

# CERIO Corporation

## CS-2008G

### 8 Port 10/100/1000M Gigabit Web Managed Switch



## User's Manual

### **FCC Warning**

This device has been tested and found to comply with limits for a Class A digital device, pursuant to Part 2 and 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiates radio frequency energy and, if not installed and used in accordance with the user's manual, may cause interference in which case user will be required to correct the interference at his own expense.

### **CE Mark Warning**

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

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# 1. Introduction

CERIO CS-2000 Series Model: **CS-2008G** is a powerful high-performance 8 port 10/100/1000Mbps layer 2 web managed switch. This device supports port base IEEE802.1Q VLAN Tagging Port base VLAN, IGMP snooping, IEEE802.1p port-based QoS, and Link Aggregation Control Protocol (LCAP). CS-2008G is a compact layer 2 desktop switch that provides reliable performance and easy management of auto-negotiation speeds.

CERIO's **CS-2008G** Web Managed Switch is ideal for minimizing network downtime, connecting subnets for improved performance, and enabling the bandwidth demanded for multimedia and imaging applications. **CS-2008G** effectively reduces operational costs by allowing network administrators to remotely access and monitor their network, ultimately eliminating the need for constant on-site maintenance staff. **CS-2008G's** layer 2 web managed design also increases network security by providing enhanced network control through port management and visible MAC table addresses/clients. This device's high feature and high performance design, paired with an easy to use web interface, effectively improves both network management and efficiency for small and medium sized applications.

## 1.1 Feature

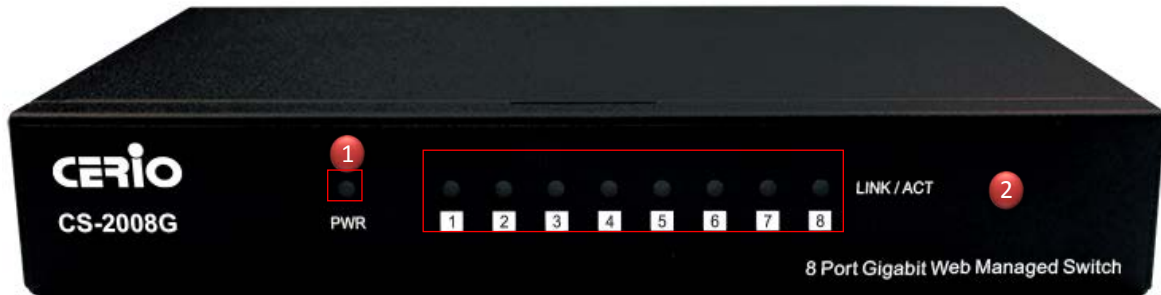
- Complying with IEEE 802.3 10Base-T, IEEE 802.3u 100Base-TX, IEEE 802.3ab 1000Base-T, IEEE 802.3az EEE
- 8port 10/100/1000Mbps TX Auto-Negotiation Ethernet Switch
- Full/Half-Duplex capability on each TX port , Auto-learning networking configurations
- Supporting the flow control: back pressure for Half-duplex and IEEE 802.3x for Full-duplex mode
- Supports store & forward operations
- Non-blocking & Non-head-of-line blocking full-wire speed forwarding
- Supports TP interface Auto MDIX function for auto TX/RX swap

- Automatic Source MAC Address Learning and Aging
- Provides 9K Jumbo frames to improve network utilization of a large file transfers
- Supports up to 8K MAC addresses
- Up to 1Mb Packet Buffer size
- VLAN and IEEE802.1Q tag-base VLAN based on ports & VIDs; add/remove/modify tag
- Supports bandwidth control to set control traffic limits (inflow and outflow) for each port
- IEEE802.3ad Link Aggregation Port trunking ( LACP ) and Port Mirroring
- Provides IGMP snooping function
- Supports IEEE802.1p-based QoS, Port-based QoS, and Scheduling Method for WRR
- Web-based management interface

## 1.2 Package Contents

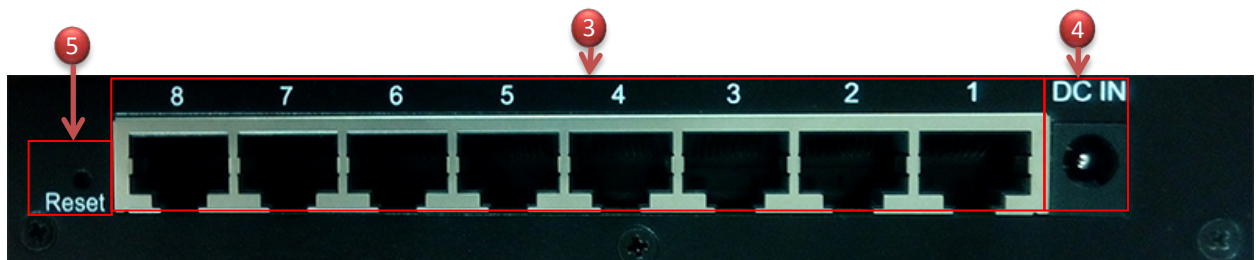
<b>CS-2008G Main Unit</b>	<b>x1</b>
<b>CD Manual</b>	<b>x1</b>
<b>Power Adapter</b>	<b>x1</b>
<b>Warranty Card</b>	<b>x1</b>

