Industrial IEC 61850-3
Management Ethernet Switch

RES-P3242GCL SERIES User's Manual

Version 2.0
JUN, 2012

ORing Industrial Networking Corp.

Website: www.oring-networking.com

E-mail: support@oring-networking.com

Table of Content

Getting to Know Your Switch

1.1 About the RES-P3242GCL SERIES Industrial Switch

RES-P3242GCL SERIES are powerful managed industrial switches for power station applications which have many features. RES-P3242GCL SERIES pass the IEC 61850-3 and IEEE 1613 certification. They can be managed by WEB, TELNET, Console or other third-party SNMP software as well. Besides, these switches can be managed by a useful utility that we called Open-Vision.

Open-Vision is powerful network management software. With its friendly and powerful interface, you can easily configure multiple switches at the same time, and monitor switches' status.

1.2 Software Features

- World's fastest Redundant Ethernet Ring (Recovery time < 10ms over 250 units connection)
- Supports Ring Coupling, Dual Homing, RSTP over O-Ring
- Supports SNMPv1/v2/v3 & RMON & Port base/802.1Q VLAN Network Management
- Event notification by Email, SNMP trap and Relay Output
- Web-based ,Telnet, Console, CLI configuration
- Enable/disable ports, MAC based port security
- Port based network access control (802.1x)
- VLAN (802.1Q) to segregate and secure network traffic
- SNMPv3 encrypted authentication and access security
- RSTP (802.1w)
- Quality of Service (802.1p) for real-time traffic
- Port configuration, status, statistics, mirroring, security

1.3 Hardware Features

- Isolation redundant power inputs with 12 ~ 36VDC or 36 ~ 72VDC or 100 ~ 240VAC power supply range
- Operating Temperature:: -40 to 85^{o}C
- Operating Humidity: 5% to 95%, non-condensing
- 8 x 10/100Base-T(X) Ethernet ports

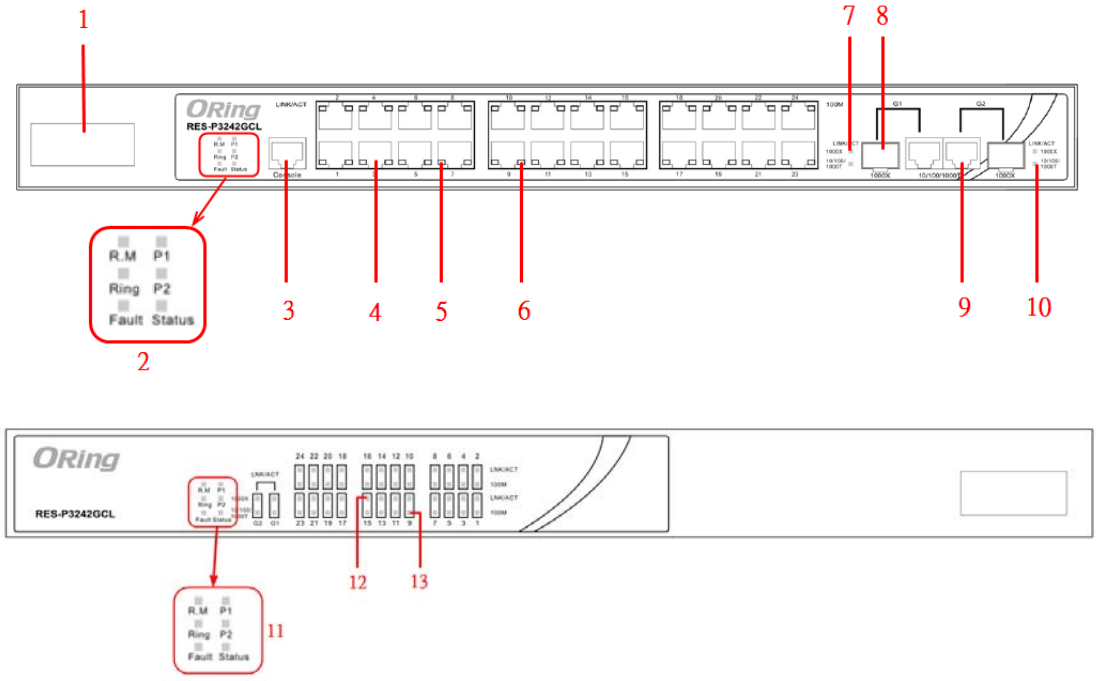
- 2 x 10/100/1000Base-T(X) and 1000Base-X SFP ports on combo port
- 1 x Console Port
- Dimensions(W x D x H) : 443.7 mm(W)x 262.7 mm(D)x 44 mm(H)
- 19 inches rack mountable

Hardware Overview

2.1 Front Panel

The following table describes the labels that stick on the RES-P3242GCL SERIES.

Port	Description
10/100 RJ-45 fast Ethernet ports	24 x 10/100Base-T(X) RJ-45 fast Ethernet ports support auto-negotiation. Default Setting : Speed: auto Duplex: auto Flow control : disable
Gigabit port	2 x 10/100/1000Base-T(X) Gigabit ports (combo)
Fiber port	2 x 1000Base-X on SFP ports (combo)
Console	Use RS-232 cable to manage switch



1. Power inputs .
2. LED Status :

   P1 LED for PWR1. When the PWR1 links, the green led will be light on.

   P2 LED for PWR2. When the PWR2 links, the green led will be light on.

   Status LED for System Status. When the system is ready, the green led will be light on.

R.M LED for Ring master. When the LED light on, it means that the switch is the ring master of O-Ring.

Ring LED for Ring. When the LED light on, it means the O-Ring is activated.

Fault LED for Fault Relay. When the fault occurs, the amber LED will be light on.

3. RS-232 Console Port. Set connection at 9600bps, 8N1.
4. 10/100Base-T(X) Ethernet ports.
5. LED for Ethernet ports Link status.
6. LED for Ethernet ports ACT status.
7. LED for Combo SFP ports Link / ACT status.
8. 1000Base-X fiber port in SFP socket.
9. 10/100/1000Base-T(X) Ethernet port.
10. LED for Combo Copper ports Link / ACT status.
11. LED Status

    P1 LED for PWR1. When the PWR1 links, the green led will be light on.

    P2 LED for PWR2. When the PWR2 links, the green led will be light on.

    Status LED for System Status. When the system is ready, the green led will be light on.

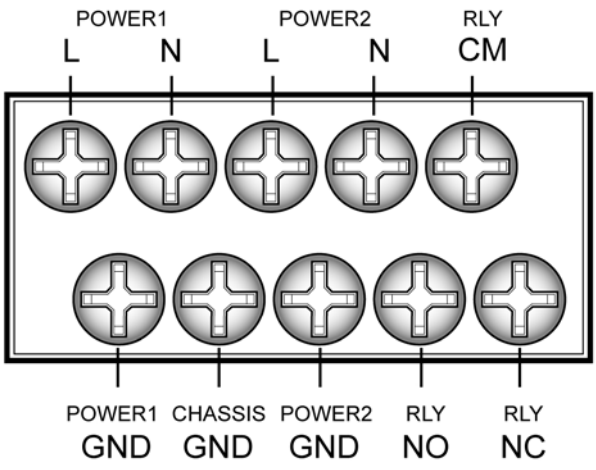
    R.M LED for Ring master. When the LED light on, it means that the switch is the ring master of O-Ring.

    Ring LED for Ring. When the LED light on, it means the O-Ring is activated.

    Fault LED for Fault Relay. When the fault occurs, the amber LED will be light on.
12. LED for Combo SFP ports Link / ACT status.
13. LED for Combo Copper ports Link / ACT status.

2.2 Power Panel

RES-P3242GCL SERIES are power redundant switches, supports two power inputs.



Note :

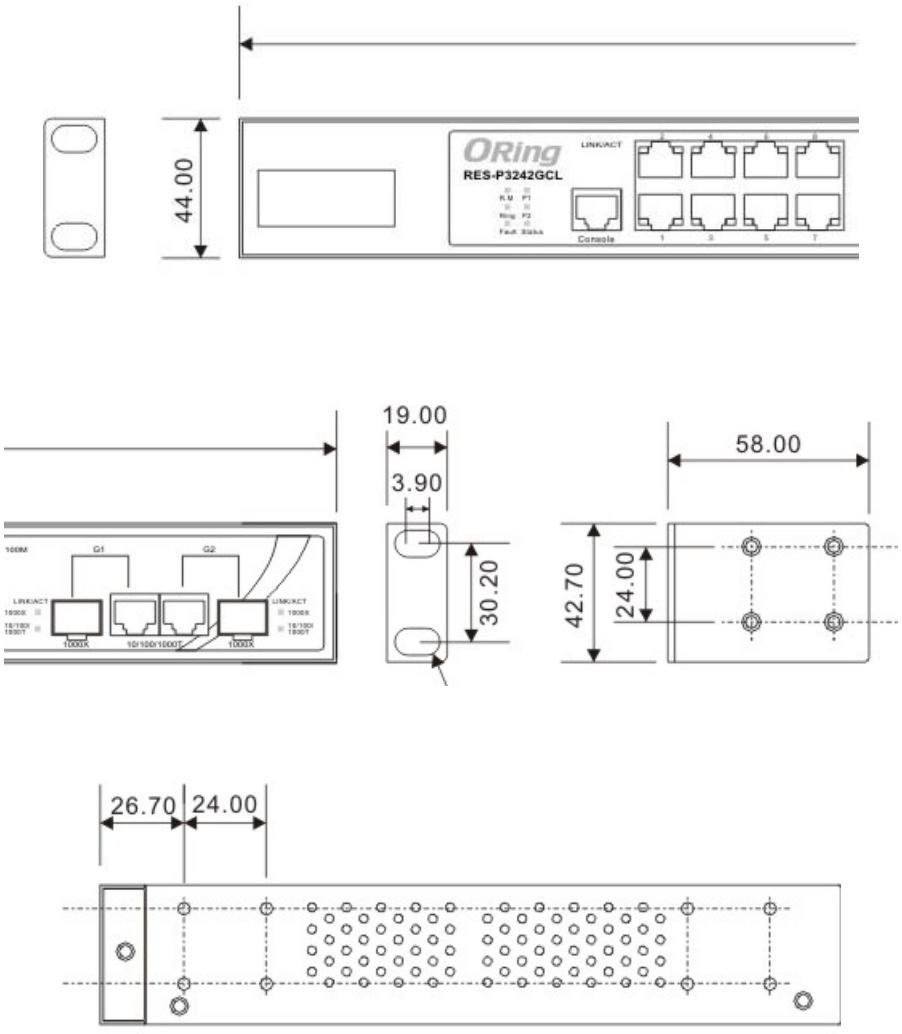
RLY COM– Relay Com

RLY NO – Relay Normal Open

RLY NC – Relay Normal Close

2.3 Rack mount kit assembly

You can find the rack mount kit and the screws in the packing box. Please assembly the rack mount kit on the switch with screws as below picture.



Cables

3.1 Ethernet Cables

RES-P3242GCL SERIES switches have standard Ethernet ports. According to the link type, these switches use CAT 3, 4, 5,5e UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs). Please refer to the following table for cable specifications.

Cable Types and Specifications

Cable	Type	Max. Length	Connector
10BASE-T	Cat.3, 4, 5 100-ohm	UTP 100 m (328 ft)	RJ-45
100BASE-TX	Cat.5 100-ohm UTP	UTP 100 m (328 ft)	RJ-45
1000BASE-T	Cat.5/Cat.5e 100-ohm UTP	UTP 100 m (328ft)	RJ-45

3.1.1 100BASE-TX/10BASE-T Pin Assignments

With 100BASE-TX/10BASE-T cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 are used for receiving data.

10/100 Base-T RJ-45 Pin Assignments

Pin Number	Assignment
1	TD+
2	TD-
3	RD+
4	Not used
5	Not used
6	RD-
7	Not used
8	Not used

1000 Base-T RJ-45 Pin Assignments

Pin Number	Assignment
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

The RES-P3242GCL SERIES switches support auto MDI/MDI-X operation. You can use a straight-through cable to connect PC to switch. The following table below shows the 10BASE-T/ 100BASE-TX MDI and MDI-X port pin outs.

10/100 Base-T MDI/MDI-X pins assignment

Pin Number	MDI port	MDI-X port
1	TD+(transmit)	RD+(receive)
2	TD-(transmit)	RD-(receive)
3	RD+(receive)	TD+(transmit)
4	Not used	Not used
5	Not used	Not used
6	RD-(receive)	TD-(transmit)
7	Not used	Not used
8	Not used	Not used

1000 Base-T MDI/MDI-X pins assignment

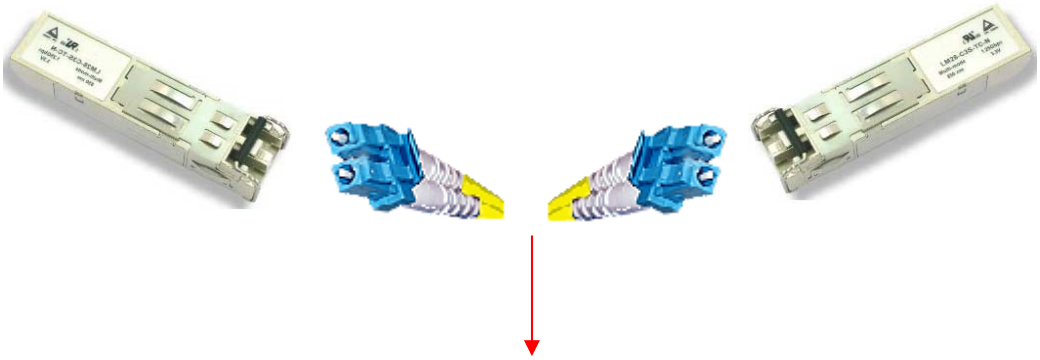
Pin Number	MDI port	MDI-X port
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

Note: "+" and "-" signs represent the polarity of the wires that make up each wire pair.

3.2 SFP

The RES-P3242GCL SERIES has fiber optical ports with SFP connectors. The fiber optical ports are in multi-mode (0 to 550M, 850 nm with 50/125 µm, 62.5/125 µm fiber) and single-mode with LC connector. Please remember that the TX port of Switch A should be connected to the RX port of Switch B.

Switch A Switch B

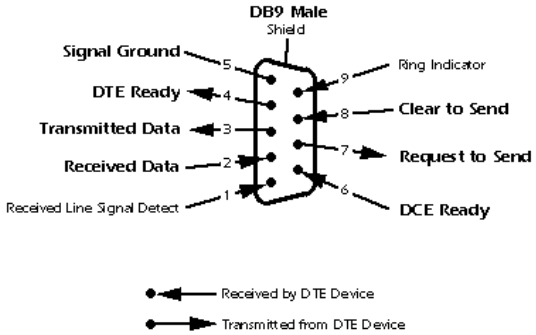


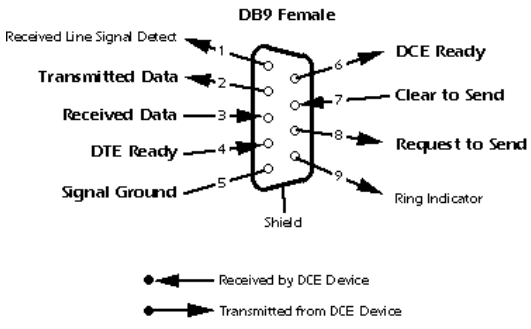
Fiber cord

3.3 Console Cable

RES-P3242GCL SERIES switches can be management by console port. The DB-9 to RJ-45 cable can be found in the package. You can connect them to PC via a RS-232 cable with DB-9 female connector and the other end (RJ-45 connector) connects to console port of switch.

PC pin out (male) assignment	RS-232 with DB9 female connector	DB9 to RJ 45
Pin #2 RD	Pin #2 TD	Pin #2
Pin #3 TD	Pin #3 RD	Pin #3
Pin #5 GD	Pin #5 GD	Pin #5





WEB Management

4.1 Configuration by Web Browser

This section introduces the configuration by Web browser.

4.1.1 About Web-based Management

Inside the CPU board of the switch, an embedded HTML web site resides in flash memory. It contains advanced management features and allows you to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

The Web-Based Management supports Internet Explorer 5.0. It is based on Java Applets with an aim to reduce network bandwidth consumption, enhance access speed and present an easy viewing screen.

Note: By default, IE5.0 or later version does not allow Java Applets to open sockets. You need to explicitly modify the browser setting in order to enable Java Applets to use network ports.

Preparing for Web Management

The default value is as below:

IP Address: **192.168.10.1**

Subnet Mask: **255.255.255.0**

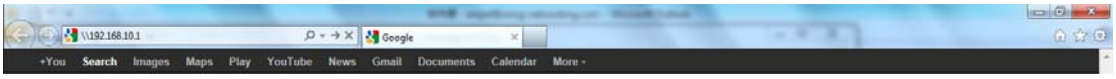
Default Gateway: **192.168.10.254**

User Name: **admin**

Password: **admin**

System Login

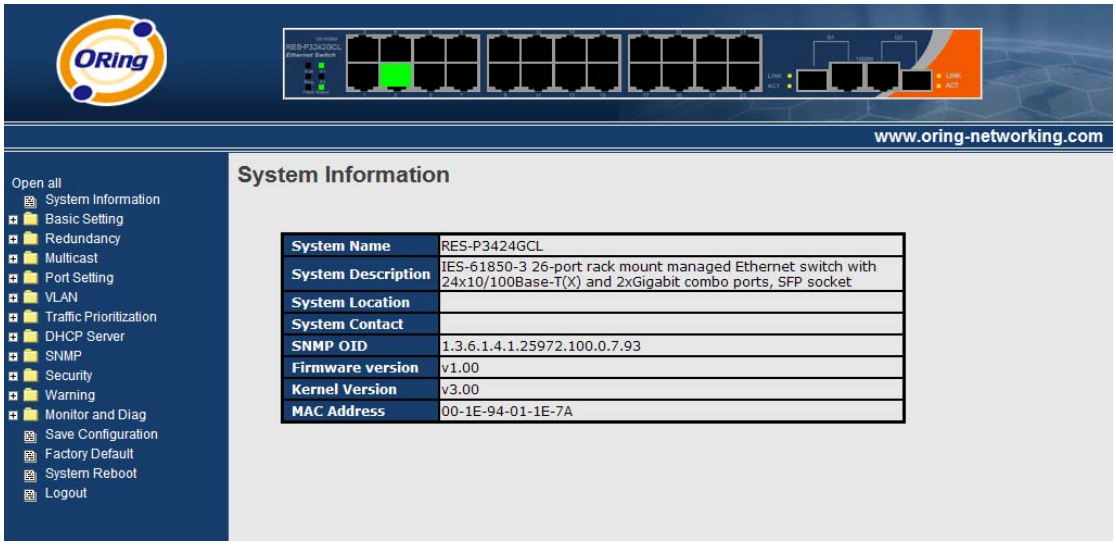
1. Launch the Internet Explorer.
2. Type http:// and the IP address (default is 192.168.10.1) of the switch. Press "**Enter**".



3. The login screen appears.
4. Key in the username and password. The default username and password is "**admin**".
5. Click "**Enter**" or "**OK**" button, then the main interface of the Web-based management appears.

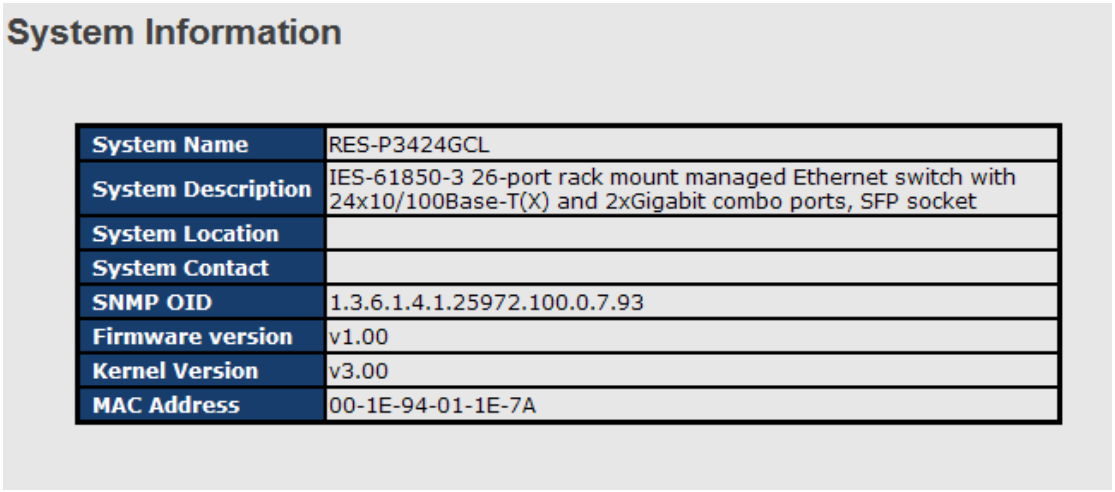
Login screen

Main Interface



Main interface

4.1.2 System Information



System Information interface

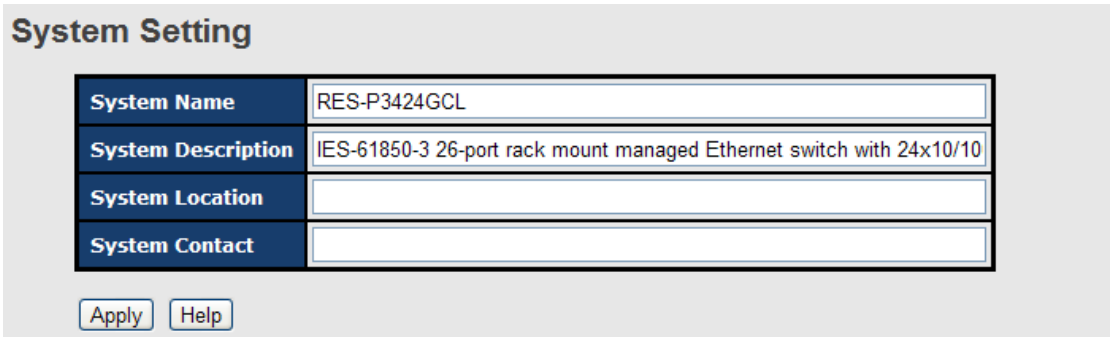
System Information will display the configuration of Basic Setting / Switch Setting page.

The following table describes the labels in this screen.

Label	Description
System Name	Display the system name of switch.
System Description	Display the description of switch.
System Location	Display the location of switch.
System Contact	Display the name of contact person or organization
Firmware Version	Display the switch's firmware version
Kernel Version	Display the kernel software version
MAC Address	Display the unique hardware address assigned by manufacturer (default)

4.1.3 Basic setting

4.1.3.1 Switch Setting



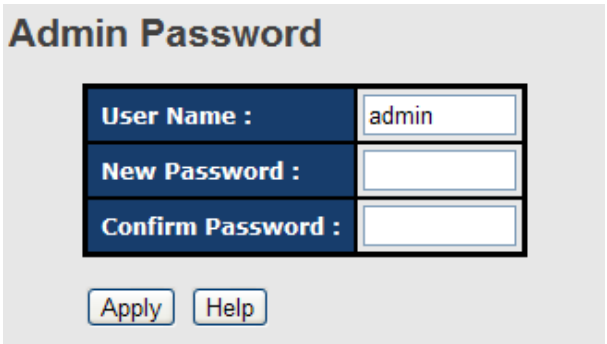
Switch setting interface

The following table describes the labels in this screen.

Label	Description
System Name	Assign the name of switch. The maximum length is 64 bytes
System Description	Display the description of switch.
System Location	Assign the switch physical location. The maximum length is 64 bytes
System Contact	Enter the name of contact person or organization

4.1.3.2 Admin Password

Change web management login username and password for the management security issue



Admin Password interface

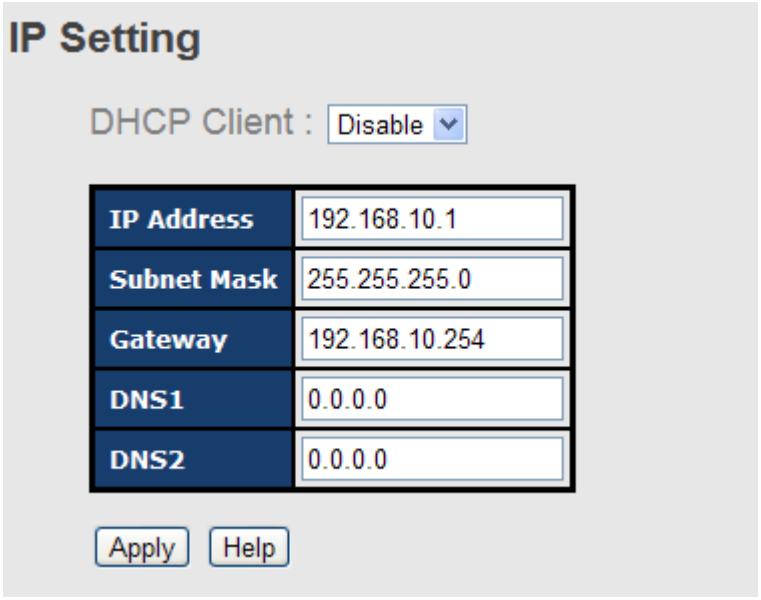
The following table describes the labels in this screen.

Label	Description
User name	Key in the new username(The default is "**admin**")
New Password	Key in the new password(The default is "**admin**")

Confirm password	Re-type the new password.
Apply	Click "**Apply**" to set the configurations.

4.1.3.3 IP Setting

You can configure the IP Settings and DHCP client function through IP configuration.



IP Configuration interface

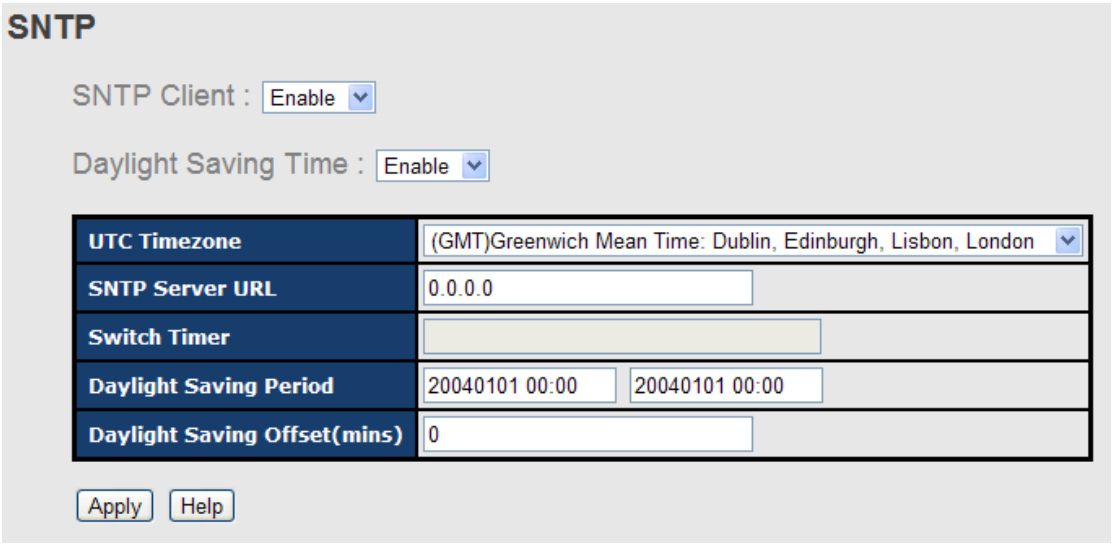
The following table describes the labels in this screen.

