

# IES6210 Series

## Managed Industrial Ethernet Switch (Optional POE)

### User Manual

Version 01

Issue Date: 2019-01-22

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## Preface

Managed Industrial Ethernet Switch User Manual has introduced this series of switches:

- Product feature
- Network management method
- Network management relative principle overview

## Readers


This manual mainly suits for engineers as follows:





- Network administrator responsible for network configuration and maintenance
- On-site technical support and maintenance staff
- Hardware engineer

## Text Format Convention

Format	Description
“”	Words with "" represent the interface words. e.g.: "The port number".
>	Multi-level path is separated by ">". Such as opening the local connection path description: Open "Control Panel> Network Connection> Local Area Connection".
Light Blue Font	Represent the words click to achieve hyperlink. Font color as: "Light blue".
About This Chapter	The "About This Chapter" section provides links to each section and corresponding principles / operating chapters in this chapter.

## Icon Convention

Format	Description
 Notice	Reminder the announcements in the operation, improper

Format	Description
 Warning	operation may result in data loss or equipment damage.
 Note	Pay attention to the notes on the mark, improper operation may cause personal injury.
 Key	Make a necessary supplementary instruction for operation description.
 Tips	Configuration, operation, or tips for device usage.
	Pay attention to the operation or information to ensure success device configuration or normal working.

## Revision Record

Version NO.	Revision Date	Revision Description
01	2019-01-22	Product release
02	2019-02-20	Add Modbus TCP function

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# The First Part: Operation

## 1 Log in the Web Interface

### 1.1 WEB Browsing System Requirements

While using managed industrial Ethernet switches, the system should meet the following conditions.

Hardware and Software	System Requirements
CPU	Above Pentium 586
Memory	Above 128MB
Resolution	Above 1024x768
Color	Above 256 color
Browser	Above Internet Explorer 6.0
Operating System	Windows XP Windows 7

### 1.2 Setting IP Address of PC

The switch default management as follows:



IP Setting	Default Value
IP Address	192.168.1.254
Subnet Mask	255.255.255.0

While configuring the switch via Web:

- Before remote configuration, please make sure the route between computer and switch is reachable.
- Before local configuration, please make sure the computer IP address is on the same subnet as the one of switch.

Notes:

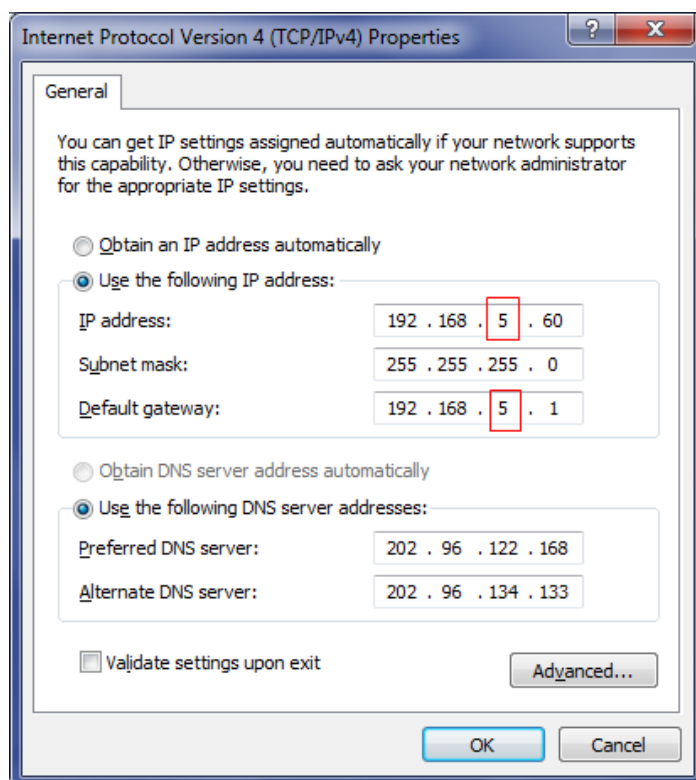
While first configuring the switch, if it is a local configuration mode, please make sure that the network segment of current PC is 1.

E.g.: Assume that the IP address of the current PC is 192.168.5.60, change the network segment "5" of the IP address to "1".

## Operation Steps

Amendment steps as follows:

- Step 1** Open "Control Panel > Network Connection> Local Area Connection> Properties> Internet Protocol Version 4 (TCP / IPv4)> Properties".
- Step 2** Change the selected "5" in red frame of the picture below to "1".



**Step 3** Click “OK”, IP address modifies successfully.

**Step 4** End.



**Notice**

In windows system, if user adopts the advanced configuration function of IP address and accesses the switch device via setting IP dummy address, the following managed functions can't be achieved: IEEE 802.1x polling.

## 1.3 Log in the Web Configuration Interface

### Operation Steps

Login in the web configuration interface as follow:

**Step 1** Run the computer browser.

**Step 2** On the browser's address bar, type in the switch addresses "http://192.168.1.254".

**Step 3** Click the “Enter” key.

**Step 4** Pop-up a window as the figure below, enter the user name and password on the login window.



Notes:

- The default username and password are “admin”, please strictly distinguish capital and small letter while entering.
- Default username and password have the administrator privileges.
- WebServer will provide 3 times opportunities to enter username and password. If enter the error information for 3 times, the browser will display a "Access denied" to reject access message. Refresh the page and try again.

**Step 5** Click "OK".

**Step 6** End.

After login in successfully, user can configure relative parameters and information according to demands.

Notes:

After login in the device, modify the switch IP address for usage convenience.

## 2 System Configuration

---

### 2.1 System Information

#### Function Description

In "System Information" page, user can check "Device Information" and "Port Info".

#### Operation Path

Open in order: "Main Menu > System Config > System Information".

#### Interface Description

Device information interface as follows:

Device Information				
Name:	IndustrialSwitch	Hardware Ver:	1.0.0	
Module:	ManagedSwitch	Firmware Ver:	2.0.0 build201811290AR	
Description:	10PORT	MAC Address:	00-22-6F-00-01-E3	
Serial No:	0012018000001	Contact Information:		
Port Information				
Port	Connection	Duplex	Speed	Type
01	LOS	HALF	10M	TX
02	LOS	HALF	10M	TX
03	LOS	HALF	10M	TX
04	LOS	HALF	10M	TX
05	LOS	HALF	10M	TX
06	LOS	HALF	10M	TX
07	LINK	FULL	100M	TX
08	LOS	HALF	10M	TX
G1	LOS	HALF	10M	Combo
G2	LOS	HALF	10M	Combo

The main element configuration description of device information interface:

Interface Element	Description
Name	Display the device name.
Module	Display the device model.
Description	Display characters description of the device.
Serial No.	SN code, product serial number.
Hardware Ver	Current hardware version information, pay attention to the hardware version limits in software version.
Firmware Ver	Current using software version information, updated software version has more functions.
MAC Address	Hardware address of device factory configuration.
Contact Information	Display the contact information of the device maintenance personnel.
Link status	Port connection state, display state as follows: <ul style="list-style-type: none"> <li>"LINK" represents connected port;</li> <li>"LOS" represents disconnected port.</li> </ul>
Port state	Port work state, display state as follows:

Interface Element	Description
	<ul style="list-style-type: none"> <li>"HALF" represents the corresponding port is in half-duplex state;</li> <li>"FULL" represents corresponding port is in full duplex state.</li> </ul>
Speed	<p>Current port link rate, valid after port connection, display speed as follows:</p> <ul style="list-style-type: none"> <li>10M;</li> <li>100M;</li> <li>1000M.</li> </ul>
Interface type	<p>Interface type, display port type as follows:</p> <ul style="list-style-type: none"> <li>Copper port;</li> <li>Combo</li> </ul>

The main element configuration description of network setting interface:

Interface Element	Description
IPv4	<p>IPv4 address access method, manual configuration and automatic acquisition.</p> <ul style="list-style-type: none"> <li>"Automatic Acquisition (DHCP)", automatic acquisition is open DHCP function; obtain the IP address of the device through HyperTerminal. Connect to INTERNET function to use NTP, please fill in the correct gateway and DNS address.</li> <li>"Manual Configuration", fill in the static IP address, user needs to manually fill in the IPV4 address and gateway.</li> </ul>
IPv4 address	<p>Manually enter device IP address and subnet mask information, such as: 10.0.0.0/2.</p>
Gateway	<p>Fill in the gateway address information of device, e.g.: 10.0.0.1.</p> <p>Notes: Connect to the Internet to use NTP, please fill in the correct and available gateway and DNS address.</p>

# 3 Port Configuration

## 3.1 Port Setting

### Function Description

On the "Port Setting" page, user can check port type, rate and connection state, set rate mode, duplex mode, port enable, flow control and other parameters.



Note

- Speed, duplex, flow control will take effect when the port is enabled.
- After selecting automated negotiation, speed and duplex will be gained via automated negotiation.

### Operation Path

Open in order: "Main Menu > Port Config > Port Setting".

### Interface Description

Port setting interface as follows:

Port Settings					
Port	Type	Speed	Duplex	Enable	Flow Control
01	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
02	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
03	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
05	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
06	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
07	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
08	Tx	AUTO	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G1	Combo	Auto-Detect	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G2	Combo	Auto-Detect	Full Duplex	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The main element configuration description of port setting interface:

Interface Element	Description
Port	Display the device port number.
Type	Support two kinds of interface types: <ul style="list-style-type: none"> <li>Copper port;</li> <li>Combo port.</li> </ul>
Speed	<p>Click the drop-down list box of “Speed” to select the port speed mode.</p> <p>Copper port:</p> <ul style="list-style-type: none"> <li>10M</li> <li>100M</li> <li>AUTO</li> </ul> <p>Combo:</p> <ul style="list-style-type: none"> <li>Auto-Detect</li> <li>1000 Base-X</li> <li>100 Base-FX</li> </ul> <p>Notes:</p> <p>All copper ports of the switch are MDI/MDIX self-adapting ports, and support automated negotiation speed mode.</p>
Duplex	<p>Click the drop-down list box of “Duplex” to select corresponding duplex mode of the port.</p> <p>Notes:</p> <p>When the speed mode is “AUTO”, the port will automatically match the opposite port mode, “Duplex” mode is disabled.</p>



Interface Element	Description
Enable	Enable Ethernet port. Note: If user doesn't check the port "Enable" checkbox, the port won't be connected to use.
Flow control	Tick the check box to enable the flow control function of the port. <ul style="list-style-type: none"> <li>Under full duplex mode, flow control method is IEEE 802.3x flow control.</li> <li>Under half duplex mode, flow control method is back pressure flow control.</li> </ul>

## 3.2 SFP DDM

### Function Description

On the "SFP DDM" page, the DDM (Digital Diagnostic Monitor) function is supported. User can monitor SFP parameters in real time, which has greatly facilitated the troubleshooting process of fiber link and lowered the cost of on-site debugging.

### Operation Path

Open in order: " Main Menu > Port Configuration > DDM".

### Interface Description

DDM interface as follows:

SFP DDM Monitor												
Port	Model Name	Wavelength (nm)	Vcc(V)		Temperature(°C)		Tx Power(dBm)		Rx Power(dBm)		Bias(mA)	
			Current	Max.	Current	Max/Min.	Current	Max/Min.	Current	Max/Min.	Current	Max/Min.
G1		0	0.00	0.00	0	0 / 0	-inf	-inf / -inf	0.00	0.00 / 0.00	0.00	0.00 / 0.00
G2		0	0.00	0.00	0	0 / 0	-inf	-inf / -inf	0.00	0.00 / 0.00	0.00	0.00 / 0.00

The main element configuration description of DDM interface:

Interface Element	Description
Port	The corresponding name of this device's Ethernet port
Model Name	This device's SFP type
Wavelength	Transmission wavelength of SFP module of the device port, unit is: nm.
Vcc (V)	The voltage that this device offers SFP. Its unit is V.

Interface Element	Description
	overvoltage could lead to the breakdown of CMOS device; under voltage would disable the normal operation of lasers.
Temperature	This device's SFP temperature. Its unit is °C. The operating temperature of this SFP module should be within the temperature range of normal operation.
Tx Power	Optical output power, referring to the output power of optical source in the sending end of optical module. The unit is dBm
RX Power	Optical input power, referring to the lowest optical power of receiving in certain rate and bit error rate. The unit is dBm.
Bias	The bias current of laser. Its unit is mA.

## 3.3 PoE Configuration

PoE (Power over Ethernet) means supplying power through Ethernet. It's a wired Ethernet power supply technology that enables electric power to transmit to terminal device through data line or free line.

PoE power supply system includes:

- PSE (Power-sourcing Equipment): PoE device that supplies powered device with power through Ethernet.
- PD (Powered Device): powered device like wireless AP (Access Point), POS machine, camera and so on.
- PoE power supply: PoE power supply powers the whole PoE system. The quantity of PD that connects to PSE is limited by the power of PoE power supply.

### Function Description

The "PoE Config" page mainly includes:

- PoE total power settings;
- PoE port power settings;
- Priority settings;
- PoE port enablement.

## Operation Path

Open in order: "Main Menu > Port Config > PoE Config".

## Interface Description

PoE configuration interface as follows:

POE Total Power Set

POE Total Power Set :  (1-240 ) W

Port	State	Class	Electricity(mA)	Voltage(V)	Power(W)	Max Power(W)	Enabled	Priority
*	---	---	---	---	---	10 W ▼	<input type="checkbox"/>	Low ▼
1	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
2	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
3	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
4	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
5	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
6	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
7	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼
8	Disconnect	0	0.00	0.00	0.00	15 W ▼	<input checked="" type="checkbox"/>	Low ▼

Apply

Cancel

The main element configuration description of PoE configuration interface:

Interface Element	Description
POE total power	The total power of all PoE ports that supply power.
Port	The PoE port number of the device.
State	The power state of PoE port.
Class	The PoE power class.
Electricity (mA)	The current size of PoE port power.
Voltage (V)	The voltage size of PoE port power.
Power (W)	The power size of PoE port power.
Max power (W)	The maximum output power limitation of configuring PoE port.
Enabled	Check the box to enable port PoE power function.
Priority	The priority configuration of PoE port power supply. Port power distribution priority with the constraint of gross power.

Interface Element	Description
	<ul style="list-style-type: none"> <li>High: high priority;</li> <li>Medium: medium priority;</li> <li>Low: low priority.</li> </ul> <p>Note:</p> <p>When the switch supplies power at nearly full capacity, it would first supply power to the PD device that connects to the port with High priority; then the PD device that connects to port with Medium priority.</p>

## 3.4 Bandwidth Management

### Function Description

On the page of “Bandwidth Management”, the device can achieve the port’s egress bandwidth settings and priority scheduling of ingress data packet.

### Operation Path

Open in order: “Main Menu > Port Configuration > Bandwidth Management”.

### Interface Description

Interface printscreen of bandwidth management as follows:

Current Location>>Main Menu>>Port Configuration>>Bandwidth Management

Egress							
Port	Rate	Port	Rate	Port	Rate	Port	Rate
01	1M	02	2M	03	4M	04	8M
05	----	06	----	07	----	08	----
G1	----	G2	----				

Ingress					
Port	Policy	Rate of Low Priority Queue	Rate of Normal Priority Queue	Rate of Medium Priority Queue	Rate of High Priority Queue
01	Broadcast,Multicast and flood unicast frames	128k	256K	512K	1M
02	Broadcast and Multicast only	256K	512K	1M	2M
03	All frames	512K	1M	2M	4M
04	Broadcast only	1M	2M	4M	8M
05	Broadcast only	----	----	----	----
06	Broadcast only	----	----	----	----
07	Broadcast only	----	----	----	----
08	Broadcast only	----	----	----	----
G1	Broadcast only	----	----	----	----
G2	Broadcast only	----	----	----	----

Note:

The Rate of Low Priority Queue can be set to 128K 256K 512K 1M 2M 4M 8M

Main elements configuration description of bandwidth management interface:

Interface Element	Description
Port	Port number of the device.
Rate	Egress bandwidth is the bandwidth when the port sends data. Notes: “----” represents no speed limit.
Policy	The data packets type of receiving bandwidth needs to be limited, options of drop-down list as follows: <ul style="list-style-type: none"> <li>• All frames: all kinds of data packets;</li> <li>• Broadcast, Multicast and flood unicast frames;</li> <li>• Broadcast and Multicast only;</li> <li>• Broadcast only.</li> </ul>
Rate of Low Priority Queue	Bandwidth settings of low priority queue.
Rate of Normal Priority Queue	Bandwidth settings of normal priority queue. The value could be the same to or twice of the bandwidth with the lowest priority.
Rate of Medium Priority Queue	Bandwidth settings of medium priority queue, the value could be the same to or twice of the bandwidth of normal priority queue.
Rate of High Priority Queue	Bandwidth settings of high priority queue, the value could be the same to or twice of the bandwidth of medium priority queue.