## 1.3 Front Panel



- 1) Power and system status LED light.
- 2) 8 Port Ethernet status LED light.

## 1.4 Rear Panel Layout



- 3) 8 (RJ-45) Giga Ethernet Ports.
- 4) DC input (+5V 0.6A).
- 5) Hardware reset button.

## 2. Software Configuration

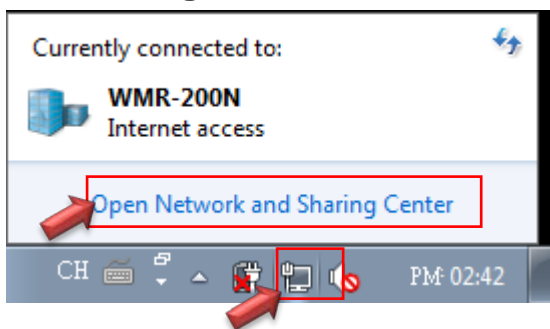
CS-2008G supports web-based configuration. Upon the completion of hardware installation, CS-2008G-8P can be configured through a PC/NB by using its web browser such as Internet Explorer 6.0 or later.

Set the IP segment of the administrator's computer to be in the same range as CS-2008G for accessing the system. Do not duplicate the IP Address used here with IP Address of CS-2008G or any other device within the network. *Please refer to the following steps*

### 2.1 Example of Segment: (Windows 7)

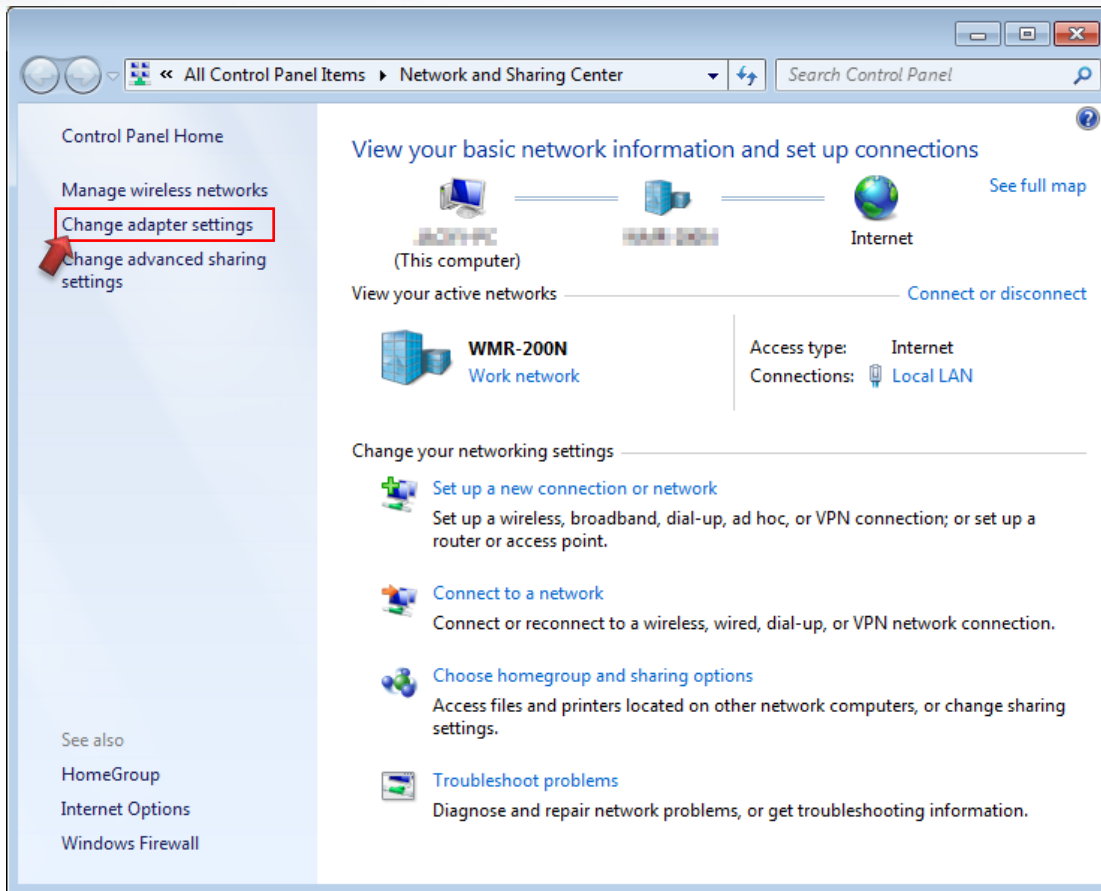
#### Step 1 :

