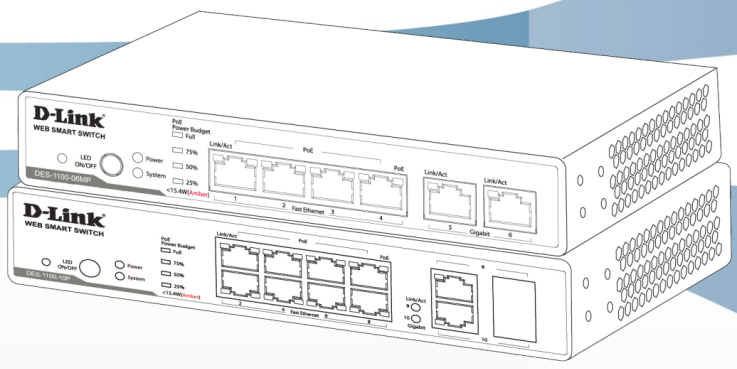
D-Link
Building Networks for People

DES-1100-10MP

MANUAL

WEBSMART SWITCH

V1.0



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Getting Started

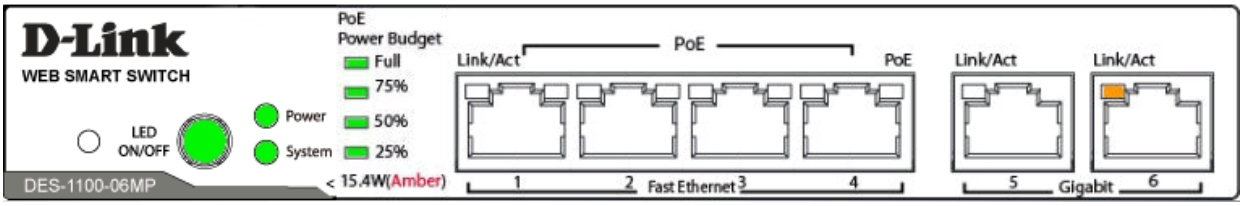


Fig. Front panel of DES-1100-06MP

✓ **Power on the Switch:**

Power on the Switch before plug in any Ethernet cable, system will go through Power-On-Self-Test (POST) with LEDs lighting in Green or Amber. Then, after completing the POST, LEDs will stay at the state as the table below..

LED Indication		Color / State	Description
Power		Green On	The device is powered on.
PoE Power Budget	Full	Green On	Power for POE is full, not been consumed yet.
	75%	Green On	
	50%	Green On	
	25%	Green On	
System		Amber On	Device passed POST and ready for login.

✓ **Log into the Switch:**

Connect PC to any port of the Switch via Ethernet cable. Make sure the LAN setting of PC

is set to work in the same subnet as Switch device which the default IP address is **10.90.90.90.**

Type IP address **10.90.90.90** in the WEB Browser of PC, you will then be asked to enter ID and Password so that you can log into the Switch device.

The default ID is **"admin"**.

The default Password is **"admin"**.

Press **"OK"**, you will log in and see the welcome page for **"Home"**.

WEB Configuration

Home

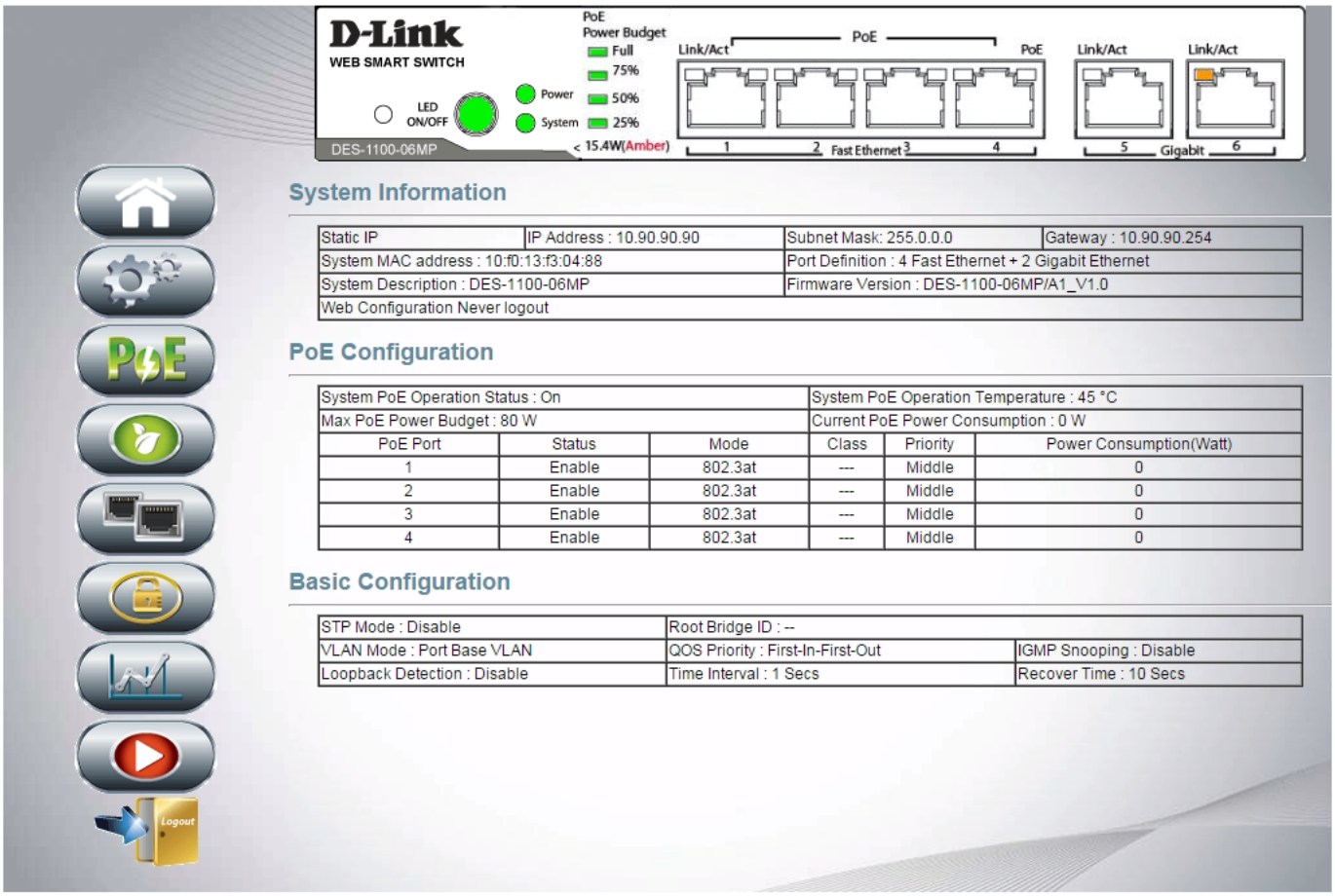


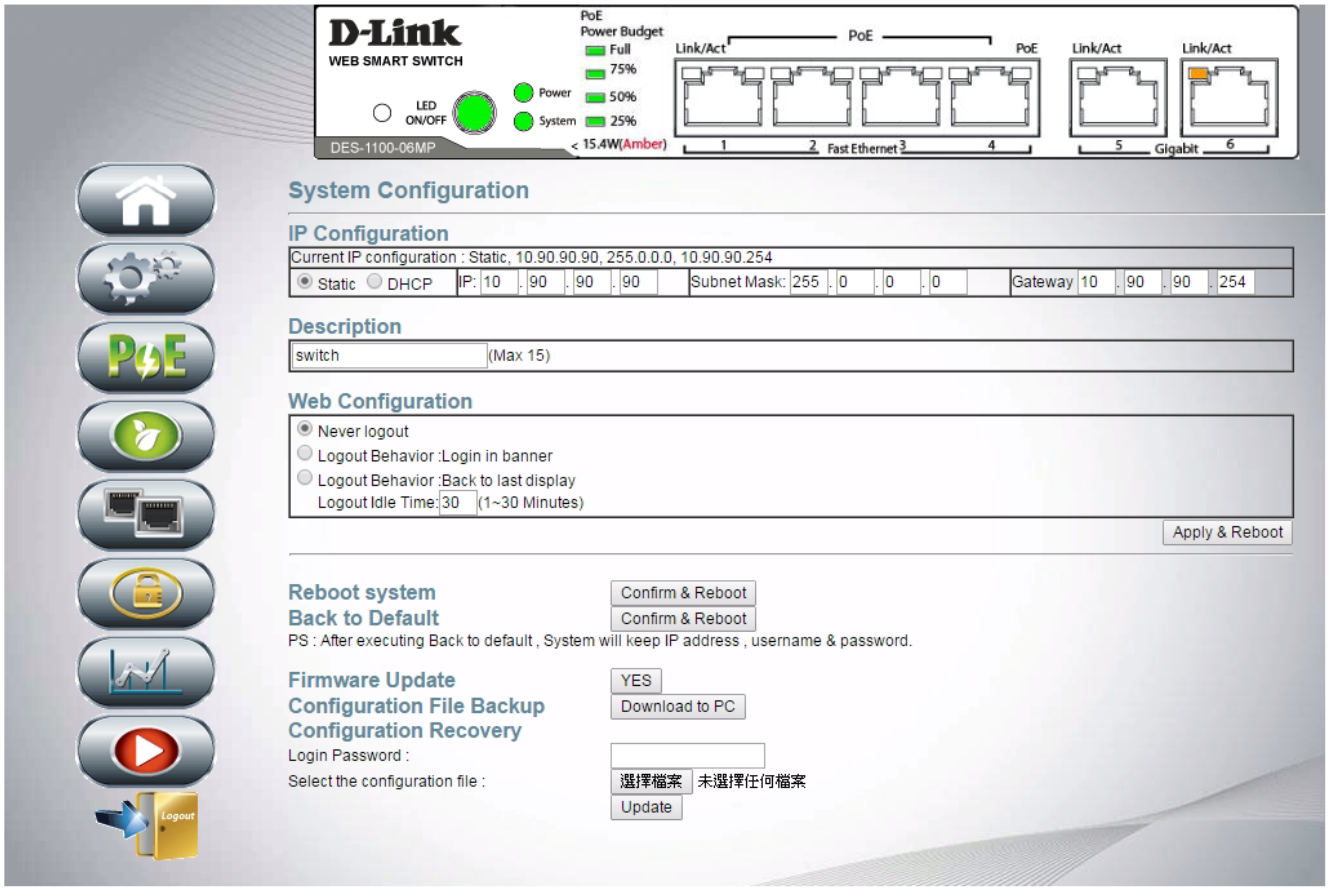
Fig. Web page of “Home”

