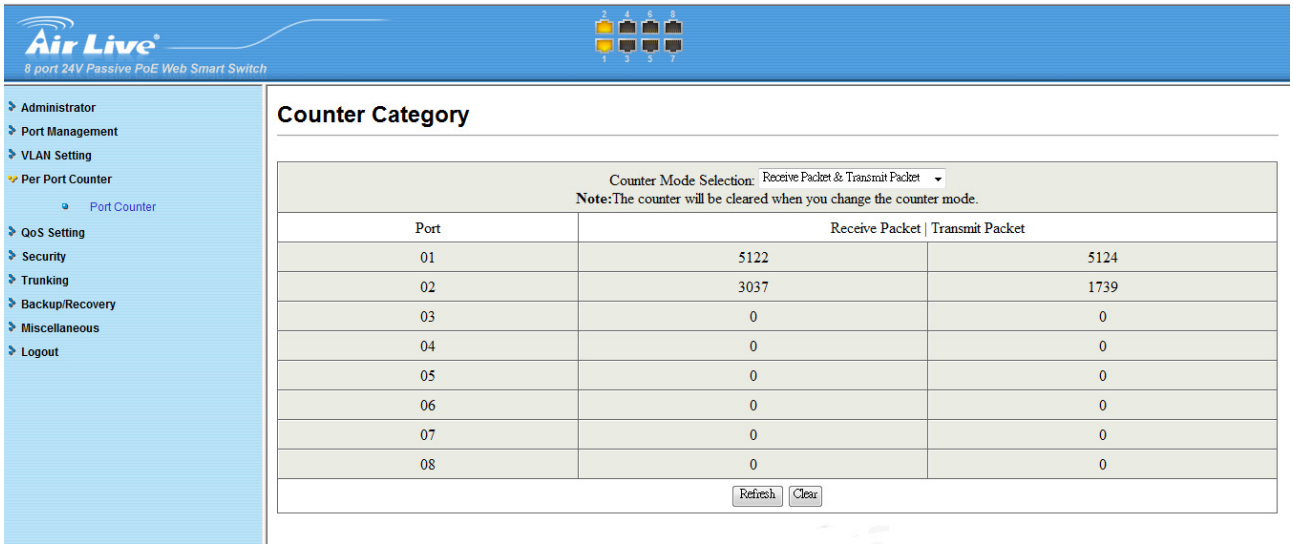
Multi-to-1 VLAN is used in CPE side of Ethernet-to-the-Home and is exclusive to VLAN setting on”**VLAN member setting**“. When VLAN member setting is updated, multi-to-1 setting will be void and vice versa. The “**disable port**” means the port which will be excluded in this setting. All ports excluded in this setting are treated as the same VLAN group.

The port 5~port 7 of THE DEVICE only forward packets to port 8. The port 8 is set to home. The VLAN and port 5~ port 8 are the member of the VLAN group for multi-to-2 setting.



4.7 Per Port Counter Port

This page provides port counter for each port. There are 4 groups of statistics in total. These 4 categories cannot work simultaneously. Once you change the counter category, the counter will be cleared automatically.



- **Transmit packet& collision:** This category shows the packets outgoing from the switch and the count of collision.
- **Receive packet& Transmit packet: T**his category shows both the received packet count (excluding the incorrect packet) and the transmitted packet count.
- **Receive packet & Drop packet: T**his category shows the number of received valid packet and the number of dropped packet.
- **Receive packet & CRC packet:** This category shows the received correct packet and received CRC error.
- **Refresh:** Press "**Refresh**" button will aggregate the number of the counter for all ports. Clear: Press "clear" will clear all counters.

4.8 QoS Setting

Here you can configure QoS policy priority mode and CoS (Class of Service) configuration. QoS (Quality of Service) refers to mechanisms in the network software that make the actual determination of which packets have priority. CoS refers to feature sets, or groups of services, that are assigned to users based on company policy. If a feature set includes priority transmission, then CoS winds up being implemented in QoS functions within the routers and switches in the network. In an enterprise network, class of service (CoS) differentiates high-priority traffic from lower-priority traffic. Tags may be added to the packets to identify such classes, but they do not guarantee delivery as do quality of service (QoS) functions, which are implemented in the network devices.