Label	Description
DHCP Client	To enable or disable the DHCP client function. When DHCP client function is enabling, the switch will be assigned the IP address from the network DHCP server. The default IP address will be replaced by the IP address which the DHCP server has assigned. After clicking "**Apply**" button, a popup dialog shows up to inform when the DHCP client is enabling. The current IP will lose and you should find a new IP on the DHCP server.
IP Address	Assign the IP address that the network is using. If DHCP client function is enabling, you do not need to assign the IP address. The network DHCP server will assign the IP address for the switch and it will be display in this column. The default IP is 192.168.10.1
Subnet Mask	Assign the subnet mask of the IP address. If DHCP client function is enabling, you do not need to assign the subnet mask
Gateway	Assign the network gateway for the switch. The default gateway is

	192.168.10.254
DNS1	Assign the primary DNS IP address
DNS2	Assign the secondary DNS IP address
Apply	Click "**Apply**" to set the configurations.

4.1.3.4 SNTP (Time)

The SNTP (Simple Network Time Protocol) settings allow you to synchronize switch clocks in the Internet.



SNTP Configuration interface

The following table describes the labels in this screen.

Label	Description
SNTP Client	Enable or disable SNTP function to get the time from the SNTP server.
Daylight Saving Time	Enable or disable daylight saving time function. When daylight saving time is enabling, you need to configure the daylight saving time period.
UTC Time zone	Set the switch location time zone. The following table lists the different location time zone for your reference.

Local Time Zone	Conversion from UTC	Time at 12:00 UTC
November Time Zone	- 1 hour	11 am
Oscar Time Zone	-2 hours	10 am

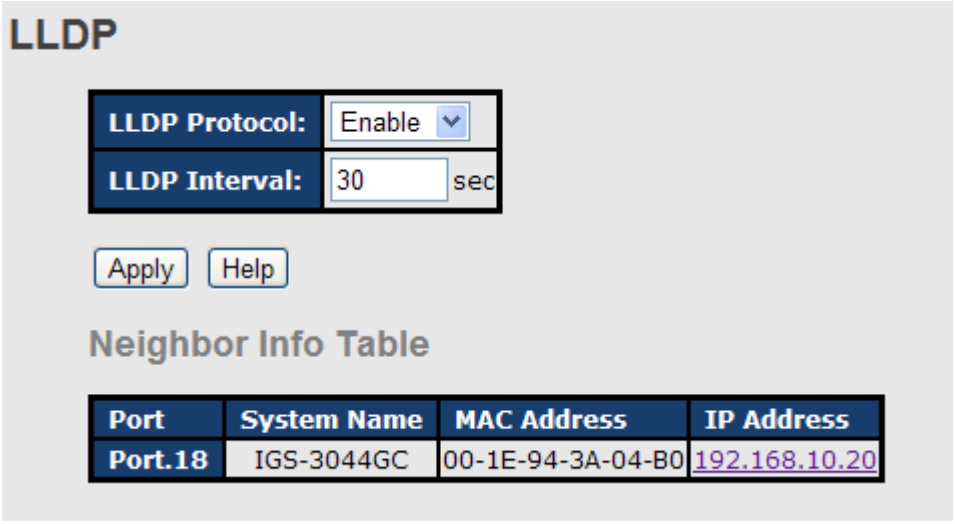
ADT - Atlantic Daylight	-3 hours	9 am
AST - Atlantic Standard EDT - Eastern Daylight	-4 hours	8 am
EST - Eastern Standard CDT - Central Daylight	-5 hours	7 am
CST - Central Standard MDT - Mountain Daylight	-6 hours	6 am
MST - Mountain Standard PDT - Pacific Daylight	-7 hours	5 am
PST - Pacific Standard ADT - Alaskan Daylight	-8 hours	4 am
ALA - Alaskan Standard	-9 hours	3 am
HAW - Hawaiian Standard	-10 hours	2 am
Nome, Alaska	-11 hours	1 am
CET - Central European FWT - French Winter MET - Middle European MEWT - Middle European Winter SWT - Swedish Winter	+1 hour	1 pm
EET - Eastern European, USSR Zone 1	+2 hours	2 pm
BT - Baghdad, USSR Zone 2	+3 hours	3 pm
ZP4 - USSR Zone 3	+4 hours	4 pm
ZP5 - USSR Zone 4	+5 hours	5 pm
ZP6 - USSR Zone 5	+6 hours	6 pm
WAST - West Australian Standard	+7 hours	7 pm
CCT - China Coast, USSR Zone 7	+8 hours	8 pm

JST - Japan Standard, USSR Zone 8	+9 hours	9 pm
EAST - East Australian Standard GST Guam Standard, USSR Zone 9	+10 hours	10 pm
IDLE - International Date Line NZST - New Zealand Standard NZT - New Zealand	+12 hours	Midnight

Label	Description
SNTP Sever IP Address	Set the SNTP server IP address.
Daylight Saving Period	Set up the Daylight Saving beginning time and Daylight Saving ending time. Both will be different each year.
Daylight Saving Offset	Set up the offset time.
Switch Timer	Display the switch current time.
Apply	Click "**Apply**" to set the configurations.

4.1.3.5 LLDP

LLDP (Link Layer Discovery Protocol) function allows the switch to advertise its information to other nodes on the network and store the information it discovers.

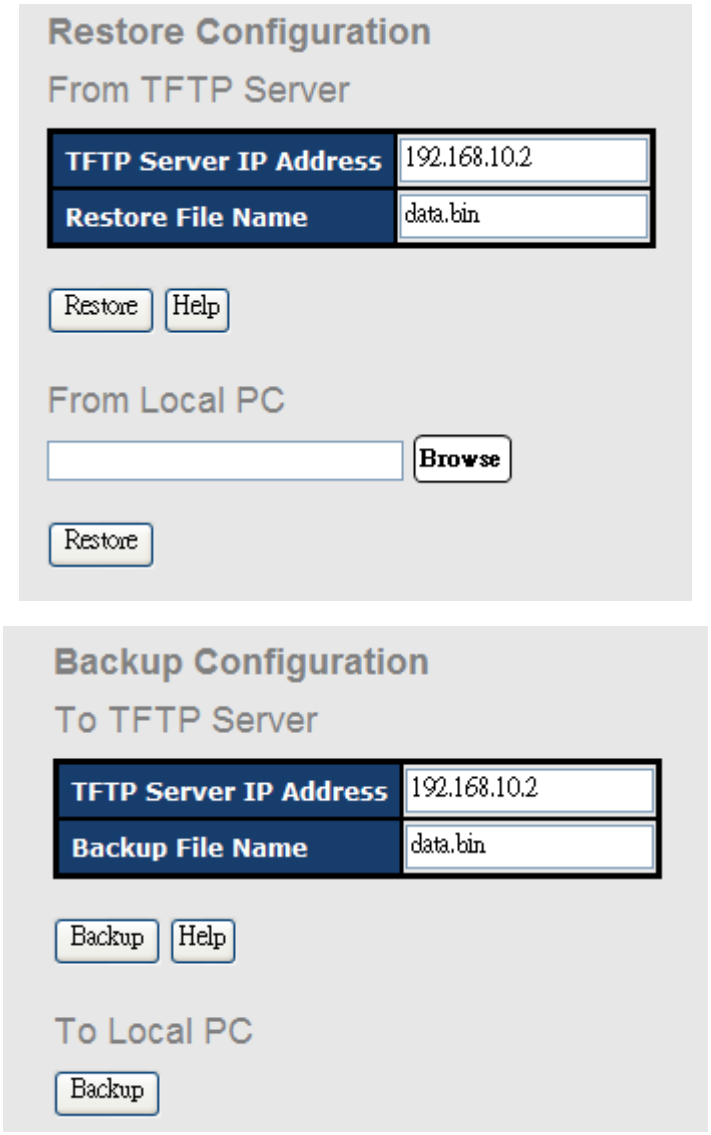


The following table describes the labels in this screen.

Label	Description
LLDP Protocol	"Enable" or "Disable" LLDP function.
LLDP Interval	The interval of resend LLDP (by default at 30 seconds)
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.
Neighbor info table	Can show neighbor device info .

4.1.3.6 Backup & Restore

You can save current EEPROM value from the switch to TFTP server, then go to the TFTP restore configuration page to restore the EEPROM value.



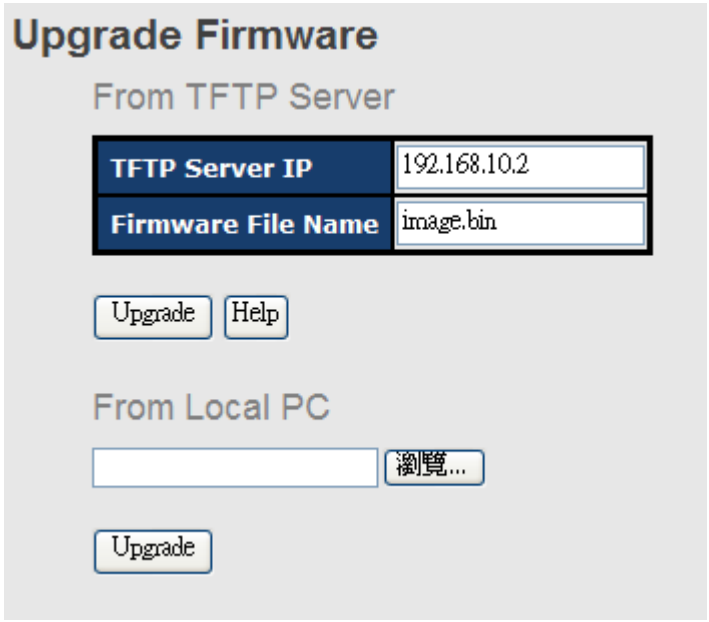
Backup & Restore interface

The following table describes the labels in this screen.

Label	Description
TFTP Server IP Address	Fill in the TFTP server IP
Restore File Name	Fill the file name.
Restore	Click "**restore**" to restore the configurations.
Form Local PC	User can select file restore , not need TFTP server .
Restore File Name	Fill the file name.
Restore	Click "**restore**" to restore the configurations.
Backup	Click "**backup**" to backup the configurations.
To Local PC	User can download config file to switch . not need TFTP server

4.1.3.7 Upgrade Firmware

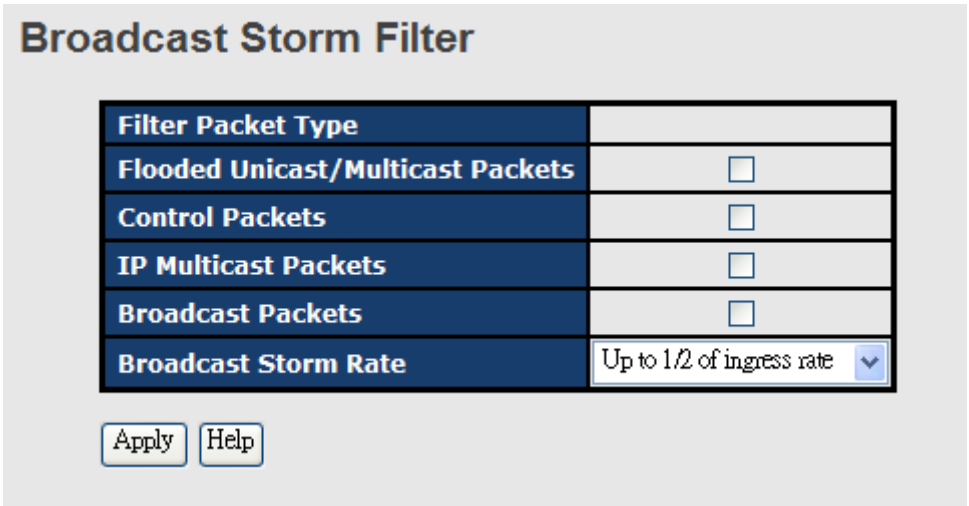
Upgrade Firmware allows you to update the switch firmware. Before updating, make sure you have your TFTP server ready and the firmware image is on the TFTP server.



Update Firmware interface

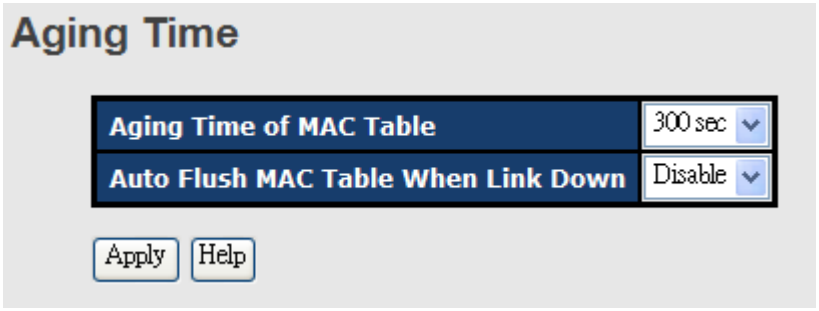
4.1.3.8 Broadcast storm filter

Set the broadcast storm rate to prevent network crash..



1. **Flooded Unicast / Multicast Packets:** Enable/disable to limit the frame type.
2. **Control Packets:** Enable/disable to limit the frame type.
3. **IP Multicast Packets:** Enable/disable to limit the frame type.
4. **Broadcast Packets:** Enable/disable to limit the frame type.
5. **Broadcast Storm Rate:** Set the filtering rate range from 1/2 to 1/16 of ingress.

4.1.3.9 Aging Time



1. **Aging Time of MAC Table:** Default 300secs.
2. **Auto Flush MAC Table When Link Down:** enable/disable the function

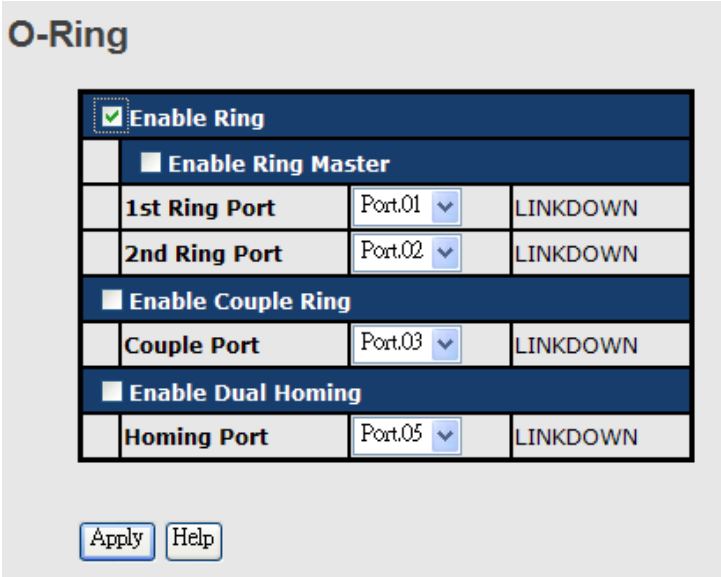
4.1.3.10 Jumbo Frame

Enable/disable all ports Jumbo frame function.

4.1.4 Redundancy

4.1.4.1 O-Ring

O-Ring is the most powerful Ring in the world. The recovery time of O-Ring is less than 10 ms. It can reduce unexpected damage caused by network topology change. O-Ring supports three Ring topologies: O-Ring, Coupling Ring and Dual Homing.



O-Ring interface

The following table describes the labels in this screen.

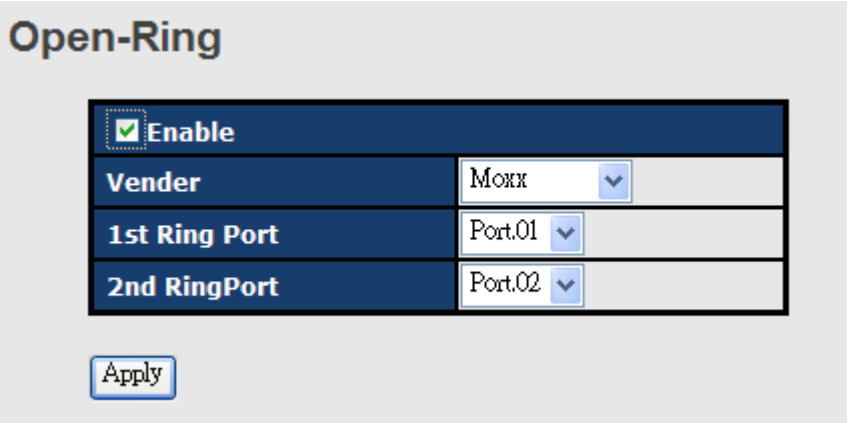
Label	Description
Enable Ring	Mark to enable Ring.
Enable Ring Master	There should be one and only one Ring Master in a ring. However if there are two or more switches which set Ring Master to enable, the switch with the lowest MAC address will be the actual Ring Master and others will be Backup Masters.
1st Ring Port	The primary port, when this switch is Ring Master.
2nd Ring Port	The backup port, when this switch is Ring Master.
Enable Coupling Ring	Mark to enable Coupling Ring. Coupling Ring can be used to divide a big ring into two smaller rings to avoid effecting all switches when network topology change. It is a good application for connecting two Rings.
Coupling Port	Link to Coupling Port of the switch in another ring. Coupling Ring need four switch to build an active and a backup link. Set a port as coupling port. The coupled four ports of four switches will be run at active/backup mode.
Control Port	Link to Control Port of the switch in the same ring. Control Port used to transmit control signals.
Enable Dual Homing	Mark to enable Dual Homing. By selecting Dual Homing mode, O-Ring will be connected to normal switches through two RSTP links (ex: backbone Switch). The two links work as active/backup mode, and connect each O-Ring to the normal switches in RSTP mode.
Apply	Click "Apply" to set the configurations.

Note: We don't suggest you to set one switch as a Ring Master and a Coupling Ring at the same time due to heavy load.

4.1.4.2 OPEN-Ring

Open-Ring technology can be applied for other vendor's proprietary ring. Thus, you can add switches of ORing into the network constructed by other ring technology and enable Open-Ring to co-operate with other vendor's managed switch.

Click "Connect to other vendor's ring….." to join the ring constructed by other vendor.

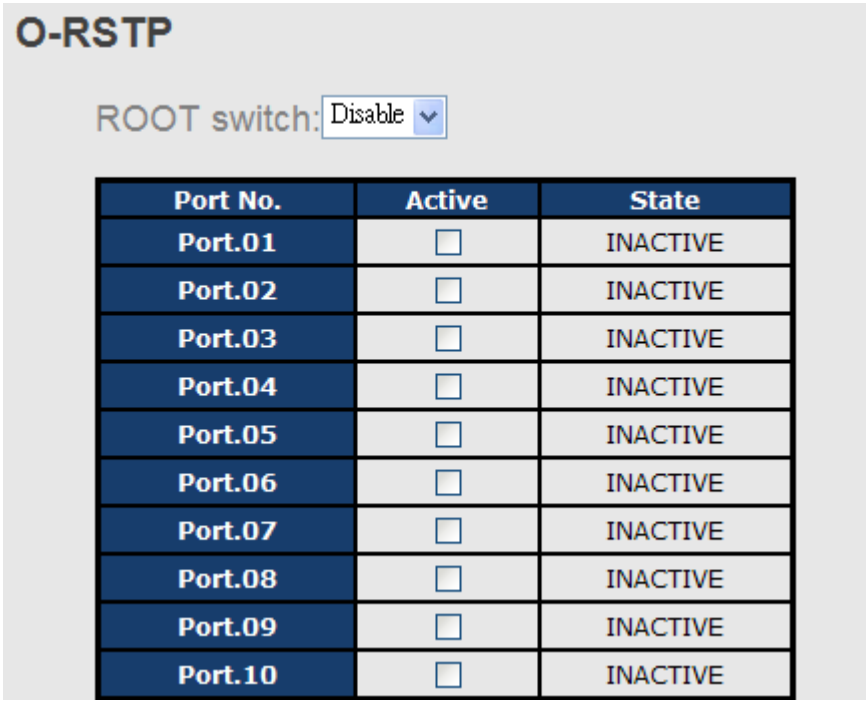


Open-Ring interface

Label	Description
Enable	Enabling the Open-Ring function
Vender	Choosing the venders that you want to join to their ring
1st Ring Port	Choosing the port which connect to the ring
2nd Ring Port	Choosing the port which connect to the ring

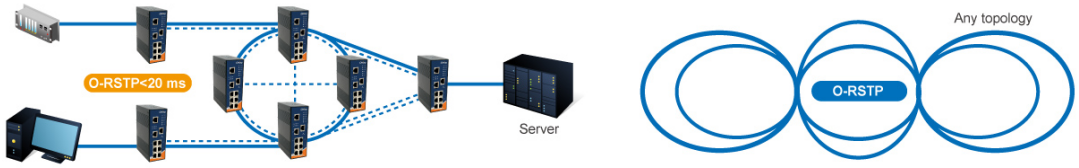
4.1.4.3 O-RSTP

O-RSTP is proprietary redundant ring technology invented by O-Ring. Different from standard STP/RSTP, the recovery time of O-RSTP is less than 10mS and support more nodes of connection in a ring topology.



O-RSTP interface

The application of O-RSTP is shown as below.



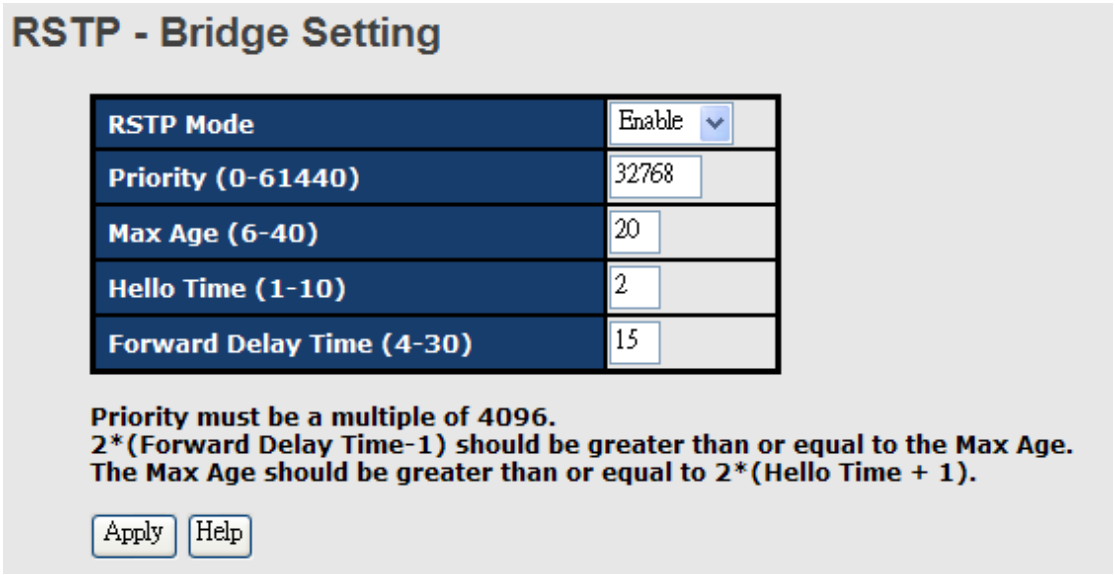
O-RSTP connection

4.1.4.4 RSTP

The Rapid Spanning Tree Protocol (RSTP) is an evolution of the Spanning Tree Protocol. It provides faster spanning tree convergence after a topology change. The system also supports STP and the system will auto detect the connected device that is running STP or RSTP protocol.

RSTP setting

You can enable/disable RSTP function, and set parameters for each port.



RSTP Setting interface

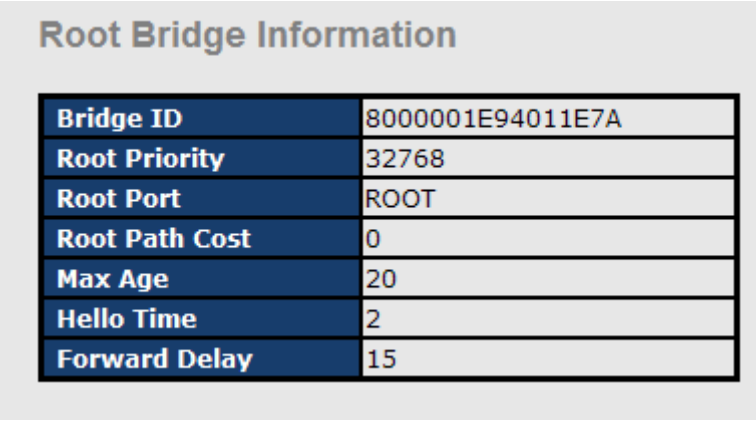
The following table describes the labels in this screen.

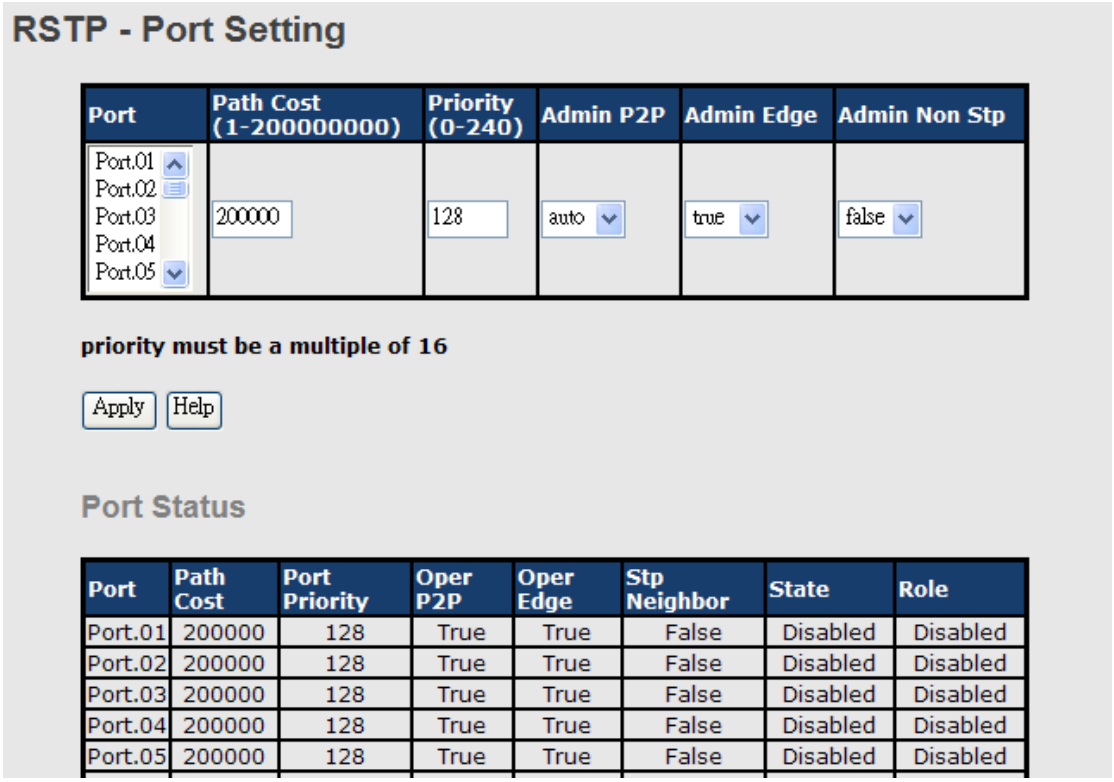
Label	Description
RSTP mode	You must enable or disable RSTP function before configuring the related parameters.
Priority (0-61440)	A value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. If the value changes, You must reboot the switch. The value must be multiple of 4096 according to the protocol standard rule.
Max Age Time(6-40)	The number of seconds a bridge waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration. Enter a value between 6 through 40.
Hello Time (1-10)	The time that controls switch sends out the BPDU packet to check RSTP current status. Enter a value between 1 through 10.
Forwarding Delay Time (4-30)	The number of seconds a port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a value between 4 through 30.
Apply	Click "**Apply**" to set the configurations.

NOTE: Follow the rule to configure the MAX Age, Hello Time, and Forward Delay Time.