- ✓ **“Home -> System Information”, “Home -> POE Configuration”** and **“Home -> Basic Configuration”** expose most of the important information which Installer or Network Administrator may need for realizing the status and configuration in a quick glance.
- ✓

No setting function is provided on this page.

Want to configure the Switch device? Kick an icon on the left side of the page.

System

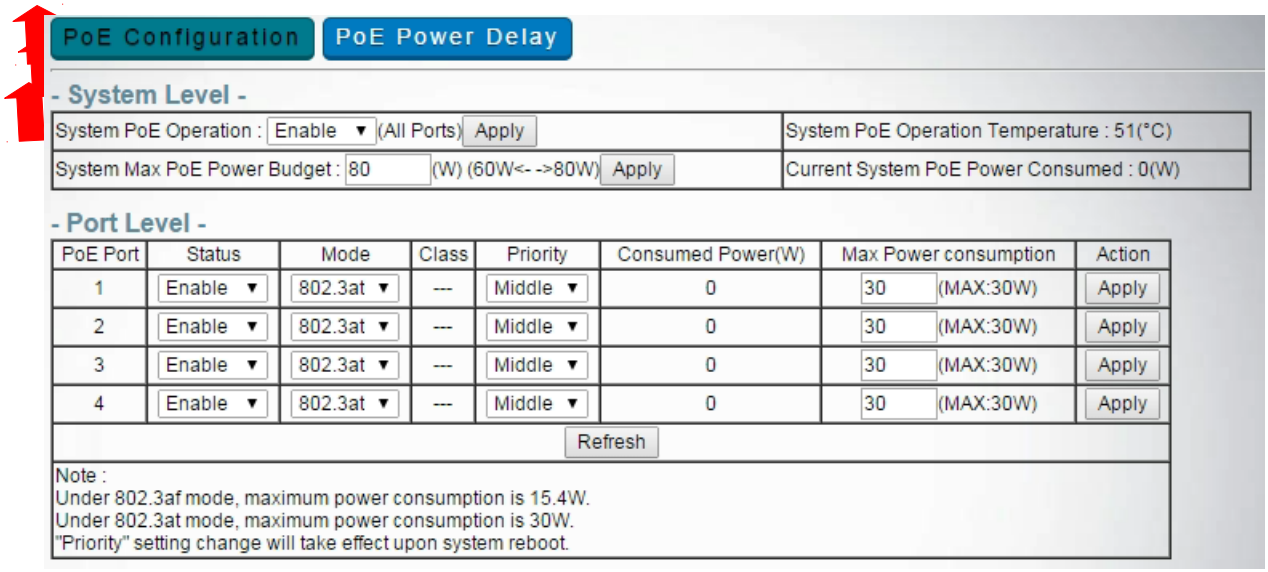


- ✓ In this page, user can re-set the IP address of this Switch device. Also you can give your Switch an easily-remembered name in **“System”-> “System Configuration”-> “Description”**.

- ✓ In **“System”-> “System Configuration”-> “Web Configuration”**, set **“Idle Time”** will make device automatically log out by the time you set.

- ✓ Click Yes on the **“Firmware Update”** will be requested to enter the password (default is “system”) and to specify the location of new firmware (xxxxx.bin). Simply follow the instructions to update the firmware which a few minutes are required for the process. During update, don’t turn off the power, message “uploading” will keep showing on the web page.

Power Over Ethernet



✓ **“Power Over Ethernet ” -> “POE Configuration” -> “System Level“ -> “System PoE Operation”**

Disable and Apply will stop all POE activity of this Switch device.

Default of **“**System PoE Operation” is Enable (of course, this is a POE Switch, isn’t it?)

✓ **“Power Over Ethernet ” -> “POE Configuration” -> “System Level“ -> “System Max PoE Power Budget”**

User can define the POE power budget of the Switch device here. Note that POE power budget of DES-1100-06MP is 80 Watt, which is the Maximum power for POE usage.

✓ **“Power Over Ethernet ” -> “POE Configuration” -> “Port level” -> “Status”**

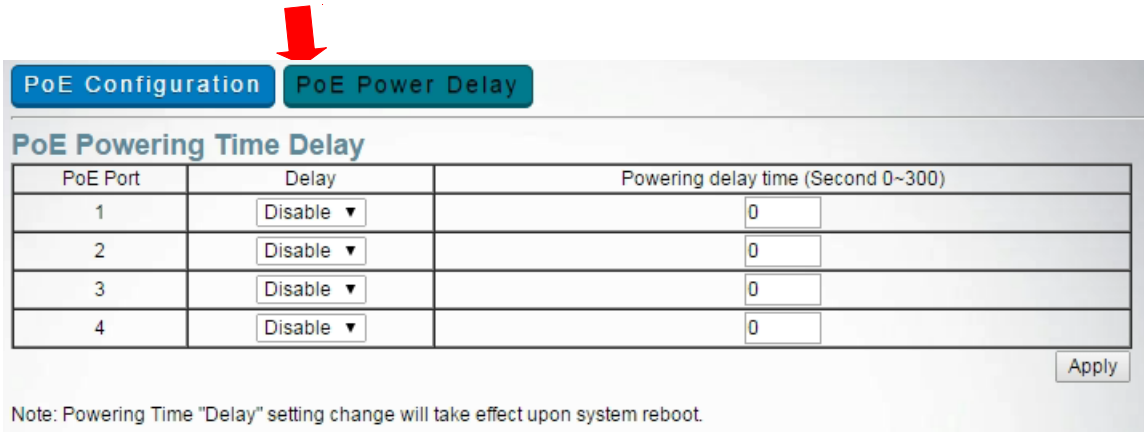
If user want to disable Power Over Ethernet function of any specific port, set it here.

✓ **“Power Over Ethernet ” -> “POE Configuration” -> “Port level” -> “Priority”**

- “Priority” setting (High, Middle, Low) decides the port’s priority of feeding power to PD.
  This setting takes effect only upon the Switch device power-on.
- If there are several ports share the same priority, port number takes over the

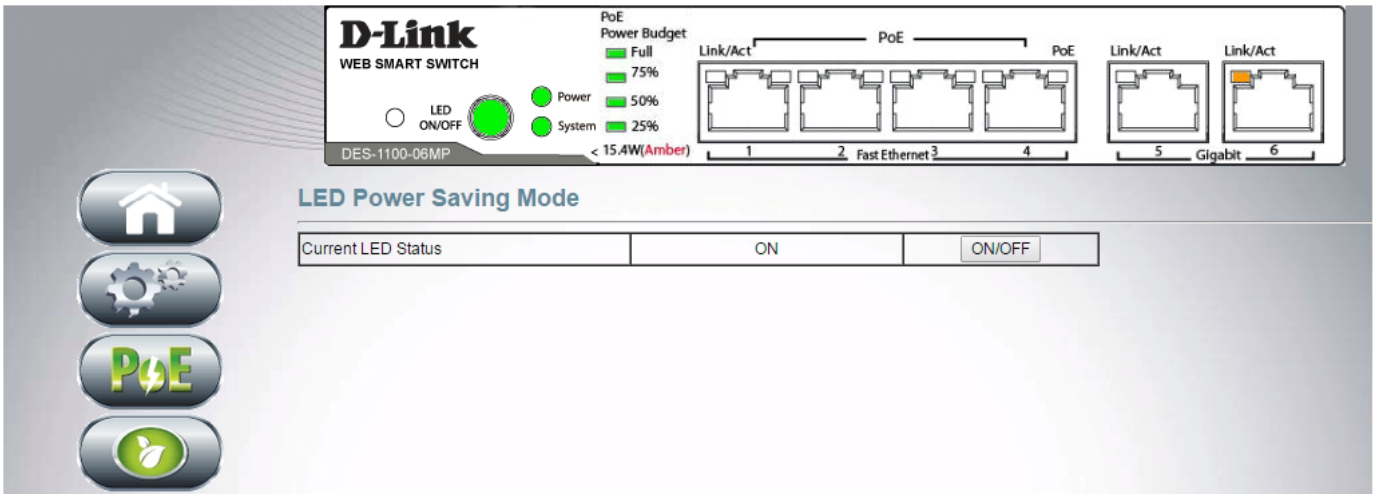
decision. The smaller the port number is, the higher the priority is. For instance, port 1 and port2 share the same priority “middle”, port1 priority will be higher than port2.
Default setting here applies the same priority to every port, meaning port1 priority is the highest in this Switch device, followed by port2, then port3….