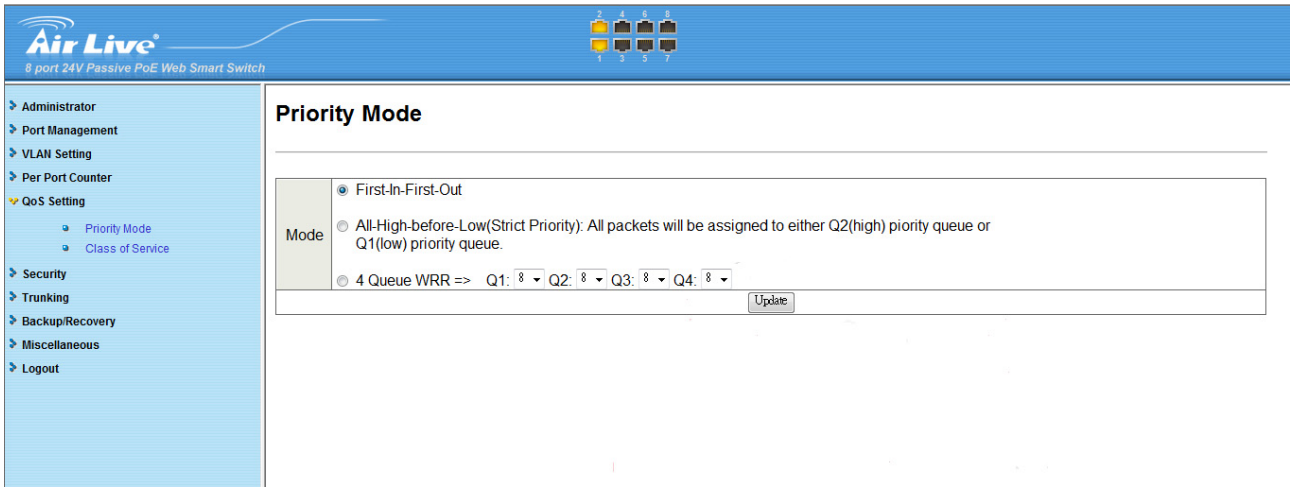
There are many management functions can be set or performed if you click the QoS Setting on Home Page, including:

- Priority Mode
- Class of service Configuration

In the following sessions, we will talk in detail about the management functions under the QoS Setting menu.

4.8.1 Priority Mode

There are three priority modes available to specify the priority of packets being serviced. Those include First-In-First-Out, All-High-Before-Low, and Weight-Round-Robin.



- First-In-First-Out: Packets are placed into the queue and serviced in the order they were received.
- All-high-before-low(Strict priority)：All packets will be assigned to either high priority queue (Queue 2) or low priority queue (Queue 1). The packet on the low priority queue will not be forwarded until the high priority queue is empty.
- WRR mode: There are 4 priority queues for Weighted-and-round-robin (WRR) mode. When this mode is selected, the traffic will be forwarded according to the number set in each queue.

4.8.2 Class of Service Configuration

There are 4 types of CoS for this setting; ie, TCP/UDP port, TOS/DS, 802.1p and physical port. The user can select more than one item for each port.

Please note that if more than one type of CoS is selected, the switch will arrange the packet to the assigned queue according the following priority: TCP/UDP port the first, ToS/DS the second, 802.1p the third and physical port the last.

Class of Service

The switch treats TCP/UDP, IP TOS/DS, 802.1p and physical port CoS scheme in the following priority.
TCP/UDP > IP TOS/DS > 802/1p > Physical port.
This means TCP/UDP CoS will override all other settings.