Please click on the computer icon in the bottom right window, and click “**Open Network and Sharing Center**”



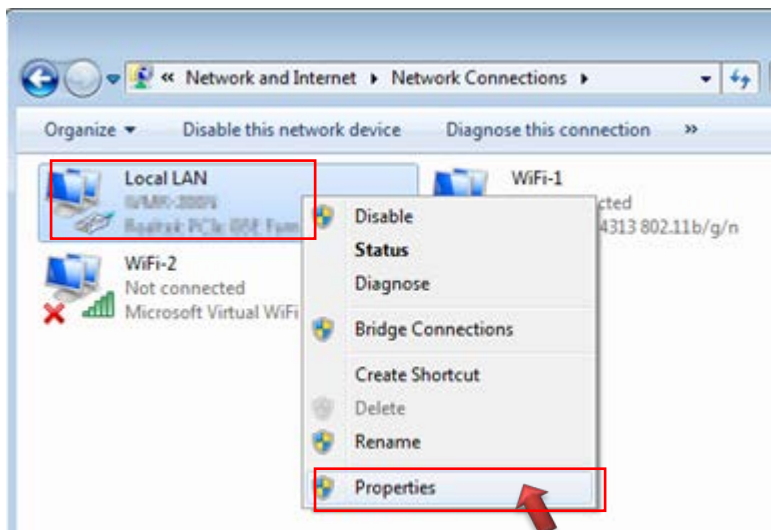
#### Step 2 :

In the Network and Sharing Center page, click on the left side of “**Change adapter setting**” button



**Step 3 :**

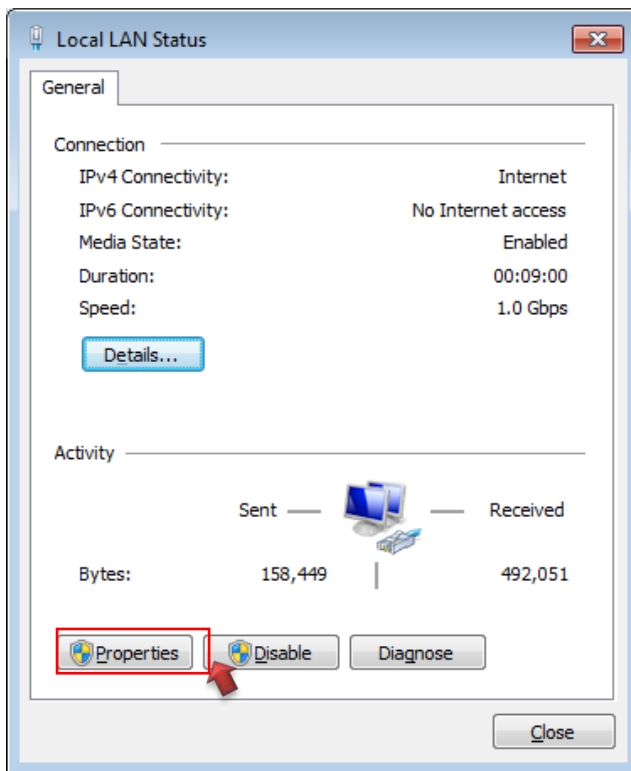
In “Change adapter setting” Page, right click on Local LAN then select “Properties”