2 x (Forward Delay Time value –1) > = Max Age value >= 2 x (Hello Time value +1)

Show RSTP algorithm result at this table



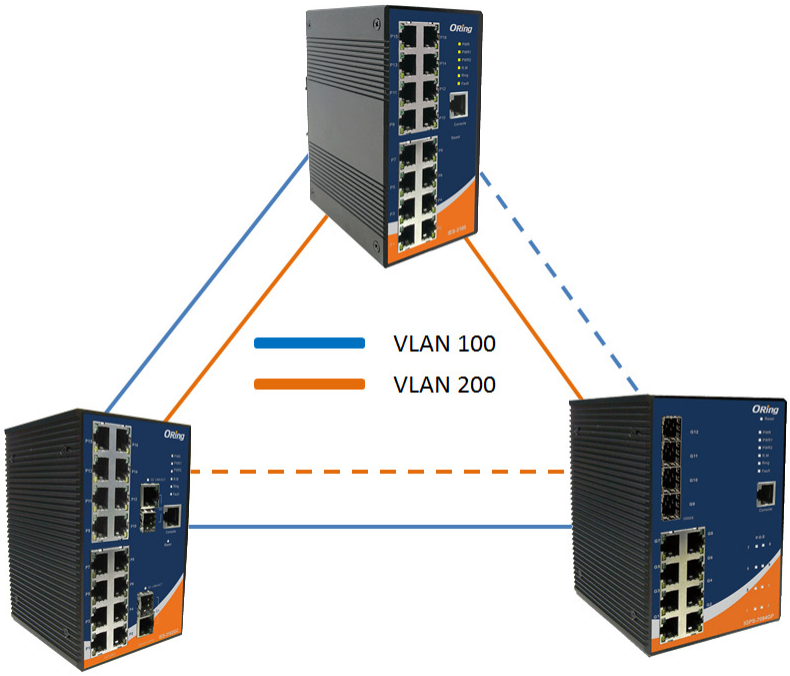


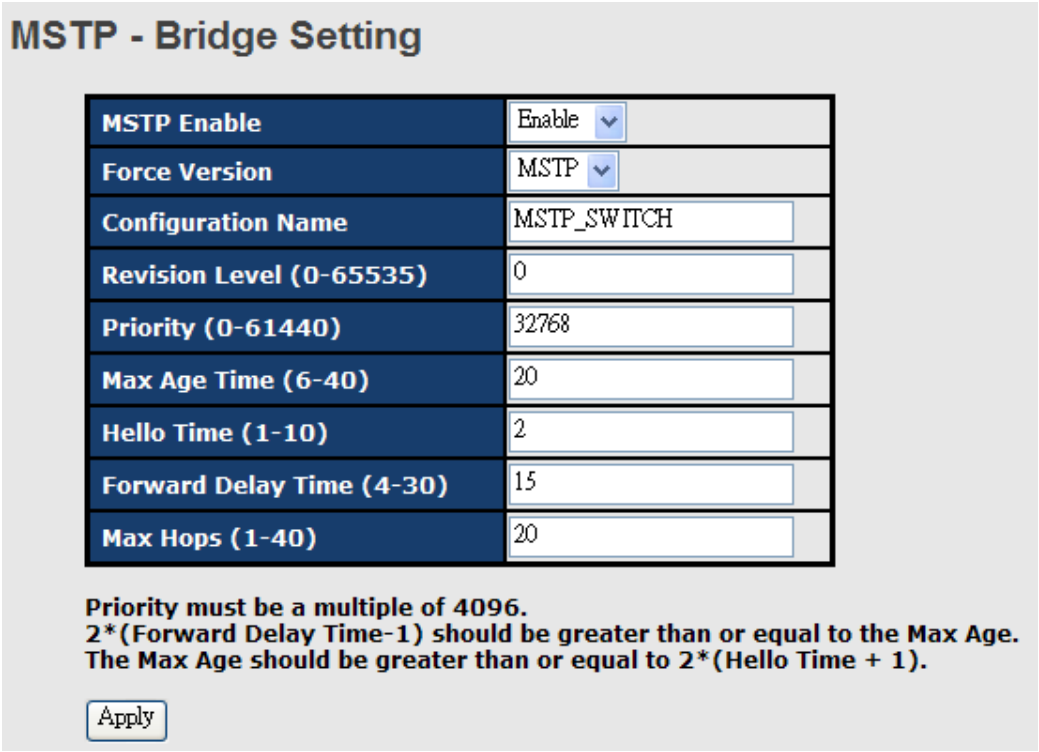
Label	Description
Path Cost (1-200000000)	The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
Port Priority (0-240)	Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16
Admin P2P	Some of the rapid state transactions that are possible within RSTP are dependent upon whether the port concerned can only be connected to exactly one other bridge (i.e. It is served by a point-to-point LAN segment), or it can be connected to two or more bridges (i.e. It is served by a shared medium LAN segment). This function allows the P2P status of the link to be manipulated administratively. True means P2P enabling. False means P2P disabling.
Admin Edge	The port directly connected to end stations, and it cannot create bridging loop in the network. To configure the port as an edge port, set the port to "**True**".

Admin Non STP	The port includes the STP mathematic calculation. **True** is not including STP mathematic calculation. **False** is including the STP mathematic calculation.
Apply	Click "**Apply**" to set the configurations.

4.1.4.5 MSTP

Multiple Spanning Tree Protocol (MSTP) is a standard protocol base on IEEE 802.1s. The function is that several VLANs can be mapping to a reduced number of spanning tree instances because most networks do not need more than a few logical topologies. It supports load balancing scheme and the CPU is sparer than PVST (Cisco proprietary technology).



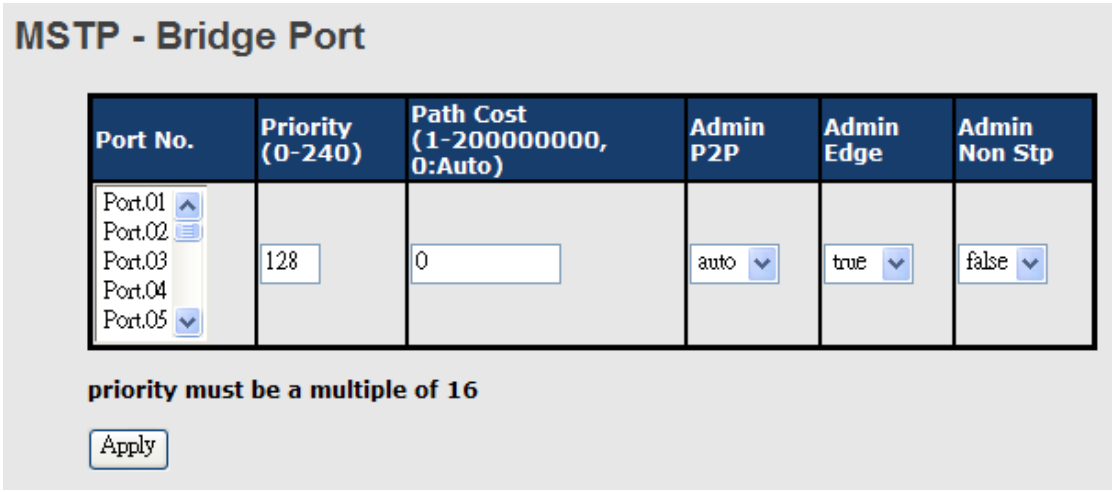


MSTP Setting interface

The following table describes the labels in this screen.

Label	Description
MSTP Enable	You must enable or disable MSTP function before configuring the related parameters.
Force Version	The Force Version parameter can be used to force a VLAN Bridge that supports RSTP to operate in an STP-compatible manner.
Configuration Name	The same MST Region must have the same MST configuration name.
Revision Level (0-65535)	The same MST Region must have the same revision level.
Priority (0-61440)	A value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. If the value changes, You must reboot the switch. The value must be multiple of 4096 according to the protocol standard rule.
Max Age Time(6-40)	The number of seconds a bridge waits without receiving Spanning-tree Protocol configuration messages before attempting a reconfiguration. Enter a value between 6 through 40.
Hello Time (1-10)	The setting follow the rule below to configure the MAX Age, Hello

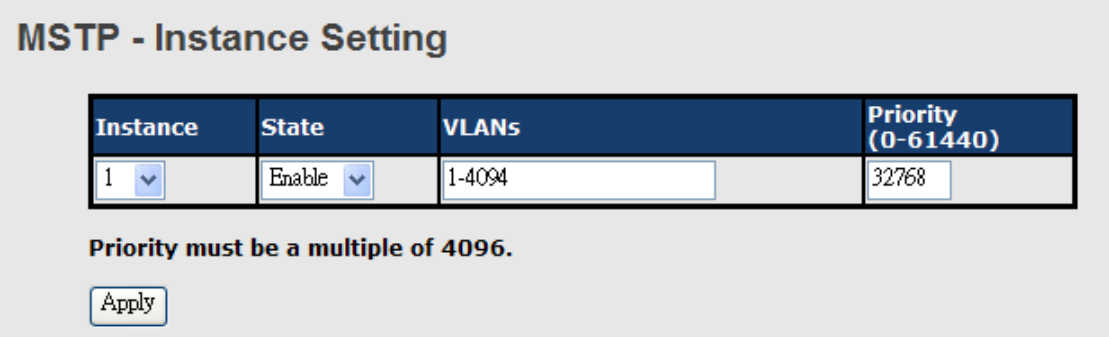
	Time, and Forward Delay Time at controlled switch sends out the BPDU packet to check RSTP current status. Enter a value between 1 through 10. **2 x (Forward Delay Time value –1) ≥ Max Age value ≥ 2 x (Hello Time value +1)**
Forwarding Delay Time (4-30)	The number of seconds a port waits before changing from its Rapid Spanning-Tree Protocol learning and listening states to the forwarding state. Enter a value between 4 through 30.
Max Hops (1-40)	This parameter is additional to those specified for RSTP. A single value applies to all Spanning Trees within an MST Region (the CIST and all MSTIs) for which the Bridge is the Regional Root.
Apply	Click "**Apply**" to activate the configurations.



MSTP Port interface

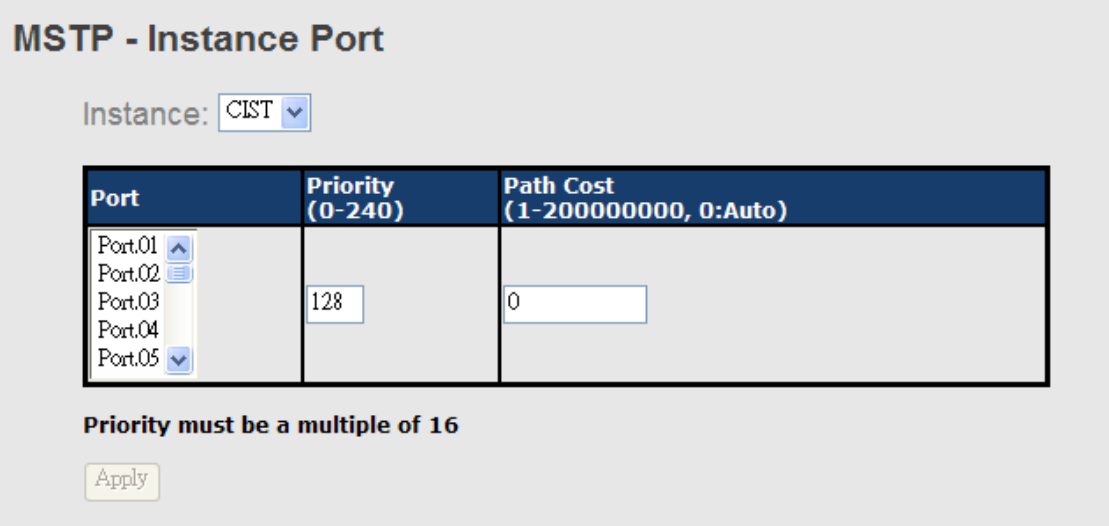
Label	Description
Port No.	Selecting the port that you want to configure.
Priority (0-240)	Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16
Path Cost (1-200000000)	The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
Admin P2P	Some of the rapid state transactions that are possible within RSTP are dependent upon whether the port concerned can only

	be connected to exactly one other bridge (i.e. It is served by a point-to-point LAN segment), or it can be connected to two or more bridges (i.e. It is served by a shared medium LAN segment). This function allows the P2P status of the link to be manipulated administratively. True means P2P enabling. False means P2P disabling.
Admin Edge	Label
Admin Non STP	Label
Apply	Click "**Apply**" to activate the configurations.



MSTP Instance interface

Label	Description
Instance	Set the instance from 1 to 15
State	Enable or disable the instance
VLANs	Set which VLAN will belong which instance
Proprietary (0-61440)	A value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. If the value changes, You must reboot the switch. The value must be multiple of 4096 according to the protocol standard rule.
Apply	Click "**Apply**" to activate the configurations.



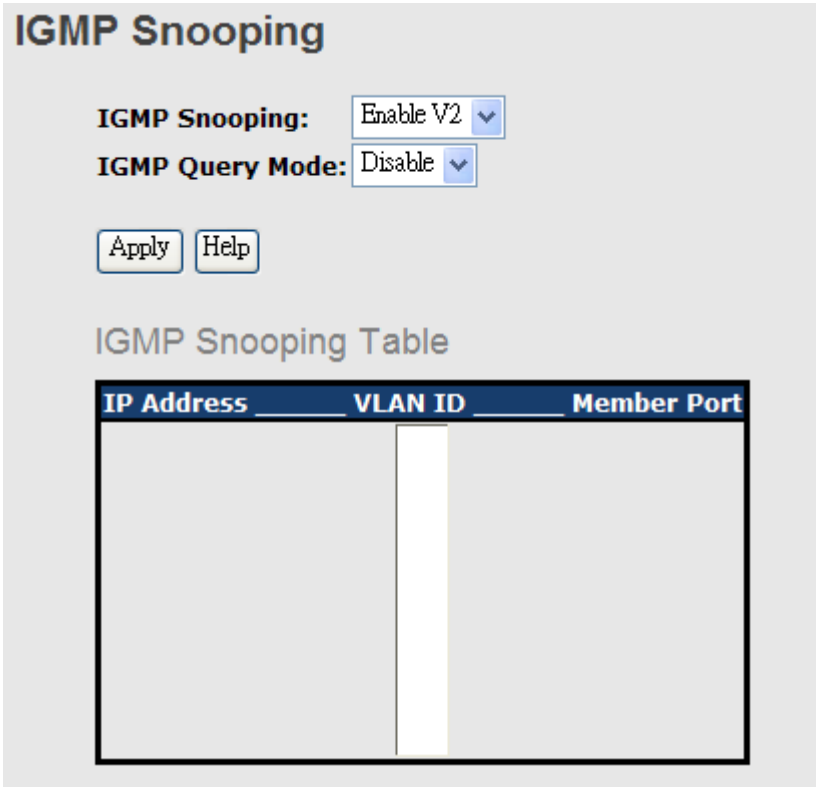
MSTP Instance Port interface

Label	Description
Instance	Set the instance's information except CIST
Port	Selecting the port that you want to configure.
Priority (0-240)	Decide which port should be blocked by priority in LAN. Enter a number 0 through 240. The value of priority must be the multiple of 16
Path Cost (1-200000000)	The cost of the path to the other bridge from this transmitting bridge at the specified port. Enter a number 1 through 200000000.
Apply	Click "**Apply**" to set the configurations.

4.1.5 Multicast

4.1.5.1 IGMP Snooping

Internet Group Management Protocol (IGMP) is used by IP hosts to register their dynamic multicast group membership. IGMP has 3 versions, IGMP v1, v2 and v3. Please refer to RFC 1112, 2236 and 3376. IGMP Snooping improves the performance of networks that carry multicast traffic. It provides the ability to prune multicast traffic so that it travels only to those end destinations that require that traffic and reduces the amount of traffic on the Ethernet LAN.



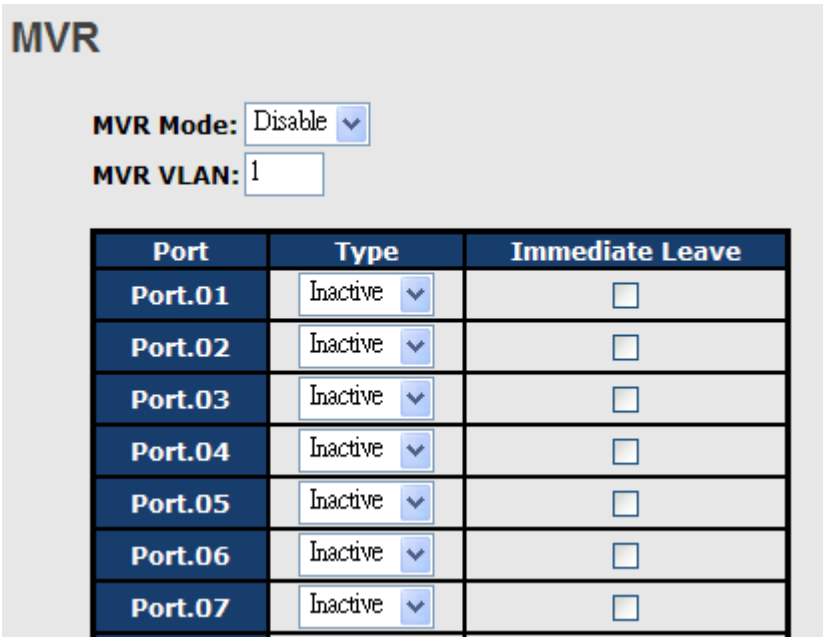
IGMP Snooping interface

The following table describes the labels in this screen.

Label	Description
IGMP Snooping Table	Show current IP multicast list
IGMP Protocol	Enable/Disable IGMP snooping.
IGMP Query	Switch will be IGMP querier or not. There should exist one and only one IGMP querier in an IGMP application. The "Auto" mode means that the querier is the one with lower IP address.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

4.1.5.2 MVR

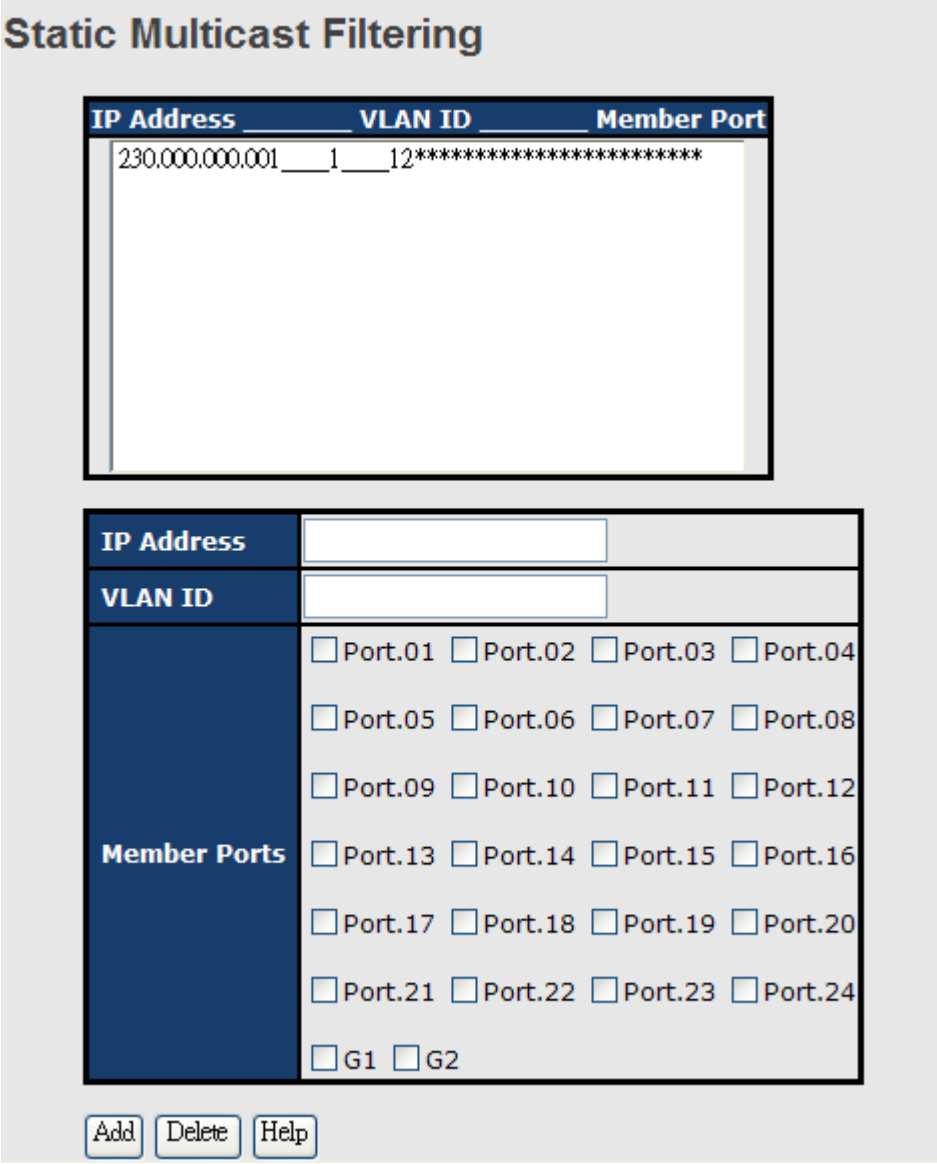
MVR Function can provide a different VLAN users to receive MVR Mode VLAN Multicast Packet.



Label	Description
MVR Mode	Enable or Disable MVR Mode
MVR VLAN	Setting MVR VLAN
TYPE	Setting Port Type to inactive、Receiver、Source
Immediate Leave	Enable or disable Immediate leave

4.1.5.3 Multicast Filter

Multicast filtering is the system by which end stations only receive multicast traffic if they register to join specific multicast groups. With multicast filtering, network devices only forward multicast traffic to the ports that are connected to registered end stations.



Multicast Filtering Interface

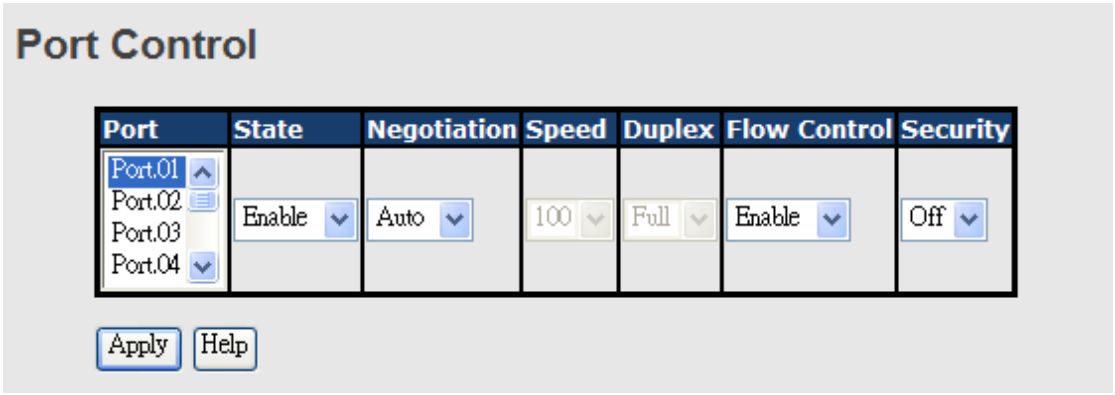
The following table describes the labels in this screen.

Label	Description
IP Address	Assign a multicast group IP address in the range of 224.0.0.0 ~ 239.255.255.255
Member Ports	Tick the check box beside the port number to include them as the member ports in the specific multicast group IP address.
Add	Show current IP multicast list
Delete	Delete an entry from table
Help	Show help file.

4.1.6 Port Setting

4.1.6.1 Port Control

By this function, you can set the state, speed/duplex, flow control, and security of the port.



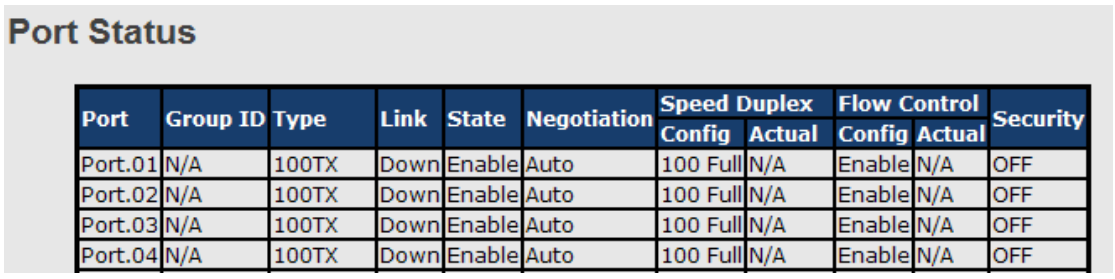
Port Control interface

The following table describes the labels in this screen.

Label	Description
Port NO.	Port number for setting.
State	Current port status. The port can be set to disable or enable mode. If the port setting is disabled then it will not receive or transmit any packet.
Negotiation	set auto negotiation status of port.
Speed/Duplex	You can set Autonigotiation,100 full ,100 half,10 full,10 half mode.
Flow Control	Support symmetric and asymmetric mode to avoid packet loss when congestion occurred.
Security	Support port security function. When enable the function, the port will STOP learning MAC address dynamically.
Apply	Click "**Apply**" to set the configurations.

4.1.6.2 Port Status

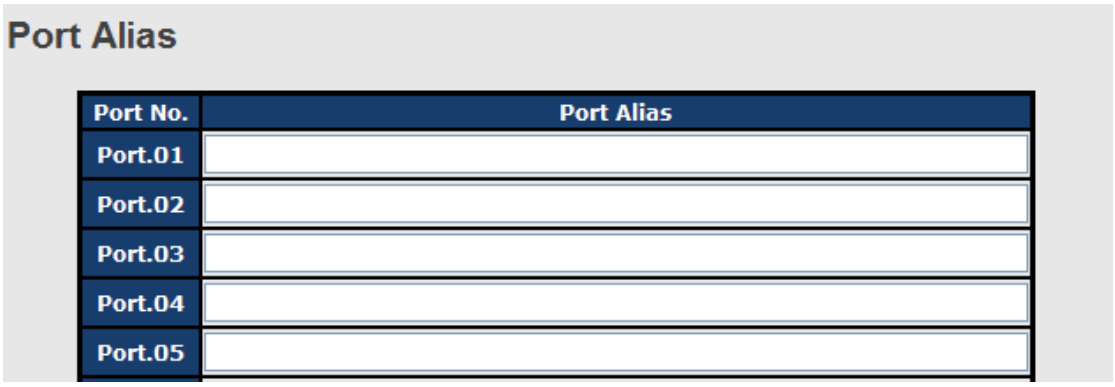
The following information provides the current port status information



Port Status interface

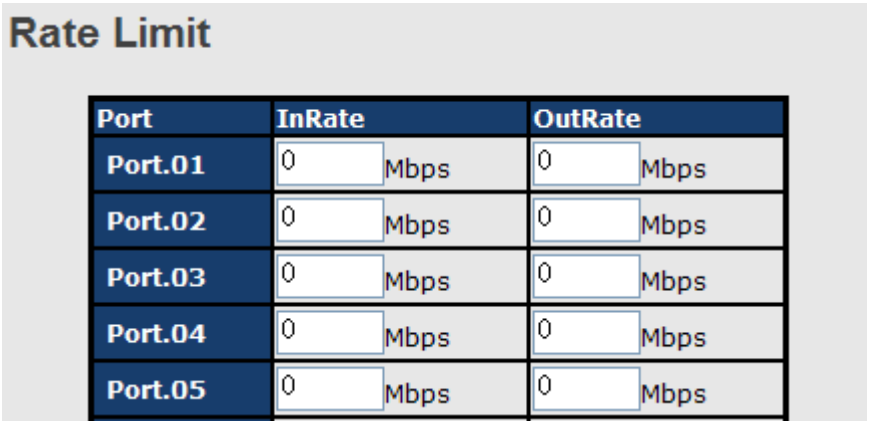
4.1.6.3 Port Alias

The user can define the name of every port. That can let user to convenient management every port.