### Example: Bandwidth Settings

For example:

- Configure the egress bandwidth of port 1 as “4M”.
- Configure the ingress bandwidth of port 1 as “Broadcast only”, and set the bandwidth from low to high priority as follows: 1M, 2M, 4M, 8M.

### Operation Steps

- Step 1** Click “Main Menu > Port Configuration > Bandwidth Management”.
- Step 2** On the region of “Egress”, choose the egress bandwidth of port 1 as “4M”.
- Step 3** On the region of “Ingress”, conduct following operations on the row of port 1:
- a) Choose “Policy” as “Broadcast only”;

- b) Choose “Rate of Low Priority Queue” as “1M”;
- c) Choose “Rate of Normal Priority Queue” as “2M”;
- d) Choose “Rate of Medium Priority Queue” as “4M”;
- e) Choose “Rate of High Priority Queue” as “8M”.

**Step 4** Click “Apply”.

**Step 5** End.

# 4 Layer 2 Features

## 4.1 VLAN

VLAN (Virtual Local Area Network) is a communication technology that logically divides a physical LAN into multiple broadcast domains. Hosts in VLAN can directly communicate with each other, but two VLAN can't directly communicate with each other, which can limit the broadcast message in a VLAN. Using VLAN can bring following benefits to users.

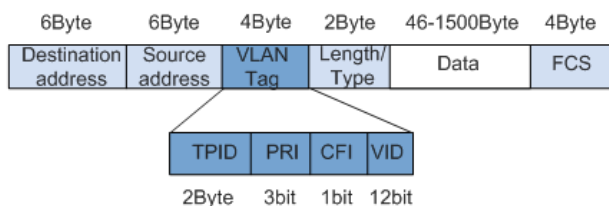
- Limit the broadcast domain;
- Increase the security of LAN;
- Improve the network stability;
- Flexibly construct virtual working team.

### Port VLAN

Port VLAN adopts different identifications to distinguish different VLAN. Adopting the same ID identification will cause internal member groups being replaced, new ID identification will establish new forwarding rules, and all ports must belong to one or more VLAN.

### IEEE802.1Q VLAN

Under the provisions of IEEE 802.1Q protocol, the device can add 4 bytes VLAN tag (Tag for short) between Source address and Length/Type fields of Ethernet data frame, identifying the VLAN information. As the picture below:



- TPID: Tag Protocol Identifier represents the data frame type, when the value is 0x8100, it represents the VLAN data frame of IEEE 802.1Q.
- PRI: Priority represents the 802.1p priority of data frame. Value range is 0-7, larger value represents higher priority. During network congestion, the switch will preferentially send data frame with higher priority.
- CFI: Canonical Format Indicator represents whether MAC address is packaged in standard format in different transmission media. 0 represents that MAC address is packaged in standard format.
- VID: VLAN ID represents the VLAN number of the data frame. VLAN ID value range is 0-4095. 0 and 4095 are reserved values of the protocol, so the valid value range of VLAN ID is 1-4094.

### Function Description

On the VLAN page, user can configure the following functions:

- Configure the port PVID;
- Create VLAN entry;
- Configure the port member type.

### Operation Path

Open in order: "Main Menu > L2 Feature > VLAN".

### Interface Description 1: Port-based VLAN

Port-based VLAN interface as follows:

VLAN Mode:	<input checked="" type="radio"/> Port-based VLAN	<input type="radio"/> IEEE 802.1Q VLAN				
VLAN Name:	<input type="text"/> (Range:1~64)					
Join Port:	01- <input type="checkbox"/> 02- <input type="checkbox"/> 03- <input type="checkbox"/> 04- <input type="checkbox"/> 05- <input type="checkbox"/> 06- <input type="checkbox"/> 07- <input type="checkbox"/> 08- <input type="checkbox"/> G1- <input type="checkbox"/> G2- <input type="checkbox"/>					
Operation:	<input type="button" value="Add / Edit"/> <input type="button" value="Delete"/> <input type="button" value="Apply"/>					
<table border="1"> <tr> <td>VLAN Name</td> <td>Join Port</td> </tr> <tr> <td>1</td> <td>01 02 03 04 05 06 07 08 G1 G2</td> </tr> </table>			VLAN Name	Join Port	1	01 02 03 04 05 06 07 08 G1 G2
VLAN Name	Join Port					
1	01 02 03 04 05 06 07 08 G1 G2					

The main elements configuration description of port-based VLAN interface:



Interface Element	Description
VLAN Mode	Choose VLAN type, options are: <ul style="list-style-type: none"> <li>Port-based VLAN</li> <li>IEEE 802.1Q VLAN</li> </ul>
VLAN name	Enter VLAN number in digital form. Note: Input range is 1~4094.
Join port	Choose VLAN member.
Operation	Add/edit, delete or save VLAN configuration information.

#### Instance: create port-based VLAN.

The steps of configuring port-based VLAN:

- Step 1** Open "Main Menu > L2 Feature > VLAN".
- Step 2** On the option box of "VLAN Mode", select "Port-based VLAN".
- Step 3** Enter VLAN table items in the textbox of "VLAN Name", such as fill in the figure "3" to represent VLAN3.
- Step 4** Select VLAN member on the check box of "Join Port", such as select port 2 and port 3.
- Step 5** Click "Add/Edit".
- Step 6** Click "Apply", port 2 and port 3 are divided into VLAN3, port 2 and port 3 that belong to the same VLAN can transmit data to each other.

#### Interface Description: VLAN based on 802.1Q

Interface screenshot of VLAN based on 802.1Q as follows:

Current Location>>Main Menu>>L2 Feature>>VLAN

VLAN Mode: ☐ Port-based VLAN ☒ IEEE 802.1Q VLAN

### VLAN Port Settings

Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08
Type:	Access	Access	Access	Access	Access	Access	Access	Trunk	Trunk
PVID:	1	1	1	1	1	2	2	2	2

### 802.1Q VLAN Settings

VID:

Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08
Type:	--	--	--	--	--	--	--	--	--

( "UnModified"-No need to modify the egress frame; "UnTagged" -No tag of the egress frame ; "Tagged" -Need to tag the egress frame ; " - - " -The port is not a VLAN member. )

Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
VID: 1	UnTagged	UnTagged	UnTagged	UnTagged	UnTagged	empty	empty	empty	empty	empty	empty
VID: 2	empty	empty	empty	empty	empty	empty	empty	UnTagged	UnTagged	UnTag	UnTag

Main elements configuration descriptions of VLAN interface:

Interface Element	Description
<b>VLAN Port Settings</b>	<b>Port type and PVID settings column</b>
Port	Port number of the device.
Type	<p>Configure the link type of port, there are two types as follows:</p> <ul style="list-style-type: none"> <li>Access: the port can only belong to 1 VLAN and is generally used for connecting user equipments.</li> <li>Trunk: the port can belong to multiple VLAN; it can receive and send multiple VLAN messages. And it's generally used for connecting network equipments.</li> </ul>
PVID	<p>PVID (Port Default VLAN ID) port default VLAN ID, value range is 1-4094.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>If the port type is "access", PVID will replace the</li> </ul>

Interface Element	Description
	<p>“VLAN ID” fields in the message.</p> <ul style="list-style-type: none"> <li>If the port type is “trunk” and message is untagged, PVID will replace the “VLAN ID” fields in the message.</li> <li>If the port type is “trunk” and message is tagged, the “VLAN ID” fields in the message will be reserved.</li> </ul>
<b>802.1Q VLAN Settings</b>	<b>802.1Q VLAN Entry Settings Column</b>
VID	<p>Port forwarding rule number, value range is 1-4094.</p> <p>Notes: As for two ports that belong to the same VID; two ports with the same “VLAN ID” can communicate with each other.</p>
Type	<p>There are three types of “VLAN ID” for data frames sent out by the port:</p> <ul style="list-style-type: none"> <li>Unmodify: when the data frame is sent out from the port, it will recover the “VLAN ID” of accessing to the switch.</li> <li>Untagged: remove the “VLAN ID” fields when the data frame is sent out from the port,</li> <li>Tagged: reserve “VLAN ID” fields when the data frame is sent out from the port.</li> </ul>
Modify All	Quickly and simultaneously modify all member types.
Add/Edit	Add configured VLAN to VLAN member list.
Delete	Delete a VLAN item in the selected member list.
Apply	Apply VLAN configuration information.

VLAN configuration operations are introduced from the following five aspects:

- Create VLAN
- Modify VLAN
- Delete VLAN
- VLAN configuration for all-purpose single ring
- Examples for typical VLAN configuration

#### Example: Create IEEE 802.1Q VLAN

Create a new IEEE 802.1Q VLAN.

Operation steps

**Step 1** Open “Main Menu > L2 Feature > VLAN”.

**Step 2** On the displayed VLAN settings interface, configure “Type” of each port in the column of “VLAN Port Settings”.

Notes:

All factory defaults of the port “Type” are “Access”.

**Step 3** In the column of “VLAN Port Settings”, enter the default VLAN “PVID” value of each port.

**Step 4** In the column of “802.1Q VLAN Settings”, enter “VID” value of VLAN entry to be created.

**Step 5** In the drop-down list of “Type”, choose the member type of each port.

**Step 6** Click “Add” button to add VLAN entry to the “Port”.

**Step 7** Click “Apply” button and reboot the device, and then VLAN creation is finished.

**Step 8** End.



Note

VLAN configuration will take effect after rebooting.

---

### Example: Modify IEEE 802.1Q VLAN

The operation can reconfigure the existing VLAN and change the “Type”, “Quantity”, etc.

Operation steps

**Step 1** Open “Main Menu > L2 Feature > VLAN”.

**Step 2** In the column of “802.1Q VLAN Settings”, click a VLAN entry to be modified in the “Port”, such as VLAN1. And then the type of VLAN1 will display in the option of current VLAN entry settings.

**Step 3** Modify the “VID” as required.

**Step 4** Modify the “Type” as required.

**Step 5** Click “Add” button.

**Step 6** A prompt box pops up.

**Step 7** Click “Yes” to add the modified VLAN entry to the list.

**Step 8** Click “Apply”.

**Step 9** Open “Main Menu > Basic Settings > Network & Reboot”.

**Step 7** On the column of “Device Reboot”, click the button of “Reboot”.

**Step 10** END.



Note

VLAN configuration will take effect after rebooting.

### Example: Delete IEEE 802.1Q VLAN

The operation can delete existing VLAN

Operation steps

- Step 1** Open “Main Menu > L2 Feature > VLAN”.
- Step 2** On the column of “VLAN Port Settings”, click a VLAN entry to be modified in the “Port”.
- Step 3** Click “Delete” button.
- Step 4** Click “Apply”.
- Step 5** Open “Main Menu > Basic Settings > Network & Reboot”.
- Step 8** On the column of “Device Reboot”, click the button of “Reboot”.
- Step 6** END.



Note

VLAN configuration will take effect after rebooting.

### Example: IEEE 802.1Q VLAN Configuration for the Single Ring



Note

VLAN of single ring means creating VLAN in the single ring to prevent too many data frames from entering the single ring, causing single ring blocking.

For example, create VLAN on the single ring composed of port 2~8, port G1 and G2, among which port 7 and port 8 are the ring network ports.

Operation steps as follows:

- Step 1** Open “Main Menu > L2 Feature > VLAN”.
- Step 2** On the column of “VLAN Port Settings”, configure the port 1 as management port.

Notes:

- Management port can manage and configure the switch; it must belong to the same VLAN to CPU port.

- Step 3** On the “Type” setting row of “VLAN Port Settings” column:
  - 1. Configure the “Type” of port 7 as “Trunk”.

2. Configure the "Type" of port 8 as "Trunk".
3. Configure the "Type" of port 2-6 as "Access".
4. Configure the "Type" of port G1 and G2 as "Access".

**Step 4** On the "PVID" setting row of "VLAN Port Settings" column:

1. Configure the "PVID" of port 2-8 as "2".
2. Configure the "PVID" of port G1 and G2 as "2".

**Step 5** On the "VID" setting row of "802.1Q VLAN Settings" column, configure the value of "VID" as 2.

**Step 6** On the "Type" setting row of "802.1Q VLAN Settings" column:

1. Configure the "Type" of port 2-6 as "Untagged".
2. Configure the "Type" of port 7 as "Tagged".
3. Configure the "Type" of port 8 as "Tagged".
4. Configure the "Type" of port G1 and G2 as "Untagged".

**Step 7** Click "Add".

**Step 8** Click "Apply".

**Step 9** Open "Main Menu > Basic Settings > Network & Reboot".

**Step 9** On the column of "Device Reboot", click the button of "Reboot".

**Step 10** END.

VLAN Mode: ☐ Port-based VLAN ☒ IEEE 802.1Q VLAN

---

**VLAN Port Settings**

Port:	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08
Type:	Access	Access	Access	Access	Access	Access	Access	Trunk	Trunk
PVID:	1	1	2	2	2	2	2	2	2

---

**802.1Q VLAN Settings**

VID:

Port:	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08
Type:	--	--	--	--	--	--	--	--	--

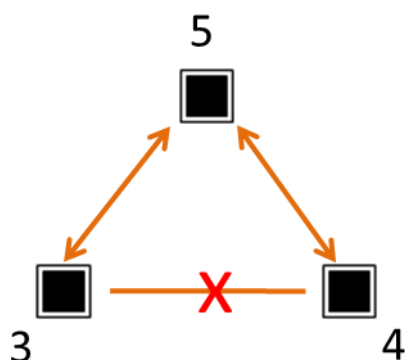
("UnModified"-No need to modify the egress frame; "UnTagged"-No tag of the egress frame; "Tagged"-Need to tag the egress frame; "--"-The port is not a VLAN member. )

---

Port:	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
VID: 1	UnTagged	UnTagged	empty	empty	empty	empty	empty	empty	empty	empty	empty
VID: 2	empty	empty	UnTagged	UnTagged	UnTagged	UnTagged	UnTagged	UnTagged	Tagged	Tagged	Tagged

### Example: Typical IEEE 802.1Q VLAN Configuration

Suppose that the switch port 3, 4 and 5 have the following requirements: Port 3 and Port 5 can communicate with each other. Port 4 and Port 5 can communicate with each other. But port 3 and Port 4 can't communicate with each other, as the picture below. Do not consider other ports, how to set the VLAN?



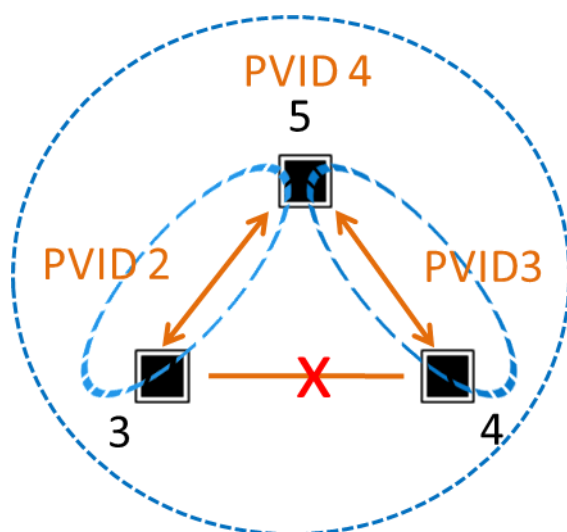
### Example Analysis

Configure the "Type" of Port3, Port4 and Port5 as Access. Port3, Port 4 and Port 5 are set with different forwarding entries; forwarding entries can enable the communication between two ports.