Power Over Ethernet



✓ Enable **“Power Over Ethernet ” -> “POE Power Delay” -> “ PoE Powering Timer Delay” -> “Delay”** and set **“Powering delay time”** will postpone the port to feed power to PD. At most, a port can delay 300 seconds before its powering. This setting takes effect only upon the Switch device power-on.

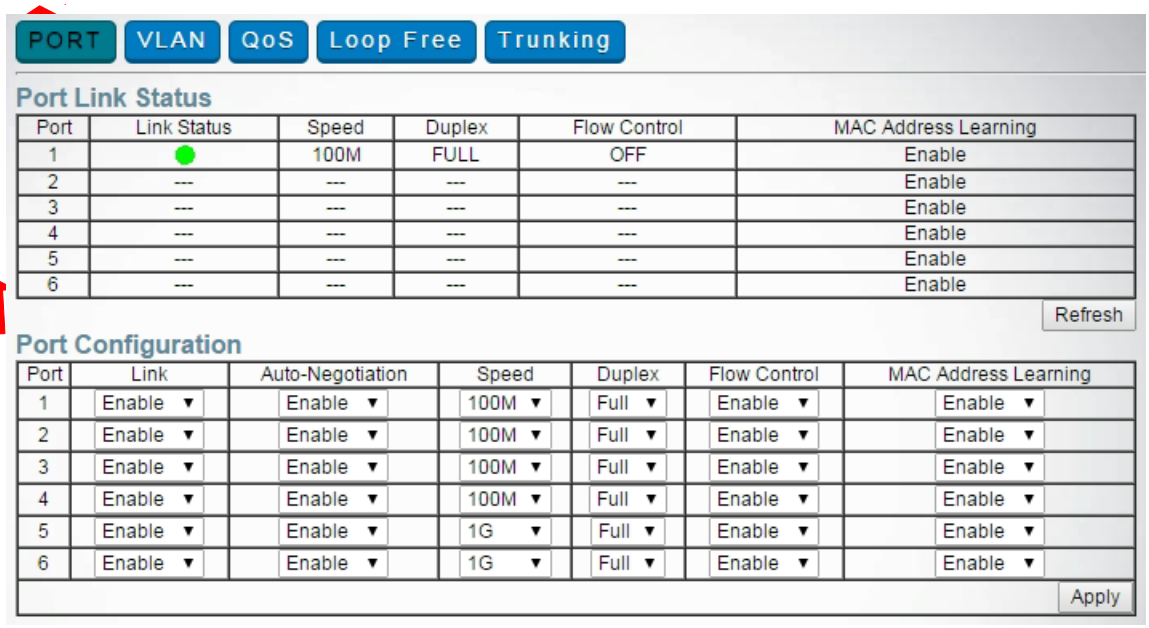
LED Power Saving



- ✓ User can turn on or turn off LEDs of the front panel, except POWER LED. This green feature helps energy saving.
  If user sets “off”, meaning the LEDs of the front panel are turned off. However, in the WEB GUI, user still can see the LED lighting reflecting the real network connection. (only appears on the graphic user interface.)

- ✓ Note there is a push button “LED ON/OFF” on the front panel which can perform the same function.

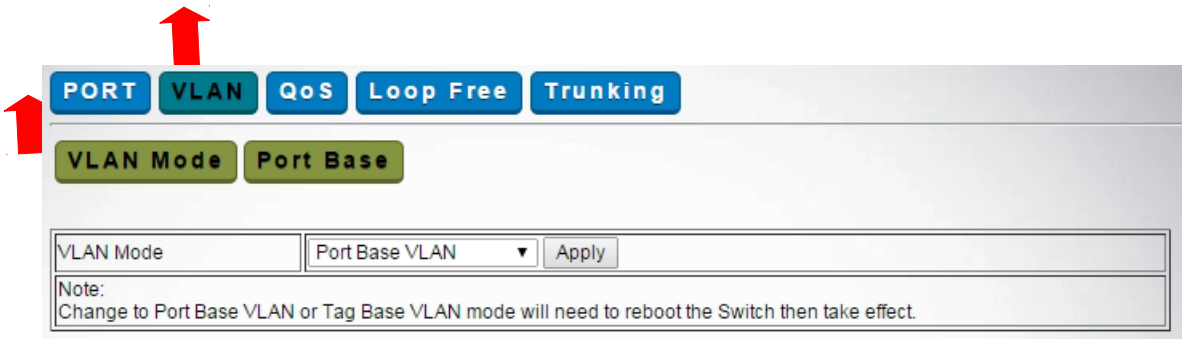
Fundamentals



- ✓ In general application, these parameters are automatically negotiated between Switch and
  Client via IEEE802.3 standard.

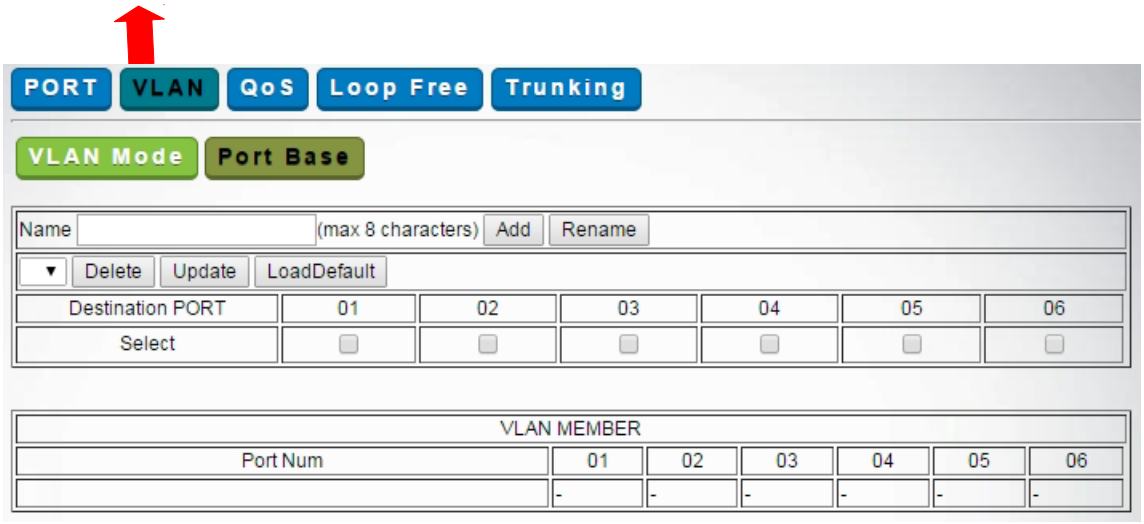
- ✓ Note that Disable **“Fundamentals” -> “Port ” -> “Port Configuration” -> “Link”** will only disable the data path of that port. No impact on POE function. If user wants to disable POE function, go to **“Power Over Ethernet” -> “POE Configuration” -> “Port level” -> “Status”.**

Fundamentals



- ✓ **“Fundamentals”** -> **“VLAN ”** ->**“VLAN Mode ”** can select one of the three VLAN modes.
  They are “Port Base VLAN”, “Tag Base VLAN”, and “IP Surveillane VLAN”.
  Default VLAN mode is Port Base.
  Note that change to different VLAN mode, the Switch will need to reboot then take effect.
  During Switch reboot period, WEB GUI may have chance not getting response from Switch in time.
  It is normal and depends on the setting of user’s laptop/desktop computer.