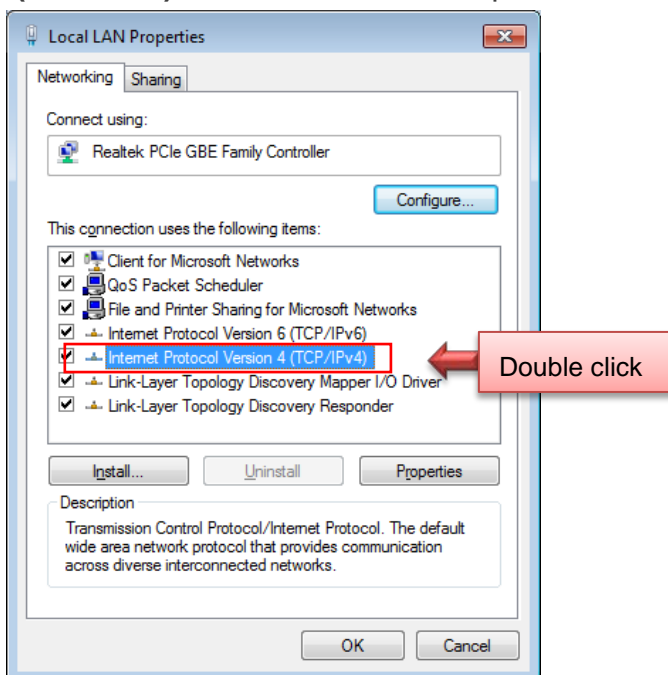
**Step 4 :**

In the “**Properties**” page, click the “**Properties**” button to open TCP/IP setting



**Step 5 :**

In Properties page for setting IP addresses, find “**Internet Protocol Version 4 (TCP/IPv4)**” and double click to open TCP/IPv4 Properties window

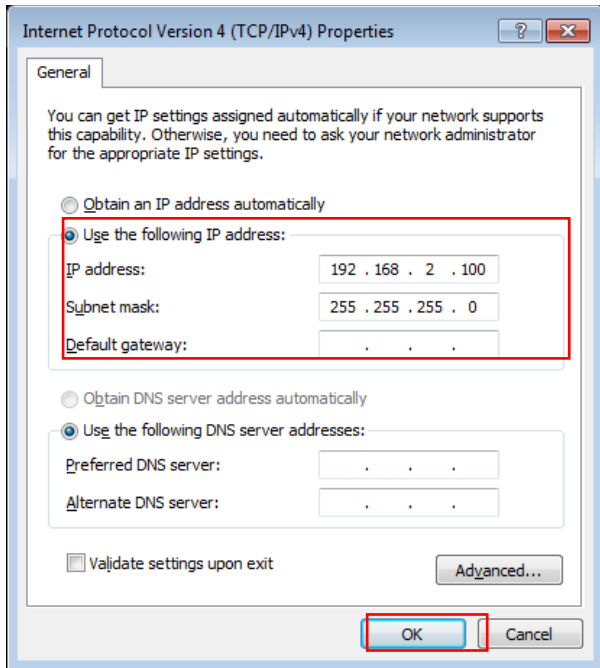


**Step 6 :**

Select **“Use the following IP address”**, and fix in IP Address to: 192.168.2.X  
*ex. The X is any number from 1 to 253*

Subnet mask : 255.255.255.0

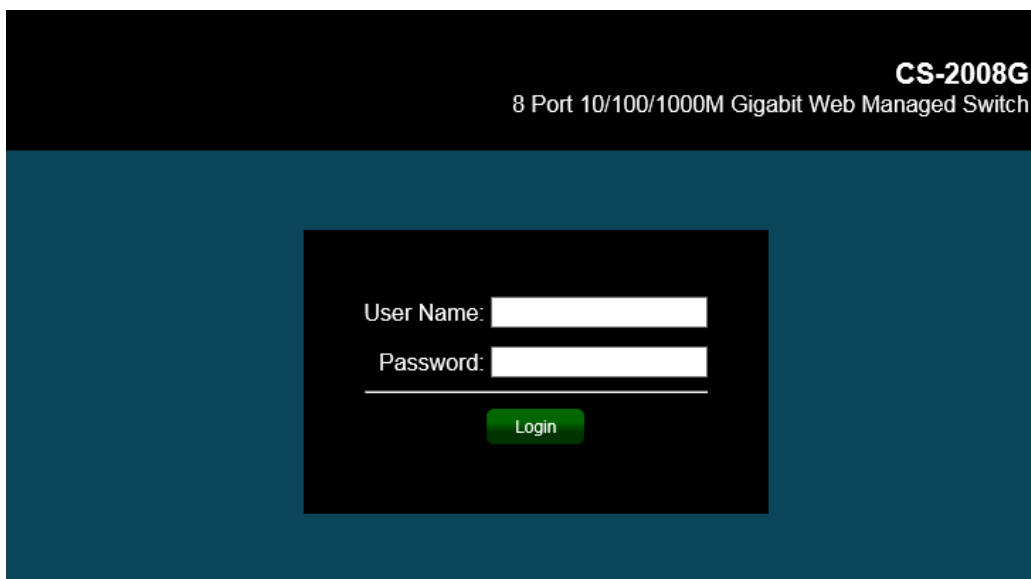
And Click **“OK”** to complete fixing the computer IP settings



**Step 7 :**

**Open Web Browser**

Without a valid certificate, users may encounter the following problem in IE7 when they try to access system's WMI (<https://192.168.2.200>). There will be a **“Certificate Error”**, because the browser treats system as an illegal website.