(1) TCP/UDP port

Protocol	**Note:** (1) Q1 ~ Q4 options are effective for the selected physical port only. (2) "Drop" option is the global setting for all physical ports.
FTP	Q1
SSH	Q1
TELNET	Q1
SMTP	Q1
DNS	Q1
TFTP	Q1
HTTP	Q1
POP3	Q1
NEWS	Q1
SNTP	Q1
NetBIOS	Q1
IMAP	Q1
SNMP	Q1
HTTPS	Q1
MSN	Q1
XRD_RDP	Q1
QQ	Q1
ICQ	Q1
Yahoo	Q1
BOOTP/ DHCP	Q1
User-defined A TCP/UDP	Q1
User-defined B TCP/UDP	Q1
User-defined C TCP/UDP	Q1

Note: These user-defined TCP/UDP port are the same as that used in TCP/UDP filter

User-defined Port range (65535~1)	User-defined A Port: ~ Port:	User-defined B Port: ~ Port:	User-defined C Port: ~ Port:

The TCP/UDP port will be checked on the following physical port

01	02	03	04	05	06	07	08
☐	☐	☐	☐	☐	☐	☐	☐

TCP/UDP port number QoS function Disable

Update

The Class of Service for TCP/UDP port number allows the network administrator to assign the specific application to a priority queue.

(2) IP TOS/DS

IP TOS/DS Priority Setting	6'b001010: Q1 6'b010010: Q1 6'b011010: Q1 6'b100010: Q1 6'b101110: Q1 6'b110000: Q1 6'b111000: Q1 Other Values: Q1							
IP TOS/DS Port Setting	01 ☐	02 ☐	03 ☐	04 ☐	05 ☐	06 ☐	07 ☐	08 ☐

Update

(3) 802.1p

For 802.1p priority field, the switch utilizes the following priority mapping table.
6 and 7 are mapped to the "Q4" priority queue.
4 and 5 are mapped to the "Q3" priority queue.
0 and 3 are mapped to the "Q2" priority queue.
1 and 2 are mapped to the "Q1" priority queue.

Port No.	1	2	3	4
Mode:802.1p	☐	☐	☐	☐
Port No.	5	6	7	8
Mode:802.1p	☐	☐	☐	☐

Update

(4) Physical port

Port 1	Port 2	Port 3	Port 4
Q1	Q1	Q1	Q1
Port 5	Port 6	Port 7	Port 8
Q1	Q1	Q1	Q1

Update

4.9 Security

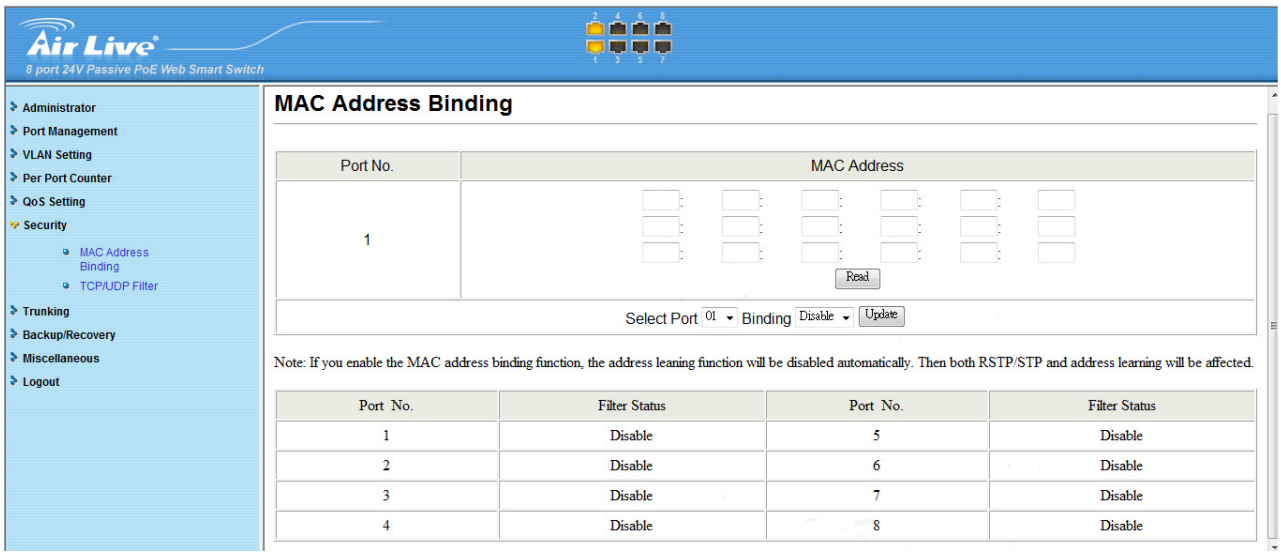
There are many management functions can be set or performed if you click the Security on Home Page, including:

- MAC Address Binding
- TCP/UDP Filter

In the following sessions, we will talk in detail about the management functions under the Security menu.

4.9.1 MAC Address Binding

This function provides a method for the administrator to specify the relationship between the physical port and the MAC address. Only the packet with specified source MAC address can be forwarded. By specifying the MAC address to each port, the network administrator can prevent the unauthorized user from accessing the switch. Each port can correspond to up to 3 MAC addresses.
To activate the port binding function, you should enter the correct MAC address, select the port number, and set the port binding to “enable” and then press “update”.



- **Port No:** Displays the port number being assigned the MAC addresses.
- **MAC Address:** Users can assign up to 3 MAC addresses to the port.
- **Read:** Pull down the selection bar to choose a port number and click the read button to show the MAC addresses bound with the port or modify the MAC addresses.
- **Select Port:** Pull down the selection menu bar to choose a port number to be set.

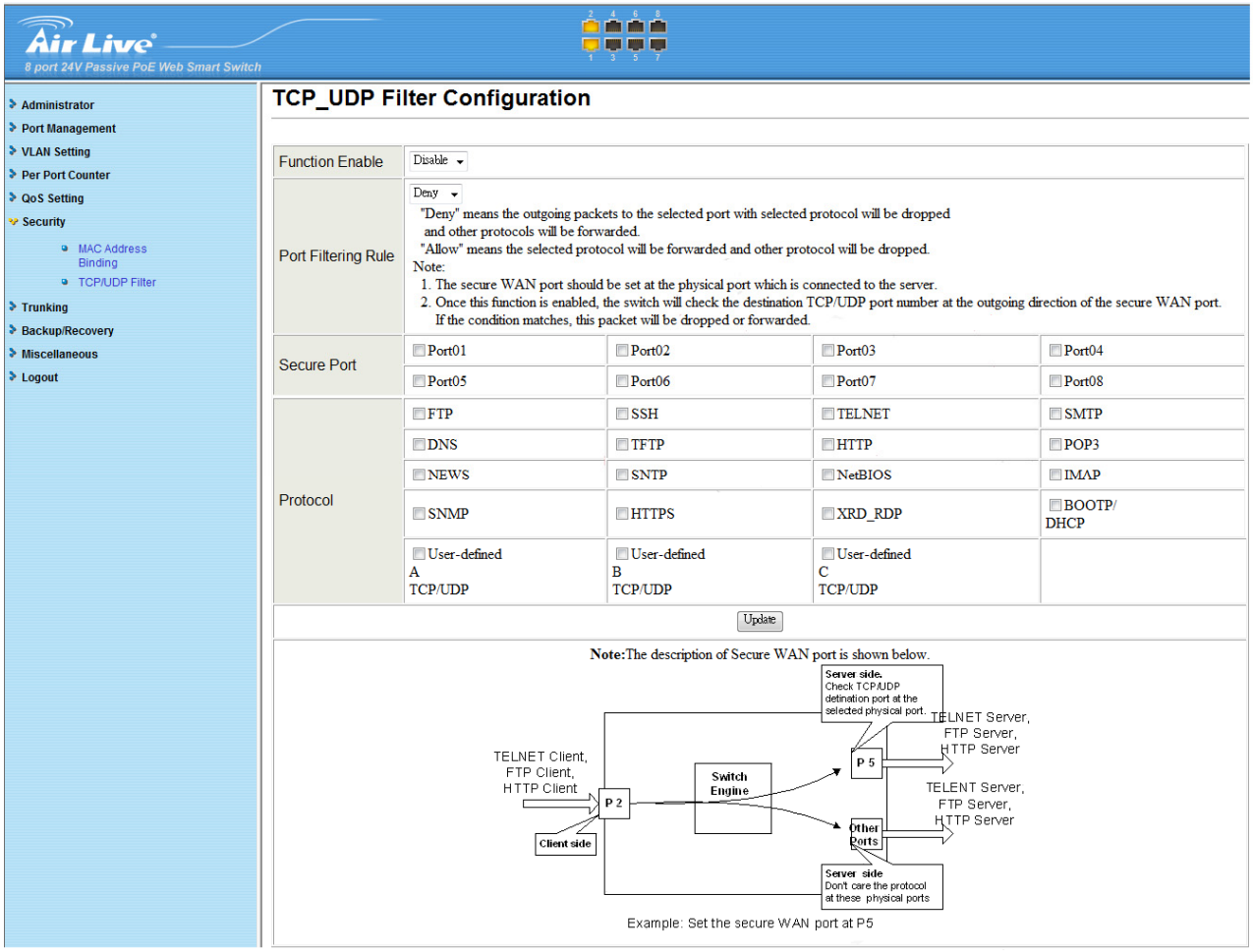
■ **Binding:** Enable or disable the binding function.