Analyse the port forwarding entries design as below:

- Port 3  
Port3 and Port5 can communicate with each other. Port3 forwarding entries include Port3 and Port5. Therefore, a forwarding entry PVID3 is designed, including Port 3 and Port 5. Configure the "Type" of Port 3 and Port 5 to U.
- Port 4  
Port 4 and Port 5 can communicate with each other. Port 4 forwarding entries include Port 4 and Port 5. Therefore, a forwarding entry PVID4 is designed, including Port 4 and Port 5. Configure the "Type" of Port 4 and Port 5 to U.
- Port 5  
Port 5 and Port 3, Port 4 can communicate with each other, Port 5 forwarding entries include Port 3, Port 4. Therefore, design a forwarding entry PVID5, including Port 3, Port 4. Configure the "Type" of Port 3 and Port 4 to U.

According to the forwarding entry analysis of Port 3, Port 4 and Port 5, forwarding entry design picture as follows:



## Operation Steps

- Step 1** Open "Main Menu > L2 Feature > VLAN".
- Step 2** On the displayed VLAN setting interface, configure the "Type" of Port3, Port4 and Port5 as Access on the column of "VLAN Port Settings".
- Step 3** On the column of "VLAN Port Settings", enter the default VLAN "PVID" of Port3, Port4 and Port5 as follows: 2, 3, 4.
- Step 4** On the column of "802.1Q VLAN Settings", enter 2 in the "VID" text box of creating VLAN entry.
- Step 5** Conduct following operations on the drop-down list of "Type":
  1. Configure the "Type" of Port3 as Untagged.
  2. Configure the "Type" of Port5 as Untagged.
- Step 6** Click "Add" button to add VLAN entry to the "Port".
- Step 7** On the column of "802.1Q VLAN Settings", enter 3 in the "VID" text box of creating VLAN entry.
- Step 8** Conduct following operations on the "Type" setting row of "802.1Q VLAN Settings":
  1. Configure the "Type" of Port4 as Untagged.
  2. Configure the "Type" of Port5 as Untagged.
- Step 9** Click "Add" button to add VLAN entry to the "Port".
- Step 10** On the column of "802.1Q VLAN Settings", enter 4 in the "VID" text box of creating VLAN entry.
- Step 11** Conduct following operations on the drop-down list of "Type":
  1. Select the "Type" of Port3 as Untagged.
  2. Select the "Type" of Port4 as Untagged.



3. Select the “Type” of Port5 as Untagged.

**Step 12** Click “Add” button to add VLAN entry to the “Port”.

VLAN Mode: ☐ Port-based VLAN ☒ IEEE 802.1Q VLAN

VLAN Port Settings									
Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08
Type:	Access	Access	Access	Access	Access	Access	Access	Trunk	Trunk
PVID:	1	1	2	2	3	4	2	2	2

802.1Q VLAN Settings											
VID											
Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
Type:	--	--	--	--	--	--	--	--	--	--	--

Modify All

( "UnModified"-No need to modify the egress frame; "UnTagged" -No tag of the egress frame ; "Tagged" -Need to tag the egress frame ; "--" -The port is not a VLAN member. )

Add Delete Apply

Port	CPUPort	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
VID: 1	UnTagged	UnTagged	UnTagged	empty	empty	empty	empty	empty	empty	empty	empty
VID: 2	empty	empty	empty	UnTagged	empty	UnTagged	empty	empty	empty	empty	empty
VID: 3	empty	empty	empty	empty	UnTagged	UnTagged	empty	empty	empty	empty	empty
VID: 4	empty	empty	empty	UnTagged	UnTagged	UnTagged	empty	empty	empty	empty	empty

**Step 10** Click “Apply”.

**Step 11** Open “Main Menu > Basic Settings > Network & Reboot”.

**Step 12** On the column of “Device Reboot”, click the button of “Reboot”.

**Step 13** End.

## 4.2 Multicast Filtering

### 4.2.1 IGMP Snooping

#### Function Description

On the “Dynamic multicast” page, user can:

- Enable/disable IGMP snooping
- Enable/disable IGMP query
- Routing mouth set

## Operation Path

Open in order: “Main Menu > L2 Feature > Multicast Configuration > Dynamic Multicast”.

## Interface Description

Dynamic multicast interface as follows:

No.	MAC Address	Type	Join Port
-----	-------------	------	-----------

The main element configuration description of dynamic multicast interface:

Interface Element	Description
IGMP snooping	<p>The switch of IGMP snooping function, options are:</p> <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> <p>Notes: IGMP snooping means snooping the messages between user host and router, as well as tracking multicast information and the ports that have been applied for.</p>
IGMP Query	<p>The switch of IGMP query, options are:</p> <ul style="list-style-type: none"> <li>• Enable</li> <li>• Disable</li> </ul> <p>Notes: IGMP query means that router inquiring all hosts in subnet if they join some multicast groups.</p>
IGMP query interval	<p>IGMP query interval, unit: second.</p> <p>Notes: The time range that can be entered is 60-1000s.</p>
Group survival	<p>The maximum time that multicast members in device can survive from existence to not receiving any response. Unit:</p>

	<p>second.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>IGMP snooping needs to be enabled before using this function.</li> <li>The time range of group survival that can be set is 120-5000s.</li> </ul>
Routing mouth set	<p>Choose the building mode of routing table, options are:</p> <ul style="list-style-type: none"> <li>Dynamic routing, routing ports are dynamically acquired though switch.</li> <li>Static routing, check the box of port in “port list” as routing port.</li> </ul>



Note

- You need to set multicast source and port in one VLAN first to enable IGMP Snooping function.
- Multiple IGMP inquirers should be avoided in network lest cause waste of resources. Please choose all ports if the forwarding relationship of unknown multicast group is uncertain.

## 4.2.2 Static Filtering

### Function Description

On the page of “Static Multicast”, user can configure the forwarding port list of static multicast.

### Operation Path

Open in order: “Main Menu > L2 Feature > Multicast Configuration”.

### Interface Description

Static filtering interface as follows:

Current Location>>Main Menu>>L2 Feature>>Multicast Configuration>>Static Multicast

Add New Static Multicast MAC Address to the List

MAC Address:  (XX-XX-XX-XX-XX-XX)

Join Port: 01- ☐ 02- ☐ 03- ☐ 04- ☐ 05- ☐ 06- ☐ 07- ☐ 08- ☐ G1- ☐ G2- ☐

Operation:

MAC Address	Join Port

Main elements configuration description of static filtering interface:

Interface Element	Description
MAC Address	<p>Input “MAC Address”, and the format should be “XX-XX-XX-XX-XX-XX”.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>Low-order of the highest byte of multicast MAC address is 1, please don’t input non-multicast address.</li> <li>Space and other illegal characters are not allowed for address format, otherwise alarm message will pop up.</li> </ul>
Join Port	<p>Tick the check box of corresponding port, it represents that corresponding port joins in the static multicast MAC address.</p>
Operation	<p>Add, delete or apply the configuration information of static multicast filtering.</p>



Warning

- Static multicast filtering has a great impact on multicast data packets forwarding via network, please don’t use it unless the added address is exactly right.
- Multicast addresses of 0180C20000xx and 01005E0000xx are reserved for the device or protocol, please don’t use them.
- IGMP dynamic learning won’t update statically typed multicast address, static multicast forwarding table is more of a security mechanism.

### Example: Static Multicast Filtering Configuration

For example: configure the filtering port of multicast address 01-00-00-00-00-01 as 01, 02 and 03.

Operation steps as follows:

- Step 1** Open “Main Menu > L2 Feature > Multicast Configuration > Static Multicast”.
- Step 2** On the text box after “MAC Address”, input “01-00-00-00-00-01”.
- Step 3** On the row of “Join Port”:
  - a) Tick the check box after “1-”;
  - b) Tick the check box after “2-”;
  - c) Tick the check box after “3-”.
- Step 4** Click “Add”.
- Step 5** Configured static filtering is displayed in the display frame on the bottom of the page, click “Apply”.
- Step 6** End.

# 5 QoS

---

## 5.1 QoS Classification

### Function Description

On the page of QoS Classification, user can set:

- Queuing mechanism
- Enable ToS
- Enable CoS
- Port priority

### Operation Path

Open in order: "Main Menu > QoS > QoS Classification".

### Interface Description

Screenshot of QoS Classification interface:

Current Location>>Main Menu>>QoS>>QoS Classification

**QoS Classification**

Queuing Mechanism: Weighted Fair(8:4:2:1) ▼

Port	Inspect ToS	Inspect CoS	Default Port Priority
01	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0 ▼
02	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0 ▼
03	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0 ▼
04	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0 ▼
05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼
06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼
07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼
08	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼
G1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼
G2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0 ▼

Apply Cancel

The main element configuration description of QoS classification interface:

Interface Element	Description
Queuing mechanism	<p>Queuing scheduling setting, options are:</p> <ul style="list-style-type: none"> <li>Weighted Fair (8:4:2:1): according to the queue's weighted value 8:4:2:1, weighted round-robin queue scheduling algorithm would schedule queues in turn to ensure that each queue can get some service time.</li> <li>Strict (Strict Priority): Strict priority queue scheduling algorithm includes 4 queues and schedules in the decreasing order of priority. When the queue with fairly high priority is empty, then it would send groupings of queue with fairly low priority.</li> </ul>
Port	Port number of switch.
Inspect ToS	After checking the checkbox, the priority of ToS would be checked during queue scheduling.
Inspect CoS	After checking the checkbox, the priority of CoS would be checked during queue scheduling.
Default port priority	To configure default port priority for ports that haven't

Interface Element	Description
	<p>enabled ToS and CoS priority. The value range is 0-7. The higher the value, the higher the priority.</p> <p>Description: By default, switch would use port priority in place of the 802.1p priority the port comes with when receiving message to control the quality of service the messages deserve.</p>



Note

- When the ToS and CoS are not enabled, queuing and scheduling are in the order of port priority.
- When the ToS or CoS are enabled, queuing and scheduling according to ToS or CoS instead of considering port priority.
- If the ToS and CoS are enabled at the same time, queuing according to ToS priority. When the ToS values are the same, queuing according to CoS priority.

### Instance: QoS configuration

For example:

- Set port 1's queuing mechanism as "Weight Fair (8:4:2:1)", adopts ToS priority.

### Operation steps

- Step 1** Open "Main Menu > QoS > QoS Classification".
- Step 2** On the page of classification, choose "Weight Fair (8:4:2:1)" in queuing mechanism.
- Step 3** On the line of port 1, check the checkbox of "inspect ToS".
- Step 4** Click "apply".
- Step 5** Ends.

## 5.2 CoS Mapping

### Function Description

On the page of "CoS Mapping", user can configurate mapping between CoS value and priority queues.

### Operation Path

Open in order: "Main Menu > QoS > QoS Mapping".



## Interface Description

Screenshot of QoS Mapping interface:

The screenshot shows the 'CoS Mapping' configuration page. At the top, it indicates the current location: 'Main Menu > QoS > CoS Mapping'. Below this is a title bar 'Mapping Table of CoS Value and Priority Queues'. The main area contains a table with two rows of configuration. The first row has CoS values 0, 1, 2, and 3, each mapped to a 'Low' priority queue. The second row has CoS values 4, 5, 6, and 7, each mapped to a 'Low' priority queue. At the bottom, there are 'Apply' and 'Cancel' buttons.

CoS	0	1	2	3
Priority Queue	Low	Low	Low	Low

CoS	4	5	6	7
Priority Queue	Low	Low	Low	Low

The main element configuration description of QoS mapping interface:

Interface Element	Description
CoS value	Display CoS value.
Priority queue	Set mapping between CoS value and priority queue, options are as follows: <ul style="list-style-type: none"> <li>Low: low priority queue</li> <li>Normal: normal priority queue</li> <li>Medium: medium priority queue</li> <li>High: high priority queue</li> </ul>

### Instance: CoS mapping configuration

For example:

- When the CoS value is set to 0 and 1, the corresponding priority queue is Low
- When the CoS value is set to 2 and 3, the corresponding priority queue is Normal
- When the CoS value is set to 4 and 5, the corresponding priority queue is Medium
- When the CoS value is set to 6 and 7, the corresponding priority queue is High

### Operation steps

**Step 1** Open "Main Menu > QoS > CoS Mapping".

**Step 2** In the table of CoS value and priority queue mapping of CoS mapping page:

- When the CoS value is "0", choose Low as the corresponding priority.
- When the CoS value is "1", choose Low as the corresponding priority.
- When the CoS value is "2", choose Normal as the corresponding priority.

4. When the CoS value is “3”, choose Normal as the corresponding priority.
5. When the CoS value is “4”, choose Medium as the corresponding priority.
6. When the CoS value is “5”, choose Medium as the corresponding priority.
7. When the CoS value is “6”, choose High as the corresponding priority.
8. When the CoS value is “7”, choose High as the corresponding priority.

**Step 3** Click “apply”

**Step 4** Ends.

## 5.3 ToS Mapping

### Function Description

On the page of “CoS Mapping”, user can configurate mapping between CoS value and priority queue.

### Operation Path

Open in order: “Main Menu > QoS > ToS Mapping”.

### Interface Description

Screenshot of ToS Mapping interface:

Current Location>>Main Menu>>QoS>>ToS/DiffServ Mapping

Mapping Table of ToS (DSCP) Value and Priority Queues							
ToS(DSCP)	Level	ToS(DSCP)	Level	ToS(DSCP)	Level	ToS(DSCP)	Level
0x00(01)	Low	0x04(02)	Low	0x08(03)	Low	0x0C(04)	Low
0x10(05)	Low	0x14(06)	Low	0x18(07)	Low	0x1C(08)	Low
0x20(09)	Low	0x24(10)	Low	0x28(11)	Low	0x2C(12)	Low
0x30(13)	Low	0x34(14)	Low	0x38(15)	Low	0x3C(16)	Low
0x40(17)	Low	0x44(18)	Low	0x48(19)	Low	0x4C(20)	Low
0x50(21)	Low	0x54(22)	Low	0x58(23)	Low	0x5C(24)	Low
0x60(25)	Low	0x64(26)	Low	0x68(27)	Low	0x6C(28)	Low
0x70(29)	Low	0x74(30)	Low	0x78(31)	Low	0x7C(32)	Low
0x80(33)	Low	0x84(34)	Low	0x88(35)	Low	0x8C(36)	Low
0x90(37)	Low	0x94(38)	Low	0x98(39)	Low	0x9C(40)	Low
0xA0(41)	Low	0xA4(42)	Low	0xA8(43)	Low	0xAC(44)	Low
0xB0(45)	Low	0xB4(46)	Low	0xB8(47)	Low	0xBC(48)	Low
0xC0(49)	Low	0xC4(50)	Low	0xC8(51)	Low	0xCC(52)	Low
0xD0(53)	Low	0xD4(54)	Low	0xD8(55)	Low	0xDC(56)	Low
0xE0(57)	Low	0xE4(58)	Low	0xE8(59)	Low	0xEC(60)	Low
0xF0(61)	Low	0xF4(62)	Low	0xF8(63)	Low	0xFC(64)	Low

The main element configuration description of ToS mapping interface:

Interface Element	Description
ToS (DSCP) value	It displays ToS (DSCP) in hexadecimal and decimal format simultaneously. The value in the bracket is decimal.
Priority queue	Set mapping between ToS value and priority queue, options are as follows: <ul style="list-style-type: none"> <li>Low: low priority queue</li> <li>Normal: normal priority queue</li> <li>Medium: medium priority queue</li> <li>High: high priority queue</li> </ul>

### Instance: ToS mapping configuration

For example:

- When the ToS value is set to 0x00~0x3C, the corresponding priority is Low.
- When the ToS value is set to 0x40~0x7C, the corresponding priority is Normal.
- When the ToS value is set to 0x80~0xBC, the corresponding priority is Medium.