System login Overview page will appear after successful login.

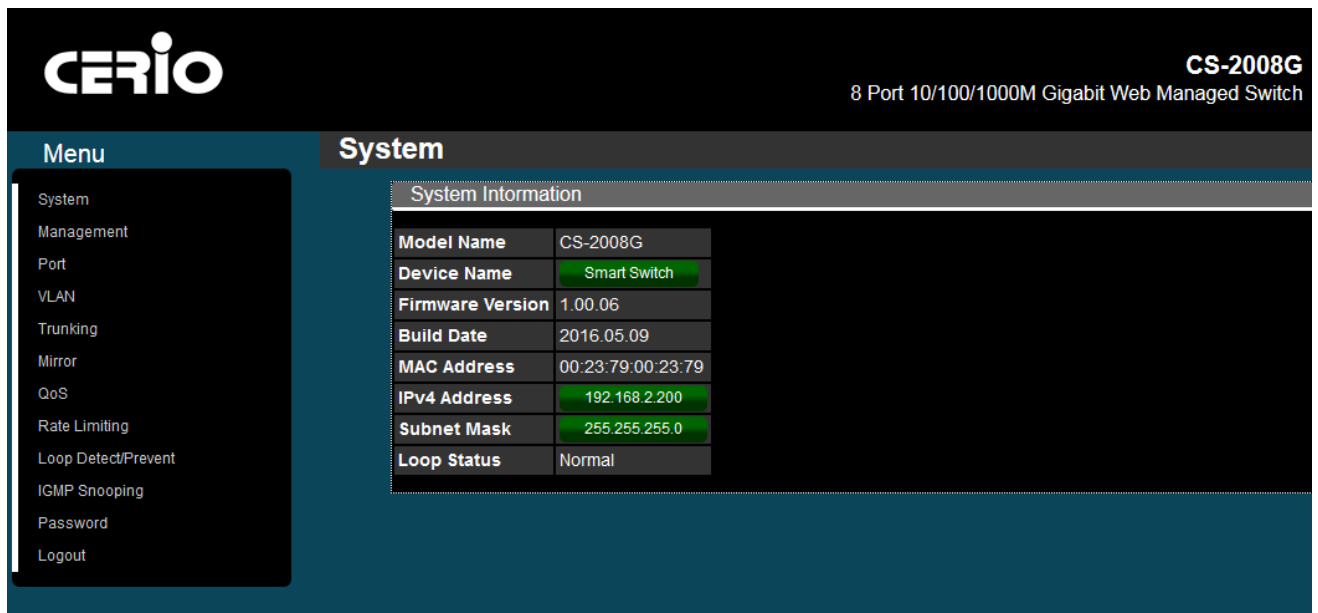
## 2.2 System login

The **CS-2008G** web switch default IP is 192.168.2.200 (enter into browser URL bar) into the management page as follows, please enter Username and password

- **Default IP Address:** 192.168.2.200
- **Default Username and Password**

<b>Management Account</b>	Root Account
<b>Username</b>	root
<b>Password</b>	default

After logging in the page will display system information.



The screenshot shows the CERIO web management interface for a CS-2008G switch. The top header includes the CERIO logo and the device model name 'CS-2008G' with the description '8 Port 10/100/1000M Gigabit Web Managed Switch'. A left-hand menu lists various configuration options such as System, Management, Port, VLAN, Trunking, Mirror, QoS, Rate Limiting, Loop Detect/Prevent, IGMP Snooping, Password, and Logout. The main content area is titled 'System' and contains a 'System Information' table with the following details:

System Information	
Model Name	CS-2008G
Device Name	Smart Switch
Firmware Version	1.00.06
Build Date	2016.05.09
MAC Address	00:23:79:00:23:79
IPv4 Address	192.168.2.200
Subnet Mask	255.255.255.0
Loop Status	Normal

## Side Panel Functions

### 3. System

The page administrator can monitor switch information and modify network IP / mask.

System Information	
Model Name	CS-2008G
Device Name	Smart Switch
Firmware Version	1.00.06
Build Date	2016.05.09
MAC Address	8C:4D:EA:00:11:22
IPv4 Address	192.168.2.200
Subnet Mask	255.255.255.0
Loop Status	Normal

- **Model Name:** Display switch model name.
- **Device Name:** Administrator can modify the system name.
- **Firmware Version:** Display system firmware version.
- **Build Date:** Display firmware release date.
- **MAC Address:** Display the system MAC Address.
- **IPv4 Address:** Display system IP address of the current, administrator can click the button to change system IP address.
- **Subnet Mask:** Display network Mask, administrator can click the button to change Mask.
- **Loop Status:** Display network infrastructure whether there loop. (reference 11 Loop function)

## 4. Management

This page administrator can reboot the system or reset the system to default settings. Users can also backup or restore device settings, and also upgrade firmware from this page.