Fundamentals



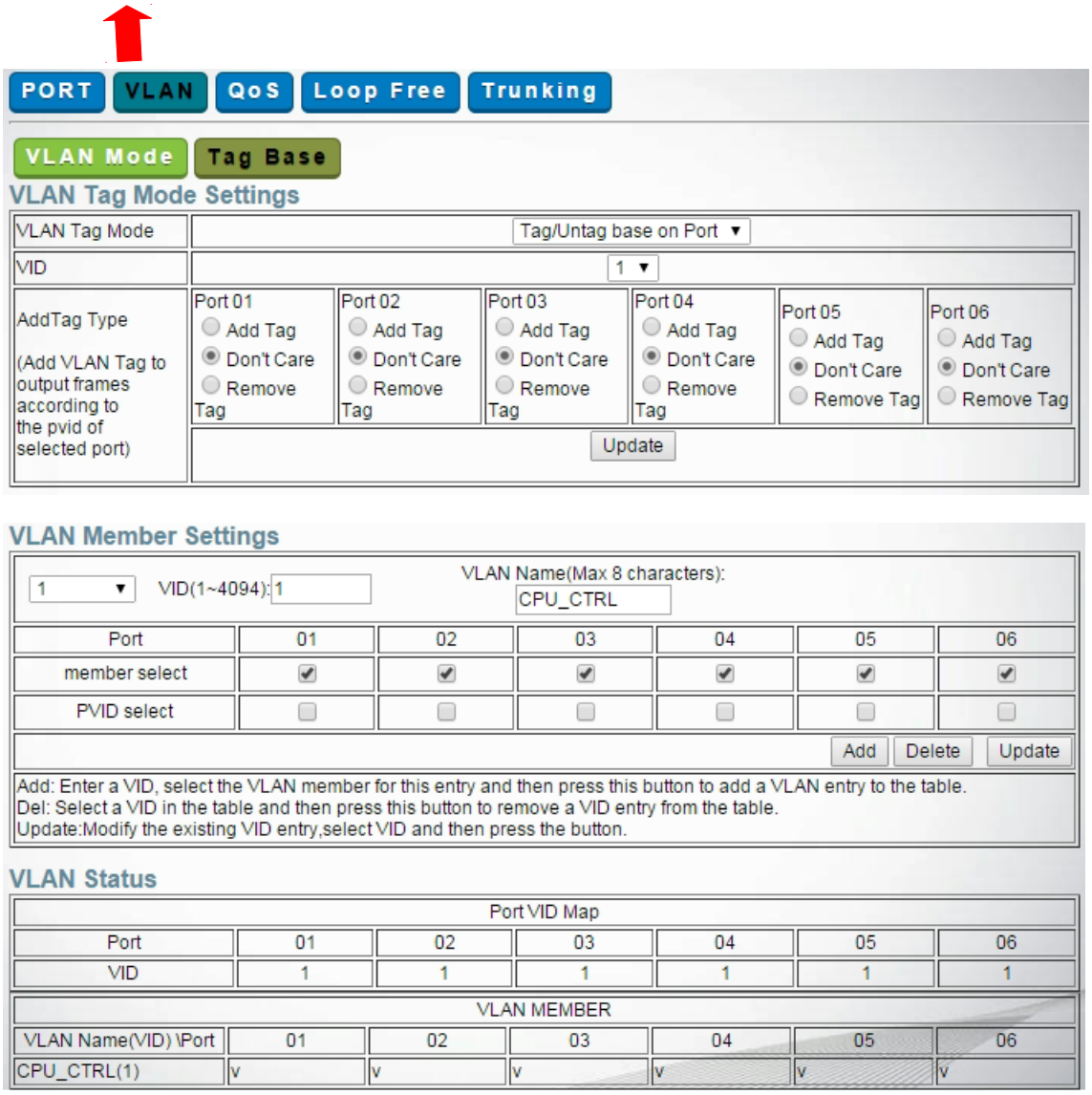
✓ Default VLAN mode is Port Base. Click **“VLAN ”** ->**“ Port Base ”** to complete other settings.

✓ **What is Port Base VLAN?**

Ports that are assigned to a VLAN group will send and receive broadcast and multicast traffic within
this virtual LAN only. A VLAN (user can add name to it) is an individual broadcasting domain. Generally, one VLAN group may be created for one function department (or sector…) which is not preferred to be influenced by the traffic from the other function department (or sector…).

✓ This Switch allows totally 8 port based VLANs to be created.

Fundamentals



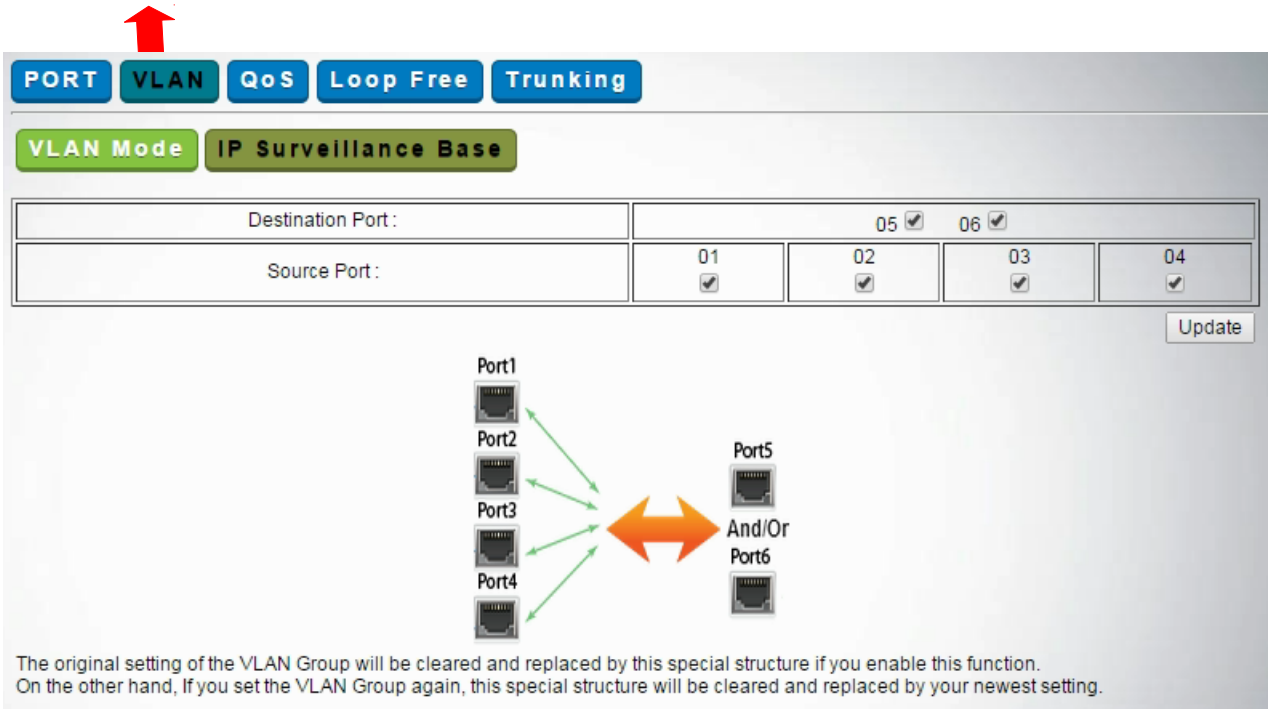
✓ **What is Tag Base VLAN**

VLAN membership in a tagged VLAN is determined by information within the frames that are received on a port. The VLAN information within an Ethernet frame is referred to as a tag which contains the **VID** (VLAN ID). When the switch receives a frame with a VLAN tag, referred to as a tagged frame, the switch forwards the frame only to those ports that share the same VID.

✓ **PVID** is a Port VLAN ID that will be associated with an incoming untagged frame.

✓ This Switch allows totally 4094 tag base VLANs to be created.

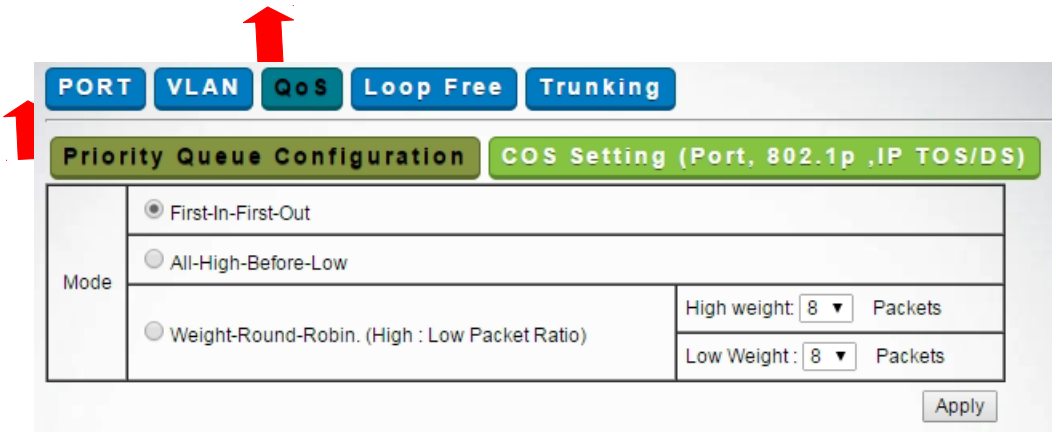
Fundamentals



✓ What is IP Surveillance Base VLAN?

Enable IP Surveillance VLAN, the port 01 ~ port 04 video stream can be carried only to the Destination port 05 or 06 individually. Source port (port 01~04) is not allowed to communicate to each other.
So that network snooping is prevented.