- When the ToS value is set to 0xC0~0xFC, the corresponding priority is High.

### Operation steps

**Step 1** Open “Main Menu > QoS > ToS Mapping”.

**Step 2** In the table of ToS value and priority queue mapping of ToS mapping page:

1. When the “ToS value” is “0x00” ~ “0x3C” , choose Low as the corresponding priority.
2. When the “ToS value” is “0x40” ~ “0x7C” , choose Normal as the corresponding priority.
3. When the “ToS value” is “0x80” ~ “0xBC” , choose Medium as the corresponding priority.
4. When the “ToS value” is “0xC0” ~ “0xFC” , choose High as the corresponding priority.

**Step 3** Click “apply”.

**Step 4** Ends.

# 6 Link Backup

## 6.1 Rapid Ring

### Function Description

On the “Rapid ring” page, user can choose redundancy protocol and configure the ring network under this protocol quickly.

### Operation Path

Open in order: “Main Menu > Redundancy > Rapid Ring”.

### Interface Description

Initial rapid ring interface as follows:

Current Status	
Active Protocol of Redundancy :	None

Settings	
Protocol of Redundancy :	<div> None  SW-Ring V3  RSTP (IEEE802.1W/1D) </div>
<p>Note : Changes will only take effect after system reboot !</p>	
<div> <div>Apply</div> <div>Cancel</div> </div>	

The main element configuration description of initial rapid ring interface:

Interface Element	Description
<b>Current status</b>	<b>Current status bar</b>
Active protocol of redundancy	The current status of ring network protocol of the device.
<b>Settings</b>	<b>Settings bar</b>
Protocol of redundancy	Choose the corresponding redundancy protocol. Options are: <ul style="list-style-type: none"> <li>• None: it means that the ring network function is disabled.</li> <li>• Ring V3: single ring, coupling ring, chain and Dual homing are supported.</li> <li>• RSTP (IEEE 802.1W/1D): rapid spanning tree.</li> </ul>

### Function description of Ring V1/V2/V3

On the “rapid ring” page, user can choose Ring redundancy protocol and configure the ring network under this protocol quickly.

### Operation Path

Open in order: “Main Menu > Redundancy > Rapid Ring”. Choose “Ring V3” in the drop-down list of “protocol of redundancy”.

### Interface Description

Ring network interface as follows:

Current Location>>Main Menu>>Redundancy>>Rapid Ring

Current Status

Active Protocol of Redundancy None

Settings

Protocol of Redundancy SW-Ring V3
 

Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	1	01	02	Single	0 ×100ms	Slave	<input type="checkbox"/>
Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
2	2	03	04	Single	0 ×100ms	Slave	<input type="checkbox"/>

Note : Changes will only take effect after system reboot!

Apply

Cancel

The main element configuration description of Ring network interface:

Interface Element	Description
Rapid ring state	Click “rapid ring state” to check the ring state of current ring network group configuration.
Group	Support Group 1-2 or Group 1-4, it means that the device supports up to 2 or 4 groups. Notes: Device with less than 10 ports supports up to 2 rings, device with more than 10 ports supports 4 rings.
ID	When multiple switches form a ring, the current ring ID would be network ID. Different ring network has different ID.
Port 1	port 1 can be used for the formation of ring network in switch.
Coupling port	When the ring type is “Couple”, the coupling port would be the one connects different network ID.
Port 2	Port 2 can be used for the formation of ring network in switch.
Control port	When the ring type is “Couple”, the control port would be the one in the link of the intersection of two rings.
Type	According to the requirement in the scene, user can choose different ring network. <ul style="list-style-type: none"> <li>Single: single ring, using a continuous ring to connect all</li> </ul>

Interface Element	Description
	<p>device together.</p> <ul style="list-style-type: none"> <li>• Couple: couple ring is a redundant structure used for connecting two independent networks.</li> <li>• Chain: chain can enhance user's flexibility in constructing all types of redundant network topology via an advanced software technology.</li> <li>• Dual-homing: two adjacent rings share one switch. User could put one switch in two different networks or two different switching equipments in one network.</li> </ul>
HelloTime	Hello_time is the time interval of Hello packet transmission. It is a query packet sent to adjacent device via ring network port to confirm whether the connection is normal.
Master-slave	<p>Single ring has master/slave device option. One-Master Multi-Slave mode is recommended in one single ring. When the device is set as master device and one end of it is backup link, it can enable backup link to ensure the normal operation of the network when failure occurs in ring network.</p> <p>Notes:</p> <p>Some products don't support Master-slave option, so their ring network is non-master station structure.</p>
Enable	Enable or disable the corresponding ring group.

Click "rapid ring state" to check the ring state of current ring network group configuration.

Rapid ring state interface as follows:



Current Location>>Main Menu>>Redundancy>>Rapid Ring

Ring group 1 state

Ring port 1	transmit
Ring port 2	block
Ring enable	enable

Ring group 2 state

Ring port 1	
Ring port 2	
Ring enable	disable

Close

The main element configuration description of rapid ring interface

Interface Element	Description
Ring group state	Display the current state of ring group, ring port and ring enable.
Ring port	Display the current state of ring port in the ring group.
Ring enable	Display the current state of ring enable.

Now introduce the creation process respectively according to different ring network:

- Create single ring
- Create coupling ring
- Create chain
- Create rapid spanning tree

### 6.1.1 Instance: create single ring

Single ring could be created when the redundant protocol is “Ring V1”, “Ring V2” or “Ring V3”. Here we take creating single ring in Ring V3 for example.



Note

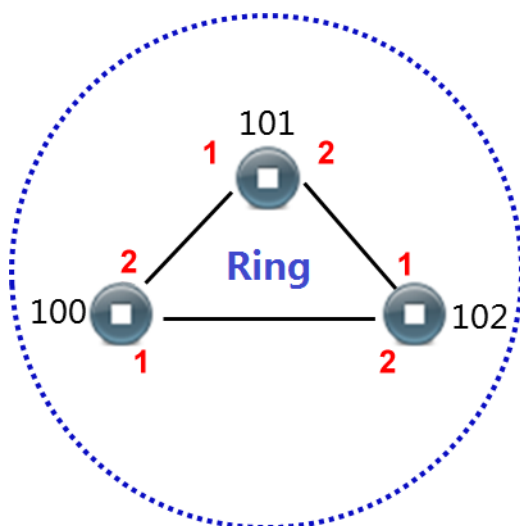
---

Using Ring V1 and Ring V2 to create ring network is the same as using Ring V3.

---

### Instance

For example: create the following single ring:



### Instance analysis

The ring ports of Device 100, 101, and 102 are port 1 and port 2. Therefore, creating single ring is viable. Port 1 and port 2 are set as the ring ports of each device.

### Operation steps

Configuring Device 100, 101 and 102 in the following steps:

- Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.
- Step 2** In the setting area of the “Rapid Ring” page, choose “Ring V3” as the “protocol of redundancy”.
- Step 3** Check the box of “Enable” in “Group 1”.
- Step 4** Choose “Single” in the drop-down list of “Type” of “Group 1”.

Current Location>>Main Menu>>Redundancy>>Rapid Ring

**Current Status**

Active Protocol of Redundancy SW-Ring V3

**Settings**

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	<input type="text" value="1"/>	<span>01</span>	<span>02</span>	<span>Single</span>	<input type="text" value="0"/> x100ms	<span>Slave</span>	<input checked="" type="checkbox"/>
2	<input type="text" value="2"/>	<span>03</span>	<span>04</span>	<span>Single</span>	<input type="text" value="0"/> x100ms	<span>Slave</span>	<input type="checkbox"/>

Note : Changes will only take effect after system reboot!

Apply Cancel

**Step 5** Enter “1” in the “ID” textbox of “Group1”.

**Step 6** Set “Port 1” as “01” and “Port 2” as “02” separately.

Note:

“Port 1” and “Port 2” cannot be set to the same port.

**Step 7** For Device 100 and 101, choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

**Step 8** For Device 102, choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

**Step 9** Click “Apply”. Enter “Main Menu > System Management > Device Address”.

**Step 10** In the area of “reboot the device”, click “reboot”.

**Step 11** End.

## 6.1.2 Instance: create coupling ring

Coupling ring could be created when the redundant protocol is “Ring V2” and “Ring V3”. Here we take creating coupling ring in Ring V3 for example.



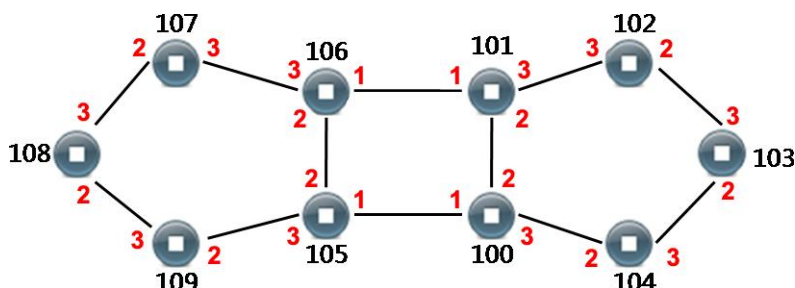
Note

When using Ring V2 to create coupling ring:

- “Port 1” represents “coupling port”, no control port.
- The creation process of coupling ring is same as that of Ring V3.

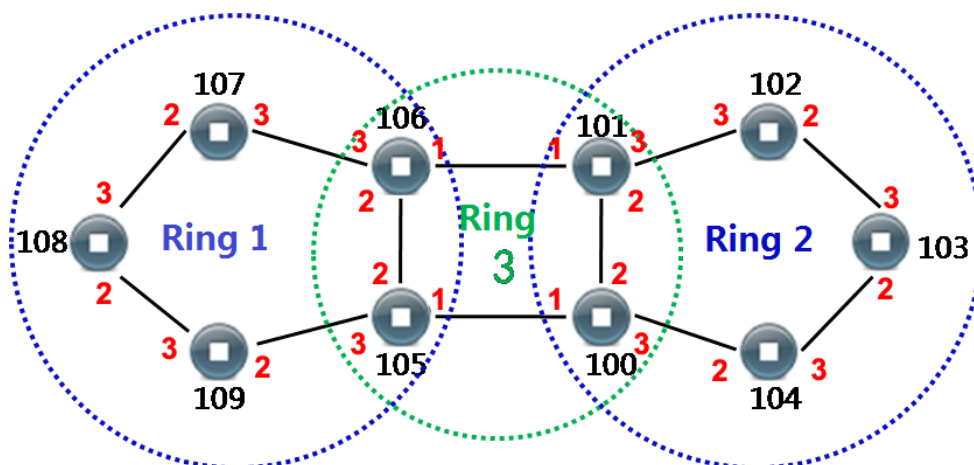
## Instance

For example: creating coupling ring. Its basic architecture is shown as below:



## Instance analysis

We can get the following picture by analyzing the coupling ring above.



There are three rings in coupling ring. Ring 1 and Ring 2 intersect Ring 3 respectively. When setting ring in WEB interface, we can set Ring 1 and Ring 2 as single ring, Ring 3 as coupling ring. In coupling ring, we set the port in the link where the two rings intersect as control port. The Port 2 of Device 105 in the picture above is the control port. The analyses of each switch are displayed as follows:

- 105, 106, 107, 108 and 109 are in Ring 1; ring network ports are Port 1 and Port 2; single ring; 105 is the master station, others are slave stations.
- 100, 101, 102, 103 and 104 are in Ring 2; ring network ports are Port 2 and Port 3; single ring; 100 is the master station, others are slave stations.
- 100, 101, 105 and 106 are in Ring 3. It is a coupling ring. Port 1 is coupling port. Port 2 is control port.

## Operation Step 1: configuring Ring 1 in WEB interface

Configuring Device 105, 106, 107, 108 and 109 in the following steps respectively.

**Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.

**Step 2** In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

**Step 3** Check the “Enable” box in the “Group 1”.

**Step 4** Choose “Single” in the drop-down list of “Type” of “Group 1”.

Current Location>>Main Menu>>Redundancy>>Rapid Ring

Current Status

Active Protocol of Redundancy SW-Ring V3

Settings

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	1	02	03	Single	0x100ms	Slave	<input checked="" type="checkbox"/>
2	2	03	04	Single	0x100ms	Slave	<input type="checkbox"/>

Note : Changes will only take effect after system reboot!

Apply Cancel

**Step 5** Enter “1” into the “ID” textbox of “Group 1”.

**Step 6** Set “Port 1” and “Port 2” to “02” and “03” respectively.

Note:

“Port 1” and “Port 2” cannot be set to the same port.

**Step 7** For Device 106/107/108/109, choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

**Step 8** For Device 105, choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

**Step 9** Click “Apply”. Enter “Main Menu > System Management > Device Address”.

**Step 10** In the area of “reboot the device”, click “reboot”.

**Step 11** End.

### Operation Step 2: configuring Ring 2 in WEB interface

Configuring Device 100, 101, 102, 103 and 104 in the following steps respectively.

**Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.

**Step 2** In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

**Step 3** Check the “Enable” box in the “Group 1”.

**Step 4** Choose “Single” in the drop-down list of “Type” of “Group 1”.

Current Location>>Main Menu>>Redundancy>>Rapid Ring

Current Status

Active Protocol of Redundancy SW-Ring V3

Settings

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	1	02	03	Single	0x100ms	Slave	<input checked="" type="checkbox"/>
2	2	03	04	Single	0x100ms	Slave	<input type="checkbox"/>

Note: Changes will only take effect after system reboot!

Apply Cancel

**Step 5** Enter “2” into the “ID” textbox of “Group 1”.

**Step 6** Set “Port 1” and “Port 2” to “02” and “03” respectively.

Note:

“Port 1” and “Port 2” cannot be set to the same port.

**Step 7** For Device 101/102/103/104, choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

**Step 8** For Device 100, choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

**Step 9** Click “Apply”. Enter “Main Menu > System Management > Device Address”.

**Step 10** In the area of “reboot the device”, click “reboot”.

**Step 11** End.

### Operation Step 3: configuring Ring 3 in WEB interface

Configuring Device 100, 101, 105 and 106 in the following steps respectively.

**Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.

**Step 2** In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

**Step 3** Check the “Enable” box in the “Group 2”.

**Step 4** Choose “Couple” in the drop-down list of “Type” of “Group 2”.

**Step 5** Enter “3” into the “ID” textbox of “Group 2”.

**Step 6** Choose “1” in the drop-down list of “Coupling Port” of “Group 2”.

**Step 7** Choose “2” in the drop-down list of “Coupling Ctrl Port” of “Group 2”.

**Step 8** Click “Apply”. Enter “Main Menu > System Management > Device Address”.

**Step 9** In the area of “reboot the device”, click “reboot”.

**Step 10** End.

Current Location>>Main Menu>>Redundancy>>Rapid Ring

**Current Status**

Active Protocol of Redundancy SW-Ring V3

**Settings**

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	2	02	03	Single	0 ×100ms	Slave	<input checked="" type="checkbox"/>
2	3	01	02	Couple	0 ×100ms	Slave	<input checked="" type="checkbox"/>

Note : Changes will only take effect after system reboot!

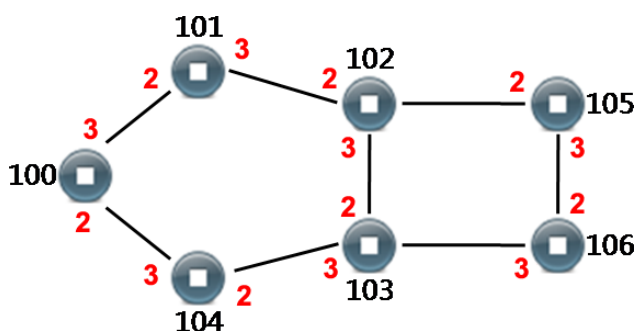
Apply Cancel

Instance: creating chain

The chain could be created when the “Protocol of Redundancy” is “Ring V3”.