4.1.6.4 Rate Limit

By this function, you can limit traffic of all ports, including broadcast, multicast and flooded unicast. You can also set "Ingress" or "Egress" to limit traffic received or transmitted bandwidth.



Rate Limit interface

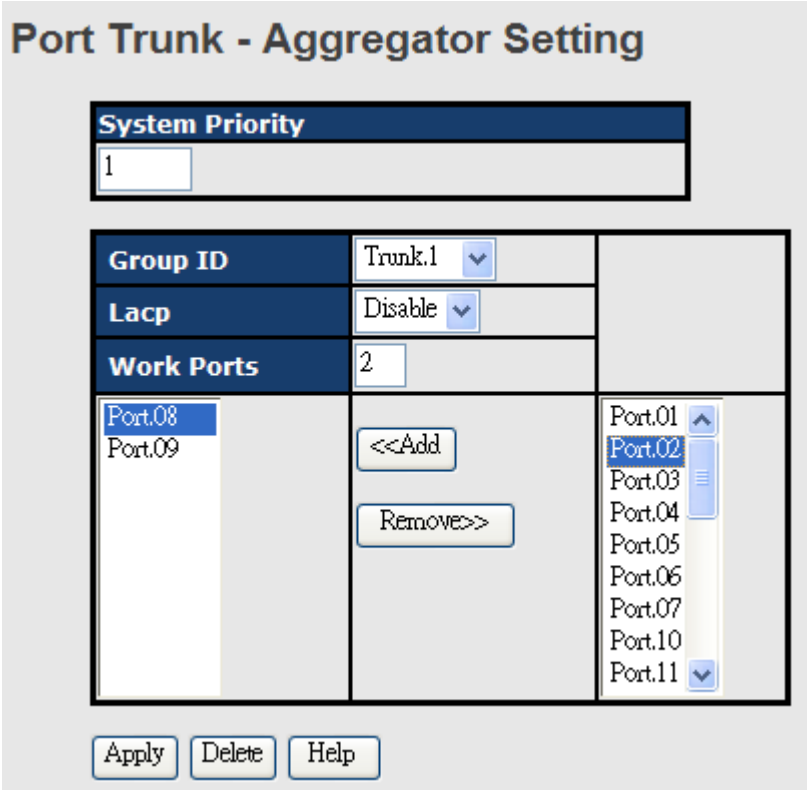
The following table describes the labels in this screen.

Label	Description
Ingress	The switch port received traffic.
Egress	The switch port transmitted traffic.
Apply	Click "**Apply**" to activate the configurations.

4.1.6.5 Port Trunk

Port Trunk – Setting

You can select static trunk or 802.3ad LACP to combine several physical links with a logical link to increase the bandwidth.



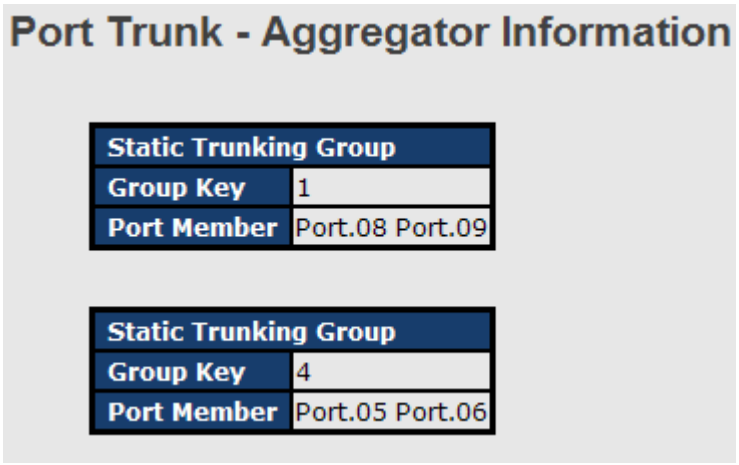
Port Trunk - Setting interface

The following table describes the labels in this screen.

Label	Description
System Priority	A value used to identify the active LACP. The switch with the lowest value has the highest priority and is selected as the active LACP.
Group ID	There are three trunk groups to provide configure. Choose the "**Group ID**" and click Select.
LACP	If enable, the group is LACP static trunk group. If disable, the group is local static trunk group. All ports support LACP dynamic trunk group. If connecting to the device that also supports LACP, the LACP dynamic trunk group will be created automatically.
Work ports	Allow maximum four ports to be aggregated at the same time. With LACP static trunk group, the exceed ports are standby

	and can be aggregated if work ports fail. If it is local static trunk group, the number of ports must be the same as the group member ports.
Add or Remove	Select the ports to join the trunk group. Allow maximum four ports to be aggregated at the same time. Click Add button to add the port. To remove unwanted ports, select the port and click Remove button.
Apply	Click "**Apply**" to set the configurations.

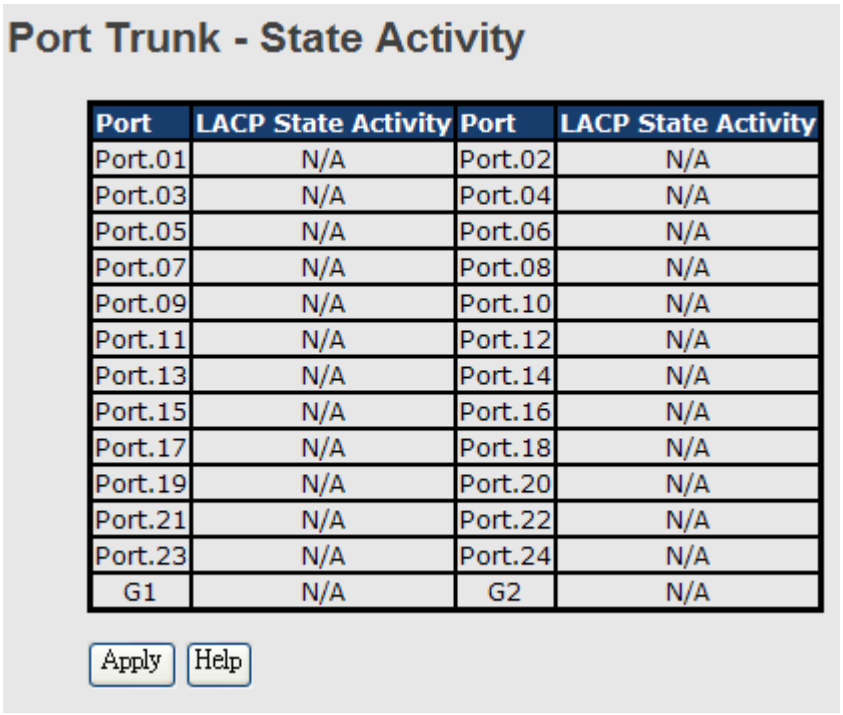
Port Trunk – Aggregator Information



Port Trunk - Status interface

Label	Description
Group Key	Trunk Group number
Port Member	Show Group port info

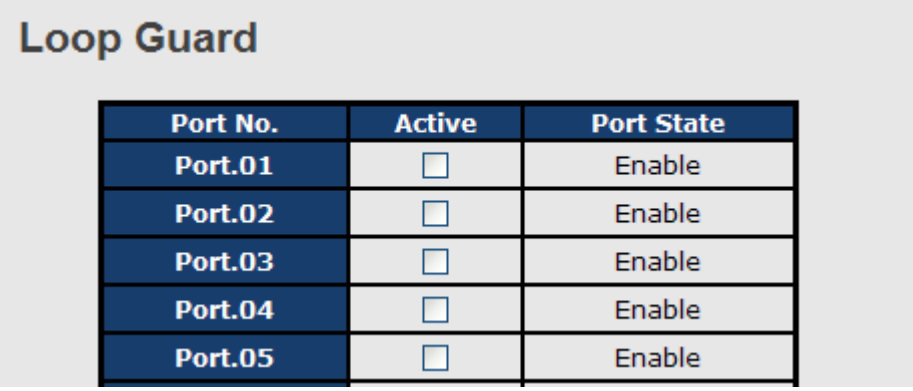
Port Trunk – State Activity



Label	Description
Port	Port number
LACP State Activity	LACP Mode work status .

4.1.6.6 Loop Guard

This feature prevents the loop attack, when the port receives loop packet. This port will auto disable , prevent the "loop attack" affect other network devices



Label	Description
Active	Loop Guard Enable or Disable
Port Status	Port work status.

4.1.7 VLAN

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain, which allows you to isolate network traffic. Only the members of the VLAN will receive traffic from the same members of 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.

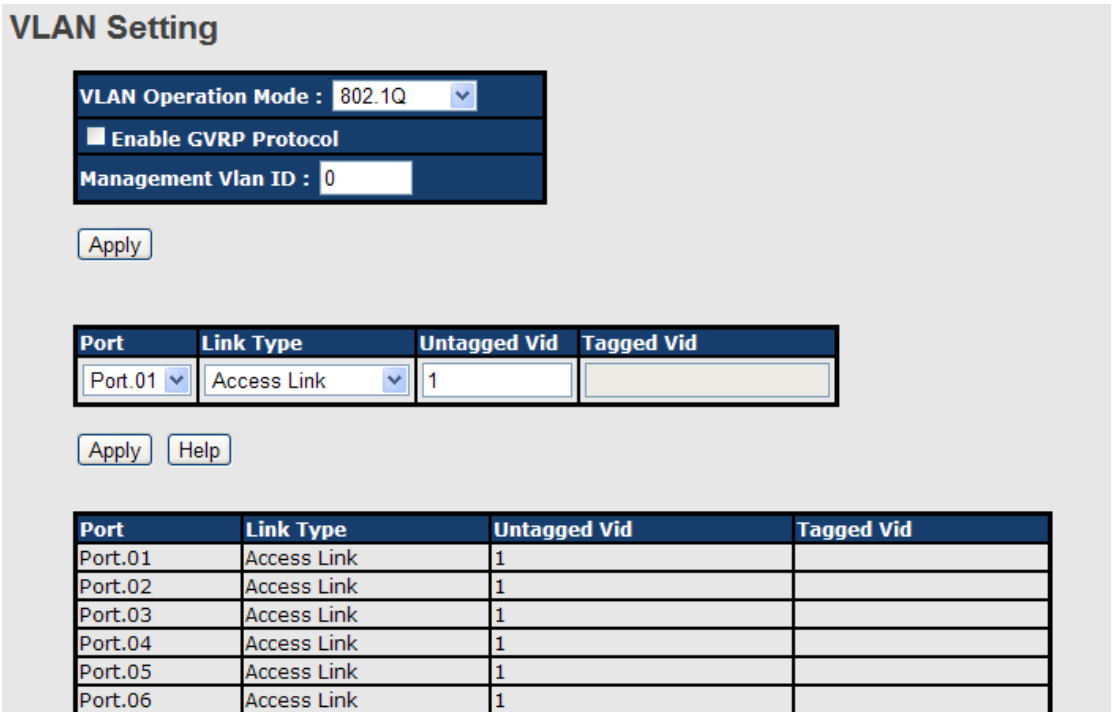
The switch supports port-based and 802.1Q (tagged-based) VLAN. The default configuration of VLAN operation mode is at "**802.1Q**".

4.1.7.1 VLAN Setting

Tagged-based VLAN is an IEEE 802.1Q specification standard, and t is possible to create a VLAN across devices from different switch venders. IEEE 802.1Q VLAN uses a technique to insert a "tag" into the Ethernet frames. Tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

You can create Tag-based VLAN, and enable or disable GVRP protocol. There are 256 VLAN groups to provide configure. Enable 802.1Q VLAN, the all ports on the switch belong to default VLAN, VID is 1. The default VLAN cannot be deleted.

GVRP allows automatic VLAN configuration between the switch and nodes. If the switch is connected to a device with GVRP enabled, you can send a GVRP request by using the VID of a VLAN defined on the switch; the switch will automatically add that device to the existing VLAN.



VLAN Configuration – 802.1Q interface

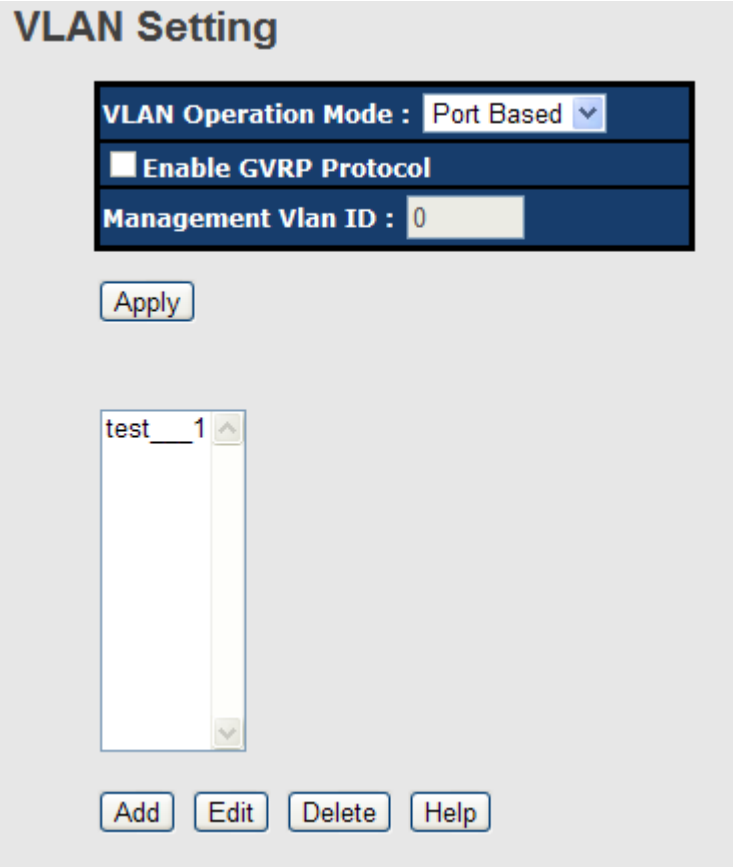
The following table describes the labels in this screen.

Label	Description
VLAN Operation Mode	Configure VLAN Operation Mode: disable, Port Base,802.1Q
GVRP Mode	Enable/Disable GVRP function.
Management VLAN ID	Management VLAN can provide network administrator a secure VLAN to management Switch. Only the devices in the management VLAN can access the switch.
Port	Select the port to configure.
Link type	There are 3 types of link type: **Access Link:** single switch only, allows you to group ports by setting the same VID. **Trunk Link:** extended application of **Access Link**, allows you to group ports by setting the same VID with 2 or more switches. **Hybrid Link:** Both **Access Link** and **Trunk Link** are available. **Hybrid(QinQ) Link:** enable QinQ mode，allow you to insert one more VLAN tag in a original VLAN frame.
Untagged VID	Set the port default VLAN ID for untagged devices that connect to the port. The range is 1 to 4094.

Tagged VIDs	Set the tagged VIDs to carry different VLAN frames to other switch.
Apply	Click "**Apply**" to set the configurations.

4.1.7.2 VLAN Setting – Port Based

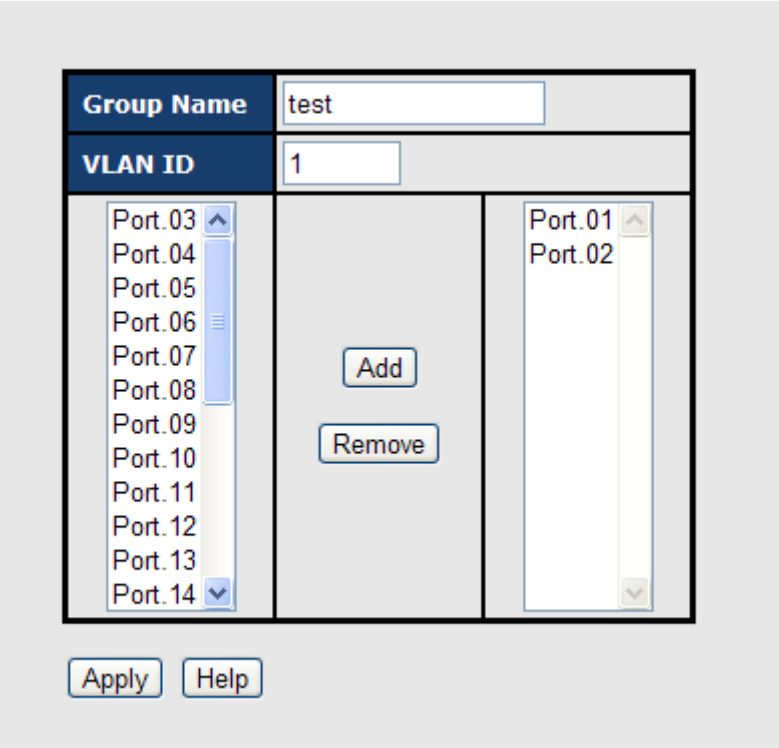
Packets can go among only members of the same VLAN group. Note all unselected ports are treated as belonging to another single VLAN. If the port-based VLAN enabled, the VLAN-tagging is ignored.



VLAN Configuration – Port Base interface-1

The following table describes the labels in this screen.

Label	Description
Add	Click "**add**" to enter VLAN add interface.
Edit	Edit exist VLAN
Delete	Delete exist VLAN
Help	Show help file.



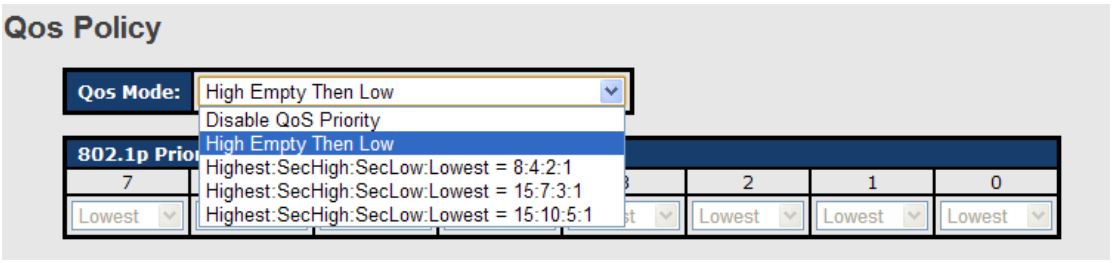
VLAN Configuration – Port Base interface-2

The following table describes the labels in this screen.

Label	Description
Group Name	VLAN name.
VLAN ID	Specify the VLAN ID
Add	Select port to join the VLAN group.
Remove	Remove port of the VLAN group
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

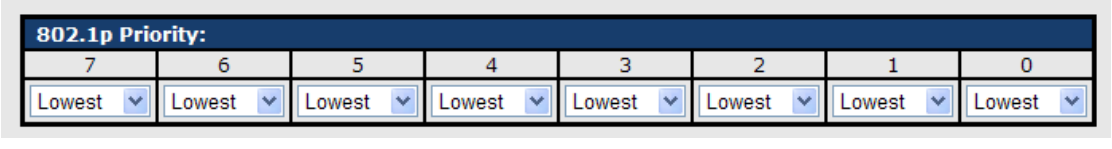
4.1.8 Traffic Prioritization

Traffic Prioritization includes 3 modes: port base, 802.1p/COS, and TOS/DSCP. By traffic prioritization function, you can classify the traffic into four classes for differential network application. RES-P3242GCL SERIES supports 4 priority queues.



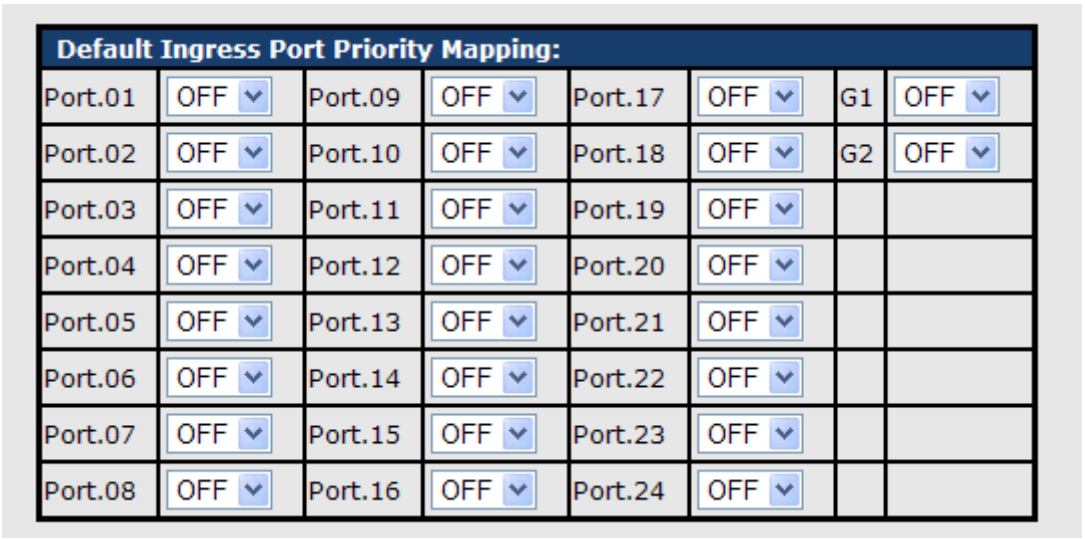
Label	Description
QoS Mode	■ **Highest:SecHigh:SecLow:Lowest=8:4:2:1** The output queues will follow 8:4:2:1 ratio to transmit packets from the highest to lowest queue. For example: 8 high queue packets, 4 middle queue packets, 2 low queue packets, and the one lowest queue packets are transmitted in one turn. ■ **Highest:SecHigh:SecLow:Lowest=15:7:3:1** The same as 8:4:2:1, only the ratio different. ■ **Highest:SecHigh:SecLow:Lowest=15:10:5:1** The same as 8:4:2:1, only the ratio different. ■ **High Empty Then Low:** The packets in higher queue will be transmitted first until higher queue is empty.

COS / 802.1p



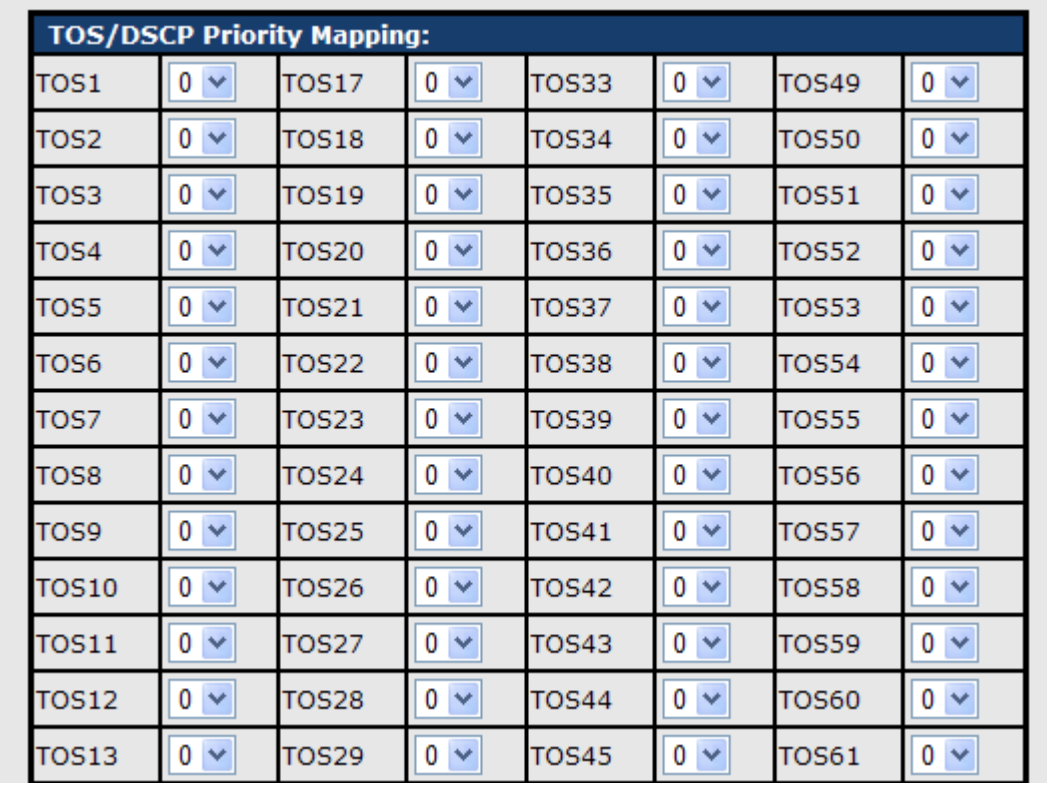
COS/802.1p	COS (Class Of Service) is well known as 802.1p. It describes that the output priority of a packet is determined by user priority field in 802.1Q VLAN tag. The priority value is supported 0 to 7 COS value map to 4 priority queues: Highest, SecHigh, SecLow, and Lowest.

Port Base Priority



Port base Priority	Assign each port a value form 0 to 7, the value will according to the 802.1p 4 priority queues.
Help	Show help file.
Apply	Click "**Apply**" to set the configurations.

TOS/DSCP Priority

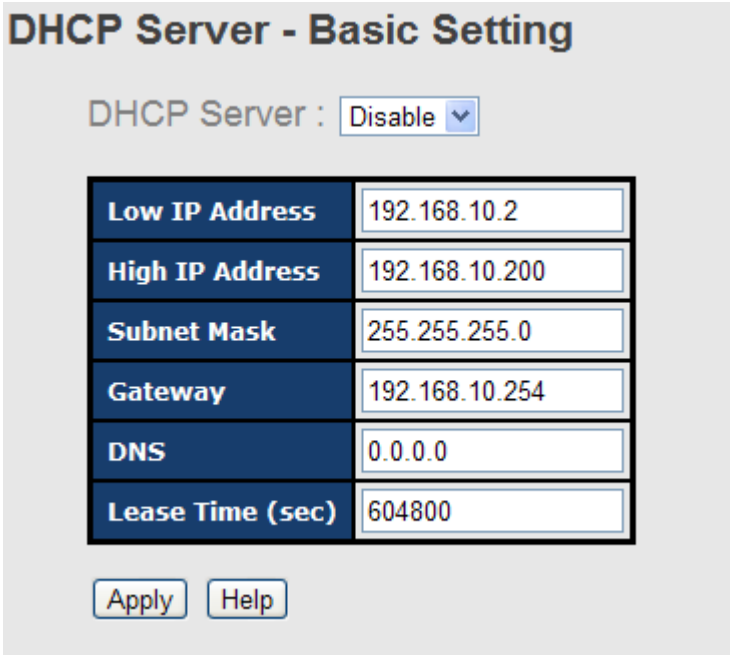


TOS/DSCP	TOS (Type of Service) is a field in IP header of a packet. This TOS field is also used by Differentiated Services and is called the Differentiated Services Code Point (DSCP). The output priority of a packet can be determined by this field and the priority value is supported 0 to 63. DSCP value map to 4 priority queues: Highest, SecHigh, SecLow, and Lowest.
Apply	Click "**Apply**" to set the configurations.

4.1.9 DHCP Server

4.1.9.1 DHCP Server – Setting

The system provides with DHCP server function. Enable the DHCP server function, the switch system will be a DHCP server.



DHCP Server Configuration interface

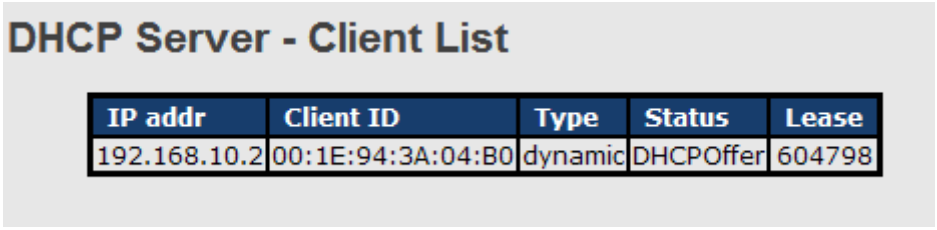
The following table describes the labels in this screen.