The screenshot displays a web interface with three main sections:

- System:** Contains two buttons: "Reset" (labeled "Reset to default:") and "Reboot" (labeled "Reboot system:").
- Configuration Restore/Backup:** Includes a "Path:" input field, a "Select file:" button with a file browser icon and the text "未選擇檔案。", a "Restore" button, and a "Backup system Profile:" button with a "Backup" label.
- Firmware Upgrade:** Includes a "Path:" input field, a "Select firmware file:" button with a file browser icon and the text "未選擇檔案。", and an "Upgrade" button.

### System

- **Reset to default:** Administrator can click the button to reset system default.
- **Reboot system:** Administrator can click the button to reboot system.

### Configuration

- **Path:** Display path for the restore config file.
- **Select file:** Administrator can click button to find the restore config file in the PC.
- **Backup system Profile:** Administrator can click the button to backup system profile.

### Firmware Upgrade

- **Path:** Display path for the firmware file.
- **Select firmware file:** Administrator can click button to find the firmware file in the PC.

## 5. Port

Administrator can monitor link rate and Tx/Rx flow status.

Port Status			
Port	Link Status	TX	RX
1	0 Mbps	0	0
2	0 Mbps	0	0
3	0 Mbps	0	0
4	0 Mbps	0	0
5	1000 Mbps	274	878
6	0 Mbps	0	0
7	0 Mbps	0	0
8	0 Mbps	0	0

[Clear Counters](#)

- **Clear Counters:** Administrator can click the button to recalculate flow status.

## 6. VLAN

The VLAN function administrator can set IEEE 802.1q Tag Based VLAN or Port Based VLAN. System default is tag based VLAN.

### IEEE 802.1Q VLAN

**Select VLAN Type**

IEEE 802.1Q VLAN

Port-Based VLAN

**PVID Configurations**

Apply

Port	01	02	03	04	05	06	07	08
PVID	1	1	1	1	1	1	1	1

**IEEE 802.1Q VLAN Configurations**

Maximum number of IEEE 802.1Q VLAN : 8 Create New VLAN

VLAN ID	Non-Member		Tag Egress Member		Untag Egress Member		Modify	Delete
	01	02	03	04	05	06		
1							Modify	Delete

Click on bottom to change member state or remove vlan.

- **PVID:** Administrator can set Port tag VLAN ID
- **802.1Q VLAN:** Administrator can set tag number for 802.1Q VLAN.

### Port-Based VLAN

Administrator can set Group for Port VLAN

**Change VLAN Type**

IEEE 802.1Q VLAN  
 Port-Based VLAN

Maximum number of Port-Based VLAN : 4 Apply Add VLAN

Group ID	Member Port								Delete
	01	02	03	04	05	06	07	08	
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Delete

Click on checkbox to change group member.  
A port can belong to only one group !

## 7. Trunking

The trunking function supports 802.3ad (LACP, Link Aggregation Control Protocol). Link Aggregation Control Protocol (LACP) can aggregate multiple Ethernet ports together to form a logical aggregation group. To upper layer entities, all the physical links in an aggregation group are a single logical link.

**LACP Setup**

LACP Global State	Enable ▾	
Link Aggregation Algorithm	MAC SA ▾	
Link Group Activity	Active ▾	
Link Group Member	Port 7	Port 8
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Apply

If Trunking enable, Please verify VLAN configurations in trunk port.

- **LACP Global State:** Administrator can Enable/Disable the function.
- **Link Aggregation Algorithm:** Administrator can select SA or DA or SA+DA for the MAC Frame.

**MAC DA:** Destination Address



Notice

**MAC SA:** Source Address

**Layer2 Packet Frame :** The following example

Preamble	SFD	DA	SA	Ether type	Payload	.....
----------	-----	----	----	------------	---------	-------

- **Link Group Activity:** Administrator can select active/passive of the Link Group Activity.



Notice

To properly use LACP, the two switches must have one switch enable “**active**” function or both enable “**active**”, Administrator can’t set “**passive**” in the two switch

- **Link Group Member:** If LACP function is enabled, the Link Group member will be auto-displayed.



## 8. Mirror

Port mirroring function can mirror Ingress/Egress traffic, the packet can mirror to Destination port and for analysis

The screenshot shows the 'Mirror Configurations' interface. The 'Mirror Port setup' section is highlighted. It includes an 'Enable Mirror' checkbox, a table for configuration, and an 'Apply' button.