## Instance

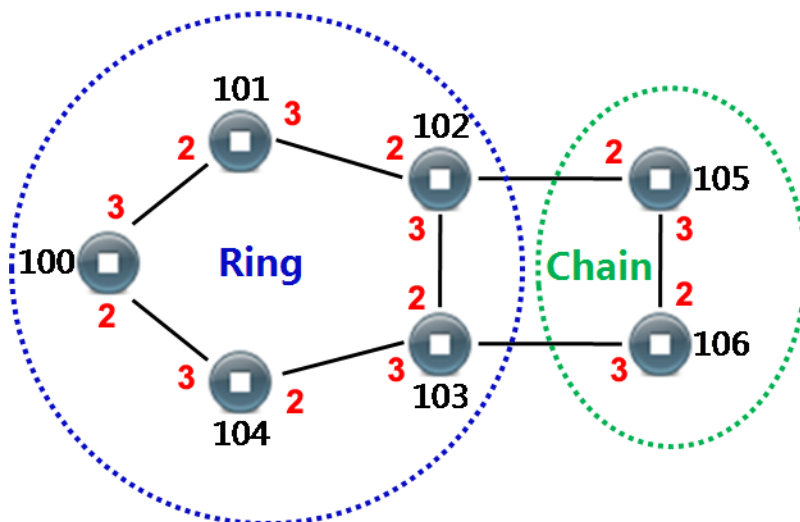
For example: creating chain. Its basic architecture is shown as below:



## Instance analysis

Basic framework, we can make the following analyses:

- 100, 101, 102, 103 and 104 are in the ring. The ring network ports are 2 and 3. Device 100 is the master station, others are slave stations.
- Device 105 and 106 are in the chain. The ring network ports are 2 and 3.



#### Operation Step 1: creating ring

Configuring Device 100, 101, 102 and 103 in the following steps respectively.

**Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.

**Step 2** In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

**Step 3** Check the “Enable” box in the “Group 1”.

**Step 4** In the “settings” area of “Rapid Ring”:

1. Set “Type” to “Single”;
2. Set “ID” to “1”;
3. Set “Port 1” to “2”;
4. Set “Port 2” to “3”;



Current Location>>Main Menu>>Redundancy>>Rapid Ring

**Current Status**

Active Protocol of Redundancy SW-Ring V3

**Settings**

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	<input type="text" value="1"/>	<input type="text" value="02"/>	<input type="text" value="03"/>	<input type="text" value="Single"/>	<input type="text" value="0"/> x100ms	<input type="text" value="Slave"/>	<input checked="" type="checkbox"/>
2	<input type="text" value="2"/>	<input type="text" value="03"/>	<input type="text" value="04"/>	<input type="text" value="Single"/>	<input type="text" value="0"/> x100ms	<input type="text" value="Slave"/>	<input type="checkbox"/>

Note : Changes will only take effect after system reboot!

Apply Cancel

**Step 5** For Device 101/102/103/104, choose “Slave” in the drop-down list of “Master-slave” of “Group 1”.

**Step 6** For Device 100, choose “Master” in the drop-down list of “Master-slave” of “Group 1”.

**Step 7** Click “Apply”.

**Step 8** Enter “Main Menu > System Management > Device Address”.

**Step 9** In the area of “reboot the device”, click “reboot”.

**Step 10** End.

## Operation Step 2: creating chain

Configuring Device 105 and 106 in the following steps respectively.

**Step 1** Choose “Main Menu > Redundancy > Rapid Ring”.

**Step 2** In the “Settings” area of “Rapid Ring” page, choose “Ring V3” as “Protocol of Redundancy”.

**Step 3** Check the “Enable” box in the “Group 1”.

**Step 4** In the “Settings” area of “Rapid Ring” page, set the “Type” to “Chain”.

**Step 5** In the “Settings” area of “Rapid Ring” page, set the “ID” to “2”.

**Step 6** Set “Port 1” to “02” and set “Port 2” to “03”.

Current Location>>Main Menu>>Redundancy>>Rapid Ring

**Current Status**

Active Protocol of Redundancy SW-Ring V3

**Settings**

Protocol of Redundancy SW-Ring V3 Rapid ring state

Group	ID	Port 1	Port 2	Type	HelloTime	Master-slave	Enable
1	<input type="text" value="2"/>	<span>02</span>	<span>03</span>	<span>Chain</span>	<input type="text" value="0"/> ×100ms	<span>Slave</span>	<input checked="" type="checkbox"/>

Group	ID	Coupling Port	Coupling Ctrl Port	Type	HelloTime	Master-slave	Enable
2	<input type="text" value="3"/>	<span>01</span>	<span>02</span>	<span>Couple</span>	<input type="text" value="0"/> ×100ms	<span>Slave</span>	<input type="checkbox"/>

Note : Changes will only take effect after system reboot!

Apply Cancel



**Note**

The chain + single ring combination could be formed by using configured ring network port of chain ring device to connect the normal port of single ring device.

**Step 7** Click “Apply”.

**Step 8** Enter “Main Menu > System Management > Device Address”.

**Step 9** In the area of “reboot the device”, click “reboot”.

**Step 10** End.



**Notice**

- The port that has been set to port trunking could not be set as rapid ring port. One port can't belong to multiple ring networks.
- The ID in the same single ring must be the same; otherwise it cannot form a ring and achieve normal communication.
- To ensure the communication of ring network, it's recommended to set the “Type” of ports that have already been set as ring network to “Trunk” and “member relationship” to “Tagged”.
- When forming complicated ring networks like tangent ring, please make sure the ID conforms to the unity of single ring network ID. Network ID of different single ring must be different.

## 6.1.3 Creating Spanning Tree

### Function description

On the “Rapid ring” page, user can choose “RSTP (IEEE 802.1W/1D)” as redundancy protocol to create spanning tree quickly.

### Operation Path

Open in order: “Main Menu > Redundancy > Rapid Ring > Protocol of Redundancy > RSTP (IEEE 802.1W/1D)”.

### Interface Description

RSTP interface as follows:

Current Location>>Main Menu>>Redundancy>>RSTP

**Current Status**

Active Protocol of Redundancy: SW-Ring V3

**Settings**

Protocol of Redundancy: RSTP (IEEE802.1W/1D)

Bridge Priority: 32768

Hello Time(s): 2 (1~10) FWD Delay(s): 15 (4~30)

MAX Age(s): 20 (6~40) RSTP Status: RSTP Port Information

Port	Cost	Priority	P2P	Edge	Port STP
01	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
02	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
03	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
04	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
05	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
06	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
07	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
08	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
G1	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>
G2	0	128	Auto	<input type="checkbox"/>	<input type="checkbox"/>

Note: Changes will only take effect after system reboot!

The main element configuration description of RSTP interface:

Interface Element	Description
Protocol of redundancy	Choose the algorithm of redundancy protocol, options are: <ul style="list-style-type: none"> <li>None: represents disabling ring network function;</li> <li>Ring V1: supports single ring;</li> </ul>

	<ul style="list-style-type: none"> <li>• Ring V2: supports single ring and coupling ring;</li> <li>• Ring V3: supports single ring, coupling ring, chain and Dual_homing;</li> <li>• RSTP (IEEE 802.1W/1D): rapid spanning tree.</li> </ul>
Bridge priority	<p>The priority of bridge.</p> <p>Note: In STP/RSTP network, the device with smallest bridge ID would be elected as root bridge. The bridge ID consists of bridge priority and bridge MAC address.</p>
Hello time	<p>The transmission time interval of the BPDU data packet.</p> <p>Note: The protocol message that STP/RSTP adopts is BPDU (Bridge Protocol Data Unit).</p>
FWD delay	<p>The forward delay time that the port of switch maintains in transition state (listening and learning).</p> <p>Note: STP/RSTP adopts a mechanism of state transition. The newly-selected root port and specified port have to go through twice the Forward Delay time to enter the forwarding state.</p>
MAX age	The lifetime of BPDU packets.
RSTP status	Button, used for checking the current status of rapid spanning tree.
Port	Displays the port number of the device.
Cost	<p>The path cost from network bridge to root bridge.</p> <p>Note: Path cost is a reference value for STP protocol to choose links. The path cost from a port to the root bridge is cumulated by the path cost it go through each port of each bridge.</p>
Priority	<p>The priority of ports in bridge. The smaller the value, the higher the priority.</p> <p>Note: PID (Port ID) consists of two parts. The high 4 digits are port priorities, the low 12 digits are port numbers. In the case of same root path cost, it would not block the port with the smallest PID value, but the one with greater PID value.</p>
P2P	<p>The directly connected switch port, options are:</p> <ul style="list-style-type: none"> <li>• Yes;</li> <li>• No;</li> <li>• Auto: adopt negotiation mechanism that could implement quick conversion of port states.</li> </ul>
Edge	The switch that is on the edge of network and connects to the terminal devices.

Port STP	Checking this checkbox. It represents participating in the operation of spanning tree protocol.
----------	---

RSTP status interface as follows:

Current Location>>RSTP Status

Root Information

Local ID :

32768:00226F03CDD6

Root ID :

4096:00226FCC0012

Root Port :

1

Root Cost:

10

Basic Information

Port	Priority	Cost	P2P	Edge	Connected	Role	FWD Status
01	128	10	Y	N	Rapid	Root	Forwarding
02	128	20	Y	N	Rapid	Alternate	Blocking
03	128	0	Y	Y	Rapid	Disabled	Enabled
04	128	30	Y	N	Rapid	Disabled	Disabled
05	128	40	Y	N	Rapid	Disabled	Disabled
06	128	40	Y	N	Rapid	Disabled	Disabled
07	128	40	Y	N	Rapid	Disabled	Disabled
08	128	50	Y	N	Rapid	Disabled	Disabled
G1	128	50	Y	N	Rapid	Disabled	Disabled
G2	128	50	Y	N	Rapid	Disabled	Disabled

Close

The main element configuration description of RSTP status interface:

Interface Element	Description
<b>Root information</b>	<b>The display bar of root information table</b>
Local ID	It displays the priority of this switch and MAC address information ID.
Root ID	It displays the priority of the root switch and MAC address information ID.
Root port	The port of the switch, which is not in the root bridge but nearest to it, is in charge of communicating with the root bridge. The path cost from this port to the root bridge is the lowest. When the path costs of multiple ports are the same, the one with the highest priority would be the root port.

Root cost	The root cost of a switch is the sum of root port cost and the root cost that data packet goes through all switches. The root cost of root bridge is zero.
<b>Basic information</b>	<b>The display bar of basic information table</b>
Port	It displays the port number of this device.
Priority	The priority of ports in network bridge. The values range from 0 to 240. The smaller the value, the higher the port priority. The higher the priority, the more likely it is to be a root port.
Cost	The path cost from network bridge to root bridge.
P2P	The directly connected switch port.
Edge	The port that directly connects to terminal instead of other switches.
Connected	It displays the network protocol of devices with connected ports.
Role	Root port, specified port, Alternate port and Backup port.
FWD status	<p>It is divided by whether the port forwards user flow and learns MAC address.</p> <ul style="list-style-type: none"> <li>Discarding: neither forward user flow nor learn MAC address;</li> <li>Learning: doesn't forward user flow but learn MAC address;</li> <li>Forwarding: forward user flow and learn MAC address;</li> <li>Listening: neither forward user flow nor learn MAC address; but can receive and send configuration message;</li> <li>Blocking: port only receives and processes BPDU, doesn't forward user flow;</li> <li>Disabled: blocked or physically disconnected.</li> </ul>



Note

The settings of rapid spanning tree will take effect after rebooting the device.

## 6.2 Loop Guard

### Function Description

On the “Loop Guard” page, user can configure related loop guard settings to prevent ring network storm.

### Operation Path

Open in order: “Main Menu > Redundancy > Loop Guard”.

### Interface Description

Loop guard interface as follows

Port	Port State	Enable	Send Trap
*	*	<input type="checkbox"/>	<input type="checkbox"/>
01	LINK	<input type="checkbox"/>	<input type="checkbox"/>
02	LOS	<input type="checkbox"/>	<input type="checkbox"/>
03	LOS	<input type="checkbox"/>	<input type="checkbox"/>
04	LOS	<input type="checkbox"/>	<input type="checkbox"/>
05	LOS	<input type="checkbox"/>	<input type="checkbox"/>
06	LOS	<input type="checkbox"/>	<input type="checkbox"/>
07	LOS	<input type="checkbox"/>	<input type="checkbox"/>
08	LOS	<input type="checkbox"/>	<input type="checkbox"/>

The main element configuration description of loop guard interfaces

Interface Element	Description
Port	Display port number.
Port state	Display port's connection state: <ul style="list-style-type: none"> <li>LOS: disconnected</li> <li>LINK: connected</li> <li>Self-loop</li> <li>Looping with port X (X presents port number)</li> </ul>
Enable	Check the box to enable loop guard. When the ring network is not enabled on rapid ring page and ports are in a loop, enabling this function on any port will not cause storm. Notes:

	Ring network port cannot be set to loop detection port.
Send trap	<p>Check the box to enable trap sending. When self-loop and looping occur, it would send TRAP alarm of SNMP.</p> <p>Notes:</p> <p>Before enabling this function, user needs to enable SNMP configuration function on SNMP configuration page and set SNMP Trap address. Then the trap sending function can take effect.</p>

## 6.3 Port Trunking

### 6.3.1 Static Trunking

#### Function Description

Binding multiple physical ports into one logical channel.

#### Operation Path

Open in order: "Main Menu > Redundancy > Port Trunking > Static Trunking".

#### Interface Description

Static Trunking interface as follows:

Static Trunking

Enable

☒ Yes
 ☐ No

Group

Join Port

01- ☐
02- ☐
03- ☐
04- ☐
05- ☐
06- ☐
07- ☐
08- ☐
G1- ☐
G2- ☐

Deal With

Group	Join Port
1	01 02 03 04
2	04 05

The main element configuration description of static trunking interface:

Interface Element	Description
Enable	Enable or disable trunking configuration.



Group	Choose trunking group.
Join port	Check the box of ports that join the trunking group.
Deal with	Add, edit, delete or apply the configuration of port trunking group.

### For instance: port trunking

For example: if the port 1 and port 2 of switch A and switch B share the same rates and duplex modes, we could improve bandwidth by grouping them into a Trunking group.

### Operation Steps

Configure switch A and switch B in the same way respectively.

**Step 1** Log in Web configuration page.

**Step 2** Choose “Main Menu > Redundancy > Port Trunking > Static Trunking”.

**Step 3** On the page of “Static Trunking”, check the box of “Yes” in the “Enable” bar.

**Step 4** Choose “1” in the droplist of “Group”.

**Step 5** Check the box of Port 1 and Port 2 in the “join port” bar.

**Step 6** Click “Add/Edit”.

**Step 7** Click “Apply”.

**Step 8** End.



Note

- All attributes of ports in trunking group should be the same, including rates and duplex modes, etc.
  - Setting one port as both ring network port and trunking port is not supported.
  - Each trunking group should have 2 ports at least, up to 4.
  - One port can only join a trunking group.
-

# 7 LLDP

## 7.1 Parameters Configuration

### Function Description

On the page of “Parameters Configuration”, user can configure LLDP function of the port and notify its device identity and performance in the local device.

### Operation Path

Open in order: “Main Menu > LLDP > Parameter Configuration”.