Click Update to have the configuration take effect.

*** Note:** Setting the multicast address to these fields is not allowed. A warning message will show up if you do so.

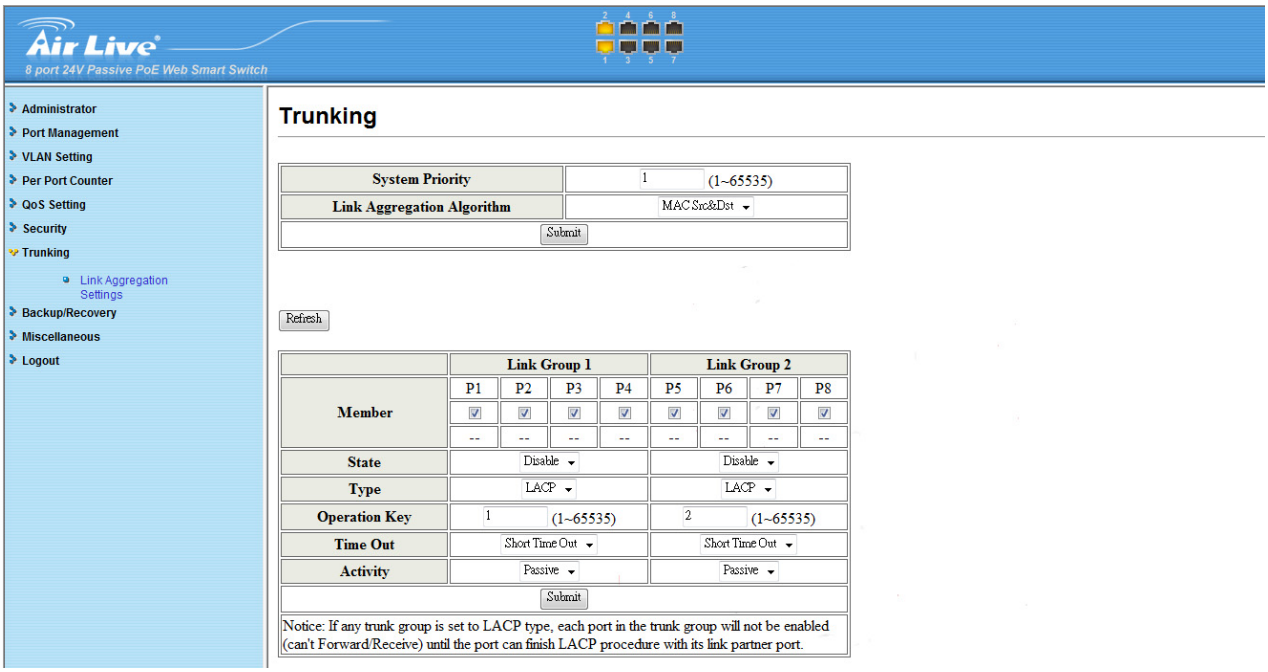
4.9.2 TCP/UDP Filter

By selecting the TCP/UDP port, the network administrator can optionally block some specific applications. There are two kinds of protocol filter functions. The ”forward” function makes the switch forward the selected protocol and drop other protocols. The ” deny” function makes the switch drop the selected protocol and forward other protocols. The protocol is checked at the selected secure WAN port. And it should be set at the server side.



4.10 Trunk Setting