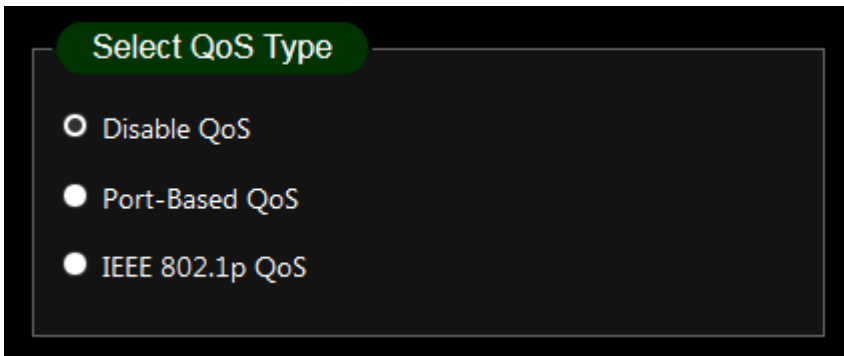
Mirror Direction	Monitor Port	Mirrored Port List
Ingress	Port 8	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8

- **Enable Mirror:** Administrator can check to start mirror function
- **Monitor Port:** Administrator can select one for monitor port.
- **Mirror Direction:** Administrator can select mirrored type for ingress/Egress or Both.
- **Mirrored Port List:** Administrator can select plural for mirrored Ports.

## 9. QoS

Quality of Service (QoS) prioritizes network traffic and manages available bandwidth so that the most important traffic goes first. QoS is implemented as rules or policies that prioritize packets, optionally change information in the packet header, and assign them to outbound port queues based on their priority.

Administrator can select disable service or 802.1p/Port-Based QoS function. The default is Disables QoS.



Port	1	2	3	4	5	6	7	8	weight
Queue0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1
Queue1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2
Queue2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4
Queue3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8

### Select QoS Type

- **Disable QoS:** Administrator can disable QoS function.
- **Port-Based QoS:** Administrator can use Port-Based mode to traffic management.
- **IEEE 802.1q QoS:** Administrator can use IEEE 802.1q mode to traffic management.

### Port-Based QoS:

Administrator can set Queue (weight) QoS by Port.

Port	1	2	3	4	5	6	7	8	weight
Queue0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1
Queue1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2
Queue2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4
Queue3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8



Queue0 is Low Priority, Queue3 is High Priority.

### IEEE 802.1q QoS

Administrator can set Queue (weight) QoS by Tag VLAN.

Port	1	2	3	4	5	6	7	8	weight
Queue0	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1
Queue1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2
Queue2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	4
Queue3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	8



Queue0 is Low Priority, Queue3 is High Priority.

## 10. Rate Limiting

The rate limiting function can be configured to limit the rate of traffic received on a particular interface.

Administrator can to click “**Edit**” button to set rate limiting for each ports.

Port	Ingress rate	Engress rate
1	no limit	no limit
2	no limit	no limit
3	no limit	no limit
4	no limit	no limit
5	no limit	no limit
6	no limit	no limit
7	no limit	no limit
8	no limit	no limit

**Edit**

Port	Ingress rate	Engress rate
1	no limit ▾	no limit ▾
2	no limit ▾	no limit ▾
3	no limit ▾	no limit ▾
4	no limit ▾	no limit ▾
5	no limit ▾	no limit ▾
6	no limit ▾	no limit ▾
7	no limit ▾	no limit ▾
8	no limit ▾	no limit ▾

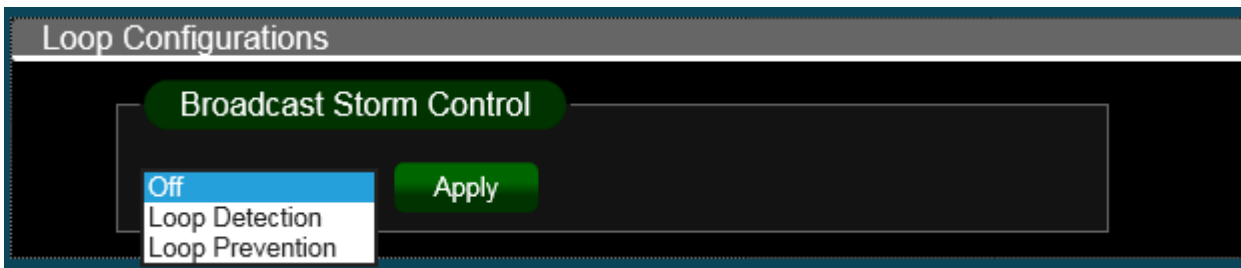
**Apply**

- **Port:** Display Port list.
- **Ingress/ Egress rate:** Administrator can set ingress or Egress for rate limiting.