Fundamentals

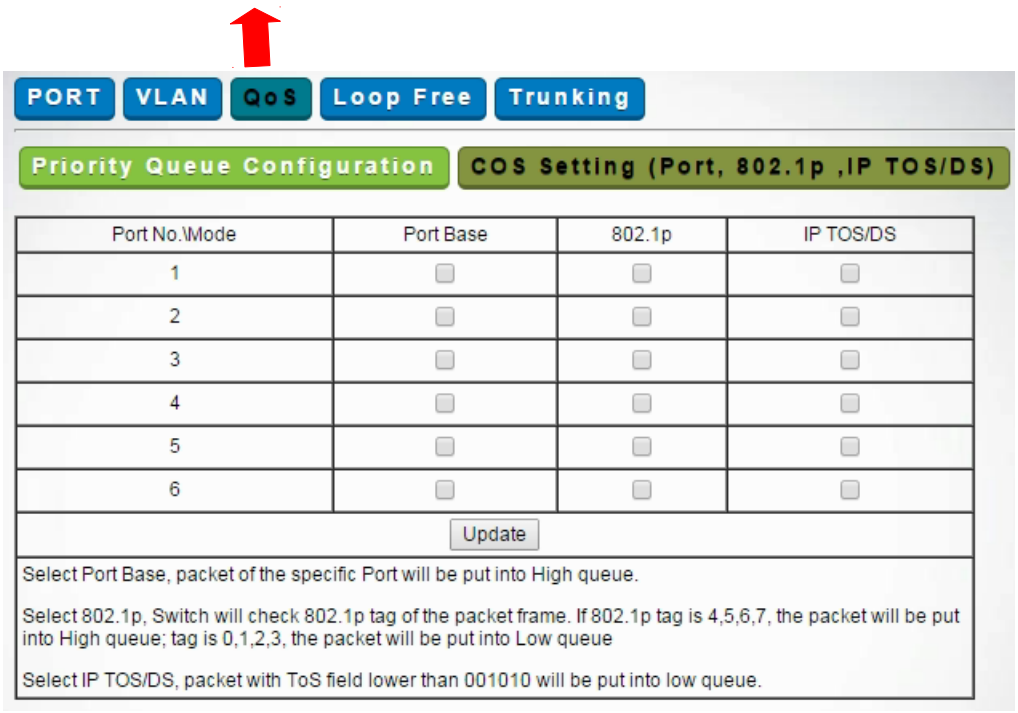


✓ **“Fundamentals”** -> **“QoS”** ->**”Priority Queue Configuration”** -> **”First-In-First-Out”**:
The first packet put into the queue will be firstly switched out.

✓ **“Fundamentals”** -> **“QoS”** ->**”Priority Queue Configuration”** -> “**All-High-Before-Low**”
After all packets in the high-priority queue are switched out, packet in the low-queue can be then processed. No packet in the low-queue can be processed until high-queue is cleaned.

✓ **“Fundamentals”** -> **“QoS”** ->**”Priority Queue Configuration”** -> “**Weight-Round-Robin**”
Packet processing will be conducted in the manner like, for instance, process 8 packets of high queue, then, process 8 packets in the low queue. And then, back to processing packets in the high queue….it’s so called round-robin. User can set weight (processed packet counts) to high and low queues.

Fundamentals



✓ **“Fundamentals”** -> **“QoS”** -> **“CoS Setting (Port, 802.1p, IP TOS/DS)”**

This Switch provides 2 priority queues, High and Low, for packet store-and-forward.

This Switch provides 3 types of Class of Service, Port based, 802.1p based, and IP TOS/DS Based.

Check the CoS of a Port will enable the Switch to follow the CoS setting and put the packet
into High or Low priority queue.

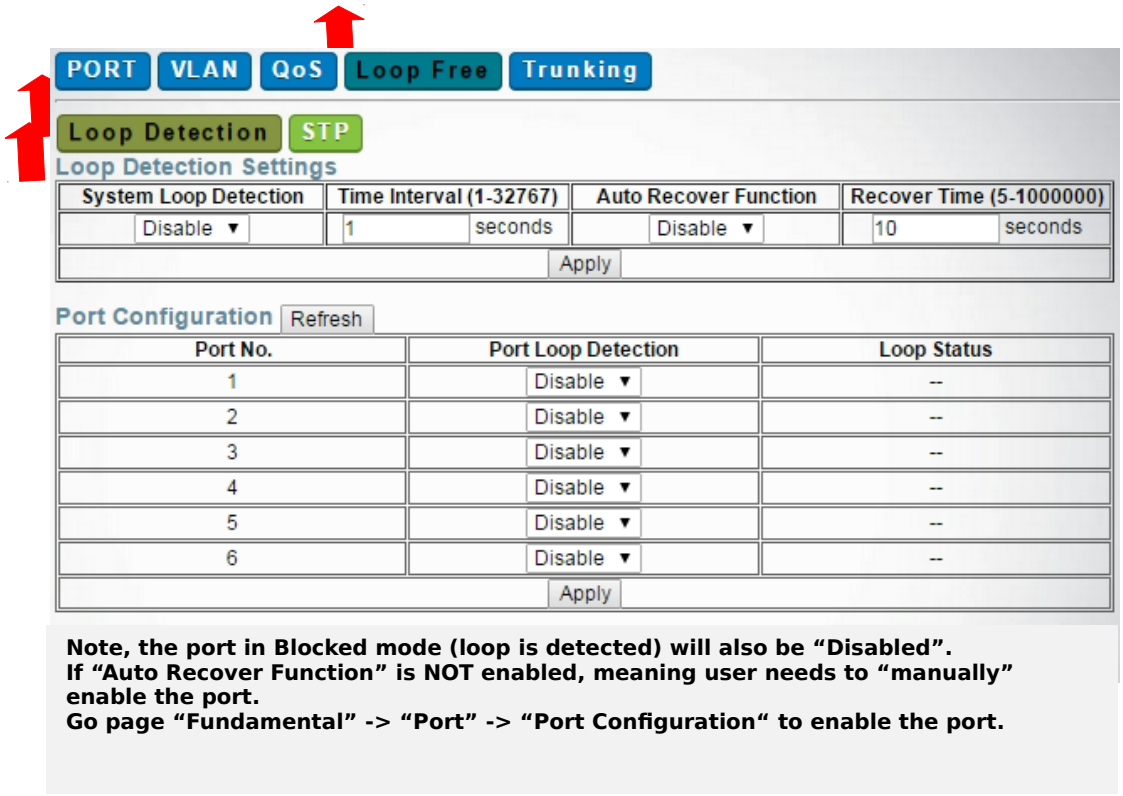
Select Port Base, packet of the specific Port will be put into High queue.

Select 802.1p, Switch will check 802.1p tag of the packet frame. If 802.1p tag is 4,5,6,7, the packet
will be put into High queue; tag is 0,1,2,3, the packet will be put into Low queue

Select IP TOS/DS, packet with ToS field lower than 001010 will be put into low queue.

If there are more than one CoS are selected at one port, Switch follows the **IP TOS/DS** setting first, then **802.1p** setting the second, and physical **Port** setting the last.

Fundamentals

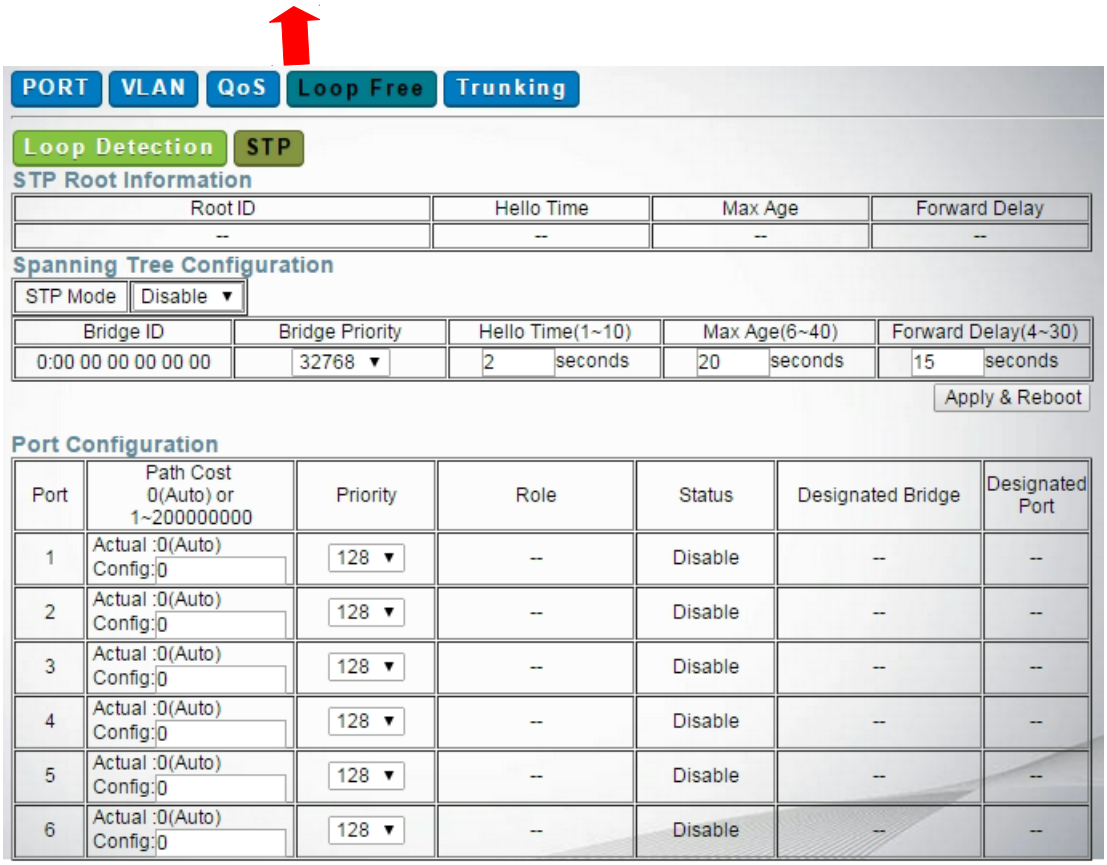


- ✓ To enable specific port’s loop detection function, user must enable **“System Loop Detection”** first.
  Once a port is blocked by detected loop condition, the port will stay in Blocked mode. (see **“Loop Status”).**
  Note, the port in Blocked mode (loop is detected) will also be “Disabled”. If **“Auto Recover Function”** is NOT enabled, (**“Fundamentals” -> “Loop Free” -> “Loop Detection” -> “Loop Detection Settings” ->Auto Recover Function”),** meaning user needs to “manually” enable the port. Go page **“Fundamental” -> “Port” -> “Port Configuration“** to enable the port.