Label	Description
DHCP Server	Enable or Disable the DHCP Server function. Enable – the switch will be the DHCP server on your local network
Start IP Address	The dynamic IP assign range. Low IP address is the beginning of the dynamic IP assigns range. For example: dynamic IP assign range is from 192.168.1.100 to 192.168.1.200. 192.168.1.100 will be the Start IP address.
End IP Address	The dynamic IP assign range. High IP address is the end of the dynamic IP assigns range. For example: dynamic IP assign range is

	from 192.168.1.100 to 192.168.1.200. 192.168.1.200 will be the End IP address
Subnet Mask	The dynamic IP assign range subnet mask
Gateway	The gateway in your network.
DNS	Domain Name Server IP Address in your network.
Lease Time (Hour)	It is the period that system will reset the assigned dynamic IP to ensure the IP address is in used.
Apply	Click "**Apply**" to set the configurations.

4.1.9.2 DHCP Server – Client List

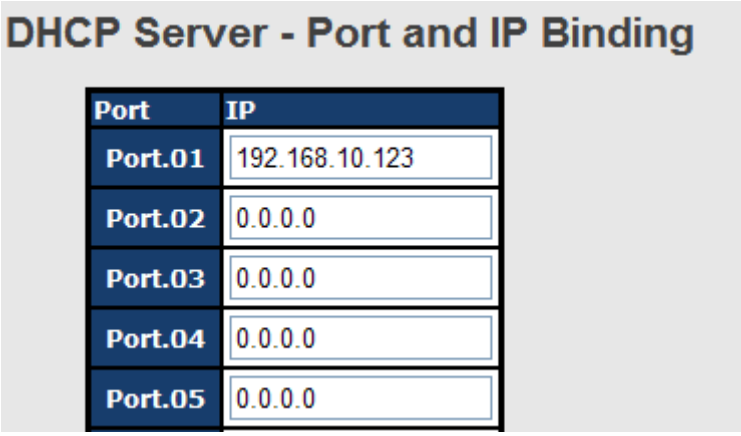
When the DHCP server function is activated, the system will collect the DHCP client information and display in here.



DHCP Server Client Entries interface

4.1.9.3 DHCP Server – Port and IP bindings

You can assign the specific IP address which is in the assigned dynamic IP range to the specific port. When the device is connecting to the port and asks for dynamic IP assigning, the system will assign the IP address that has been assigned before in the connected device.



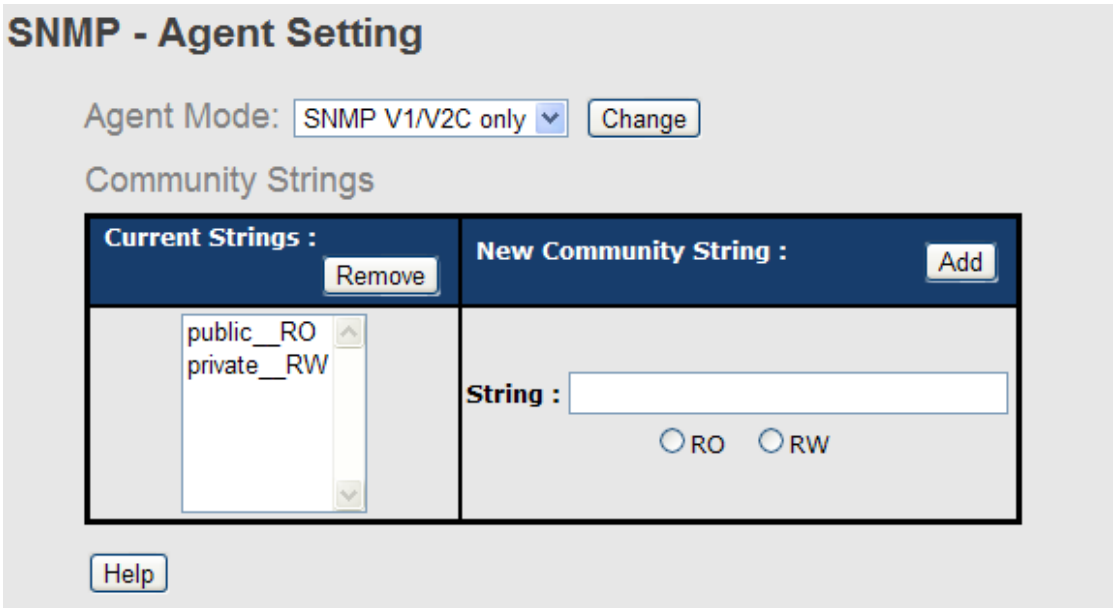
DHCP Server Port and IP Binding interface

4.1.10 SNMP

Simple Network Management Protocol (SNMP) is the protocol developed to manage nodes (servers, workstations, routers, switches and hubs etc.) on an IP network. SNMP enables network administrators to manage network performance, find and solve network problems, and plan for network growth. Network management systems learn of problems by receiving traps or change notices from network devices implementing SNMP.

4.1.10.1 SNMP –System Setting

You can set SNMP agent related information by System Setting Function.



SNMP Agent Setting interface

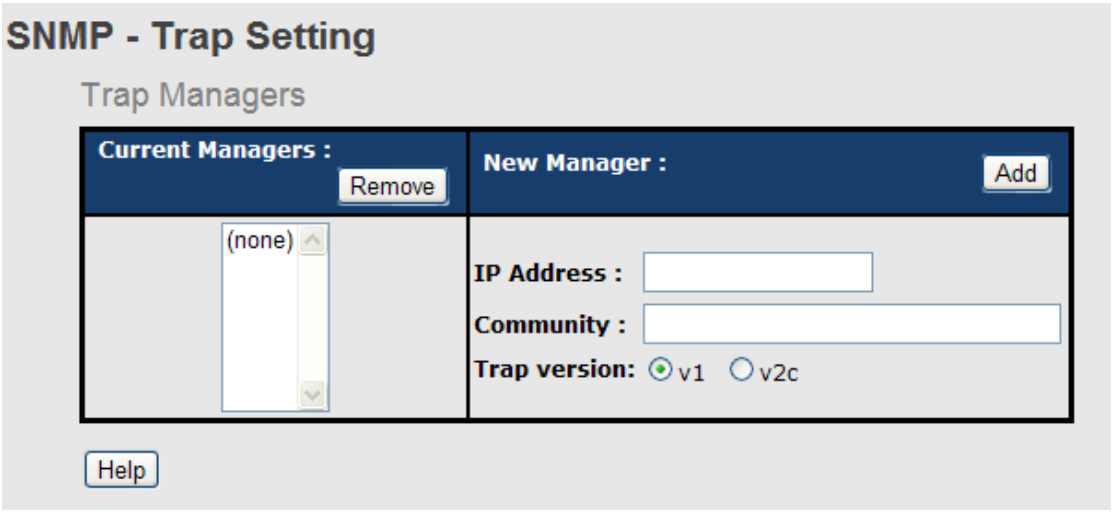
The following table describes the labels in this screen.

Label	Description
Agent Mode	Three SNMP versions are supported such as SNMP V1/SNMP V2c, and SNMP V3. SNMP V1/SNMP V2c agent use a community string match for authentication, that means SNMP servers access objects with read-only or read/write permissions with the community default string public/private. SNMP V3 requires an authentication level of MD5 or DES to encrypt data to enhance data security.
SNMP V1/V2c Community	SNMP Community should be set for SNMP V1/V2c. Four sets of "Community String/Privilege" are supported. Each Community String is maximum 32 characters. Keep empty to remove this Community string.

SNMPv3User	If SNMP V3 agent is selected, the SNMPv3 you profiled should be set for authentication. The Username is necessary. The Auth Password is encrypted by MD5 and the Privacy Password which is encrypted by DES. There are maximum 8 sets of SNMPv3 User and maximum 16 characters in username, and password. When SNMP V3 agent is selected, you can: 1. Input SNMPv3 username only. 2. Input SNMPv3 username and Auth Password. 3. Input SNMPv3 username, Auth Password and Privacy Password, which can be different with Auth Password. To remove a current user profile: 1. Input SNMPv3 user name you want to remove. 2. Click "**Remove**" button
Current SNMPv3 User Profile	Show all SNMPv3 user profiles.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

4.1.10.2 SNMP –Trap Setting

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps will issue. Create a trap manager by entering the IP address of the station and a community string. To define management stations as trap manager and enter SNMP community strings and selects the SNMP version.

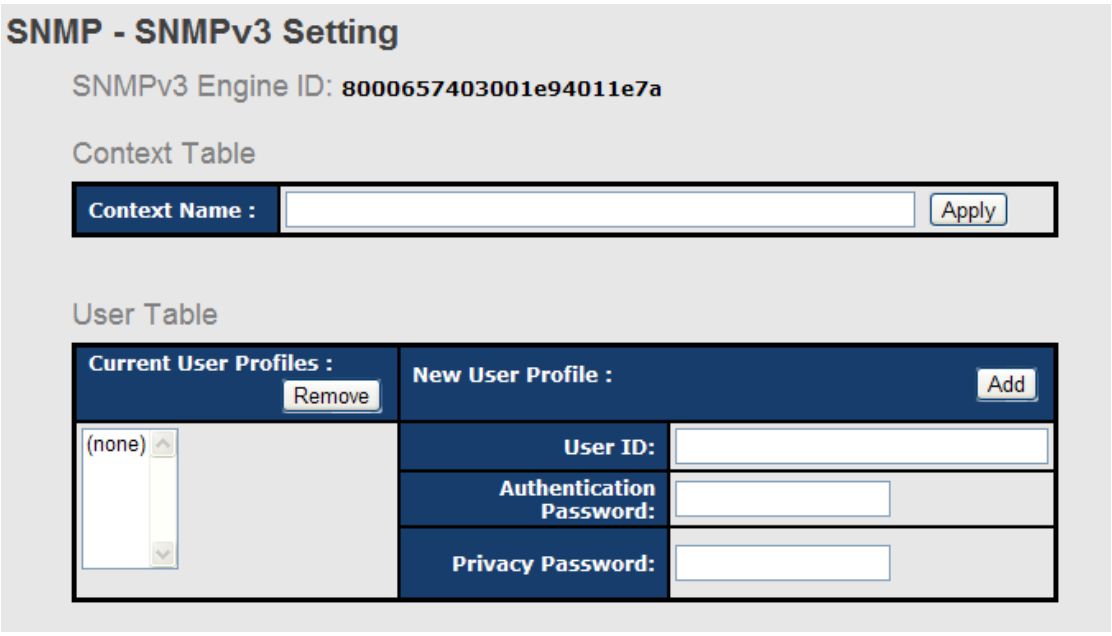


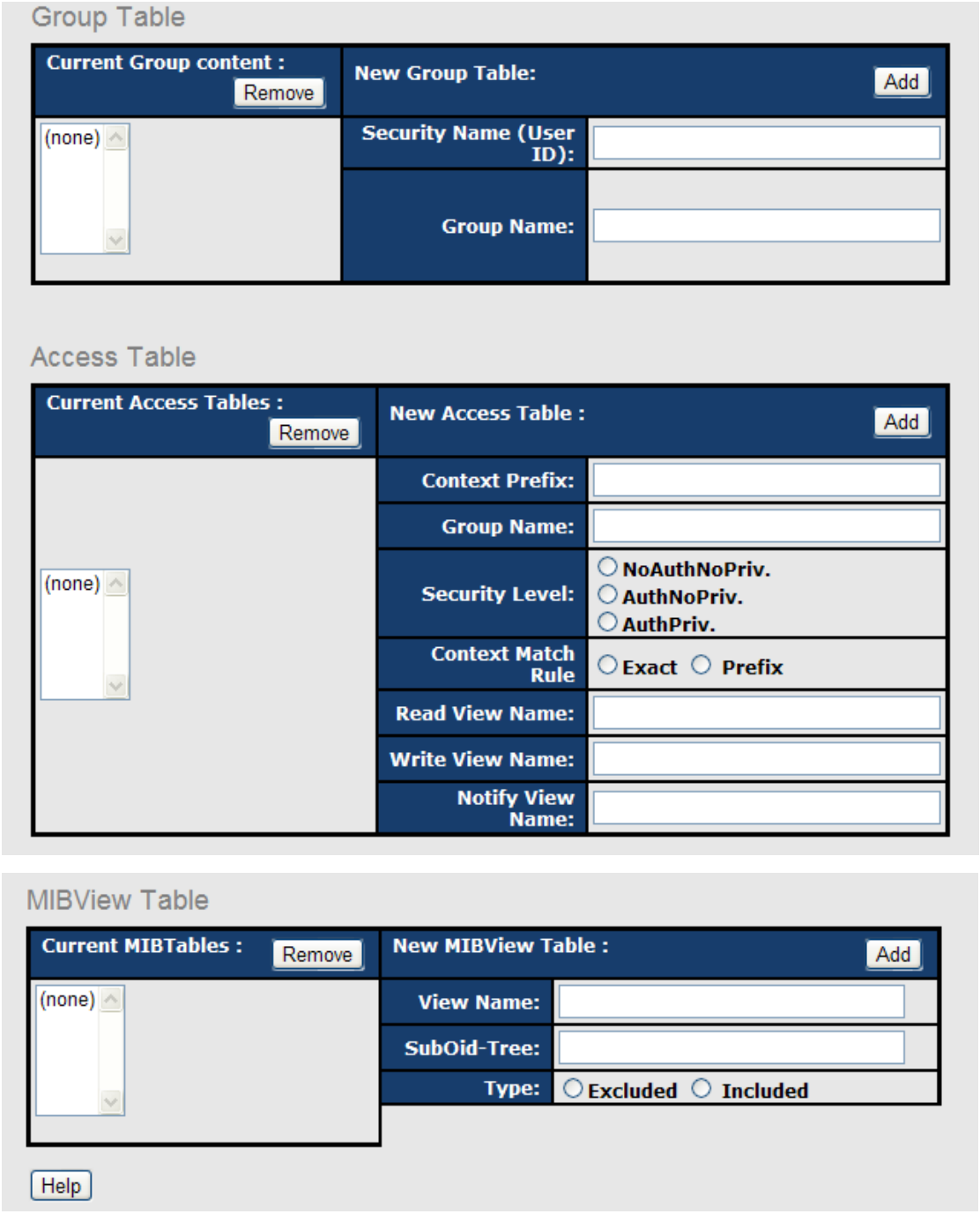
SNMP Trap Setting interface

The following table describes the labels in this screen.

Label	Description
IP Address	The server IP address to receive Trap
Community	Community for authentication
Trap Version	Trap Version supports V1 and V2c.
Add	Add trap server profile.
Remove	Remove trap server profile.
Help	Show help file.

4.1.10.3 SNMP – SNMPv3 Setting





The following table describes the labels in this screen.

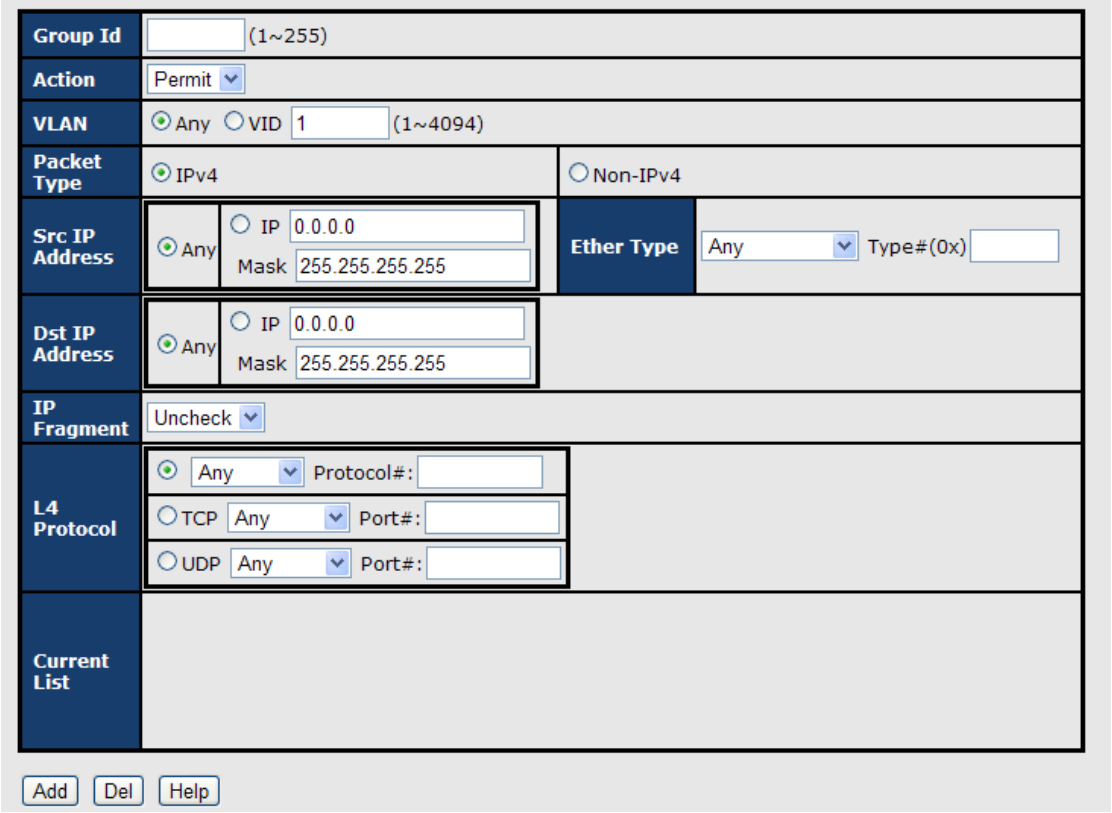
Label	Description
Context Table	Configure SNMP v3 context table. Assign the context name of context table. Click "Apply" to change context name
User Table	1. Configure SNMP v3 user table. 2. **User ID:** set up the user name. 3. **Authentication Password:** set up the

	authentication password. 4. **Privacy Password:** set up the private password. 5. Click "Add" to add context name. 6. Click "Remove" to remove unwanted context name.
Group Table	1. Configure SNMP v3 group table. 2. **Security Name (User ID):** assign the user name that you have set up in user table. 3. **Group Name:** set up the group name. 4. Click "Add" to add context name. 5. Click "Remove" to remove unwanted context name.
Access Table	1. Configure SNMP v3 access table. 2. **Context Prefix:** set up the context name. 3. **Group Name:** set up the group. 4. **Security Level:** select the access level. 5. **Context Match Rule:** select the context match rule. 6. **Read View Name:** set up the read view. 7. **Write View Name:** set up the write view. 8. **Notify View Name:** set up the notify view. 9. Click "Add" to add context name. 10. Click "Remove" to remove unwanted context name.
MIBview Table	1. Configure MIB view table. 2. **ViewName:** set up the name. 3. **Sub-Oid Tree:** fill the Sub OID. 4. **Type:** select the type – exclude or included. 5. Click "Add" to add context name. 6. Click "Remove" to remove unwanted context name.
Help	Show help file.

4.1.11 Security

Five useful functions can enhance security of switch: IP Security, Port Security, MAC Blacklist, and MAC address Aging and 802.1x protocol.

4.1.11.1 Access Control List



Access Control List Interface

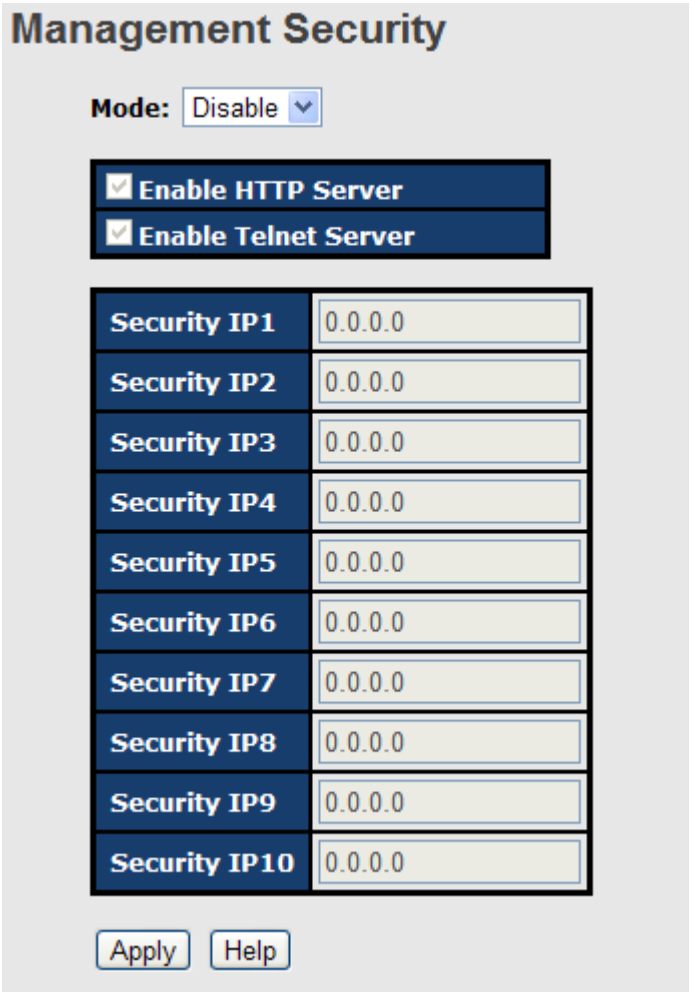
The following table describes the labels in this screen.

Label	Description
Group Id	Type in the Group ID from 1 to 229. (Maximum 255,26 rules for DHCP filter)
Action	Permit and Deny
Port	Select specific port to apply the ACL
VLAN	Select any or a particular VID
Packet type	Select packet type – IPv4 or Non-IPv4
Src IP Address	Select any or assign an IP address with Subnet Mask for source IP address
Dst IP Address	Select any or assign an IP address with Subnet Mask for

	destination IP address
Ether Type	Pull down the select menu for Any, ARP or IPX
IP Fragment	Set this item as to whether the fragment is checked or not
L4 Protocol	Assign the L4 protocol from among ICMP(1), IGMP(2), TCP or UDP
Current List	Display the current list information

4.1.11.2 IP Security

IP security can enable/disable remote management from WEB or Telnet or SNMP. Additionally, IP security can restrict remote management to some specific IP addresses. Only these secure IP addresses can manage this switch remotely.



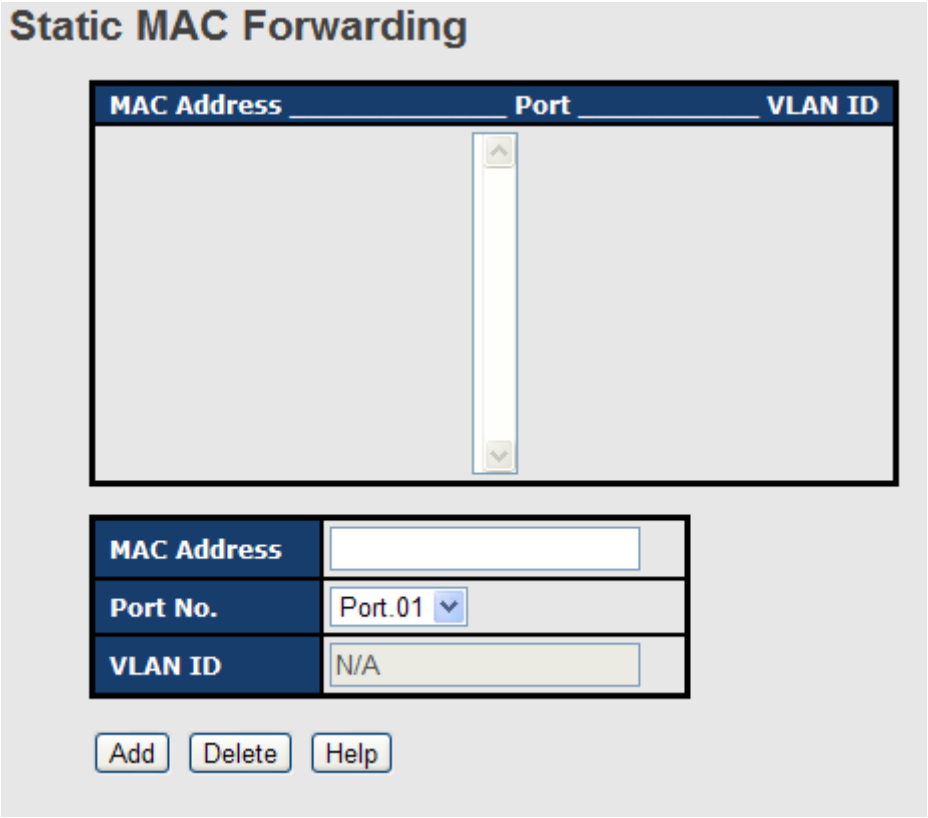
IP Security interface

The following table describes the labels in this screen.

Label	Description
IP security MODE	Enable/Disable the IP security function.
Enable HTTP Server	Mark the blank to enable HTTP Server.
Enable Telnet Server	Mark the blank to enable Telnet Management.
Security IP1 ~ 10	Fill out the IP address that allow to access Http or Telnet
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

4.1.11.3 Static MAC Forwarding

Static MAC Forwarding is to add static MAC addresses to hardware forwarding database. If port security is enabled at **Port Control** page, only the frames with MAC addresses in this list will be forwarded, otherwise will be discarded.



Static MAC Forwarding interface

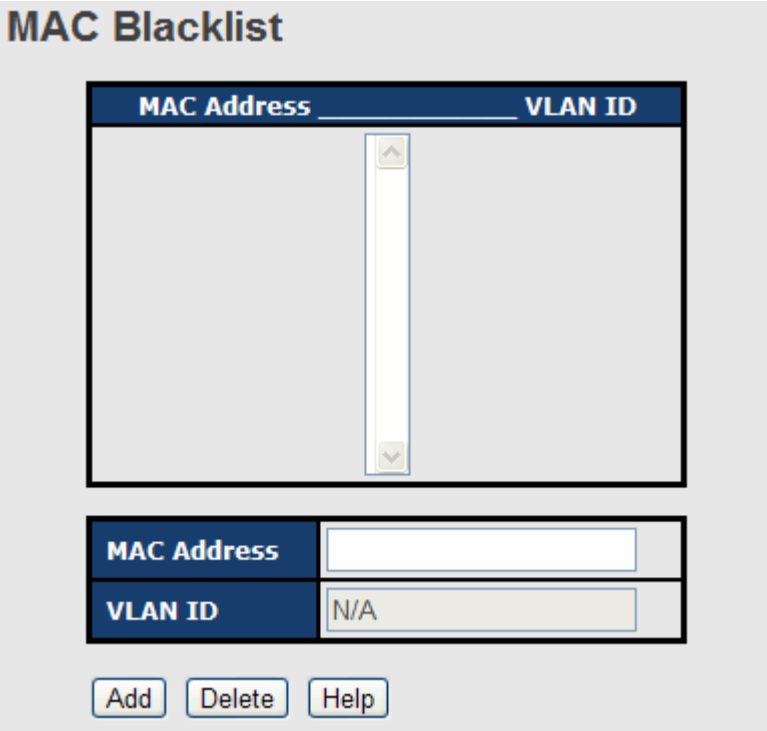
The following table describes the labels in this screen.

Label	Description
MAC Address	Input MAC Address to a specific port.
Port NO.	Select port of switch.
VLAN ID	Select the VLAN ID

Add	Add an entry of MAC and port information.
Delete	Delete the entry.
Help	Show help file.

4.1.11.4 MAC Blacklist

MAC Blacklist can eliminate the traffic forwarding to specific MAC addresses in list. Any frames forwarding to MAC addresses in this list will be discarded. Thus the target device will never receive any frame.