### Interface Description

Parameter configuration interface as follows:

LLDP Parameter Configuration

LLDP:

Disable

Message Transmit Interval(s):

30

(5 ~ 32768)

LLDP Configuration of Port

Port	Mode	Port	Mode	Port	Mode	Port	Mode	Port	Mode
*	Disable	*	Disable	*	Disable	*	Disable	*	Disable
01	Rx Tx	02	Rx Tx	03	Rx Tx	04	Rx Tx	05	Rx Tx
06	Rx Tx	07	Rx Tx	08	Rx Tx	G1	Rx Tx	G2	Rx Tx

Apply

Cancel

Main elements configuration description of parameter configuration interface:

Interface Elements	Description
--------------------	-------------

Interface Elements	Description
LLDP	Enable/disable LLDP function.
Message Transmit Interval	Interval time for messages sending is 5-32768s. For preventing abounding LLDP sending caused by frequent changes of local information, next message should be delayed to send out after sending a LLDP message.
Mode	<ul style="list-style-type: none"> <li>• Disable: disable LLDP function.</li> <li>• Tx Rx: send and receive LLDP message.</li> <li>• Tx only: periodically send LLDP message to neighbor device.</li> <li>• Rx only: conduct validity check to received LLDP and carried TLV, and configure the ageing time of neighbor device in the local device according to TTL (Time To Live) value in TLV.</li> </ul>

## 7.2 Neighbor Information

### Function Description

On the page of “Neighbor Information”, user can check the following items discovered by the local port:

- MAC address;
- Remote port;
- Port description;
- System name;
- System function;
- Management address.

### Operation Path

Open in order: “Main Menu > LLDP > Neighbor Information”.

### Interface Description

Neighbor information interface as follows:

lldp Neighbor Information						
Local Port	MAC Address	Remote Port	Port Description	System Name	System Function	Administered Address
<input type="button" value="Refresh"/>						

Main elements configuration description of neighbor information interface:

Interface Elements	Description
Local port	Corresponding local port number of the device.
MAC address	Discover corresponding MAC address of the neighbor device.
Remote port	Port number of neighbor device.
Port description	Port description information of the neighbor device.
System Name	System name of the neighbor device.
System function	System functions of the neighbor device.
Management address	Management addresses information of the neighbor device. Management address is the address provided for network management system to identify and manage the network devices. Management address can definitely identify a device, which is convenient for the drawing of network topology and network management. Management address is released to public after being packaged in Management Address TLV of LLDP message.

# 8 Access Control

## 8.1 Login Settings

### Function Description

On the “Login Settings” page, user can configure the login name and password of logging in to WEB configuration page and other parameter information.

### Operation Path

Open in order: “Main Menu > Access control > Login settings”.

### Interface Description

Login settings interface as follows:

The screenshot shows the 'Login Settings' interface within a web browser. At the top, a breadcrumb trail reads 'Current Location>>Main Menu>>Access Control>>Login Settings'. Below this is a blue header bar. The main content area contains five form fields: 'Index:' with a dropdown menu showing '1'; 'Access Level:' with a dropdown menu showing 'Administrator'; 'Login Name:' with a text input field containing 'admin'; 'Password:' with a masked input field showing ten dots; and 'Confirm Password:' with a masked input field showing ten dots. At the bottom right of the form area are two buttons: 'Apply' and 'Cancel'. The interface is enclosed in a window with a scrollbar on the right and navigation arrows at the bottom.

The main element configuration description of login settings interface:

Interface Element	Description
Index	The index number is corresponding to the access level. <ul style="list-style-type: none"> <li>1: administrator</li> <li>2: administrator or observer</li> <li>3: administrator or observer</li> </ul>
Access level	Access level setting, options: <ul style="list-style-type: none"> <li>Administrator: check and modify permissions.</li> <li>Observer: check permissions.</li> </ul>
Login name	Login name setting of WEB configuration interface.
Password	Login password setting of WEB configuration interface. Note: The password should a combination of letters that less than 16 bytes.
Confirm password	Confirm password.



Notice

Please keep the modified login name and password in mind. If you forget it, you can restore it to factory setting via DIP switch. Default login name and password of WEB configuration interface are “admin”.

### For instance: create administrator

For example: create a new administrator user “admin8” and set the management password to “admin8”.

### Operation Path

**Step 1** Log in to Web configuration interface.

**Step 2** Choose “Main Menu > Access Control > Login Settings”.

**Step 3** On the “Login settings” page:

1. Choose “1” as “Index” number
2. Choose “administrator” as “access level”
3. Enter “admin8” as “login name”
4. Enter “admin8” as “password”
5. Enter “admin8” as “confirm password”.

**Step 4** Click “apply”.

**Step 5** End.

## 9 Remote Monitoring

### 9.1 BlueEyes Configuration

#### Function Description

On the page of "BlueEyes Configuration", user can set the authority of BlueEyes tool to access this switch.

#### Operation Path

Open in order: "Main Menu > Remote Monitoring > BlueEyes Configuration".

#### Interface Description

Interface screenshot of BlueEyes Configuration:

Main elements configuration description of BlueEyes configuration interface:

Interface Element	Description
BlueEyes	<p>Check the authority of BlueEyes tool to access this switch:</p> <ul style="list-style-type: none"> <li>• Disable: BlueEyes tool cannot search this switch;</li> <li>• Only Search: BlueEyes can only search this switch but it cannot conduct parameter configuration;</li> <li>• Enable: BlueEyes tool can not only search this switch, but also conduct parameter configuration.</li> </ul>



## 9.2 SNMP Configuration

### Function Description

On the page of "SNMP Configuration", user can conduct the following operations:

- Enable or disable SNMP configuration function;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP V1/V2 read-only community name;
- Configure SNMP gateway.

### Operation Path

Open in order: "Main Menu > Remote Monitoring > SNMP Configuration".

### Interface Description

Interface screenshot of SNMP configuration as follows:

Main elements configuration description of SNMP configuration interface:

Interface Element	Description
SNMP Configuration	SNMP configuration function, options as follows: <ul style="list-style-type: none"> <li>• Enable;</li> <li>• Disable.</li> </ul>
SNMP V1/V2	SNMP supports the following version: <ul style="list-style-type: none"> <li>• SNMP V1: It adopts UDP protocol which can be used widely but exists security issue.</li> <li>• SNMP V2: Semantics has been enhanced, and it</li> </ul>

		supports TCP protocol.
SNMP Community	Read	Configure the read-only SNMP community name with the only operation permission of Get.
SNMP Community	Read/Write	Configure the Read/Write SNMP community name with the operation permission of Get and Set.
SNMP Trap		Configure the destination IP address that sends out warning message. Notes: It will send out alarm during cold or warm start, port offline/online, power on/off.



Note

Please pay attention to the permission problem of read and write in the SNMP browser, user can check the permission of used "community name" if the permission of "write" is invalid.

### Example: SNMP Configuration

For example: Enable SNMP configuration and configure the "Read-only community name" as "public", "Read-write community name" as "private", "SNMP gateway" as "192.168.1.1".

### Operation Steps

**Step 1** Log on to the Web configuration interface.

**Step 2** Select "Main Menu > Remote Monitoring > SNMP Configuration".

**Step 3** On the displayed page of "SNMP Configuration":

1. Select "enable" on the column of "SNMP Configuration";
2. Select "Read-only community name" as "public";
3. Select "Read/Write community name" as "private";
4. Select "SNMP gateway" as "192.168.1.1".

**Step 4** Click "Apply".

**Step 5** End.

## 9.3 Modbus\_TCP

### Function Description

On the page of "Modbus\_TCP", user can enable Modbus TCP monitoring function. Client can read the switch system, port, ring network, frame statistics and other parameters information via Modbus TCP protocol, which are convenient for various integrated systems to monitor and manage the device.



Note

- Switch with PoE function can acquire the switch's PoE information via Modbus TCP protocol.
- Please see the switch read-only register address information in the "Modbus TCP data sheet" of this section.

### Operation Path

Open in order: "Main Menu > Remote Monitoring > Modbus\_TCP".

### Interface Description

Modbus\_TCP screenshot:

The main element configuration description of Modbus\_TCP interface:

Interface Element	Description
Modbus_TCP	<p>"Enable" drop-down list of Modbus_TCP monitoring, options as follows:</p> <ul style="list-style-type: none"> <li>• Disable: it defaults to disabled;</li> <li>• Enable: After enabling Modbus_TCP monitoring function, client can read the switch device information via function code 4.</li> </ul>

### Modbus\_TCP Data Sheet

Switch read-only register (support function code 4) address information and stored device information, as the table below:



**Note**

The following table address is hexadecimal format, please convert it into suitable format according to the demands of current debugging tool.

Information Type	Address (HEX)	Data Type	Description
System Information	0x0000	2 Words	Device ID (reserved)
	0x0002	16 Words	Name (ASCII display)
	0x0012	16 Words	Description (ASCII display)
	0x0022	3 Words	MAC Address (HEX display)
	0x0025	2 Words	IP address
	0x0027	16 Words	Contact Information
	0x0037	16 Words	Firmware Ver (ASCII display)
	0x0047	16 Words	Hardware Ver (ASCII display)
	0x0057	16 Words	Serial No.
	0x0067	1 Word	Power supply 1 status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> </ul>
	0x0068	1 Word	Power supply 2 status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> </ul>
Port Information	0x1000-0x101B	1 Word	Port connection status: <ul style="list-style-type: none"> <li>0x0000: Link down</li> <li>0x0001: Link up</li> <li>0x0002: Disable</li> <li>0xFFFF: No port</li> </ul>
	0x101D-0x1038	1 Word	Port operating mode: <ul style="list-style-type: none"> <li>0x0000: 10M-Half</li> <li>0x0001: 10M-Full</li> <li>0x0002: 100M-Half</li> <li>0x0003: 100M-Full</li> <li>0x0004: 1G-Half</li> <li>0x0005: 1G-Full</li> <li>0xFFFF: No port</li> </ul>
	0x1039-0x1054	1 Word	Port flow control status: <ul style="list-style-type: none"> <li>0x0000: OFF</li> <li>0x0001: ON</li> </ul>

Information Type	Address (HEX)	Data Type	Description
			<ul style="list-style-type: none"> <li>0xFFFF: No port</li> </ul>
	0x1056-0x1071	1 Word	Port interface type: <ul style="list-style-type: none"> <li>0x0000: Copper port</li> <li>0x0001: Fiber port</li> <li>0x0002: Combo port</li> <li>0xFFFF: No port</li> </ul>
Frame Statistics	0x2000-0x2037	2 Words	Quantity of sending packets of the port.  For example, sending packets quantity of port 1 is 0x44332211, namely: Word 1 is 0x4433, Word 2 is 0x2211
	0x2039-0x2070	2 Words	Quantity of receiving packets of the port.  For example, receiving packets quantity of port 1 is 0x44332211, namely: Word 1 is 0x4433, Word 2 is 0x2211.
	0x2072-0x20A9	2 Words	Quantity of error packets sending of the port.  For example, sending error packets quantity of port 1 is 0x44332211, namely: Word 1 is 0x4433, Word 2 is 0x2211.
	0x20AB-0x20E2	2 Words	Quantity of receiving error packets of the port.  For example, receiving error packets quantity of port 1 is 0x44332211, namely: Word 1 is 0x4433, Word 2 is 0x2211.
Ring Information	0x3000	1 Word	Link redundancy algorithm category: <ul style="list-style-type: none"> <li>0x0000: None</li> <li>0x0001: SW-Ring V1</li> </ul>

Information Type	Address (HEX)	Data Type	Description
			<ul style="list-style-type: none"> <li>0x0002: SW-Ring V2</li> <li>0x0003: SW-Ring V3</li> <li>0x0004: RSTP</li> </ul>
	0x3001	1 Word	Ring type of Ring group 1: <ul style="list-style-type: none"> <li>0x0000: Single Ring</li> <li>0x0001: Coupling Ring</li> <li>0x0002: Chain</li> <li>0x0003: Dual_homing</li> </ul>
	0x3002	1 Word	Ring port 1 of Ring group 1
	0x3003	1 Word	Ring port 2 of Ring group 1
	0x3004	1 Word	Ring ID of Ring group 1
	0x3005	1 Word	HelloTime of Ring group 1
	0x3006	1 Word	Ring group 1 enable: <ul style="list-style-type: none"> <li>0x0000: Disable</li> <li>0x0001: Enable</li> </ul>
	0x3007	1 Word	Ring type of Ring group 2: <ul style="list-style-type: none"> <li>0x0000: Single Ring</li> <li>0x0001: Coupling Ring</li> <li>0x0002: Chain</li> <li>0x0003: Dual_homing</li> </ul>
	0x3008	1 Word	Ring port 1 of Ring group 2
	0x3009	1 Word	Ring port 2 of Ring group 2
	0x300A	1 Word	Ring ID of Ring group 2
	0x300B	1 Word	HelloTime of Ring group 2
	0x300C	1 Word	Ring group 2 enable: <ul style="list-style-type: none"> <li>0x0000: Disable</li> <li>0x0001: Enable</li> </ul>
PoE Information	0x4000 – 0x401C	1 Word	Port PoE status: <ul style="list-style-type: none"> <li>0x0000: Disconnect</li> <li>0x0001: Connect</li> <li>0xFFFF: No POE</li> </ul>
	0x401D – 0x4038	1 Word	Class of port PoE: <ul style="list-style-type: none"> <li>0x0000: Class 0</li> <li>0x0001: Class 1</li> <li>0x0002: Class 2</li> </ul>

Information Type	Address (HEX)	Data Type	Description
			<ul style="list-style-type: none"> <li>0x0003: Class 3</li> <li>0x0004: Class 4</li> <li>0x0005: Class Error</li> <li>0xFFFF: No POE</li> </ul>
	0x4039 – 0x4071	1 Word	Current of port PoE (mA)
	0x4072 – 0x40AA	1 Word	Voltage of port PoE (V)
	0x40AB – 0x40E3	1 Word	Power consumption of port PoE (W)

### Example: MODBUS\_TCP Configuration

Acquire the switch device name information via DebugTool analogue client, the switch information as follows:

- Switch default IP address: 192.168.1.254;
- Address of switch register that stores the device name information: 0x002;
- Number of switch register that stores the device name information: 16 words;

### Operation Steps

Configure the switch Modbus\_TCP monitoring enable.

**Step 1** Log on to the Web configuration interface.

**Step 2** Select "Main Menu > Remote Monitoring > Modbus\_TCP".

**Step 3** Select "Enable" on the drop-down list of "Modbus\_TCP", as the picture below.

**Step 4** Click "Apply".

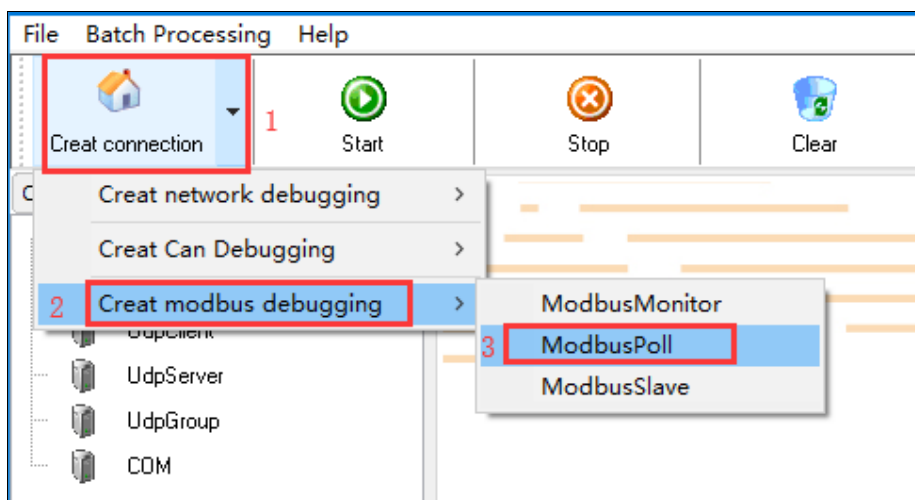
**Step 5** End.

Operate the debug tool software to acquire the device parameters.