- ✓ **“Fundamentals” -> “Loop Free” -> “Loop Detection” -> “Loop Detection Settings” -> “Time Interval”** set the time interval that the Switch send out ARP for detecting loop.
  (Enable **“System Loop Detection”** first.)

- ✓ If user wants to enable **“Auto Recover Function”,** user can also set **“Recover Time ”** which is the time interval before the blocked port is re-activated. (In case the port was in blocked state caused by loop condition.)

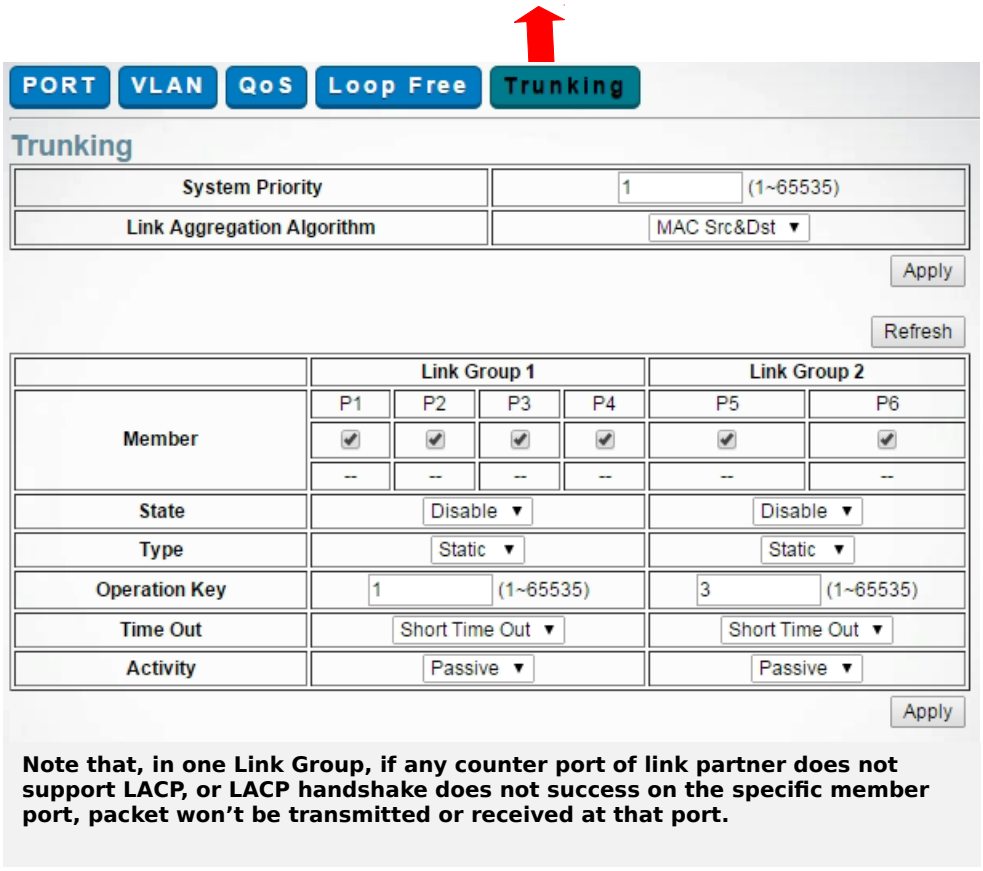
Fundamentals



✓ **“Fundamentals” -> “Loop Free” -> “STP”**

Refer to “http://en.wikipedia.org/wiki/Spanning_Tree_Protocol” for STP protocol detail.

Fundamentals



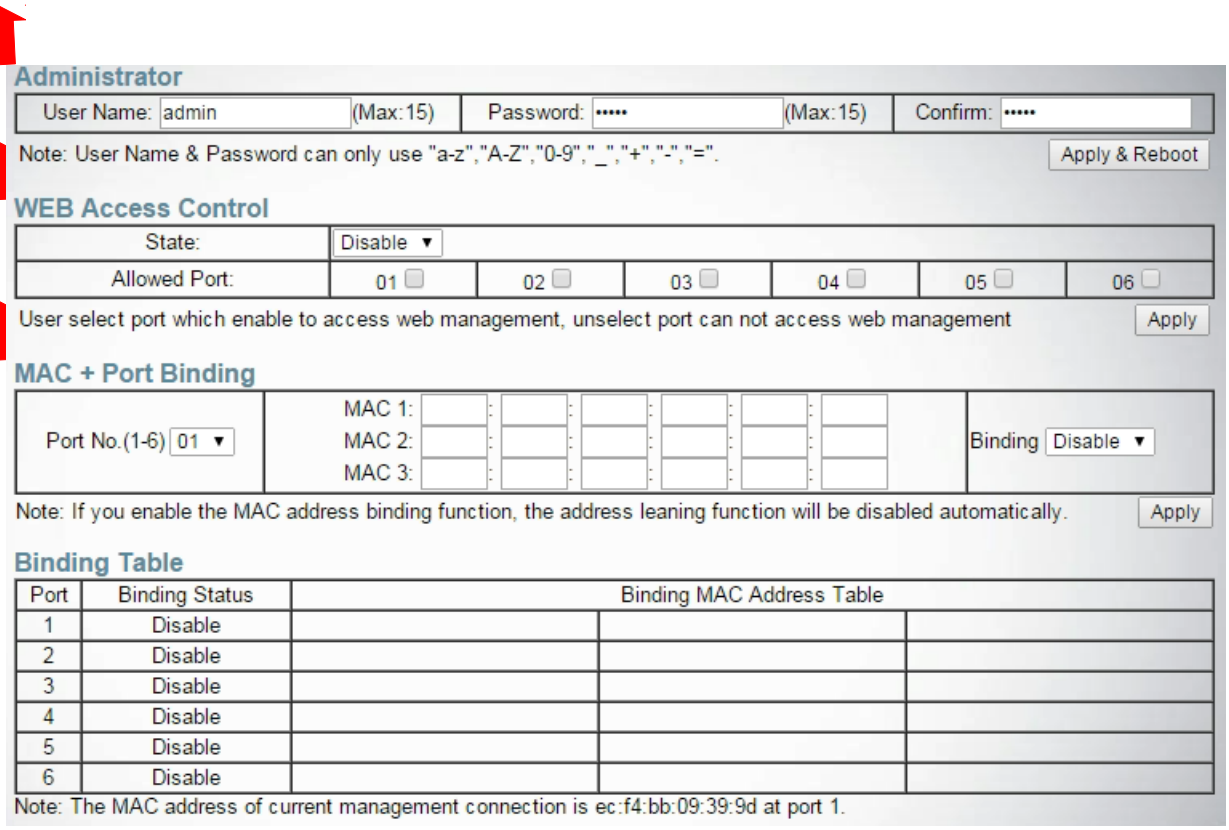
✓ **"Fundamentals" -> "Trunking" -> "Link Aggregation Algorithm"**
Traffic may be distributed over the member ports of the Trunking Group. The algorithm to distribute
traffic can be based on "MAC Source Address" or "MAC Source & Destination Address".

✓ **"Fundamentals" -> "Trunking" -> "Member"**
User can set totally 2 trunks. However, member of Trunk Group 1 must come from port 1 ~ port 4;
member of Trunk Group 2 must come from port 5 ~ port 6.

✓ **"Fundamentals" -> "Trunking" -> "Type"**
Select "Static" or "LACP" protocol to create the truck group.
LACP allows for the automatic detection of links in a Port Trunking Group. Note that, in one Link Group, if any counter port of link partner does not support LACP, or LACP handshake does not success on the specific member port, packet won't be transmitted or received at that port.

- ✓ **“Fundamentals” -> “Trunking” -> “Activity”**
  “Active” LACP port is capable of processing and sending LACP control frames. This allows LACP compliant devices to negotiate the aggregated link so the group may be changed dynamically as needs require. **“Passive”** LACP port cannot initially send LACP control frames.

Security

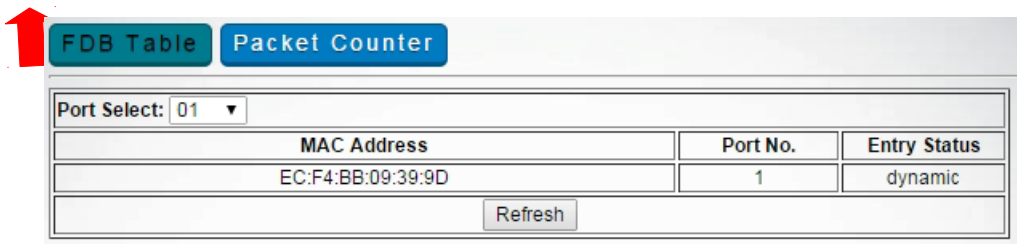


✓ Change **“Security” -> “Administrator” -> “Username” “Password”** for logging into WEB GUI will take effect only after **“Apply & Reboot”** the Switch.