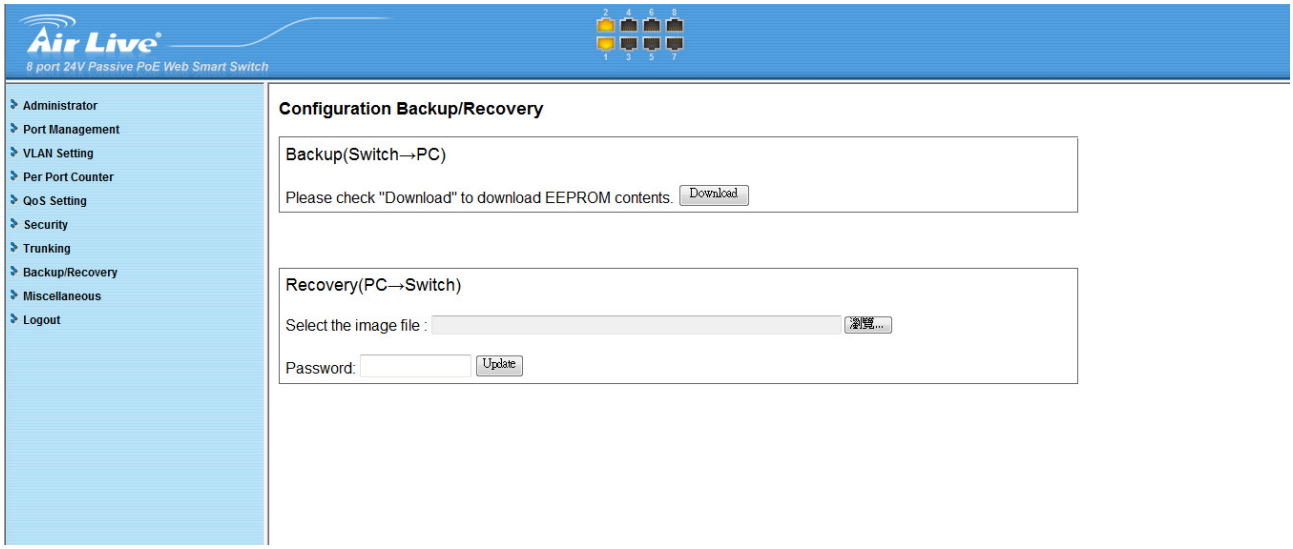
This page is used to set trunk group for load balance and auto-backup.
The smart switch supports two trunk group, each trunk consists of 2~4 ports. Trunk hash algorithm can be selected according to 4 different methods.



- Port ID: Among the trunk member ports, the packet will be distributed based on the port ID.
- SA: Among the trunk member ports, the packet will be distributed based on the source MAC address.
- DA: Among the trunk member ports, the packet will be distributed based on the destination MAC address.
- DA&SA: Among the trunk member ports, the packet will be distributed based on the XOR calculation result of the source MAC address and the destination MAC address.