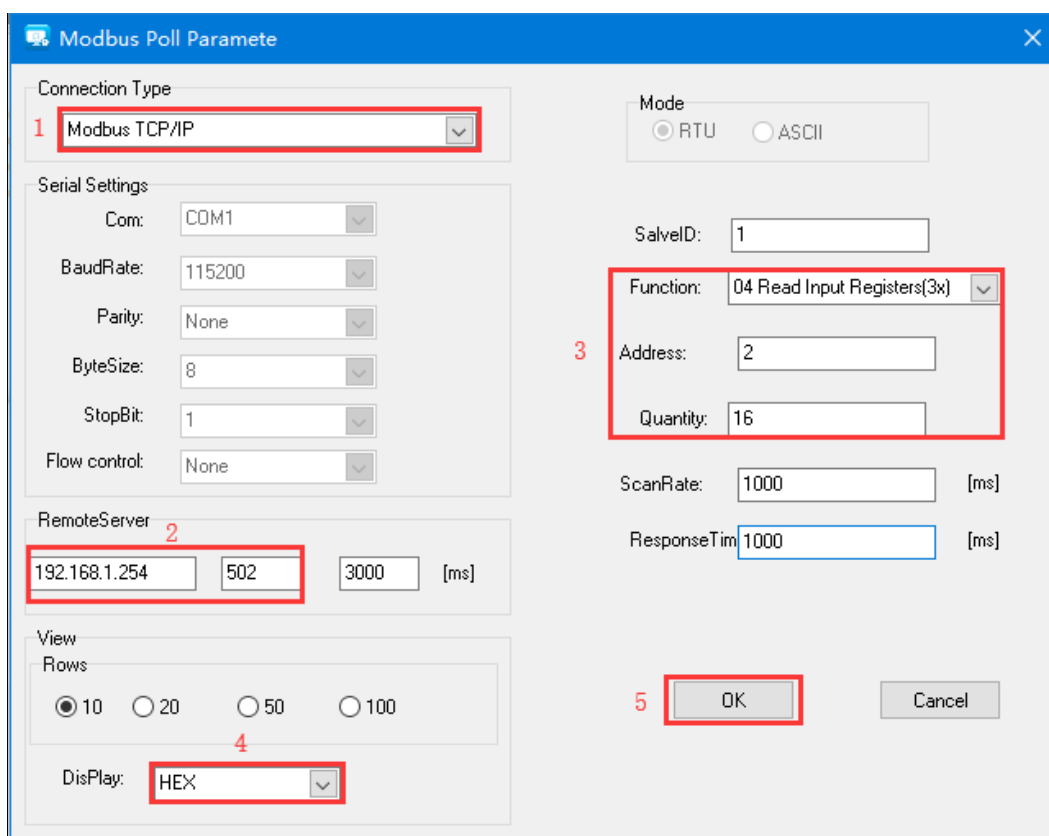
**Step 1** Open "Debug Tool".

**Step 2** Click the drop-down list of "Creat connection".

**Step 3** Select "Creat Modbus debugging > ModbusPoll", as the picture below.



**Step 4** Configuration window of ModbusPoll parameters pops up, the configuration as the picture below:



1. On the drop-down list of "Connection Type", select "Modbus TCP/IP";
2. Enter the switch IP address "192.168.1.254" and port number "502" on the column of "Remote Server";
3. Select "04 Read Input Registers (3x)" on the drop-down list of "Function";



4. Enter decimal device name register address "2" on the text box of "Address";

Note:

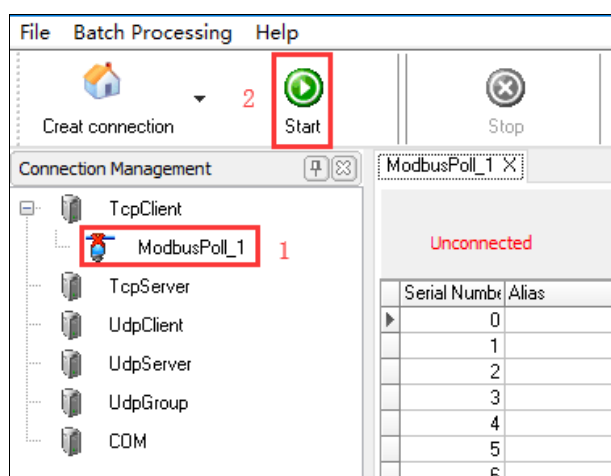
Here the start address is decimal format, so hexadecimal register address should be converted into decimal format.

5. Enter the register amount "16" on the text box of "Quantity";

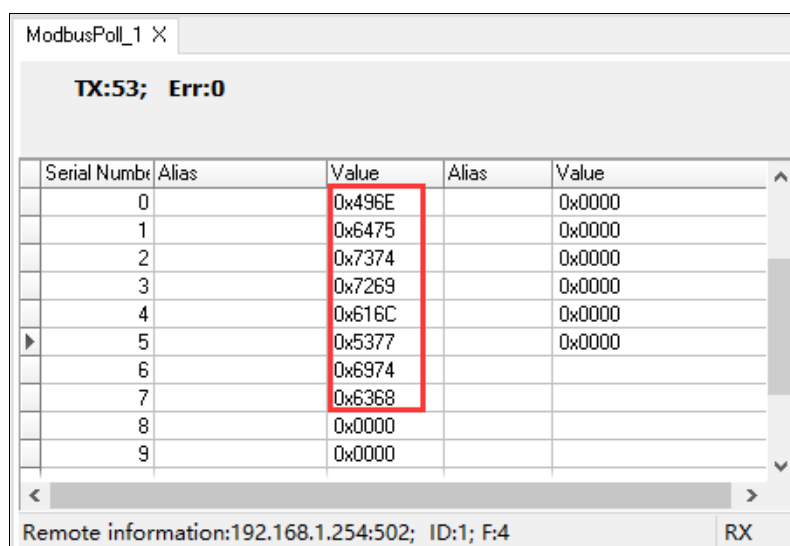
6. Select "HEX" on the drop-down list of "Display";

7. Click "OK".

**Step 5** On the page of Debug Tool, select created ModbusPoll, and then click "Start";



**Step 6** Check responsive data, and convert the hexadecimal value read by register into ASCII code, displayed as "Industrial Switch";



**Step 7** End.



Note

- Switch can establish 4 Modbus TCP monitoring connections at the same time.
- Switch Port Information, Frame Statistics and PoE Information. It supports the sequential read of port parameters of multiple registers. For example, address range of the register that stores port connection status information is 0x1000-0x101B, each register data is 1 word; when the start address of register is 0x1000, the register number is 1, it will read port 1 status; If the register quantity is 10, it will read the status from Port 1 to Port 10; If the port doesn't exist, then the read data will be 0xFFFF.

## 9.4 Relay Warning

### Function Description

On the page of "Relay Warning", user can set power supply alarm, port alarm function; when the equipment is in abnormal state, it can promptly notify the administrator, and quickly repair the equipment status to avoid excessive losses.

### Operation Path

Open in order: "Main Menu > Remote Monitoring > Relay Warning".

### Interface Description

Relay warning interface as follows:

Current location>>Main Menu>>Remote Monitoring>>Relay Warning

Enable: ☒ Enable ☐ Disable

Relay Output Type:

System Events					
Power	Alarm Setting	Status	Power	Alarm Setting	Status
1	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Normal	2	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Fault

Port Events					
Port	Alarm Setting	Connection	Port	Alarm Setting	Connection
01	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS	02	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS
03	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Link	04	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS
05	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS	06	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	Link
07	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS	08	<input checked="" type="radio"/> Enable <input type="radio"/> Disable	LOS

Main elements configuration description of relay warning interface:

Interface Element	Description
System Events	Configure alarm settings. Options as follows: <ul style="list-style-type: none"> <li>Enable;</li> <li>Disable.</li> </ul>
Relay Output Type	Click the drop-down list of "Relay Output Type", options as follows: <ul style="list-style-type: none"> <li>Normally open: when it's normal without alarm, relay is in closed status; when alarm occurs, relay is in open status;</li> <li>Normally closed: when it's normal without alarm, relay is in open status; when alarm occurs, relay is in closed status.</li> </ul>
<b>System Events</b>	<b>System events column</b>
Power	Display the device power supply number.
Alarm Setting	Configure the power supply alarm function. Options as follows: <ul style="list-style-type: none"> <li>Enable;</li> <li>Disable.</li> </ul> Notes: <ul style="list-style-type: none"> <li>DC provides 2 power supplies (AC without power supply</li> </ul>

Interface Element	Description
	<p>alarm), when one power supply goes wrong, another power supply can provide electricity soon, dual power supply hot standby is supported.</p> <ul style="list-style-type: none"> <li>After enable power supply alarm, the device will output alarm signal to hint abnormal operation of power supply when power supply is abnormal status.</li> </ul>
Status	<p>Display current status of power supply:</p> <ul style="list-style-type: none"> <li>Fault;</li> <li>Normal.</li> </ul>
<b>Port Events</b>	<b>Port events column</b>
Port	Display the device port number.
Alarm Setting	<p>Configure the port alarm function. Options as follows:</p> <ul style="list-style-type: none"> <li>Enable;</li> <li>Disable.</li> </ul> <p>Note After enabling port alarm, when port is in abnormal status, such as connection or disconnection, the device will output a signal to hint the abnormal operation of device.</p>
Connection	<p>Display port connection status of the device:</p> <ul style="list-style-type: none"> <li>Unconnected;</li> <li>Connected.</li> </ul>

### Example: Alarm Configuration

For example: Enable alarm configuration, and enable power supply alarm for power 1, port alarm for port 1.

### Operation Steps

- Step 1** Log on to the Web configuration interface.
- Step 2** Click "Main Menu > Remote Monitoring > Relay Warning".
- Step 3** On the displayed page of "Relay Warning":
  1. Select "enable" on the column of "Alarm Setting";
  2. Select "Relay Output Type" as "open".
- Step 4** On the region of "System Events", select "Enable" the "Alarm Setting" of power 1.
- Step 5** On the region of "Port Events", select "Enable" the "Alarm Setting" of power 1.
- Step 6** Click "Apply".
- Step 7** End.

# 10 Port Statistics

---

## 10.1 Frame Statistics

### Function Description

On the page of “Frame Statistics”, user can check frame statistics of sending/receiving data packets transmitted by the port within a period of time.

### Operation Path

Open in order: “Main Menu > Port Statistics > Frame Statistics”.

### Interface Description

Frames statistics interface as follows:

Rx Frame Statistics										
Item / Port	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
InGoodOctets	0	0	0	0	0	0	281582	0	0	0
InBadOctets	0	0	0	0	0	0	0	0	0	0
InUnicast	0	0	0	0	0	0	2805	0	0	0
InBroadCasts	0	0	0	0	0	0	216	0	0	0
InMulticasts	0	0	0	0	0	0	214	0	0	0
InPause	0	0	0	0	0	0	0	0	0	0
InUndersize	0	0	0	0	0	0	0	0	0	0
InFragments	0	0	0	0	0	0	0	0	0	0
InOversize	0	0	0	0	0	0	0	0	0	0
InJabber	0	0	0	0	0	0	0	0	0	0
IN RxErr	0	0	0	0	0	0	0	0	0	0
INFCSErr	0	0	0	0	0	0	0	0	0	0
Tx Frame Statistics										
Item / Port	Port01	Port02	Port03	Port04	Port05	Port06	Port07	Port08	PortG1	PortG2
OutOctets	0	0	0	0	0	0	1713820	0	0	0
OutUnicast	0	0	0	0	0	0	2682	0	0	0
OutBroadCasts	0	0	0	0	0	0	0	0	0	0
OutMulticasts	0	0	0	0	0	0	0	0	0	0
OutPause	0	0	0	0	0	0	0	0	0	0
Excessive	0	0	0	0	0	0	0	0	0	0
Collisions	0	0	0	0	0	0	0	0	0	0
Deferred	0	0	0	0	0	0	0	0	0	0
Single	0	0	0	0	0	0	0	0	0	0
Multiple	0	0	0	0	0	0	0	0	0	0
OutFCSErr	0	0	0	0	0	0	0	0	0	0
Late	0	0	0	0	0	0	0	0	0	0

Main elements configuration description of received frames statistics interface:

Interface Element	Description
InGoodOctets	Received valid data bytes (including FCS).
InbadOctets	Received invalid data bytes (including FCS).
InUnicasts	Valid unicast data frames number.
InBroadcasts	Valid broadcast data frames number.
InMulticasts	Valid multicast data frames number. Notes: Broadcast data frames are not included.
InPause	Valid flow control pause frames number.
InUndersize	Valid data frames number whose length is less than 64 bytes.
InFragments	Fragmented frames number. Notes: FCS verification is invalid when the data frame length is less than 64 bytes.
InOversize	Received valid oversize data frames number. Notes: Oversize frames refer to those data frames whose length is more than 1518 or 1522 bytes.

Interface Element	Description
InJabber	Received invalid oversize data frames number. Notes: Oversize frames refer to those data frames whose length is more than 1518 or 1522 bytes.
InFCSErr	Number (complete data) of error frames counted by FCS verification.

Main elements configuration description of transmitted frames statistics interface:

Interface Element	Description
OutOctets	Output bytes number. Notes: This data packet includes FCS parity bit.
OutUnicasts	Output unicast data frames number.
OutBroadcasts	Output multicast data frames number.
OutMulticasts	Output multicast data frames number.
OutPause	Output flow control pause frames number.
Excessive	Output unsuccessful data frames number. Notes: Frames with over 16 times of half duplex flow control attempts are unsuccessful.
Collisions	Collision number during outputting.
Deferred	Number of frames with successfully delayed sending.
Single	Successfully output data frames number after one time collision.
Multiple	Successfully output data frames number after multiple times collision.
OutFCSErr	Output invalid FCS data frames number.
Late	Number of output frames with the occurrence of collisions after 64 bytes.

# 11 Network Diagnosis

## 11.1 Port Mirror

### Function Description

On the “Port Mirror” page, user can enable or configure the correspondence between ingress data mirror and egress data mirror.

### Operation Path

Open in order: “Main Menu > Diagnosis > Mirror”.

### Interface Description

Port mirror interface as follows:

The main element configuration description of port mirror interface:

Interface Element	Description
Mirror	Setting port mirror function, options are:



	<ul style="list-style-type: none"> <li>• Enable;</li> <li>• Disable.</li> </ul>
Mirror port	Choose the ingress and egress data port that needs mirroring.
Collect port	Configure the collect ports with ingress/egress data mirroring.
Watch direction	Backup data during mirroring, options are: <ul style="list-style-type: none"> <li>• All;</li> <li>• Ingress;</li> <li>• Egress.</li> </ul>

### For instance: port mirror configuration

For example: use port 4 to collect ingress data and egress data of port 1, port 2 and port 3.

### Operation Steps

- Step 1** Log in to Web configuration interface.
- Step 2** Choose "Main Menu > Diagnosis > Mirror".
- Step 3** On the "Mirror" page, choose "enable" in the "mirror".
- Step 4** In the option of "mirror port", choose port "1", "2" and "3".
- Step 5** In the option of "collect port", choose port "4".
- Step 6** In the option of "watch direction", choose "all".
- Step 7** Click "apply".
- Step 8** End.

# 12 System Management

## 12.1 Log Information

### Function Description

On the page of “Log information”, user can enable log record to check the device status information.

### Operation Path

Open in order: “Main Menu > Basic Settings > Log information”.

### Interface Description

Log information interface as follows:

Index	Type	Time	Event
001	Boot information	01-01-2008-Tues 12:30:00	Switch pass-test
002	Boot information	01-01-2008-Tues 12:30:00	Flash pass-test
003	Boot information	01-01-2008-Tues 12:30:00	SRAM pass-test
004	Handling Information	01-01-2008-Tues 12:30:00	undefined

Main elements configuration description of log information interface:

Interface Elements	Description
Log record	Enable or disable log record.
Display Type	User can check the device booting, connection and

Interface Elements	Description
	operation information.

## 12.2 Time Configuration

### Function Description

On the page of “Time Configuration”, user can check current PC time or system operation time, and select relative time zone.

### Operation Path

Open in order: “Main Menu > Basic Settings > SNTP”.