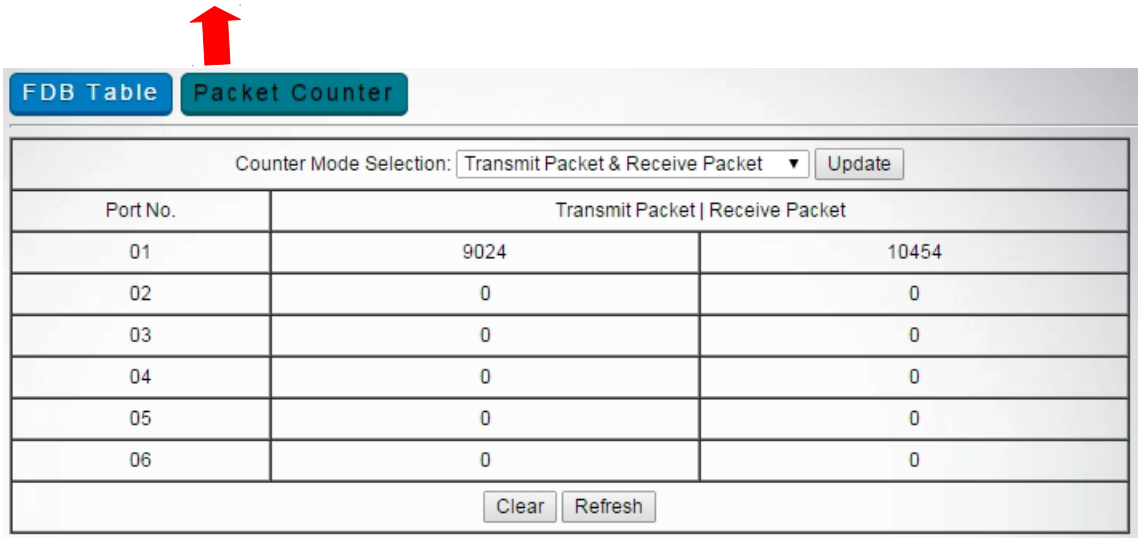
✓ For security concern, Enable **“Security” -> “WEB Access Control” -> “State”** and select **“Allowed Port”** will limit the access right of Ethernet port. Only the port been selected can access the WEB GUI.
Default Disable means every port can access to WEB GUI after login check.

✓ **“Security” -> “MAC + Port Binding”** allows user to bind specific port with up to 3 MAC addresses.
(Don’t forget Enable the **“Security” -> “MAC + Port Binding” -> “Binding”**)
Any link partner device with different MAC address from the one listed in the **“Binding Table”** will not be allowed to enter into this Switch port. That also means the MAC Address Learning Function is not
effective on the port.

Statistics



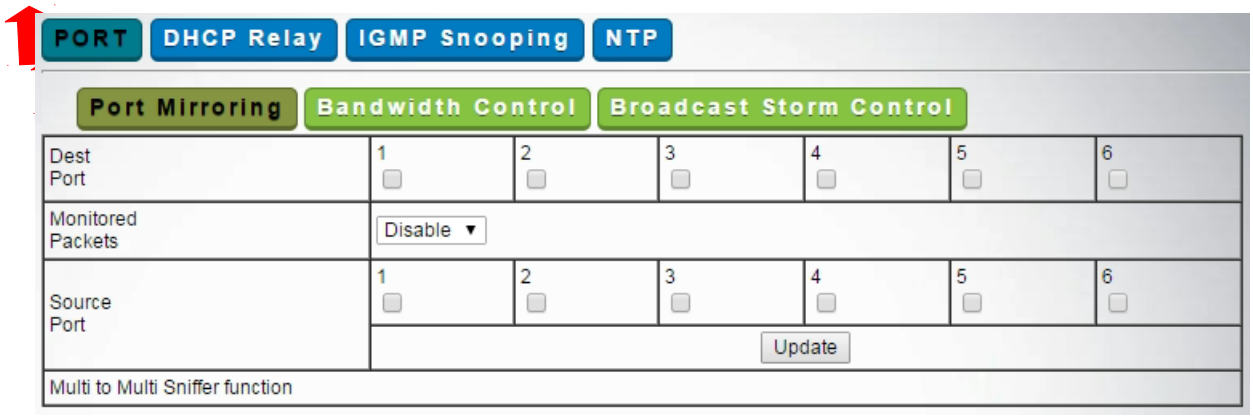
✓ The **“Statistics” -> “FDB Table”** (Forwarding Database) table is to store the MAC addresses that have been learned and which the ports that MAC address was learned on.



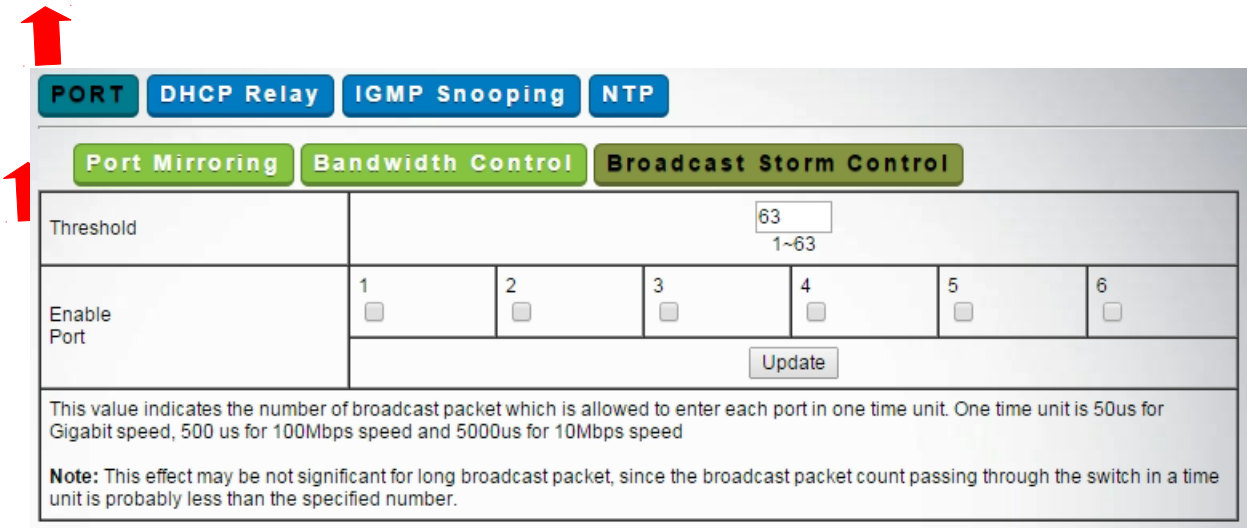
✓ **“Statistics” → “Packet Counter”** records 4 kinds of packet count. They are

- Transmit Packet and Receive Packet
- Collision counts and Transmit Packet
- Drop Packet and Receive Packet
- CRC error packet and Receive Packet

Advanced

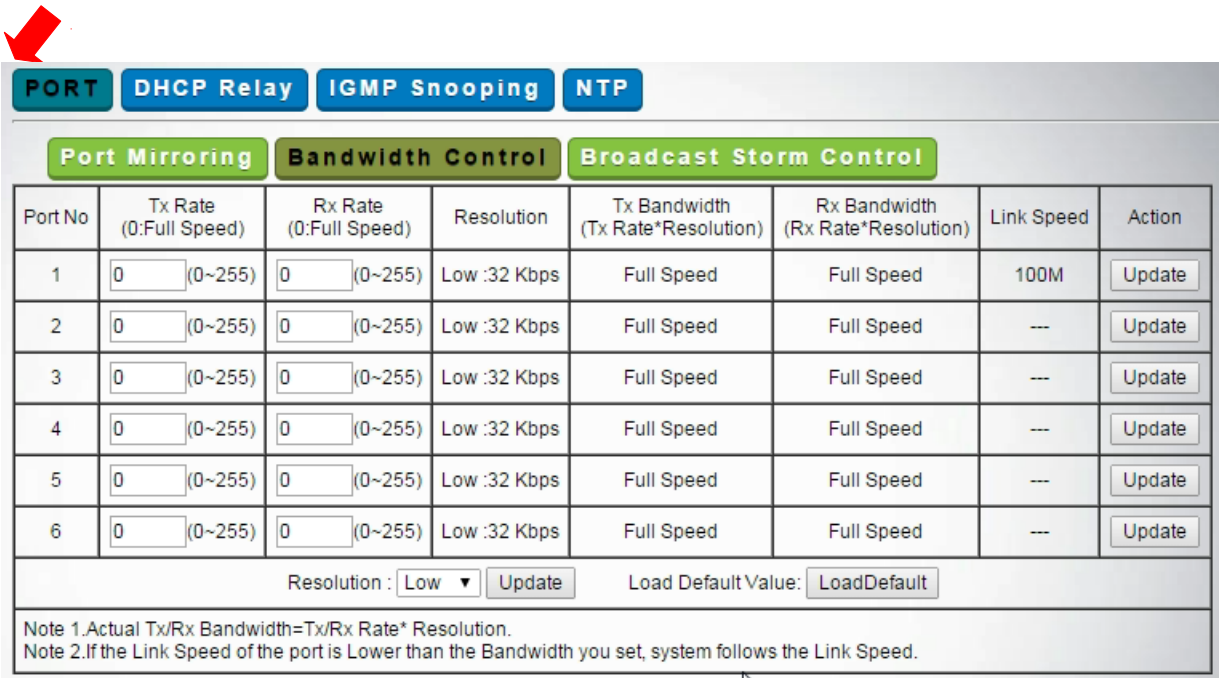


✓ **“Advanced” -> “Port” -> “Port Mirroring”** copies packets entering (Rx) or/and exiting (Tx) a port (source port) and sends the copies to a local interface (Destination Port) for monitoring purpose.