MAC Blacklist interface

The following table describes the labels in this screen.

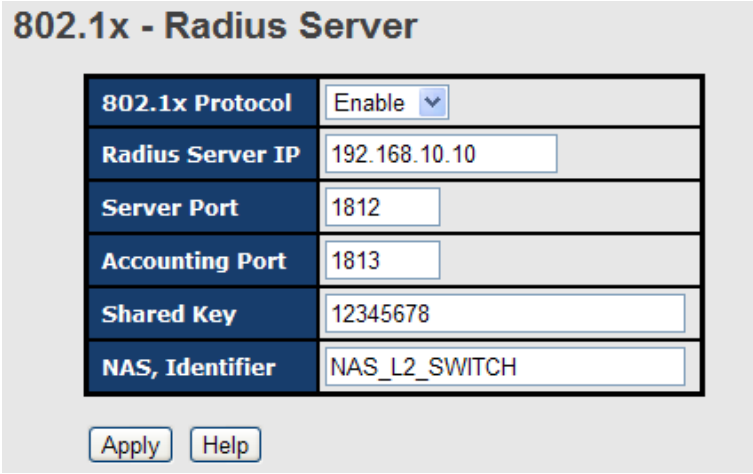
Label	Description
MAC Address	Input MAC Address to add to MAC Blacklist.
Port NO.	Select port of switch.
Add	Add an entry to Blacklist table.
Delete	Delete the entry.
Help	Show help file.

4.1.11.5 802.1x

802.1x - Radius Server

802.1x makes the use of the physical access characteristics of IEEE802 LAN infrastructures

in order to provide a authenticated and authorized devices attached to a LAN port. Please refer to IEEE 802.1X - Port Based Network Access Control.



802.1x Radius Server interface

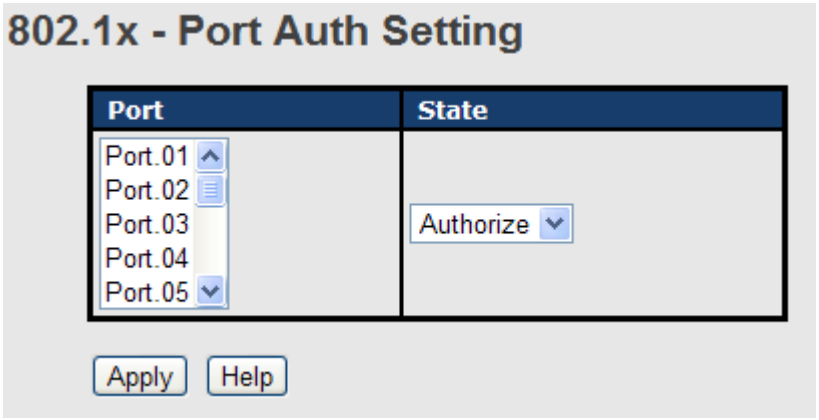
The following table describes the labels in this screen.

Label	Description
802.1x Protocol	Enable or disable 802.1X RADIUS Server
Radius Server IP	The IP address of the authentication server.
Server port	Set the UDP port number used by the authentication server to authenticate.
Account port	Set the UDP destination port for accounting requests to the specified Radius Server.
Shared Key	A key shared between this switch and authentication server.
NAS, Identifier	A string used to identify this switch.
Advanced Setting	
Quiet Period	Set the time interval between authentication failure and the start of a new authentication attempt.
Tx Period	Set the time that the switch can wait for response to an EAP request/identity frame from the client before resending the request.
Supplicant Timeout	Set the period of time the switch waits for a supplicant response to an EAP request.
Server Timeout	Set the period of time the switch waits for a Radius server response to an authentication request.
Max Requests	Set the maximum number of times to retry sending packets to the supplicant.
Re-Auth Period	Set the period of time after which clients connected must be re-authenticated.
Apply	Click "**Apply**" to set the configurations.

Help	Show help file.

802.1x-Port Authorized Setting

Set the 802.1x authorized mode of each port.



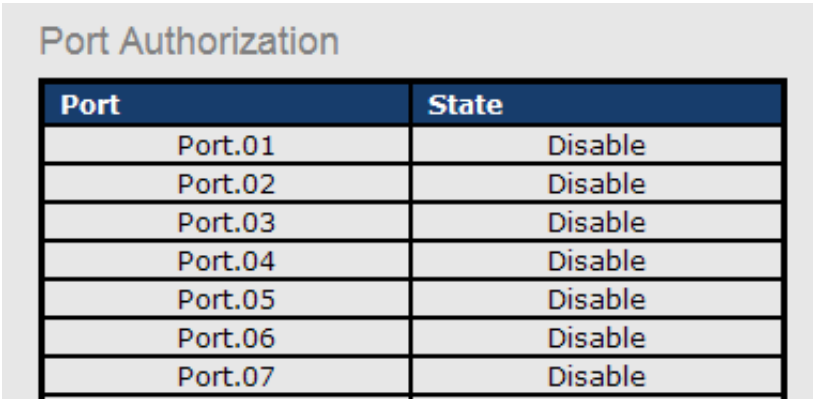
802.1x Port Authorize interface

The following table describes the labels in this screen.

Label	Description
Port Authorized Mode	■ **Reject:** force this port to be unauthorized. ■ **Accept:** force this port to be authorized. ■ **Authorize:** the state of this port was determined by the outcome of the 802.1x authentication. ■ **Disable:** this port will not participate in 802.1x.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

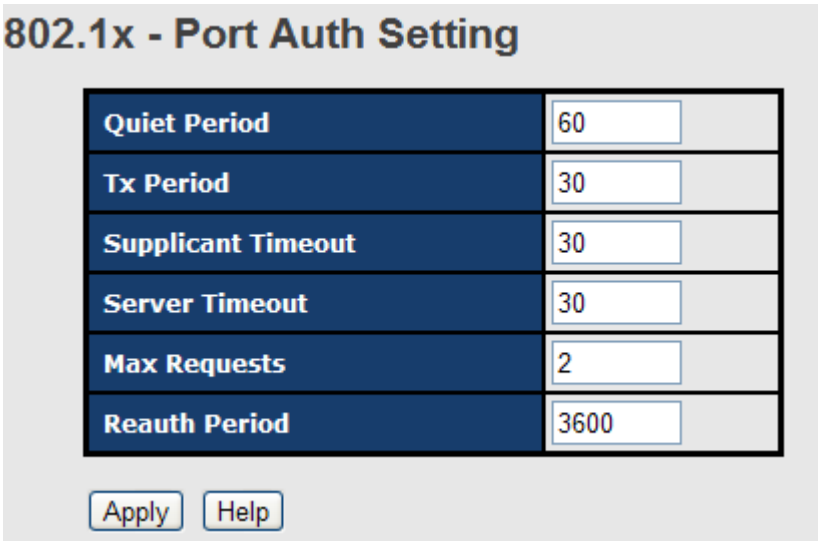
802.1x-Port Authorized State

Show 802.1x port authorized state.



802.1x Port Authorize State interface

802.1x-Port Auth Setting



Label	Description
Quiet Period	Set the time interval between authentication failure and the start of a new authentication attempt.
Tx Period	Set the time that the switch can wait for response to an EAP request/identity frame from the client before resending the request.
Supplicant Timeout	Set the period of time the switch waits for a supplicant response to an EAP request.
Server Timeout	Set the period of time the switch waits for a Radius server response to an authentication request.
Max Requests	Set the maximum number of times to retry sending packets to the supplicant.
Reauth Period	Set the period of time after which clients connected must be re-authenticated.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

4.1.12 Warning

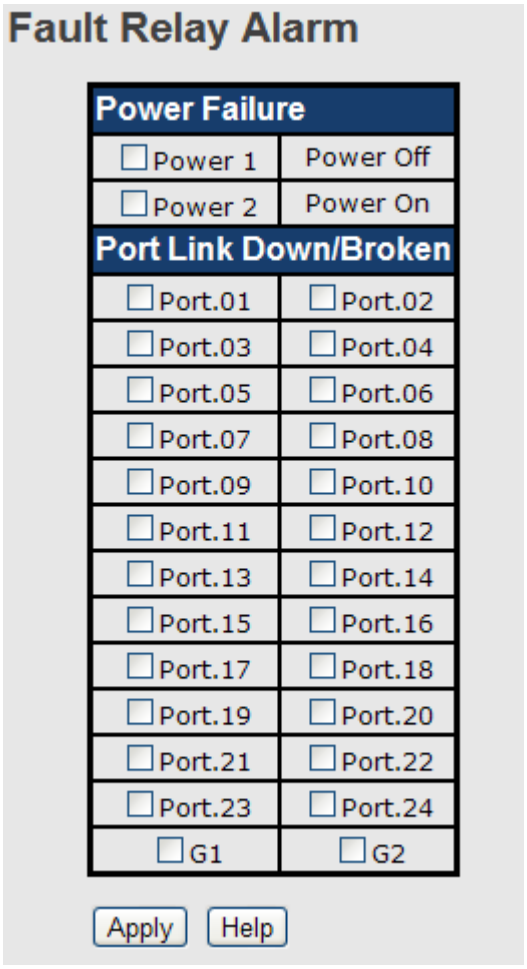
Warning function is very important for managing switch. You can manage switch by SYSLOG, E-MAIL, and Fault Relay. It helps you to monitor the switch status on remote site. When events occurred, the warning message will send to your appointed server, E-MAIL, or relay fault to switch panel.

4.1.12.1 System Alarm

System alarm support two warning mode: 1. SYSLOG. 2. E-MAIL. You can monitor switch through selected system events.

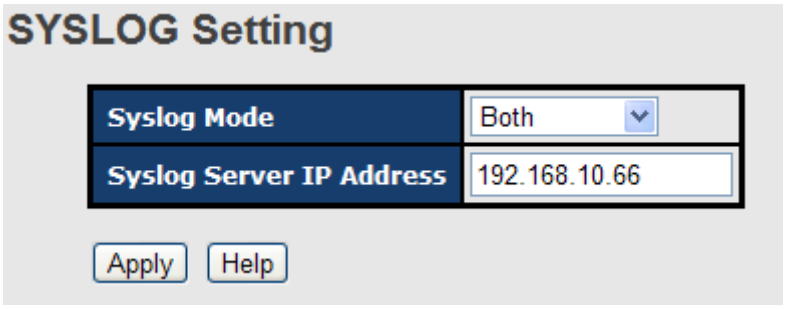
System Warning – Fault Relay Alarm (for RES-3242GC-E)

When any selected fault event is happened, the Fault LED in switch panel will light up and the electric relay will signal at the same time.



System Warning – SYSLOG Setting

The SYSLOG is a protocol to transmit event notification messages across networks. Please refer to RFC 3164 - The BSD SYSLOG Protocol



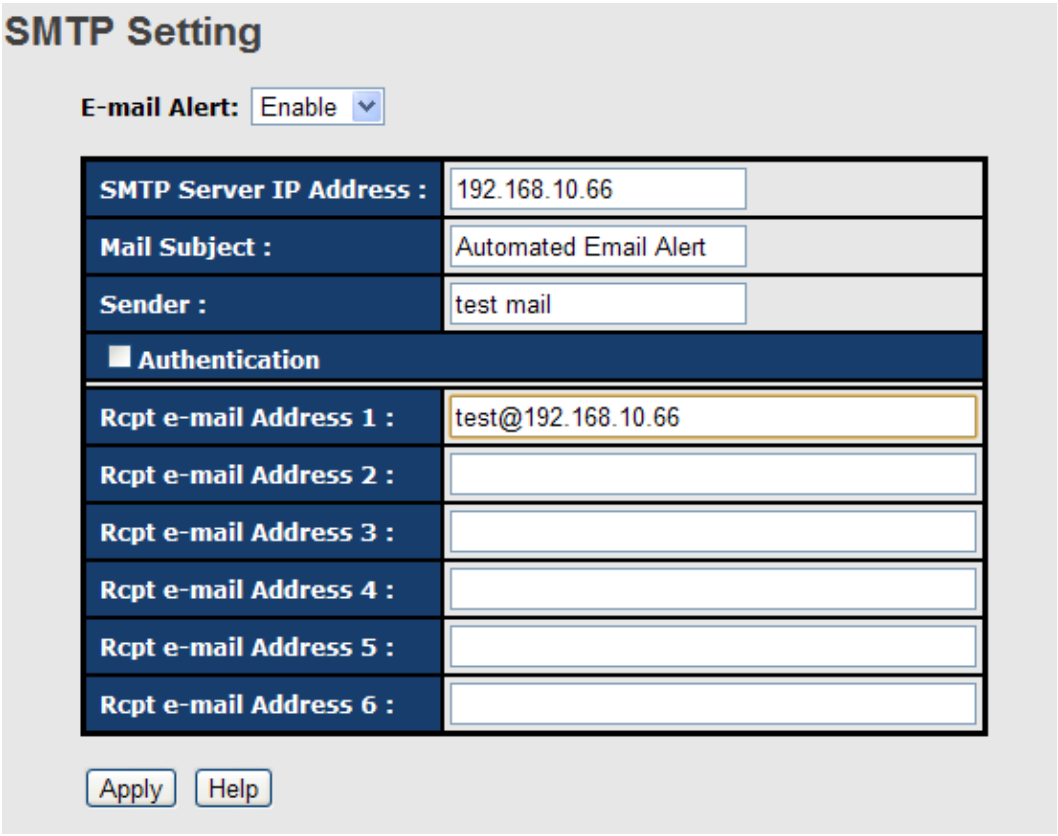
System Warning – SYSLOG Setting interface

The following table describes the labels in this screen.

Label	Description
SYSLOG Mode	■ **Disable:** disable SYSLOG. ■ **Client Only:** log to local system. ■ **Server Only:** log to a remote SYSLOG server. ■ **Both:** log to both of local and remote server.
SYSLOG Server IP Address	The remote SYSLOG Server IP address.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

System Warning – SMTP Setting

The SMTP is Short for Simple Mail Transfer Protocol. It is a protocol for e-mail transmission across the Internet. Please refer to RFC 821 - Simple Mail Transfer Protocol.



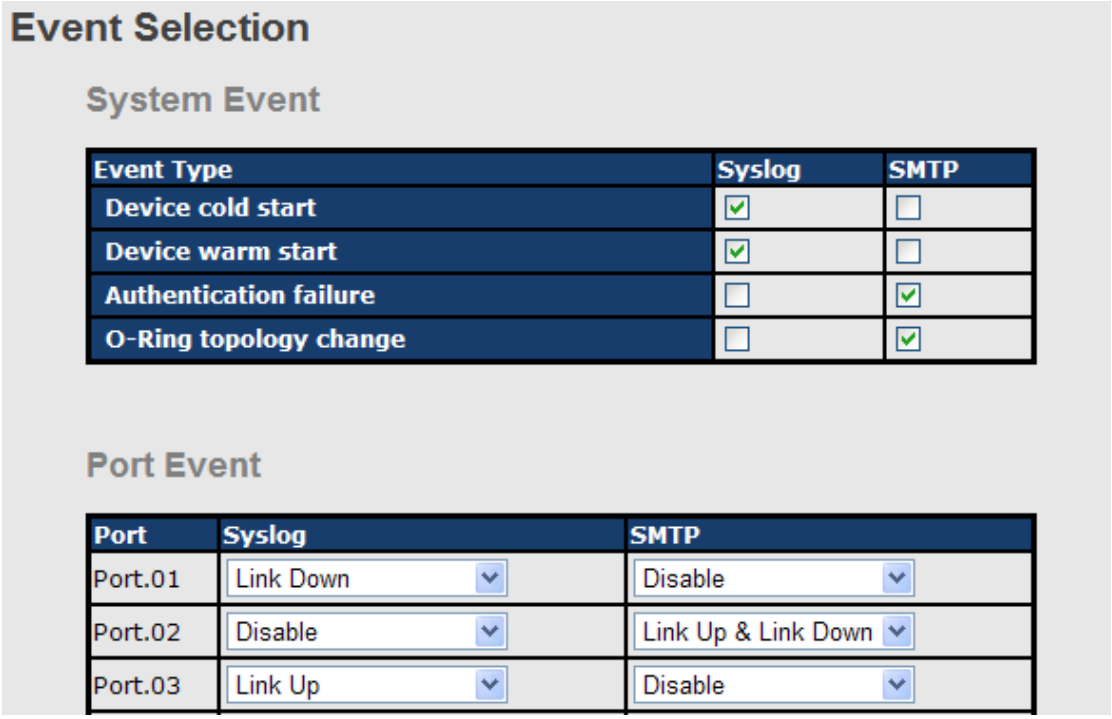
System Warning – SMTP Setting interface

The following table describes the labels in this screen.

Label	Description
E-mail Alert	Enable/Disable transmission system warning events by e-mail.
SMTP Server IP Address	Setting up the mail server IP address
Mail Subject	The Subject of the mail
Sender	Set up the email account to send the alert.
Authentication	■ **Username:** the authentication username. ■ **Password:** the authentication password. ■ **Confirm Password:** re-enter password.
Recipient E-mail Address	The recipient's E-mail address. It supports 6 recipients for a mail.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

System Warning – Event Selection

SYSLOG and SMTP are the two warning methods that supported by the system. Check the corresponding box to enable system event warning method you wish to choose. Please note that the checkbox can not be checked when SYSLOG or SMTP is disabled.



System Warning – Event Selection interface

The following table describes the labels in this screen.

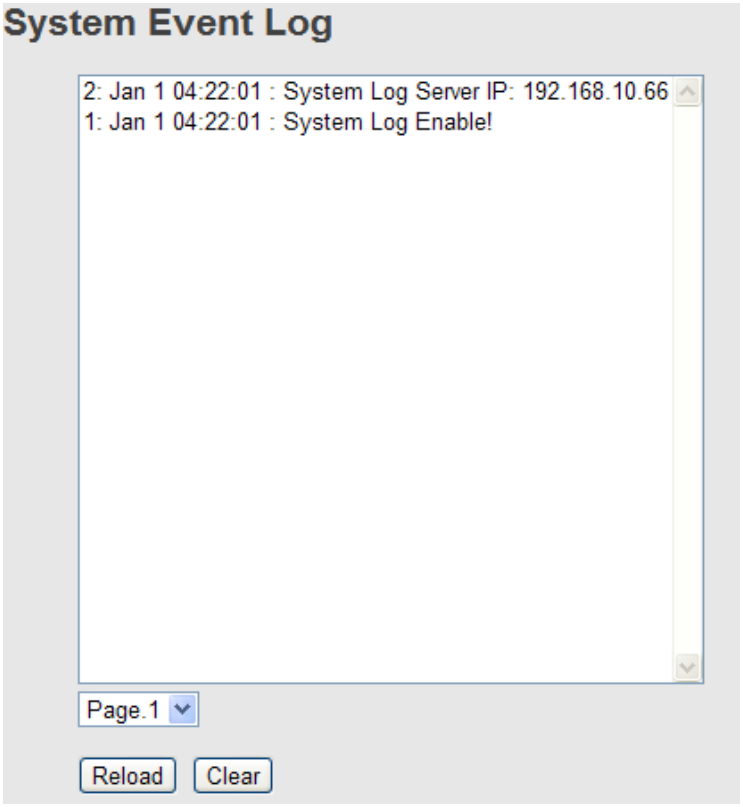
Label	Description
Device cold start	When the device executes cold start, the system will issue a log event.
Device warm start	When the device executes warm start, the system will issue a log event.
Authentication Failure	Alert when SNMP authentication failure.
O-Ring topology change	Alert when O-Ring topology changes.
Port Event	■ **Disable** ■ **Link Up** ■ **Link Down** ■ **Link Up & Link Down**
Apply	Click "**Apply**" to set the configurations.

Help	Show help file.

4.1.13 Monitor and Diag

4.1.13.1 System EventLog

If system log client is enabled, the system event logs will show in this table.



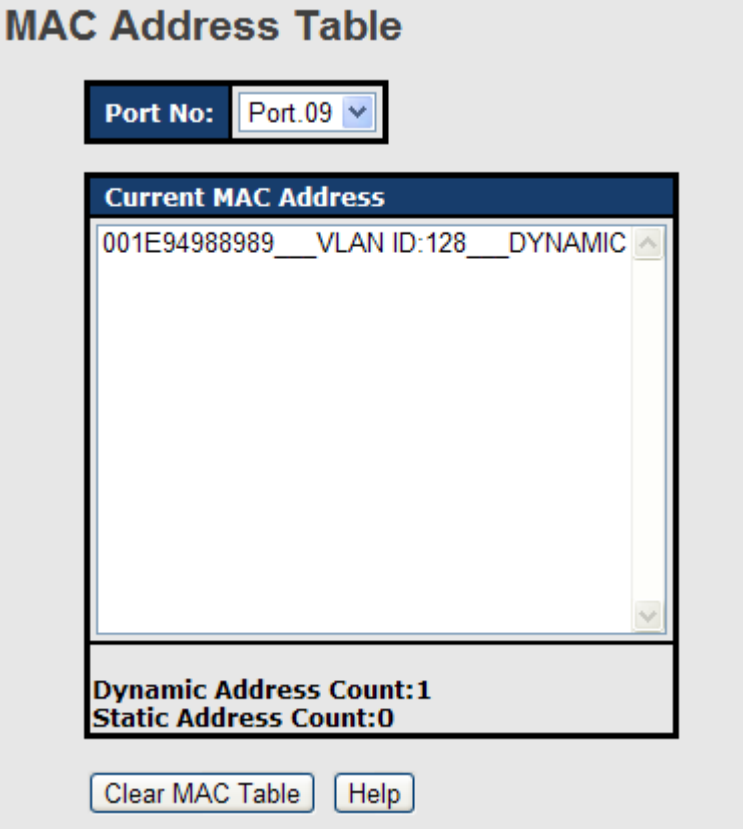
System event log interface

The following table describes the labels in this screen.

Label	Description
Page	Select LOG page.
Reload	To get the newest event logs and refresh this page.
Clear	Clear log.
Help	Show help file.

4.1.13.2 MAC Address Table

The MAC Address Table, that is Filtering Database, supports queries by the Forwarding Process, as to whether a frame received by a given port with a given destination MAC address is to be forwarded through a given potential transmission port.



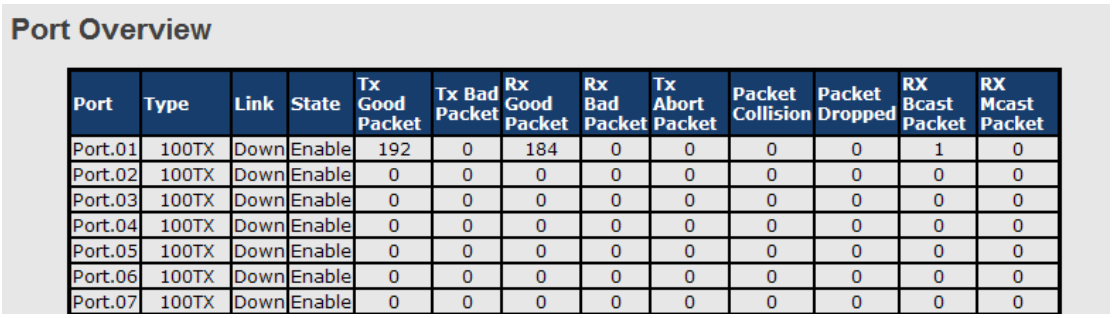
MAC Address Table interface

The following table describes the labels in this screen.

Label	Description
Port NO. :	Show all MAC addresses mapping to a selected port in table.
Clear MAC Table	Clear all MAC addresses in table
Help	Show help file.

4.1.13.3 Port Overview

Port Overview show several statistics counters for all ports



Port Overview

Port	Type	Link	State	Tx Good Packet	Tx Bad Packet	Rx Good Packet	Rx Bad Packet	Tx Abort Packet	Packet Collision	Packet Dropped	RX Bcast Packet	RX Mcast Packet
Port.01	100TX	Down	Enable	192	0	184	0	0	0	0	1	0
Port.02	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.03	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.04	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.05	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.06	100TX	Down	Enable	0	0	0	0	0	0	0	0	0
Port.07	100TX	Down	Enable	0	0	0	0	0	0	0	0	0

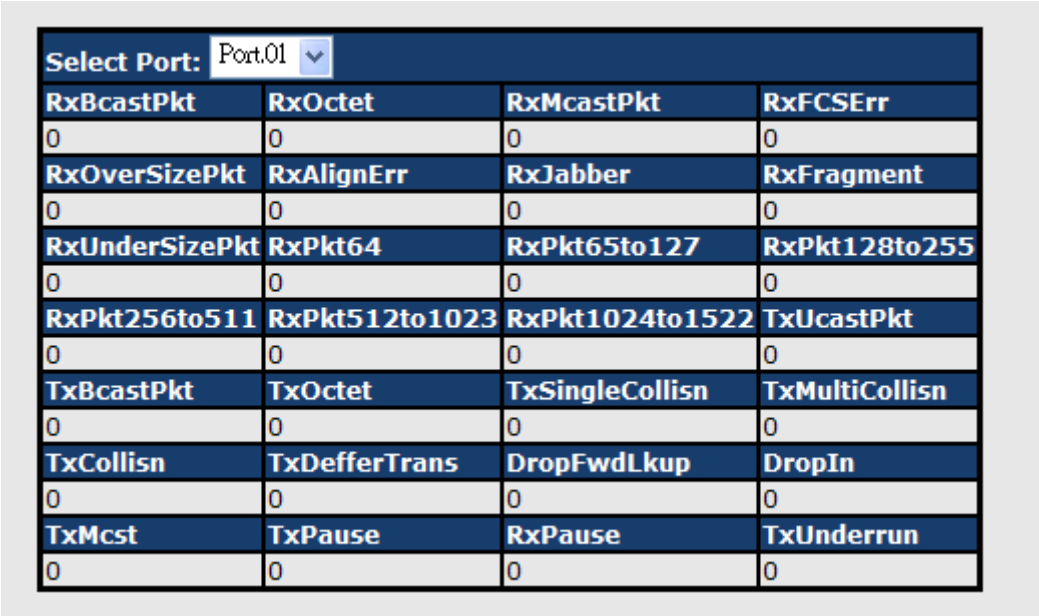
Port Overview interface

The following table describes the labels in this screen.

Label	Description
Type	Show port speed and media type.
Link	Show port link status.
State	Show ports enable or disable.
TX GOOD Packet	The number of good packets sent by this port.
TX Bad Packet	The number of bad packets sent by this port.
RX GOOD Packet	The number of good packets received by this port.
RX Bad Packet	The number of bad packets received by this port.
TX Abort Packet	The number of packets aborted by this port.
Packet Collision	The number of times a collision detected by this port.
Packet Dropped	The counts of dropped packet.
RX Bcast Packet	The counts of broadcast packet.
RX Mcast Packet	The counts of multicast packet.
Clear	Clear all counters.
Help	Show help file.

4.1.13.4 Port Counters

This page shows statistic counters for the port. The "Clear" button is to reset all counters to zero for all ports.



Port Counters interface

The following table describes the labels in this screen.