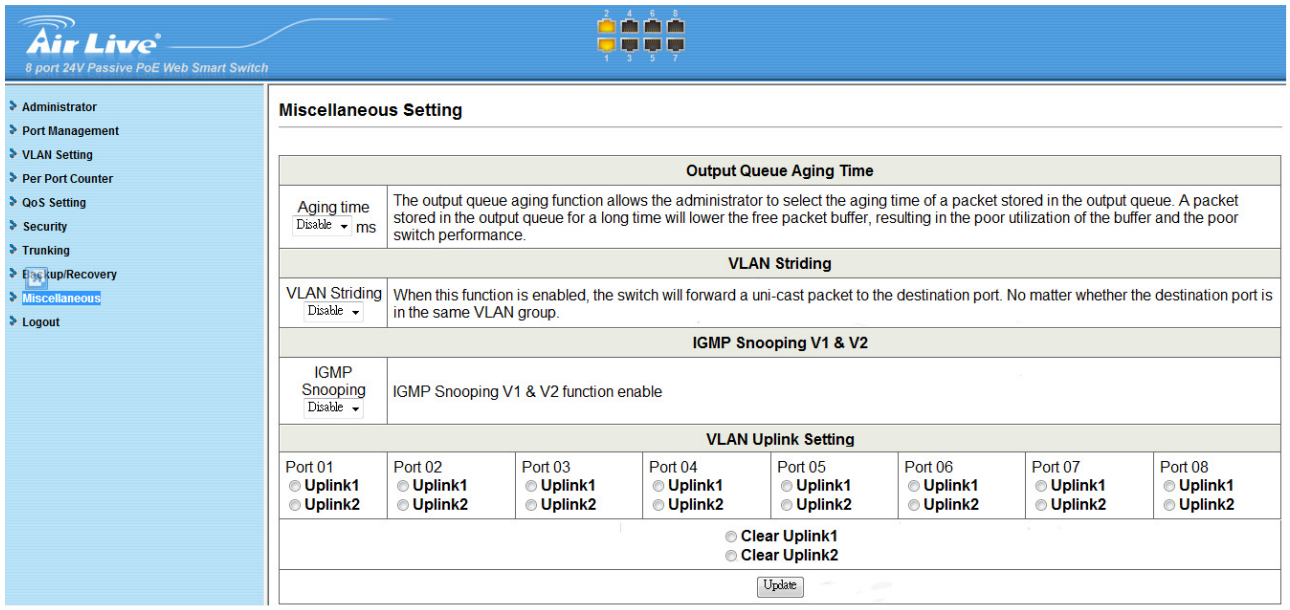
4.11 Backup/Recovery

This function provides the user with a method to backup/recovery the switch configuration. The user can save configuration file to a specified file. If the user wants to recover the original configuration, which is saved at the specified path, just enter the password and then press the "**Update**" button. Finally the original configuration of the switch will be recovered.



4.12 Miscellaneous

Miscellaneous setting is used to configure output queue aging time, VLAN stride and IGMP snooping.



- **Output queue aging:** This function is used to avoid the poor utilization of the switch. When a packet is stored in a switch for a long time, it will expire from the allowable time defined by the protocol and become a useless packet. To prevent these packets from wasting the bandwidth, this switch provide an option for the administrator to enable the queue aging function.
- **VLAN Striding:** By selecting this function, the switch will forward uni-cast packets to the destination port, no matter whether destination port is in the same VLAN.

- **IGMP Snooping:** When this function is enabled, the switch will execute IGMP snooping version 1 and version 2 without the intervention of CPU. The IGMP report and leave packets are automatically handled by the switch.

4.13 Logout

The administrator has write access for all parameters governing the onboard agent. User should therefore assign a new administrator password as soon as possible, and store it in a safe place.