✓ **“Advanced” -> “Port”** -> **“Broadcast Storm Control”** ->**“Threshold”** specifies the allowed counts of Broadcast packet entering the port in 50us (1000Mbps Link Speed), 500us (100 Mbps Link Speed), or 5000us (10Mbps Link Speed)

Advanced



✓ **“Advanced” -> “Port”** -> **“Bandwidth Control”**

To control the bandwidth of Switch port, here provides the method to set the bandwidth by selecting “**Tx Rate”** (Transmit), “**Rx Rate”** (Receive) and “**Resolution”.** Then, the multiplied result comes to “**Tx Bandwidth”** and “**Rx Bandwidth”** which indicates respectively the controlled egress and ingress bandwidth.

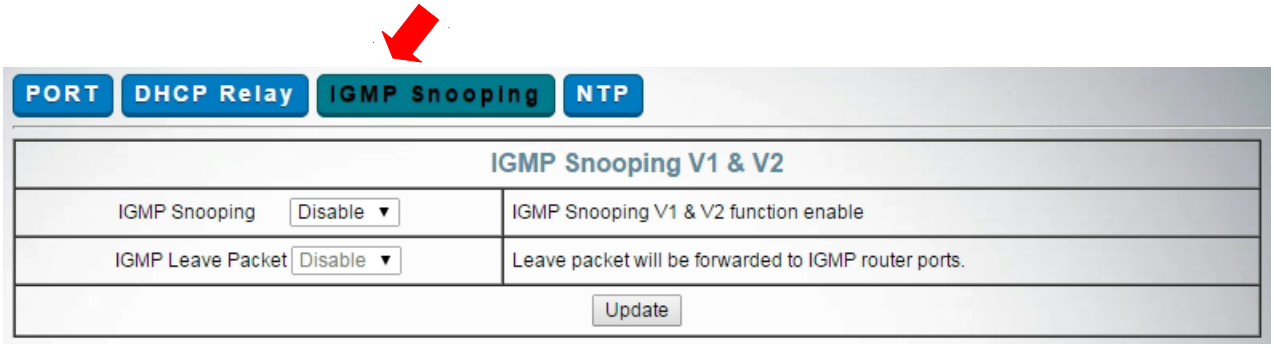
Note that if the Bandwidth user set is higher than the physical Link speed, meaning no control actually. System follows the Link speed.

Advanced

- ✓ **“Advanced” -> “DHCP Relay”** -> **“DHCP Relay Agent”** ->”**DHCP Relay Hops Count Limit”** allows the maximum number of hops (routers) that the DHCP messages can be relayed through to be set. If a packet’s hop count is more than the hop count limit, the packet is dropped. The range is between 1 and 16hops.

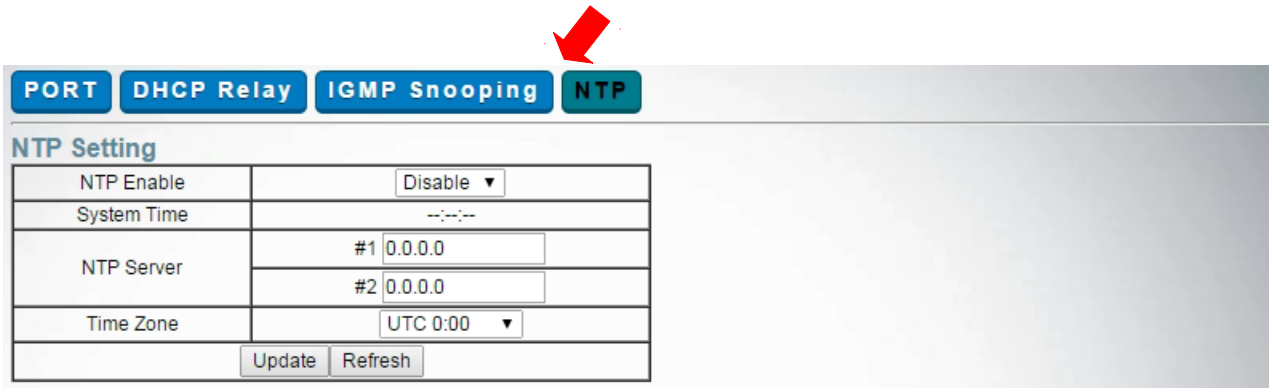
- ✓ If enable **” DHCP Relay Option 82”**, the relay agent will insert and remove DHCP relay information (option 82 field) in messages between DHCP servers and clients. When the relay agent receives the DHCP request, it adds the option 82 information and the IP address of the relay agent to the packet, and then it is sent on to the DHCP server. When the DHCP server (option 82 capable) receives the packet, it can implement policies like restricting the number of IP addresses that can be assigned to a single remote ID or circuit ID. Then the DHCP server echoes the option 82 field in the DHCP reply. Finally, the relay agent removes the option 82 field and forwards the packet to the switch port that connects to the DHCP client that sent the DHCP request.

Advanced



✓ **"Advanced" -> "IGMP Snooping"** is the process of listening to Internet Group Management Protocol (IGMP) network traffic. This feature allows a network switch to listen in on the IGMP conversation between host and router. By listening to these conversations the switch maintains a map of which links need which IP multicast streams. Multicasts may be filtered from the links which do not need them and thus controls which ports receive specific multicast traffic.

✓ When IGMP Snooping is enabled, user can choose whether send the "**IGMP Leave Packet"** to router or not. Disable **"IGMP Leave Packet"**, Switch will not send the "Leave" message to Router.



✓ **"Advanced" -> "NTP"**
Enable "Network Time Protocol", enter "**NTP Server"** IP address and specify "**Time Zone"** of where the Switch device is located. **Refresh** to get the **"System Time"**.

Product Specification

1. External Interfaces

- 4 10/100-T ports + 2 10/100/1000-T ports
  (1st ~ 4th FE ports support PoE, 5th ~ 6th GE port does not support PoE.)
- Per port LED indicators.
- System and POE LED indicators.
- DC Inlet.
- Push button. (can turn off/on Port LED display for energy saving.)
- Factory Default button. (to reset system configuration to default value.)

2. Port Functions

Items	Specifications
10/100 base-T LAN	■ Port 1-4 complies with : 1. IEEE 802.3 2. IEEE 802.3u ■ Support Half/Full-Duplex operation, Auto-negotiation, Auto MDI/MDIX ■ Support IEEE 802.3x Flow Control. (Full-Duplex mode)
10/100/1000 base-T LAN	■ Port 5-6 complies with : 1. IEEE 802.3 2. IEEE 802.3u 3. IEEE 802.3ab ■ Support Half/Full-Duplex operation, Auto-negotiation, Auto MDI/MDIX ■ Support IEEE 802.3x Flow Control. (Full-Duplex mode)IEEE 802.3x, Flow Control support for Full-Duplex mode

3. PoE Functions

Item	Specifications
PoE Standard	IEEE 802.3af/at
PoE Capable Ports	Port 1~4
PoE Power Budget	Total 80W Per Device.

<table>
<tr>
<td>PoE output power capacity</td>
<td>Maximum output: 30Watt per port.
1. Support PoE and PoE+. (IEEE 802.3af /at standard.)
2. Automatically discover the connection of PD device.
3. Automatically disable port if the port current is over 720mA.
4. Via Web setting, working mode of each port can be configured.
5. When port is in the Auto mode, output port power limit will be associated with PD Classification Value.
6. Priority of POE port is configurable. (Default setting is lower port No. higher priority.)
7. Follow the standard PSE pin-out standard of Alternative B.
8. The maximum power used by power devices is defined by the following classification. When Port works in Auto Mode, the output port power limit will be associated with PD Classification Value.
<table>
<tr><th>Class</th><th>Usage</th><th>Minimum Power Levels Output at the PSE</th><th>Maximum Power Levels at the Powered Device</th></tr>
<tr><td>0</td><td>Default</td><td>15.4W</td><td>0.44 to 12.95W</td></tr>
<tr><td>1</td><td>Optional</td><td>4.0W</td><td>0.44 to 3.84W</td></tr>
<tr><td>2</td><td>Optional</td><td>7.0W</td><td>3.84 to 6.49W</td></tr>
<tr><td>3</td><td>Optional</td><td>15.4W</td><td>6.49 to 12.95W</td></tr>
<tr><td>4</td><td>Optional</td><td>30W</td><td>12.95W to 25.5W</td></tr>
</table>
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4. Push Button

Function	Location	Description
Factory Default	Inner Push Button, Front Panel	Pin the inner button 3 seconds then release, will reset system configuration back to factory default.
LED ON/OFF	Push Button, Front Panel	Push once will turn off all functioning LEDs except Power LED. Push again, turn on all functioning LEDs.

5. Power Supply –External Adaptor

Items	Specifications
Total Electrical Power	120W
AC Input Voltage	100V ~ 240V, 50/60Hz
DC Output	+54V: 2.22A (Max)

6. System Information

Items	Specifications
Power Consumption	13.4W
MTBF	7 years or more
FAN	Fanless