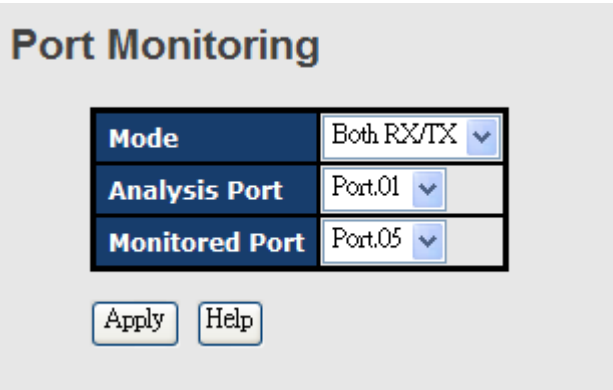
Label	Description
InGoodOctetsLo	The lower 32-bits of the 64-bit InGoodOctets counter. The sum of lengths of all good Ethernet frames received, that is frames that are not bad frames.
InGoodOctetsHi	The upper 32-bits of the 64-bit InGoodOctets counter. The sum of lengths of all good Ethernet frames received, that is frames that are not bad frames.
InBadOctets	The sum of lengths of all bad Ethernet frames received.
OutFCSErr	The number of frames transmitted with a invalid FCS. Whenever a frame is modified during transmission(e.g., to add or remove a tag) the frames's original FCS is inspected before a new FCS is added to a modified frame. If the original FCS is invalid, the new FCS is made invalid too and this counter is incremented.
InUnicasts	The number of good frames received that have a Unicast destination MAC address.
Deferred	The total number of successfully transmitted frames that experienced no collisions bu are delayed because the medium was busy during the first attempt. This counter is applicable in

	half-duplex only.
InBroadcasts	The number of good frames received that have a Broadcast destination MAC address.
InMulticasts	The number of good frames received that have a Multicast destnation MAC address.
Octets64	Total frames received (and/or transmitted) with a length of exactly 64 octes, include those with errors.
Octets127	Total frames received (and/or transmitted) with a length of between 65 and 127 octes in clusive, including those with error.
Octets255	Total frames received (and/or transmitted) with a length of between 128 and 255 octes in clusive, including those with error.
Octets511	Total frames received (and/or transmitted) with a length of between 256 and 511 octes in clusive, including those with error.
Octets1023	Total frames received (and/or transmitted) with a length of between 512 and 1023 octes in clusive, including those with error.
OctetsMax	Total frames received (and/or transmitted) with a length of between 1024 and MaxSize octes in clusive, including those with error.
OutOctetsLo	The lower 32-bit of the 64-bit OutOctets counter. The sum of lengths of all Ethernet frames sent from this MAC.
OutOctetsHi	The upper 32-bit of the 64-bit OutOctets counter. The sum of lengths of all Ethernet frames sent from this MAC.
OutUnicasts	The number of frames sent that have an Unicast destination MAC address.
Excessive	The number frames dropped in the transmit MAC because the frame experienced 16 consecutive collisions. This counter is applicable in half-duplex only and only of DiscardExcessive is one.
OutBroadcasts	The number of good frames sent that have a Broadcast destination MAC address.
Single	The total number of successfully transmitted frames that experienced exactly one collision. This counter is applicable in half-duplex only.
OutPause	The number of good Flow Control frames sent.
InPause	The number of good Flow Control frames received.
Multiple	The total number of successfully transmitted frames that experienced more than one collision. This counter is applicable in

	half-duplex only.
Undersize	Total frames received with a length of less than 64 octets but with a valid FCS.
Fragments	Total frames received with a length of more than 64 octets and with a invalid FCS.
Oversize	Total frames received with a length of more than MaxSize octets but with a valid FCS.
Jabber	Total frames received with a length of more than MaxSize octets but with an invalid FCS.
InMACRcvErr	Total frames received with an RxErr signal from the PHY.
InFCSErr	Total frames received with a CRC error not counted in Fragments, Jabber or RxErr.
Collisions	The number of collision events seen by MAC not including those conted in Single, Multiple, Excessive or Late. This counter is applicable in half-duplex only.
Late	The number of times a collision is detected later than 512 bits-times into the transmission of a frame. This counter is applicable in half-duplex only.

4.1.13.5 Port Monitoring

Port monitoring supports TX (egress) only, RX (ingress) only, and TX/RX monitoring. TX monitoring sends any data that egress out checked TX source ports to a selected TX destination port as well. RX monitoring sends any data that ingress in checked RX source ports out to a selected RX destination port as well as sending the frame where it normally would have gone. Note that keep all source ports unchecked in order to disable port monitoring.



Port Monitoring Interface

The following table describes the labels in this screen.

Label	Description
Mode	Select Disable, RX, TX or Both RX/TX
Analysis Port	There is only one port can be selected to be Analysis port for monitoring both RX and TX traffic which come from source port.
Monitored Port	The port that user wants to monitor. The monitored port traffic will be copied to Analysis port.
Apply	Click "**Apply**" to set the configurations.
Help	Show help file.

4.1.14 Save Configuration

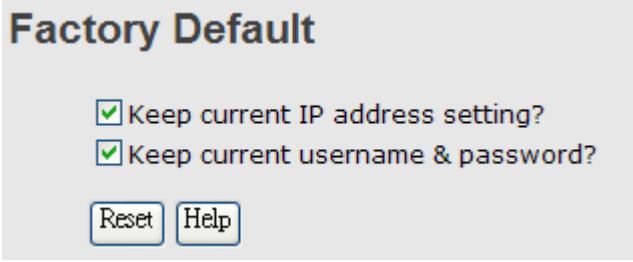
If any configuration changed, "**Save Configuration**" should be clicked to save current configuration data to the permanent flash memory. Otherwise, the current configuration will be lost when power off or system reset.

System Configuration interface

The following table describes the labels in this screen.

Label	Description
Save	Save all configurations.
Help	Show help file.

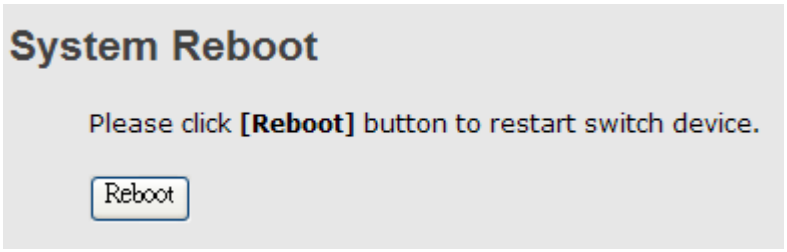
4.1.15 Factory Default



Factory Default interface

Reset switch to default configuration. Click Reset to reset all configurations to the default value. You can select "**Keep current IP address setting**" and "**Keep current username & password**" to prevent IP and username and password form default.

4.1.16 System Reboot



System Reboot interface

Command Line Interface Management

5.1 About CLI Management

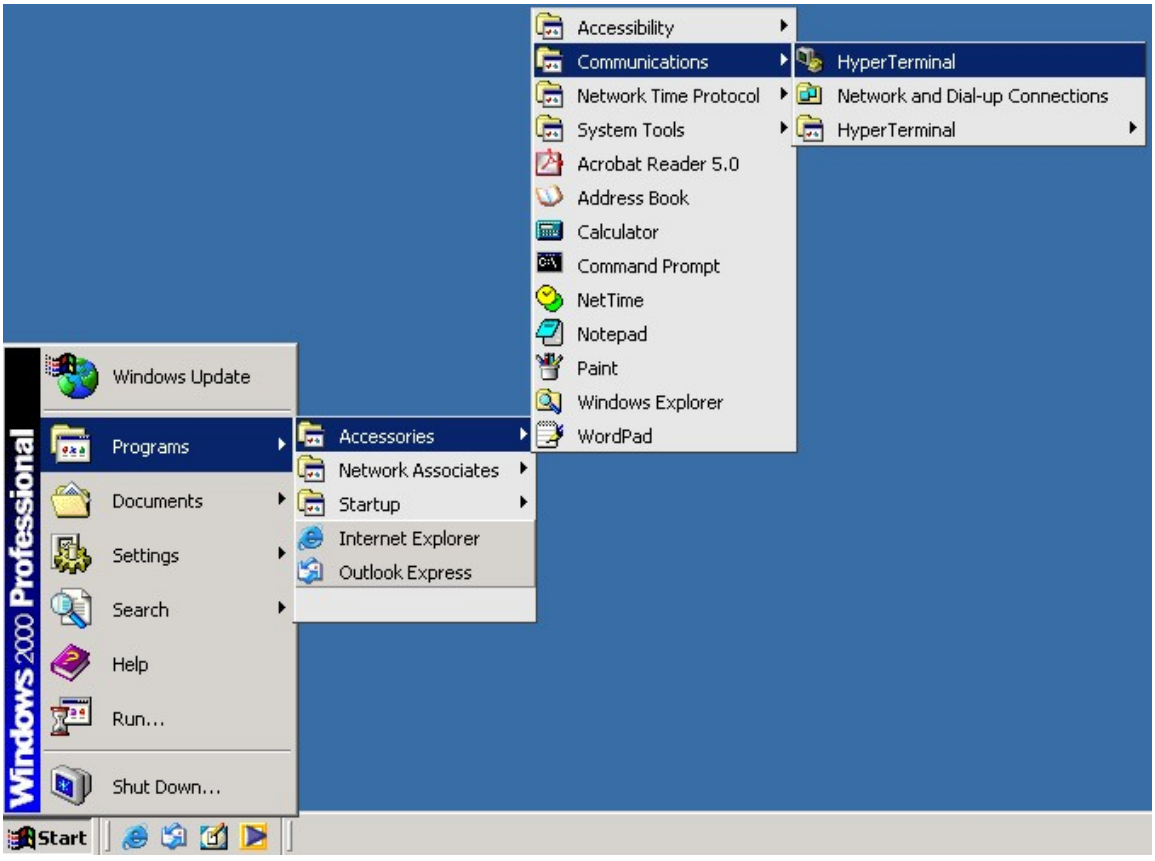
Besides WEB-based management, RES-P3242GCL SERIES also support CLI management. You can use console or telnet to management switch by CLI.

CLI Management by RS-232 Serial Console (9600, 8, none, 1, none)

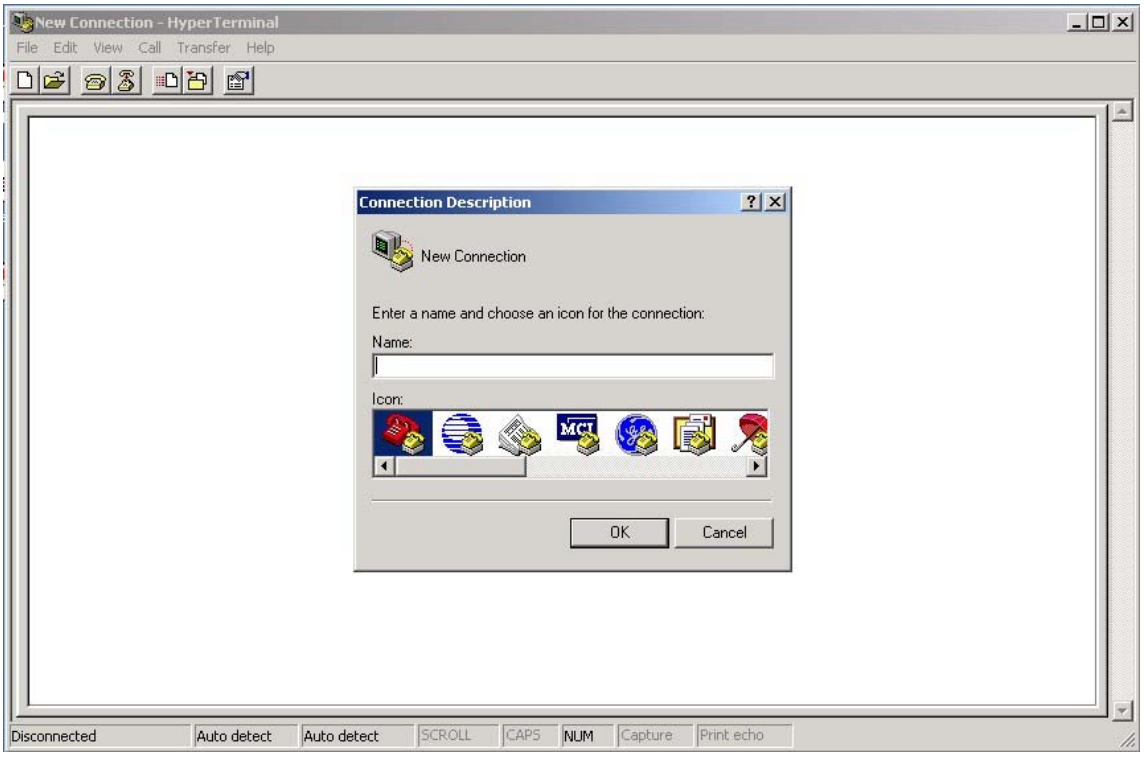
Before Configuring by RS-232 serial console, use an RJ45 to DB9-F cable to connect the Switches' RS-232 Console port to your PC's COM port.

Follow the steps below to access the console via RS-232 serial cable.

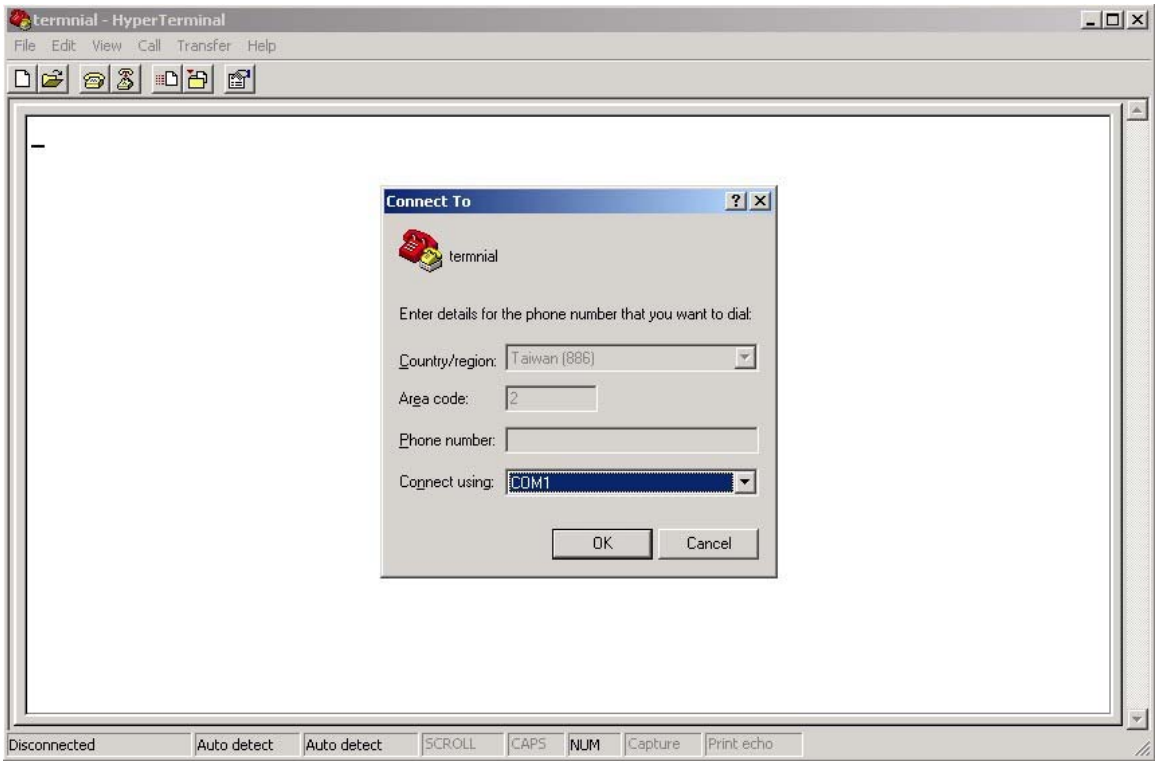
(1) From the Windows desktop, click on Start -> Programs -> Accessories -> Communications -> Hyper Terminal



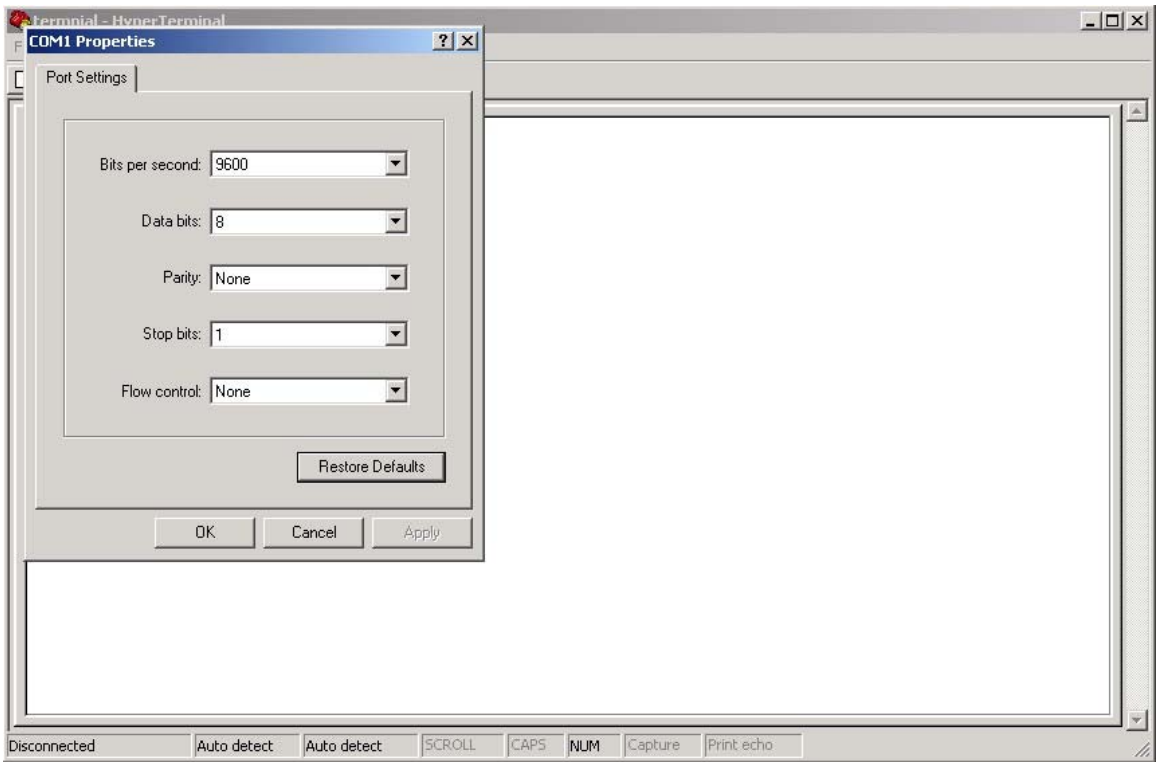
(2)Input a name for new connection



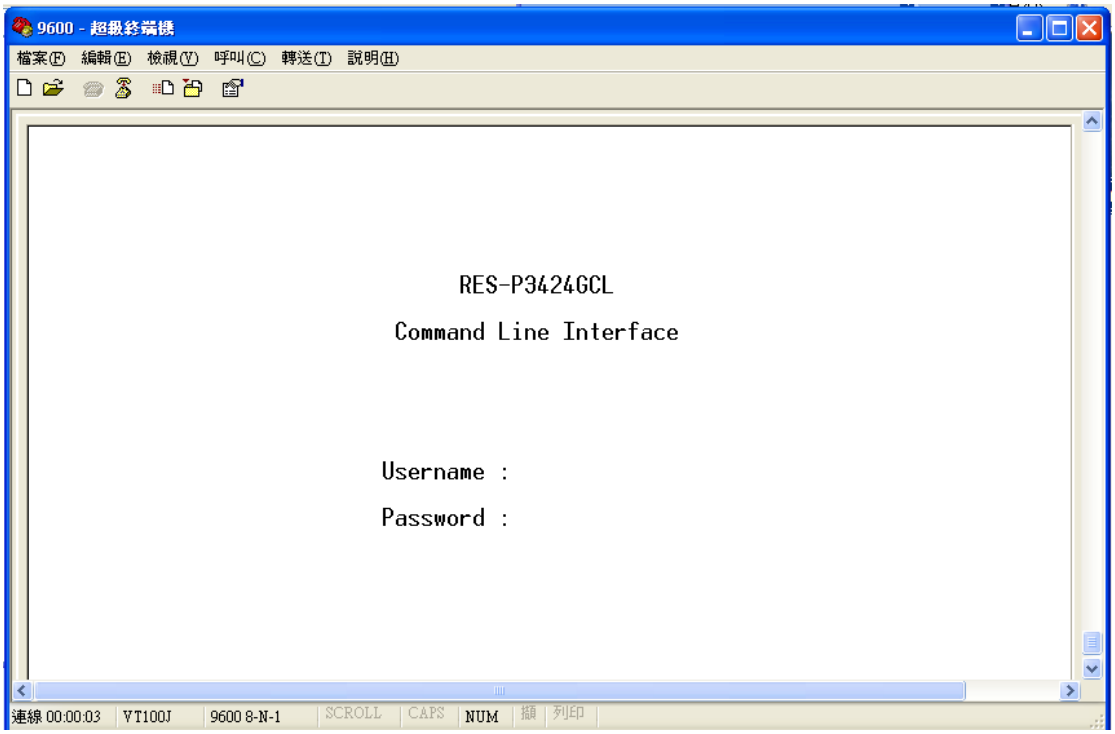
(3)Select to use COM port number



(4) The COM port properties setting, 9600 for Bits per second, 8 for Data bits, None for Parity, 1 for Stop bits and none for Flow control.



(5) The Console login screen will appear. Use the keyboard enter the Console Username and Password that is same as the Web Browser password), and then press "**Enter**".



CLI Management by Telnet.

Users can use telnet to configure the switches.

The default value is as below:

IP Address: **192.168.10.1**

Subnet Mask: **255.255.255.0**

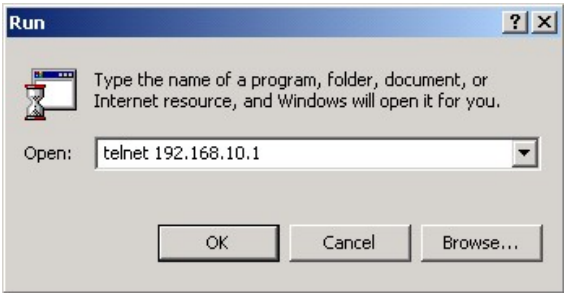
Default Gateway: **192.168.10.254**

User Name: **admin**

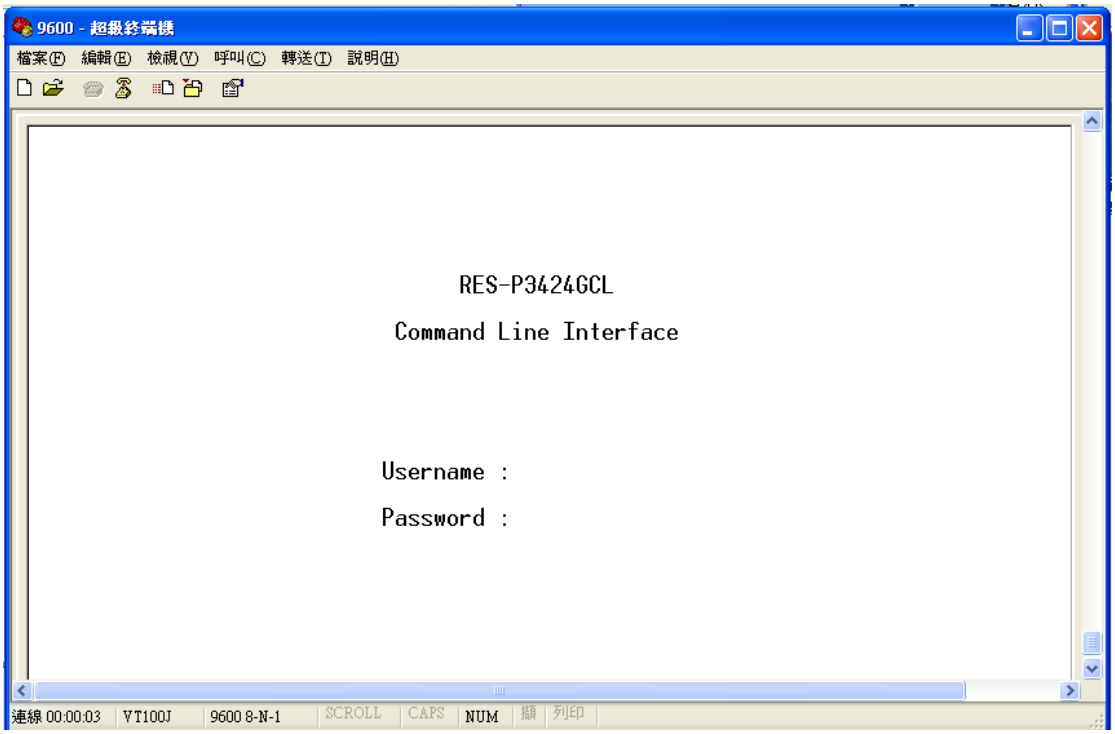
Password: **admin**

Follow the steps below to access the console via Telnet.

(1) Telnet to the IP address of the switch from the Windows "**Run**" command (or from the MS-DOS prompt).



(2) The Console login screen will appear. Use the keyboard enter the Console Username and Password that is same as the Web Browser password), and then press "**Enter**"



Commands Level

Modes	Access Method	Prompt	Exit Method	About This Model
User EXEC	Begin a session with your switch.	switch>	Enter **logout** or **quit**.	The user command available at the level of user is the subset of those available at the privileged level. Use this mode to • Enter menu mode. • Display system information.
Privileged EXEC	Enter the **enable** command while in user EXEC mode.	switch#	Enter **disable** to exit.	The privileged command is advance mode Privileged this mode to • Display advance function status • save configures
Global configuration	Enter the **configure** command while in privileged EXEC mode.	switch(config)#	To exit to privileged EXEC mode, enter **exit** or **end**	Use this mode to configure parameters that apply to your Switch as a whole.
VLAN database	Enter the **vlan database** command while in privileged EXEC mode.	switch(vlan)#	To exit to user EXEC mode, enter **exit**.	Use this mode to configure VLAN-specific parameters.
Interface configuration	Enter the **interface** command (with a specific interface)while in global configuration mode	switch(config-if)#	To exit to global configuration mode, enter **exit**. To exist privileged EXEC mode or **end.**	Use this mode to configure parameters for the switch and Ethernet ports.

Symbol of Command Level.