A Appendix A: Product Specifications

Standards	IEEE 802.3 10BaseT IEEE 802.3u 100BaseTX IEEE 802.3x Flow control
Hardware	Interface: 8 x 10/100BaseT(X) with 8 PSE/ Passive PoE Ports MAC Address: 1K Buffer Memory: 512K bits Method: Store and Forward
Support AirLive Models	AP60, G.DUO, AirMax2, AirMax5
Transmission Media	10BaseT Cat. 3, 4, 5 UTP/STP 100BaseTX Cat. 5 UTP/STP
LED Indicators	Port LED: LINK/ACT, PoE ACT/Status Status LED: Power
Power Input	100~240V/AC, 50~60Hz
Power Output	24V/DC Per Port Output 30Watt Max Per Port 8 Ports at Full 15.4 Watt Output Supported Power Pin: 4,5,7,8 Data Pin: 1,2,3,6

Humidity	10 to 90% RH (non-condensing)
Standards	IEEE 802.3 10BaseT IEEE 802.3u 100BaseTX IEEE 802.3x Full-duplex and Flow Control
Features	Number of Ports: 10/100BaseTX with 8 PSE/PoE port MAC Address: 1K Buffer Memory: 512Mb Transmission Method: Store and Forward
Filtering/ Forwarding Rates	100Mbps port - 148,800pps 10Mbps port - 14,880pps
Transmission Media	10BaseT Cat. 3,4,5 UTP/STP 100BaseTX Cat. 5 UTP/STP
LED Indicators	Per Port: Link/Act, Per Unit: Power
Power Input	100~240V/AC, 50~60Hz
Power Output	24V/DC per Port Output 30W Max per Port 8 Ports at Full 15.4 Watt Output Supported
Power Consumption	130Watts (Max)
Dimensions	266 × 160 × 44 mm (L x W x H)
Weight	1.6 kg
Temperature	Operating: 0 to 65℃
	Storage: -20 to 90℃
Certifications	FCC Class A, CE

B Appendix B: Troubleshooting

This appendix contains specific information to help you identify and solve problems. If your switch does not function properly, please make sure it is set up according to the instructions on the manual.

If you suspect your switch is not connected correctly to your network, check the following points before you contact your local dealer for support.

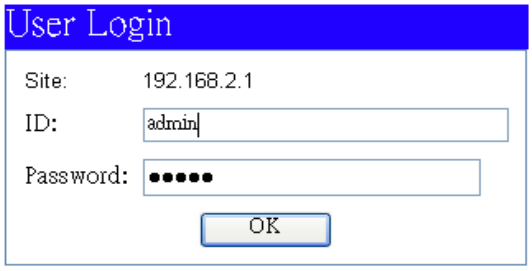
- Make sure the Power is ON (Check the Power LED).
- Make sure the cable is connected properly on both ends.
- Make sure that the maximum cable length between switch and end node does not exceed 100 meters (for 10/100/1000BASE-TX connection).
- Make sure that the maximum switch-to-hub/switch cable distance does not exceed 100 meters (for 10/100 BASE-TX connection).
- Verify that the cabling type used is correct.
- Check the corresponding Link/Act, FDX/Col, and 100M for signs of faulty connection. Check the status of the cable attachment. If the problem persists, try a different cable.
- Try another port on the Switch.
- Turn off power supply to the Switch. After a while, turn it on again to see if it resumes to its normal function.
- If you find out where the problem is but cannot solve it by yourself, or you simply cannot locate what is at fault, please contact your local dealer for technical support.

When you forgot your IP or password, please use the reset button for the factory default setting? Please take the following steps to reset the Web Smart Switch back to the original default:

Step 1. Turn on the POE Switch

Step 2. Press and hold the reset button continuously for 5 seconds and release the reset button.

Step 3. The switch will reboot for 20 seconds and the configuration of switch will back to the default setting



Key in the user ID and the password to pass the authentication as following,

IP: 192.168.2.1

ID: **admin**

Password: **airlvie**