### Interface Description

Time configuration interface as follows:

Main elements configuration description of time configuration interface:

Interface Elements	Description
SNTP Configuration	Enable or disable time configuration function.
Time Zone	Selection of standard time zone for countries in the world.
NTP Server	Host name or IP address that provides NTP timing and time service for user.
System Time	Time of the device itself, after powering on, press

Interface Elements	Description
	"Tuesday, January 1, 2008" to manually or automatically use NTP updating.
PC Time	PC time of the visitor itself, the time display isn't relative to the switch itself.



- NTP server can be empty, the device adopts self-contained server updating and must ensure the correct configuration of DNS and gateway;
- NTP server can't be empty, it must be valid host name or legal IP address;
- Only the "administrator" has the privilege to manually configure the device time.

## 12.3 Device Address

### Function Description

On the page of "Network Settings", user can conduct following operations:

- Configure default IP address of the device;
- Configure netmask;
- Configure gateway address;
- Configure DNS server;
- Reboot the device.

### Operation Path

Open in order: "Main Menu > Basic Settings > Network & Reboot".

### Interface Description

Device address interface as follows:

Network Settings

☒ Use the following IP address
☐ Automatically obtain IP address

IP Address:

Subnet Mask:

Gateway:

☒ Use the following DNS server address
☐ Automatically obtain DNS server address

DNSServer:

Main elements configuration description of device address interface:

Interface Elements	Description
<b>Network Settings</b>	<b>Configuration column of the device address</b>
Use the following IP address	It represents that enabling manually configured IP address, netmask and gateway address.
Automatically obtain DNS server address	It represents that enabling the system automatical acquisition for the device IP address.
IP Address	Configure IP address of the device. Notes: Default configured IP address is 192.168.1.254.
Subnet Mask	Configure subnet mask of the device. Notes: Default configured subnet mask is 255.255.255.0.
Gateway	Configure gateway address of the device. Notes: Default configured gateway address is 192.168.1.1.
Use the following DNS server address	Configure the acquisition form of DNS server address as manual configuration. Notes: Default configured DNS server address is 202.96.134.133.
Automatically obtain DNS server address	Configure the acquisition form of DNS server address as automatic acquisition. Notes: When IP address is manual configuration, this option becomes gray and is not optional.

Interface Elements	Description
DNS Server	Configure DNS server address.
Apply	Save the device address information. Notes: Some devices may automatically reboot after configuration, and the configuration will take effect after rebooting.
Cancel	Cancel the modification of device address information.

#### For Example: Manual Configuration

For example: Configure the device address information, IP address is 192.168.5.88, gateway address is 192.168.5.1.

#### Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select "Main Menu > Basic Settings > Network & Reboot".
- Step 3** On the "Network Settings" region of displayed page of "Device Management", select "Use the following IP address".
  - a) Enter "192.168.5.88" in the textbox of "IP Address".
  - b) Enter "192.168.5.1" in the textbox of "Gateway".
- Step 4** Click "Apply", system will automatically save the configuration.
- Step 5** End.

#### For Example: Automatic Acquisition of IP

For example: configure the device IP address as automatic acquisition.

#### Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select "Main Menu > Basic Settings > Network & Reboot".
- Step 3** On the "Network Settings" region of displayed page of "Device Management", select "Automatically obtain IP address".
- Step 4** Click "Apply", system will automatically save the configuration.
- Step 5** End.

## 12.4 System Information

#### Function Description

On the page of "System Identification", user can configure the following options:

- Device model;
- Device name;

- Device description;
- Device number;
- Contact information.

## Operation Path

Open in order: “Main Menu > Basic Settings > System Identification”.

## Interface Description

System information interface as follows:

Current Location>>Main Menu>>Basic Settings>>System Identification

Settings

Module :

Name :

Description :

Serial No :

Contact Information :

Main elements configuration description of system information interface:

Interface Elements	Description
Module	Configure the device model.
Name	Configure the device name to identify each device in the network.
Description	Configure the device summary description.
Serial No.	Configure the device number. Notes: <ul style="list-style-type: none"> <li>• The number can be used for describing the installation position of the device;</li> <li>• The number length shouldn't be more than 30 bytes.</li> </ul>
Contact Information	Configure the contact Information of the device maintenance personnel. Notes: <ul style="list-style-type: none"> <li>• Support the entering of Chinese characters, English letters,</li> </ul>

	number, characters like “-”, “_”, “@”, “,”, “.”; • The entering of blank space is not supported.
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### For Example: Device Information Configuration

For example: Configure the device according to following information:

- “Module” is “ManagedSwitch1”;
- “Name” is “IndustrialSwitch”;
- “Description” is “8ports”.

### Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > System Identification”.
- Step 3** On the “Settings” region of displayed page of “System Identification”:
- Enter “Module” as “ManagedSwitch1”;
  - Enter “Name” as “IndustrialSwitch”;
  - Enter “Description” as “8ports”.
- Step 4** Click “Apply” to save the configuration.
- Step 5** End.

## 12.5 File Management

### Function Description

On the page of “File Management”, user can conduct following operations:

- Restore factory defaults;
- Upload and download configuration files;
- System upgrading.

### Operation Path

Open in order: “Main Menu > System Management > File Management”.

### Interface Description

File management interface as follows:



Current Location>>Main Menu>>Basic Settings>>System File Update

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**Factory Default**

Load Factory Default :

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**Update Configuration File from Local PC**

Download Configuration :

Upload Configuration :

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**Upgrade Firmware from Local PC**

Upgrade Firmware :

Main elements configuration description of file management interface:

Interface Element	Description
<b>Factory Default</b>	<b>Configuration column of restore factory defaults</b>
Load Factory Default	Restore factory defaults of the switch. Notes: Restore factory defaults will cause all devices status to be in the factory status, default IP address is "192.168.1.254".
<b>Update Configuration File from Local PC</b>	<b>Configuration column of configuration files</b>
Download Configuration	Download the configuration information files of current switch. Tips: Downloaded configuration files can be uploaded to other homogeneous devices, achieving repeated usage after one-time configuration.
Upload Configuration	Configure the switch via uploading configuration files information.
<b>Upgrade Firmware from Local PC</b>	<b>Configuration column of system upgrade</b>
Upgrade Firmware	Upgrade operating system of the switch.



Warning

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In the process of uploading configuration files or upgrading software, please don't click or configure other WEB page of the switch, or reboot the switch; otherwise, it will lead to failure of configuration files uploading or software upgrading, or even cause system breakdown of the switch.

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### Example: Download Configuration Files

For example: Download configuration files.

#### Operation Steps

- Step 1** Log on to the Web configuration interface.
- Step 2** Select "Main Menu > System Management > File Management".
- Step 3** On the region of "Update Configuration File from Local PC" of displayed page of "File Management", click "Download".
- Step 4** Click "Save (S)" on the pop-up dialog box of "File Download".
- Step 5** Select save path on the pop-up dialog box of "Save as".
- Step 6** Click "Apply".
- Step 7** End.

### Example: Upload Configuration

For example: Upload configuration files to the switch for updating the switch configuration.

#### Operation Steps



Note

Please prepare the configuration files and then conduct uploading operation.

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- Step 1** Log on to the Web configuration interface.
- Step 2** Select "Main Menu > System Management > File Management".
- Step 3** On the region of "Update Configuration File from Local PC" of displayed page of "File Management", click "Browse" after the label of "Upload Configuration".
- Step 4** Select prepared cfg configuration files on the pop-up "select files to load".
- Step 5** Click "Open".
- Step 6** Click "Upload".
- Step 7** Alarm information is displayed in the pop-up dialog box of "messages from the webpage", click "OK".
- Step 8** The device is rebooted automatically and its configuration is updated.
- Step 9** End.

## 12.6 System Logout

### Function Description

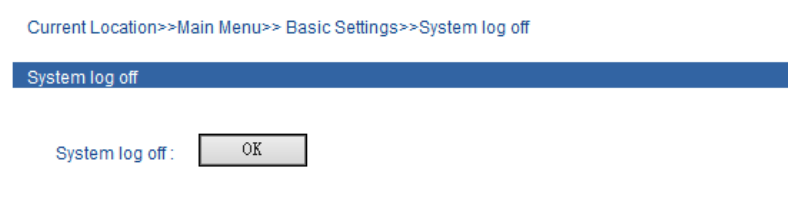
On the page of “System log off”, user can log off the login information of current user.

### Operation Path

Open in order: “Main Menu > Basic Settings > System log off”.

### Interface Description

System logout interface as follows:



Main elements configuration description of system logout interface:

Interface Elements	Description
System log off	Log off the login information of current user.

### For example: Log off and change administrator to login

For example: Log off current user, and then login again via entering “admin8” in the column of administrator and “admin8” in the column of password.

### Operation Steps

- Step 1** Login to the Web configuration interface.
- Step 2** Select “Main Menu > Basic Settings > System log off”.
- Step 3** Click “OK” on the displayed page of “System log off”.
- Step 4** Conduct following operations on the pop-up login dialog box:
  - a) Enter “admin8” on the option box of “User name”.
  - b) Enter “admin8” on the option box of “Password”.
- Step 5** Click “OK”.
- Step 6** Alarm information is displayed on the pop-up dialog box of “messages from the webpage”, click “OK”.
- Step 7** Login successfully to the WEB interface.
- Step 8** End.

# The Second Part: Frequently Asked Questions

## 13 FAQ

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### 13.1 Sign in Problems

1. **Why the webpage display abnormally when browsing the configuration via WEB?**

Before access the WEB, please eliminate IE cache buffer and cookies. Otherwise, the webpage will display abnormally.

2. **How about forget the login password?**

For forgetting the login password, the password can be initialized by restoring factory setting, specific method is adopt BlueEyes\_II software to search and use restore factory setting function to initialize the password. Both of the initial user name and password are "admin".

3. **Is configuring via WEB browser same to configuring via BlueEyes\_II software?**

Both configurations are the same, without conflict.

## 13.2 Configuration Problem

**1. How to configure the device restore default setting via DIP switch?**

Turn the DIP switch 2 to ON position, and restore default setting after power on again.

**2. Why the bandwidth can't be increased after configure Trunking (port aggregation) function?**

Check whether the port attributes set to Trunking are consistent, such as rate, duplex mode, VLAN and other attributes.

**3. What's the difference between RING V2 and RING V3?**

RING V2 and RING V3 are our company's ring patents. RING V2 only supports single ring and coupling ring. RING V3 supports single ring, coupling ring, chain and Dual\_homing, and Hello\_Time can be set to detect port connection status.

**4. How to deal with the problem that part of switch ports are impassable?**

When some ports on the switch are impassable, it may be network cable, network adapter and switch port faults. User can locate the faults via following tests:

- Connected computer and switch ports keep invariant, change other network cable;
- Connected network cable and switch port keep invariant, change other computers;
- Connected network cable and computer keep invariant, change other switch port;
- If the switch port faults are confirmed, please contact supplier for maintenance.

**5. How about the order of port self-adaption state detection?**

The port self-adaption state detection is conducted according to following order: 1000Mbps full duplex, 100Mbps full duplex, 100Mbps half-duplex, 10Mbps full duplex, 10Mbps half-duplex, detect in order from high to low, connect automatically in supported highest speed.

## 13.3 Alarm Problem

1. **When the device alarms, except BlueEyes\_II software nether alarm information display area will display alarm information, is there any other way to notify technical staffs?**

When the device alarms, monitoring host computer buzzer will continue to emit alarm sounds.

## 13.4 Indicator Problem

1. **Power indicator isn't bright, what's the reason?**

Possible reasons include:

- Not connected to the power socket; troubleshooting, connected to the power socket.
- Power supply or indicators faults; troubleshooting, change the power supply or device test.
- Power supply voltage can't meet the device requirements; troubleshooting, configure the power supply voltage according to the device manual.

2. **Link/Act indicator isn't bright, what's the reason?**

Possible reasons include:

- The network cable portion of Ethernet copper port is disconnected or bad contact; troubleshooting, connect the network cable again.
- Ethernet terminal device or network card works abnormally; troubleshooting, eliminate the terminal device fault.
- Not connected to the power socket; troubleshooting, connected to the power socket.
- Interface rate doesn't match the pattern; troubleshooting, examine whether the device transmission speed matches the duplex mode.

3. **Ethernet copper port and Combo port indicator are connected normally, but can't transmit data, what's the reason?**

When the system is power on or network configuration changes, the device and switch configuration in the network will need some time. Troubleshooting, after

the device and switch configuration are completed, Ethernet data can be transmitted; if it's impassable, power off the system, and power on again.

**4. The switch halts after communicate for a period time, and returns to normal after reboot, what's the reason?**

Reasons may include:

- Surrounding environment disturbs the product; troubleshooting, product grounding adopts shielding line or shields the interference source.
- Site wiring is not normative; Troubleshooting, optical fiber, network cable, optical cable cannot be arranged with power line and high-voltage line.
- Network cable is disturbed by static electricity or surge; Troubleshooting, change the shielded cable or install a lightning protector.
- High and low temperature influence; troubleshooting, check the device temperature usage range.

# 14 Maintenance and Service

Since the date of product delivery, our company provides five-year product warranty. According to our company's product specification, during the warranty period, if the product exists any failure or functional operation fails, our company will be free to repair or replace the product. However, the commitments above do not cover damage caused by improper usage, accident, natural disaster, incorrect operation or improper installation.

In order to ensure that consumers benefit from our company's managed switch products, consumers can get help and solutions in the following ways:

- Internet service;
- Call technical support office;
- Product repair or replacement;

## 14.1 Internet Service

More useful information and tips are available via our company website. Website:  
<http://www.3onedata.com>

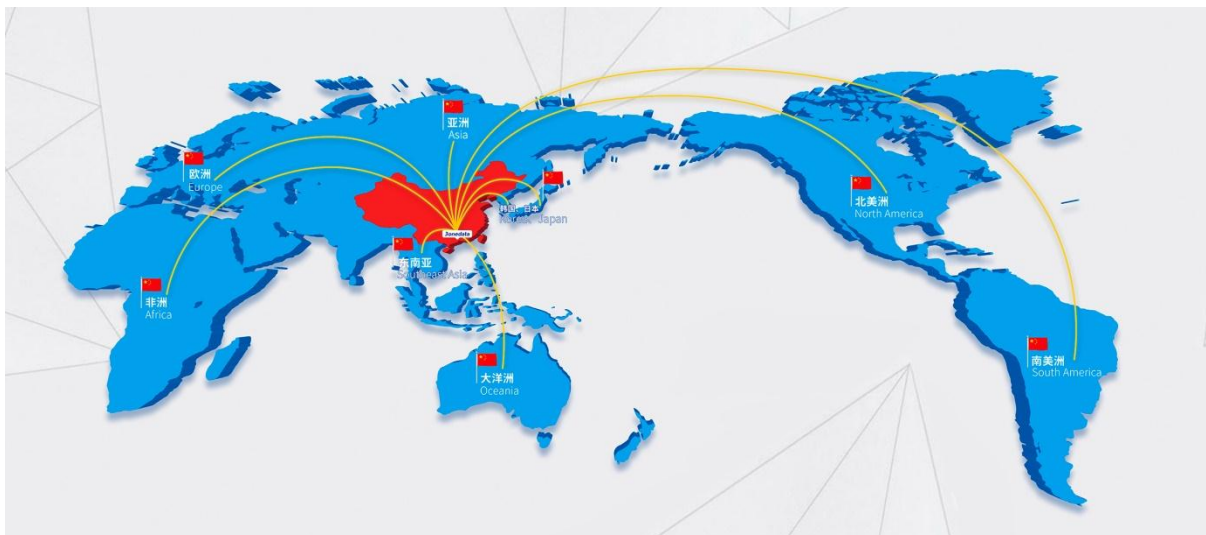
## 14.2 Service Hotline

Users using our company products can call technical support office. Our company has professional technical engineers to answer the questions and help solve the products or usage problems ASAP. Free service hotline: **+86-400-880-4496**



## 14.3 Product Repair or Replacement

As for the product repair, replacement or return, customers should firstly confirm with the company technical staff, and then contact the company salesmen and solve the problem. According to the company's handling procedure, customers should negotiate with our company's technical staff and salesmen to complete the product maintenance, replacement or return.



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