Mode	Symbol of Command Level
User EXEC	E
Privileged EXEC	P
Global configuration	G
VLAN database	V
Interface configuration	I

5.2 Commands Set List—System Commands Set

Commands	Level	Description	Example
show config	**E**	Show switch configuration	switch>show config
write memory	**P**	Save your configuration into permanent memory (flash rom)	switch#write memory
system name [System Name]	**G**	Configure system name	switch(config)#system name xxx
system location [System Location]	**G**	Set switch system location string	switch(config)#system location xxx
system description [System Description]	**G**	Set switch system description string	switch(config)#system description xxx
system contact [System Contact]	**G**	Set switch system contact window string	switch(config)#system contact xxx
show system-info	**E**	Show system information	switch>show system-info
ip address [Ip-address] [Subnet-mask] [Gateway]	**G**	Configure the IP address of switch	switch(config)#ip address 192.168.1.1 255.255.255.0 192.168.1.254
ip dhcp	**G**	Enable DHCP client function of switch	switch(config)#ip dhcp
show ip	**P**	Show IP information of switch	switch#show ip

no ip dhcp	**G**	Disable DHCP client function of switch	switch(config)#no ip dhcp
reload	**G**	Halt and perform a cold restart	switch(config)#reload
default	**G**	Restore to default	Switch(config)#default
admin username **[Username]**	**G**	Changes a login username. (maximum 10 words)	switch(config)#admin username xxxxxx
admin password **[Password]**	**G**	Specifies a password (maximum 10 words)	switch(config)#admin password xxxxxx
show admin	**P**	Show administrator information	switch#show admin
dhcpserver enable	**G**	Enable DHCP Server	switch(config)#dhcpserver enable
dhcpserver lowip **[Low IP]**	**G**	Configure low IP address for IP pool	switch(config)# dhcpserver lowip 192.168.1.1
dhcpserver highip **[High IP]**	**G**	Configure high IP address for IP pool	switch(config)# dhcpserver highip 192.168.1.50
dhcpserver subnetmask **[Subnet mask]**	**G**	Configure subnet mask for DHCP clients	switch(config)#dhcpserver subnetmask 255.255.255.0
dhcpserver gateway **[Gateway]**	**G**	Configure gateway for DHCP clients	switch(config)#dhcpserver gateway 192.168.1.254
dhcpserver dnsip **[DNS IP]**	**G**	Configure DNS IP for DHCP clients	switch(config)# dhcpserver dnsip 192.168.1.1
dhcpserver leasetime **[Hours]**	**G**	Configure lease time (in hour)	switch(config)#dhcpserver leasetime 1
dhcpserver ipbinding **[IP address]**	**I**	Set static IP for DHCP clients by port	switch(config)#interface fastEthernet 2 switch(config-if)#dhcpserver ipbinding 192.168.1.1
show dhcpserver configuration	**P**	Show configuration of DHCP server	switch#show dhcpserver configuration
show dhcpserver clients	**P**	Show client entries of DHCP server	switch#show dhcpserver clinets
show dhcpserver ip-binding	**P**	Show IP-Binding information of DHCP server	switch#show dhcpserver ip-binding
no dhcpserver	**G**	Disable DHCP server	switch(config)#no dhcpserver

		function	
security enable	**G**	Enable IP security function	switch(config)#security enable
security http	**G**	Enable IP security of HTTP server	switch(config)#security http
security telnet	**G**	Enable IP security of telnet server	switch(config)#security telnet
security ip [Index(1..10)] [IP Address]	**G**	Set the IP security list	switch(config)#security ip 1 192.168.1.55
show security	**P**	Show the information of IP security	switch#show security
no security	**G**	Disable IP security function	switch(config)#no security
no security http	**G**	Disable IP security of HTTP server	switch(config)#no security http
no security telnet	**G**	Disable IP security of telnet server	switch(config)#no security telnet

5.3 Commands Set List—Port Commands Set

Commands	Level	Description	Example
interface fastEthernet [Portid]	G	Choose the port for modification.	switch(config)#interface fastEthernet 2
duplex [full | half]	I	Use the duplex configuration command to specify the duplex mode of operation for Fast Ethernet.	switch(config)#interface fastEthernet 2 switch(config-if)#duplex full
speed [10|100|1000|auto]	I	Use the speed configuration command to specify the speed mode of operation for Fast Ethernet., the speed can't be set to 1000 if the port isn't a giga port..	switch(config)#interface fastEthernet 2 switch(config-if)#speed 100
flowcontrol mode [Symmetric|As	I	Use the flowcontrol configuration command on Ethernet ports to control traffic rates during congestion.	switch(config)#interface fastEthernet 2 switch(config-if)#flowcontrol mode

ymmetric]			Asymmetric
no flowcontrol	I	Disable flow control of interface	switch(config-if)#no flowcontrol
security enable	I	Enable security of interface	switch(config)#interface fastEthernet 2 switch(config-if)#security enable
no security	I	Disable security of interface	switch(config)#interface fastEthernet 2 switch(config-if)#no security
bandwidth type all	I	Set interface ingress limit frame type to "accept all frame"	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth type all
bandwidth type broadcast-multicast-flooded-unicast	I	Set interface ingress limit frame type to "accept broadcast, multicast, and flooded unicast frame"	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth type broadcast-multicast-flooded-unicast
bandwidth type broadcast-multicast	I	Set interface ingress limit frame type to "accept broadcast and multicast frame"	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth type broadcast-multicast
bandwidth type broadcast-only	I	Set interface ingress limit frame type to "only accept broadcast frame"	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth type broadcast-only
bandwidth in [Value]	I	Set interface input bandwidth. Rate Range is from 100 kbps to 102400 kbps or to 256000 kbps for giga ports, and zero means no limit.	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth in 100
bandwidth out [Value]		Set interface output bandwidth. Rate Range is from 100 kbps to 102400 kbps or to 256000 kbps for giga ports, and zero means no limit.	switch(config)#interface fastEthernet 2 switch(config-if)#bandwidth out 100
show bandwidth	I	Show interfaces bandwidth control	switch(config)#interface fastEthernet 2 switch(config-if)#show bandwidth

state [Enable | Disable]	I	Use the state interface configuration command to specify the state mode of operation for Ethernet ports. Use the disable form of this command to disable the port.	switch(config)#interface fastEthernet 2 switch(config-if)#state Disable
show interface configuration	I	show interface configuration status	switch(config)#interface fastEthernet 2 switch(config-if)#show interface configuration
show interface status	I	show interface actual status	switch(config)#interface fastEthernet 2 switch(config-if)#show interface status
show interface accounting	I	show interface statistic counter	switch(config)#interface fastEthernet 2 switch(config-if)#show interface accounting
no accounting	I	Clear interface accounting information	switch(config)#interface fastEthernet 2 switch(config-if)#no accounting

5.4 Commands Set List—Trunk command set

Commands	Level	Description	Example
aggregator priority [1to65535]	G	Set port group system priority	switch(config)#aggregator priority 22
aggregator activityport [Port Numbers]	G	Set activity port	switch(config)#aggregator activityport 2
aggregator group [GroupID] [Port-list] **lacp workp** [Workport]	G	Assign a trunk group with LACP active. [GroupID] :1to3 [Port-list]:Member port list, This parameter	switch(config)#aggregator group 1 1-4 lacp workp 2 or switch(config)#aggregator group 2 1,4,3 lacp workp 3

		could be a port range(ex.1-4) or a port list separate by a comma(ex.2, 3, 6) [Workport]: The amount of work ports, this value could not be less than zero or be large than the amount of member ports.	
aggregator group **[GroupID] [Port-list]** **nolacp**	**G**	Assign a static trunk group. [GroupID] :1to3 [Port-list]:Member port list, This parameter could be a port range(ex.1-4) or a port list separate by a comma(ex.2, 3, 6)	switch(config)#aggregator group 1 2-4 nolacp or switch(config)#aggreator group 1 3,1,2 nolacp
show aggregator	**P**	Show the information of trunk group	switch#show aggregator
no aggregator lacp **[GroupID]**	**G**	Disable the LACP function of trunk group	switch(config)#no aggreator lacp 1
no aggregator group **[GroupID]**	**G**	Remove a trunk group	switch(config)#no aggreator group 2

5.5 Commands Set List—VLAN command set

Commands	Level	Description	Example
vlan database	**P**	Enter VLAN configure mode	switch#vlan database
vlan **[8021q | gvrp]**	**V**	To set switch VLAN mode.	switch(vlan)# vlanmode 8021q or switch(vlan)# vlanmode gvrp
no vlan **[VID]**	**V**	Disable vlan group(by VID)	switch(vlan)#no vlan 2
no gvrp	**V**	Disable GVRP	switch(vlan)#no gvrp
IEEE 802.1Q VLAN			
vlan 8021q port **[PortNumber]** **access-link untag** **[UntaggedVID]**	**V**	Assign a access link for VLAN by port, if the port belong to a trunk group, this command can't be applied.	switch(vlan)#vlan 8021q port 3 access-link untag 33
vlan 8021q port **[PortNumber]** **trunk-link tag** **[TaggedVID List]**	**V**	Assign a trunk link for VLAN by port, if the port belong to a trunk group, this command can't be applied.	switch(vlan)#vlan 8021q port 3 trunk-link tag 2,3,6,99 or switch(vlan)#vlan 8021q port 3 trunk-link tag 3-20
vlan 8021q port **[PortNumber]** **hybrid-link untag** **[UntaggedVID]** **tag** **[TaggedVID List]**	**V**	Assign a hybrid link for VLAN by port, if the port belong to a trunk group, this command can't be applied.	switch(vlan)# vlan 8021q port 3 hybrid-link untag 4 tag 3,6,8 or switch(vlan)# vlan 8021q port 3 hybrid-link untag 5 tag 6-8
vlan 8021q aggreator **[TrunkID]** **access-link untag** **[UntaggedVID]**	**V**	Assign a access link for VLAN by trunk group	switch(vlan)#vlan 8021q aggreator 3 access-link untag 33
vlan 8021q aggreator **[TrunkID]** **trunk-link tag** **[TaggedVID List]**	**V**	Assign a trunk link for VLAN by trunk group	switch(vlan)#vlan 8021q aggreator 3 trunk-link tag 2,3,6,99 or switch(vlan)#vlan 8021q aggreator 3 trunk-link tag 3-20
vlan 8021q aggreator	**V**	Assign a hybrid link for	switch(vlan)# vlan 8021q aggreator 3

[PortNumber] **hybrid-link untag** [UntaggedVID] **tag** [TaggedVID List]		VLAN by trunk group	hybrid-link untag 4 tag 3,6,8 or switch(vlan)# vlan 8021q aggreator 3 hybrid-link untag 5 tag 6-8
show vlan [VID] or **show vlan**	**V**	Show VLAN information	switch(vlan)#show vlan 23

5.6 Commands Set List—Spanning Tree command set

Commands	Level	Description	Example
spanning-tree enable	**G**	Enable spanning tree	switch(config)#spanning-tree enable
spanning-tree priority [0to61440]	**G**	Configure spanning tree priority parameter	switch(config)#spanning-tree priority 32767
spanning-tree max-age [seconds]	**G**	Use the spanning-tree max-age global configuration command to change the interval between messages the spanning tree receives from the root switch. If a switch does not receive a bridge protocol data unit (BPDU) message from the root switch within this interval, it recomputed the Spanning Tree Protocol (STP) topology.	switch(config)# spanning-tree max-age 15

spanning-tree hello-time [seconds]	**G**	Use the spanning-tree hello-time global configuration command to specify the interval between hello bridge protocol data units (BPDUs).	switch(config)#spanning-tree hello-time 3
spanning-tree forward-time [seconds]	**G**	Use the spanning-tree forward-time global configuration command to set the forwarding-time for the specified spanning-tree instances. The forwarding time determines how long each of the listening and learning states last before the port begins forwarding.	switch(config)# spanning-tree forward-time 20
stp-path-cost [1to200000000]	**I**	Use the spanning-tree cost interface configuration command to set the path cost for Spanning Tree Protocol (STP) calculations. In the event of a loop, spanning tree considers the path cost when selecting an interface to place into the forwarding state.	switch(config)#interface fastEthernet 2 switch(config-if)#stp-path-cost 20

stp-path-priority [Port Priority]	**I**	Use the spanning-tree port-priority interface configuration command to configure a port priority that is used when two switches tie for position as the root switch.	switch(config)#interface fastEthernet 2 switch(config-if)# stp-path-priority 127
stp-admin-p2p [Auto|True|False]	**I**	Admin P2P of STP priority on this interface.	switch(config)#interface fastEthernet 2 switch(config-if)# stp-admin-p2p Auto
stp-admin-edge [True|False]	**I**	Admin Edge of STP priority on this interface.	switch(config)#interface fastEthernet 2 switch(config-if)# stp-admin-edge True
stp-admin-non-stp [True|False]	**I**	Admin NonSTP of STP priority on this interface.	switch(config)#interface fastEthernet 2 switch(config-if)# stp-admin-non-stp False
Show spanning-tree	**E**	Display a summary of the spanning-tree states.	switch>show spanning-tree
no spanning-tree	**G**	Disable spanning-tree.	switch(config)#no spanning-tree

5.7 Commands Set List—QoS command set

Commands	Level	Description	Example
qos policy [weighted-fair|strict]	**G**	Select QOS policy scheduling	switch(config)#qos policy weighted-fair
qos 8021p-prioritytype [port-based|cos-only|tos-only|cos-first|tos-first]	**G**	Setting of QOS priority type	switch(config)#qos prioritytype

qos priority portbased [Port] [lowest|low|middle|high]	**G**	Configure Port-based Priority	switch(config)#qos priority portbased 1 low
qos priority cos [Priority][lowest|low|middle|high]	**G**	Configure COS Priority	switch(config)#qos priority cos 22 middle
qos priority tos [Priority][lowest|low|middle|high]	**G**	Configure TOS Priority	switch(config)#qos priority tos 3 high
show qos	**P**	Display the information of QoS configuration	switch>show qos
no qos	**G**	Disable QoS function	switch(config)#no qos

5.8 Commands Set List—IGMP command set

Commands	Level	Description	Example
igmp enable	**G**	Enable IGMP snooping function	switch(config)#igmp enable
Igmp-query auto	**G**	Set IGMP query to auto mode	switch(config)#Igmp-query auto
Igmp-query force	**G**	Set IGMP query to force mode	switch(config)#Igmp-query force
show igmp configuration	**P**	Displays the details of an IGMP configuration.	switch#show igmp configuration
show igmp multi	**P**	Displays the details of an IGMP snooping entries.	switch#show igmp multi
no igmp	**G**	Disable IGMP snooping function	switch(config)#no igmp
no igmp-query	**G**	Disable IGMP query	switch#no igmp-query

5.9 Commands Set List—MAC/Filter Table command set

Commands	Level	Description	Example
mac-address-table static hwaddr [MAC]	I	Configure MAC address table of interface (static).	switch(config)#interface fastEthernet 2 switch(config-if)#mac-address-table static hwaddr 000012345678
mac-address-table filter hwaddr [MAC]	G	Configure MAC address table(filter)	switch(config)#mac-address-table filter hwaddr 000012348678
show mac-address-table	P	Show all MAC address table	switch#show mac-address-table
show mac-address-table static	P	Show static MAC address table	switch#show mac-address-table static
show mac-address-table filter	P	Show filter MAC address table.	switch#show mac-address-table filter
no mac-address-table static hwaddr [MAC]	I	Remove an entry of MAC address table of interface (static)	switch(config)#interface fastEthernet 2 switch(config-if)#no mac-address-table static hwaddr 000012345678
no mac-address-table filter hwaddr [MAC]	G	Remove an entry of MAC address table (filter)	switch(config)#no mac-address-table filter hwaddr 000012348678
no mac-address-table	G	Remove dynamic entry of MAC address table	switch(config)#no mac-address-table

5.10 Commands Set List—SNMP command set

Commands	Level	Description	Example
snmp agent-mode [v1v2c | v3]	G	Select the agent mode of SNMP	switch(config)#snmp agent-mode v1v2c
snmp-server host [IP address] **community** [Community-string] **trap-version**	G	Configure SNMP server host information and community string	switch(config)#snmp-server host 192.168.10.50 community public trap-version v1 (remove) Switch(config)#

[v1|v2c]			no snmp-server host 192.168.10.50
snmp community-strings [Community-string] **right** [RO|RW]	**G**	Configure the community string right	switch(config)#snmp community-strings public right RO or switch(config)#snmp community-strings public right RW
snmp snmpv3-user [User Name] **password** [Authentication Password] [Privacy Password]	**G**	Configure the userprofile for SNMPV3 agent. Privacy password could be empty.	switch(config)#snmp snmpv3-user test01 password AuthPW PrivPW
show snmp	**P**	Show SNMP configuration	switch#show snmp
show snmp-server	**P**	Show specified trap server information	switch#show snmp-server
no snmp community-strings [Community]	**G**	Remove the specified community.	switch(config)#no snmp community-strings public
no snmp snmpv3-user [User Name] **password** [Authentication Password] [Privacy Password]	**G**	Remove specified user of SNMPv3 agent. Privacy password could be empty.	switch(config)# no snmp snmpv3-user test01 password AuthPW PrivPW
no snmp-server host [Host-address]	**G**	Remove the SNMP server host.	switch(config)#no snmp-server 192.168.10.50

5.11 Commands Set List—Port Mirroring command set

Commands	Level	Description	Example
monitor rx	**G**	Set RX destination port of monitor function	switch(config)#monitor rx
monitor tx	**G**	Set TX destination port of monitor	switch(config)#monitor tx

		function	
show monitor	**P**	Show port monitor information	switch#show monitor
monitor [RX|TX|Both]	**I**	Configure source port of monitor function	switch(config)#interface fastEthernet 2 switch(config-if)#monitor RX
show monitor	**I**	Show port monitor information	switch(config)#interface fastEthernet 2 switch(config-if)#show monitor
no monitor	**I**	Disable source port of monitor function	switch(config)#interface fastEthernet 2 switch(config-if)#no monitor

5.12 Commands Set List—802.1x command set

Commands	Level	Description	Example
8021x enable	**G**	Use the 802.1x global configuration command to enable 802.1x protocols.	switch(config)# 8021x enable
8021x system radiousip [IP address]	**G**	Use the 802.1x system radious IP global configuration command to change the radious server IP.	switch(config)# 8021x system radiousip 192.168.1.1
8021x system serverport [port ID]	**G**	Use the 802.1x system server port global configuration command to change the radious server port	switch(config)# 8021x system serverport 1815
8021x system accountport [port ID]	**G**	Use the 802.1x system account port global configuration command to change the accounting port	switch(config)# 8021x system accountport 1816
8021x system sharekey [ID]	**G**	Use the 802.1x system share key	switch(config)# 8021x system sharekey 123456

		global configuration command to change the shared key value.	
8021x system nasid [words]	**G**	Use the 802.1x system nasid global configuration command to change the NAS ID	switch(config)# 8021x system nasid test1
8021x misc quietperiod [sec.]	**G**	Use the 802.1x misc quiet period global configuration command to specify the quiet period value of the switch.	switch(config)# 8021x misc quietperiod 10
8021x misc txperiod [sec.]	**G**	Use the 802.1x misc TX period global configuration command to set the TX period.	switch(config)# 8021x misc txperiod 5
8021x misc supportimeout [sec.]	**G**	Use the 802.1x misc supp timeout global configuration command to set the supplicant timeout.	switch(config)# 8021x misc supportimeout 20
8021x misc servertimeout [sec.]	**G**	Use the 802.1x misc server timeout global configuration command to set the server timeout.	switch(config)#8021x misc servertimeout 20
8021x misc maxrequest [number]	**G**	Use the 802.1x misc max request global configuration command to set the MAX requests.	switch(config)# 8021x misc maxrequest 3

8021x misc reauthperiod [sec.]	**G**	Use the 802.1x misc reauth period global configuration command to set the reauth period.	switch(config)# 8021x misc reauthperiod 3000
8021x portstate [disable | reject | accept | authorize]	**I**	Use the 802.1x port state interface configuration command to set the state of the selected port.	switch(config)#interface fastethernet 3 switch(config-if)#8021x portstate accept
show 8021x	**E**	Display a summary of the 802.1x properties and also the port sates.	switch>show 8021x
no 8021x	**G**	Disable 802.1x function	switch(config)#no 8021x

5.13 Commands Set List—TFTP command set

Commands	Level	Description	Defaults Example
backup flash:backup_cfg	**G**	Save configuration to TFTP and need to specify the IP of TFTP server and the file name of image.	switch(config)#backup flash:backup_cfg
restore flash:restore_cfg	**G**	Get configuration from TFTP server and need to specify the IP of TFTP server and the file name of image.	switch(config)#restore flash:restore_cfg
upgrade flash:upgrade_fw	**G**	Upgrade firmware by TFTP and need to specify the IP of TFTP	switch(config)#upgrade lash:upgrade_fw

		server and the file name of image.	

5.14 Commands Set List—SYSLOG, SMTP, EVENT command set

Commands	Level	Description	Example
systemlog ip [IP address]	G	Set System log server IP address.	switch(config)# systemlog ip 192.168.1.100
systemlog mode [client|server|both]	G	Specified the log mode	switch(config)# systemlog mode both
show systemlog	E	Display system log.	Switch>show systemlog
show systemlog	P	Show system log client & server information	switch#show systemlog
no systemlog	G	Disable systemlog functon	switch(config)#no systemlog
smtp enable	G	Enable SMTP function	switch(config)#smtp enable
smtp serverip [IP address]	G	Configure SMTP server IP	switch(config)#smtp serverip 192.168.1.5
smtp authentication	G	Enable SMTP authentication	switch(config)#smtp authentication
smtp account [account]	G	Configure authentication account	switch(config)#smtp account User
smtp password [password]	G	Configure authentication password	switch(config)#smtp password
smtp rcptemail [Index] [Email address]	G	Configure Rcpt e-mail Address	switch(config)#smtp rcptemail 1 Alert@test.com
show smtp	P	Show the information of SMTP	switch#show smtp
no smtp	G	Disable SMTP function	switch(config)#no smtp

event device-cold-start [Systemlog|SMTP|Both]	**G**	Set cold start event type	switch(config)#event device-cold-start both
event authentication-failure [Systemlog|SMTP|Both]	**G**	Set Authentication failure event type	switch(config)#event authentication-failure both
event O-Ring-topology-change [Systemlog|SMTP|Both]	**G**	Set s ring topology changed event type	switch(config)#event ring-topology-change both
event systemlog [Link-UP|Link-Down|Both]	**I**	Set port event for system log	switch(config)#interface fastethernet 3 switch(config-if)#event systemlog both
event smtp [Link-UP|Link-Down|Both]	**I**	Set port event for SMTP	switch(config)#interface fastethernet 3 switch(config-if)#event smtp both
show event	**P**	Show event selection	switch#show event
no event device-cold-start	**G**	Disable cold start event type	switch(config)#no event device-cold-start
no event authentication-failure	**G**	Disable Authentication failure event typ	switch(config)#no event authentication-failure
no event O-Ring-topology-change	**G**	Disable O-Ring topology changed event type	switch(config)#no event ring-topology-change
no event systemlog	**I**	Disable port event for system log	switch(config)#interface fastethernet 3 switch(config-if)#no event systemlog
no event smpt	**I**	Disable port event for SMTP	switch(config)#interface fastethernet 3 switch(config-if)#no event smtp
show systemlog	**P**	Show system log client & server information	switch#show systemlog

5.15 Commands Set List—SNTP command set

Commands	Level	Description	Example
sntp enable	G	Enable SNTP function	switch(config)#sntp enable
sntp daylight	G	Enable daylight saving time, if SNTP function is inactive, this command can't be applied.	switch(config)#sntp daylight
sntp daylight-period [Start time] [End time]	G	Set period of daylight saving time, if SNTP function is inactive, this command can't be applied. Parameter format: [yyyymmdd-hh:mm]	switch(config)# sntp daylight-period 20060101-01:01 20060202-01-01
sntp daylight-offset [Minute]	G	Set offset of daylight saving time, if SNTP function is inactive, this command can't be applied.	switch(config)#sntp daylight-offset 3
sntp ip [IP]	G	Set SNTP server IP, if SNTP function is inactive, this command can't be applied.	switch(config)#sntp ip 192.169.1.1
sntp timezone [Timezone]	G	Set timezone index, use "show sntp timzezone" command to get more information of index number	switch(config)#sntp timezone 22
show sntp	P	Show SNTP information	switch#show sntp
show sntp timezone	P	Show index number of time zone list	switch#show sntp timezone
no sntp	G	Disable SNTP	switch(config)#no sntp

		function	
no sntp daylight	**G**	Disable daylight saving time	switch(config)#no sntp daylight

5.16 Commands Set List—O-Ring command set

Commands	Level	Description	Example
Ring enable	**G**	Enable O-Ring	switch(config)# ring enable
Ring master	**G**	Enable ring master	switch(config)# ring master
Ring couplering	**G**	Enable couple ring	switch(config)# ring couplering
Ring dualhoming	**G**	Enable dual homing	switch(config)# ring dualhoming
Ring ringport [1st Ring Port] [2nd Ring Port]	**G**	Configure 1st/2nd Ring Port	switch(config)# ring ringport 7 8
Ring couplingport [Coupling Port]	**G**	Configure Coupling Port	switch(config)# ring couplingport 1
Ring controlport [Control Port]	**G**	Configure Control Port	switch(config)# ring controlport 2
Ring homingport [Dual Homing Port]	**G**	Configure Dual Homing Port	switch(config)# ring homingport 3
show Ring	**P**	Show the information of O-Ring	switch#show ring
no Ring	**G**	Disable O-Ring	switch(config)#no ring
no Ring master	**G**	Disable ring master	switch(config)# no ring master
no Ring couplering	**G**	Disable couple ring	switch(config)# no ring couplering
no Ring dualhoming	**G**	Disable dual homing	switch(config)# no ring dualhoming

Technical Specifications

ORing Switch Model	RES-P3242GCL SERIES-LV	RES-P3242GCL SERIES-MV	RES-P3242GCL SERIES-HV
Physical Ports			
10/100 Base-T(X) Ports in RJ45 Auto MDI/MDIX in back	**24**		
Gigabit combo port with 10/100/1000Base-T(X) and 1000Base-X SFP in back	**2**		
RS-232 Serial Console Port in back	RS-232 console cable. 9600bps, 8, N, 1		
Technology			
Ethernet Standards	IEEE 802.3 for 10Base-T IEEE 802.3u for 100Base-TX IEEE 802.3ab for 1000Base-T IEEE 802.3z for 1000Base-X IEEE 802.3x for Flow control IEEE 802.3ad for LACP (Link Aggregation Control Protocol) IEEE 802.1D for STP (Spanning Tree Protocol) IEEE 802.1p for COS (Class of Service) IEEE 802.1Q for VLAN Tagging IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol) IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol) IEEE 802.1X for Authentication IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)		
MAC Table	8192 MAC addresses		
Priority Queues	4		
Processing	Store-and-Forward		
Switch Properties	Switching bandwidth : 8.8Gbps Max. Number of Available VLANs:4096 IGMP multicast groups: 1024 Port rate limiting: User Define		
Security Features	Enable/disable ports, MAC based port security ACL supported Port based network access control (802.1x) VLAN (802.1q) to segregate and secure network traffic Radius centralized password management SNMP v1/v2c/v3 encrypted authentication and access security		
Software Features	STP/RSTP/MSTP (IEEE 802.1D/w/s) Redundant Ring (O-Ring) with recovery time less than 10ms over 250 units TOS/Diffserv supported Quality of Service (802.1p) for real-time traffic VLAN (802.1Q) with VLAN tagging and GVRP supported IGMP Snooping for multicast filtering Port configuration, status, statistics, monitoring, security SNTP for synchronizing of clocks over network Support **PTP Client** (Precision Time Protocol) clock synchronization DHCP Server / Client support Port Trunk support MVR (Multicast VLAN Registration) support		
Network Redundancy	O-Ring Open-Ring O-RSTP STP RSTP MSTP		
Warning / Monitoring System	Relay output for fault event alarming Syslog server / client to record and view events Include SMTP for event warning notification via email Event selection support		

LED Indicators In Front And Back			
Power indicator	Green : Power LED x 2		
System Ready Indicator	Green : Indicate system ready. Blinking for system is upgrading firmware.		
Ring Master Indicator	Green : Indicate system operated in O-Ring Master mode		
O-Ring Indicator	Green : Indicate system operated in O-Ring mode Blinking to indicate Ring is broken.		
Fault indicator	Amber : Indicate unexpected event occurred		
10/100Base-T(X) RJ45 port indicator	Green at left for port Link/Act. Amber at right for 100Mbps indicator		
10/100/1000Base-T(X) RJ45 port indicator with combo port	Green at down for port Link/Act		
1000Base-X SFP port indicator with combo port	Green at up for port Link/Act		
Fault Contact			
Relay	Relay output to carry capacity of 1A at 24VDC		
Power			
Redundant Input power	Dual 12 ~ 36VDC power inputs	Dual 36 ~ 72VDC power inputs	Dual 88 ~300VDC/100 ~ 240VAC power inputs
Power consumption (Typ.)	18 Watts		
Overload current protection	Present	Present	Present on terminal block
Physical Characteristic			
Dimension (W x D x H)	443.7(W) x 262.7(D) x 44(H) mm (17.46 x 10.34 x 1.73 inch)		
Weight (g)	TBD	TBD	3890 g
Environmental			
Operating Temperature	-40 to 85°C (-40 to 185°F)		
Operating Humidity	5% to 95% Non-condensing		
Regulatory Approvals			
Power Automation	IEC 61850-3, IEEE 1613		
EMI	FCC Part 15, CISPR (EN55022) class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)		
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11		
Warranty	5 years		