## 11. Loop Detection / Prevention

Loop detection / Prevention can be used in a network topology to prevent or detect Layer 2 loops that occur due to misconfigurations.

When a loop occurs, Administrator can go to check loop statuses (refer to section 3. System), and tick off port to stop loop.



- **Off:** Administrator can disable loop detection and prevention functions.
- **Loop Detection:** Administrators can select loop detection mode to detect network situation.(LDE regular flashing by loop Port)
- **Loop Prevention:** Administrators can select loop Prevention mode to prevent network looping. When Loop Prevention is enabled, the system can auto close one loop line.

## 12. IGMP Snooping

IGMP snooping is the process of listening to Internet Group Management Protocol (IGMP) network traffic. The feature allows a network switch to listen in on the IGMP conversation between hosts and routers. By listening to these conversations the switch maintains a map of which links need which IP multicast streams. Multicasts may be filtered from the links which do not need them and thus controls which ports receive specific multicast traffic.

The screenshot shows the 'IGMP Snooping Configurations' page. At the top, there is a title bar 'IGMP Snooping Configurations'. Below it, a section titled 'IGMP Snooping' contains a checked checkbox for 'Enable IGMP Snooping'. Underneath, there is a label 'IGMP Static Router Port:' followed by a dropdown menu currently showing 'Port 7'. A green 'Apply' button is located below the dropdown. At the bottom of the configuration area, there are three tabs: 'Multicast Group', 'Port', and 'Vid'. A note at the bottom of the interface states: 'Note: When LACP function is enable, the last two port can not set to " Static Router Port ".'

- **Enable IGMP Snooping:** To alleviate the burden of IGMP queries.
- **IGMP Static Router Port:** Administrator can choose the link router port.



When LACP function is enable, the last two port (7 & 8) can't be set to "Static Router Port ".

## 13. Password

Administrator can change Switch login password. The default login password is **default**

The screenshot shows the 'Change Password' page. It features three input fields: 'Old Password:', 'New Password:', and 'Confirm New Password:'. A green 'Save' button is positioned below the input fields. A note at the bottom of the interface states: 'Note: Password can only use "a-z","A-Z","0-9" and the length is at least 4, max is 15.'

## 14. Logout

Click the logout button to logout of the management page

## Specifications

### Standards & Hardware Specifications

	IEEE 802.3 10Base-T
	IEEE 802.3u 100Base-TX,
	IEEE 802.3ab 1000Base-T
<b>Standards Conformance</b>	IEEE 802.3az EEE
	IEEE 802.1p QoS
	IEEE 802.1Q VLAN Tag
	IEEE 802.3ad Link Aggregation
<b>Port Configuration</b>	8 ports RJ-45 connectors for 10/100/1000 BASE-T
<b>Media Access Protocol</b>	CSMA / CD
<b>Network Media</b>	10BASE -T: UTP Cat. 3 or up, 100BASE-TX: UTP Cat. 5 or up, 1000BASE-T: UTP Cat. 5 or up
<b>Transmission Method</b>	Store and Forward
<b>MAC Address Table</b>	8K
<b>Built-in Buffer</b>	1Mb
<b>Data Transfer Rate</b>	10/100Mbps (Half-duplex), 20/200Mbps (Full-duplex) 1000Mbps ( Half-duplex), 2000Mbps (Full-Duplex)
<b>Jumbo Frames</b>	9k Jumbo Frames Support
<b>Auto MDI/MDIX</b>	Yes
<b>LED Indicators</b>	Per Port:(TX): Status * 8 , Per Unit: Power*1
<b>Internal Bus Speed</b>	16Gbps

### Switch Specifications

<b>Link Aggregation</b>	IEEE802.3ad LACP Link Aggregation Supported
<b>Port Mirroring</b>	Supported
<b>Bandwidth Control</b>	Supported
<b>QoS</b>	Support IEEE 802.1p QoS , Port-based QoS
<b>IGMP Snooping</b>	IGMP Snooping v1, v2
<b>VLAN</b>	IEEE802.1Q Tagging VLAN , Port-Based, Tag based VLAN

## Environmental & Mechanical Characteristics

<b>Power Consumption</b>	4 Watt
<b>Power Type</b>	DC-Jack : for bundled External Power adapter
<b>Power Requirement</b>	100~240 AC Power, External 5 VDC 1A DC Input
<b>Operating Temperature</b>	0° to 40° C
<b>Storage Temperature</b>	-40° to 70° C
<b>Operating Humidity</b>	10% to 90% non-condensing
<b>Storage Humidity</b>	5% to 90% non-condensing
<b>Dimension ( W x D x H )</b>	155 x 85 x 26 mm
<b>Weight</b>	330g
<b>Certification</b>	FCC, CE, RoHS-compliant