Dahua Dual Optical Port 4-Port PoE Switch

User's Manual

V1.0.1

Dahua Vision Technology Co., Ltd.

Important Safeguard and Warning

Please read the following safeguards and warnings carefully before using the product in order to avoid damages and losses.

Attentions:

- Do not expose the device to lampblack, steam or dust. Otherwise it may cause fire or electric shock.
- Do not install the device at position exposed to sunlight or in high temperature. Temperature rise in device may cause fire.
- Do not expose the device to humid environment. Otherwise it may cause fire.
- The device must be installed on solid and flat surface in order to guarantee safety under load and earthquake. Otherwise, it may cause device to fall off or turnover.
- Do not place the device on carpet or quilt.
- Do not block air vent of the device or ventilation around the device. Otherwise, temperature in device will rise and may cause fire.
- Do not place any object on the device.
- Do not disassemble the device without professional instruction.

Warning:

- Please use battery properly to avoid fire, explosion and other dangers.
- Please replace used battery with battery of the same type.
- Do not use power line other than the one specified. Please use it properly. Otherwise, it may cause fire or electric shock.

Special Announcement:

- This manual is for reference only.
- All the designs and software here are subject to change without prior written notice.
- All trademarks and registered trademarks are the properties of their respective owners.
- If there is any uncertainty or controversy, please refer to the final explanation of us.
- Please visit our website for more information.

1 Product Overview

1.1 Features

Common Features:

- Two-layer industrial PoE switch.
- Conform to IEEE802.3, IEEE802.3u, IEEE802.3ab/z and IEEE802.3X standards.
- MAC auto study and aging, MAC address list capacity is 8K. All ports self-adapt MDI/MDIX mode.
- Three 10/100M self-adaptive RJ45 ports; support IEEE802.3af, IEEE 802.3at standard power supply.
- One 10/100/1000M self-adaptive RJ45 port, support Hi-PoE 60W power supply.
- Support two 1000M SFP optical ports, used for cascading or forming looped network.
- Support PoE power consumption management function, make sure it won't cause power failure to the device when it is overloaded.
- The indicator light displays PoE power supply, power failure and other functions.
- Industrial wide temperature design.
- Adopt metal structure.
- Support DC48-57V power supply.

Individual features:

- DH-PFS3206-4P-96 and DH-PFS4206-4P-96 support PoE total output power 96W; DH-PFS3206-4P-120 and DH-PFS4206-4P-120 support PoE total output power 120W.

- DH-PFS3206-4P-96 and DH-PFS3206-4P-120 support dual optical port as cascading; DH-PFS4206-4P-96 and DH-PFS4206-4P-120 support dual port to form looped network with convergence switch DH-PFS5424-24T.
- Ring network PoE switch supports loop circuit protection, quick ring network and RSTP.
- Cascading PoE switch is not equipped with network management function while ring network PoE switch is so, including system info check and setup, port mirroring, 802.1Q VLAN, ring network, SNMP, PoE page management and etc.

1.2 Typical Application

1.2.1 Cascading Mode
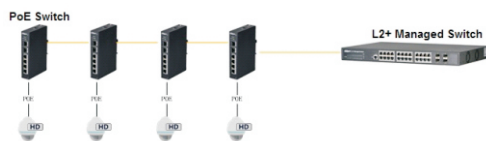
See Figure 1-1 for the cascading mode.

Figure 1-1

1.2.2 Ring Network Mode

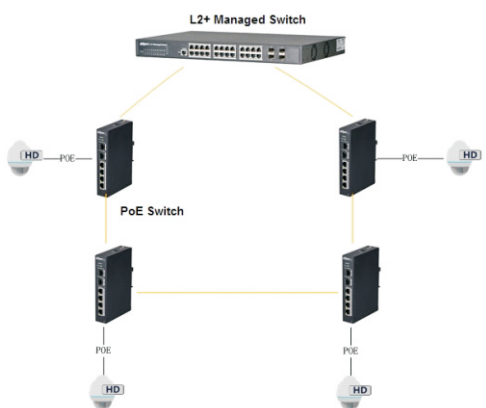See Figure 1-2 for the typical networking scene.

Figure 1-2

2 Device Structure

2.1 4-Port PoE Switch

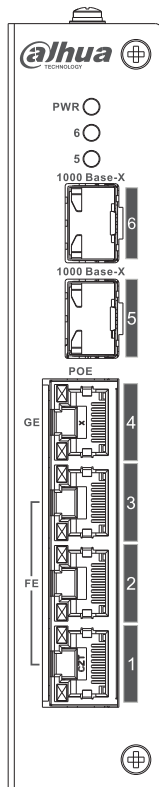### 2.1.1 Front Panel

The front panel is shown in Figure 2-1.

Figure 2-1

Refer to Sheet 2-1 for more details about the front panel.

SN	Name	Note
1	FE	10/100M self-adaptive RJ45 port, used for PoE power supply
2	GE	10/100/1000M self-adaptive RJ45 port, used for PoE power supply.
3	1000 Base-X	1000M SFP optical port.
4	Link / Act	Optical port status indicator light.
5	PWR	Power indicator light, used for PoE power supply indication as well, refer to the following sheet for more details.

Sheet 2-1

The PoE operation status indication shares the POWER light, which includes three statuses: single port device power on, single port device power off and unit device consumption overload. Please refer to the sheet 2-2 for more details.

SN	Operation Status	Display Mode
1	Single port device power on	Slow flash twice
2	Single port device power off	Quick flash once, slow flash once
3	Unit device consumption overload	Quick flash twice

Sheet 2-2

2.1.2 Upper Cover

The device power port is shown in Figure 2-2; it supports DC48-57V power supply.
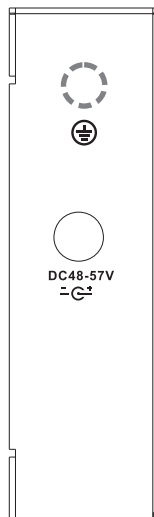
DC48-57V

Figure 2-2

2.1.3 PoE Power Supply

- 3 FE RJ45 ports support IEEE802.3af, IEEE802.3at standard power supply.
- 1 GE RJ45 port supports IEEE802.3af, IEEE802.3at standard and HiPoE 60W power supply.
- The total power of PoE power supply is no more than 96W or 120W according to different product models.

Users can connect the device to PC and implement system setup, device management and port management upon the device.

3 WEB Client Operation

3.1 Login

Make sure the device is connected to PC before logging in Web, and make the PC and device in the same network segment. The steps of logging in WEB client are as follows:

Step 1
Enter device IP address in the IE address bar (default IP address is: 192.168.1.110), press "Enter",
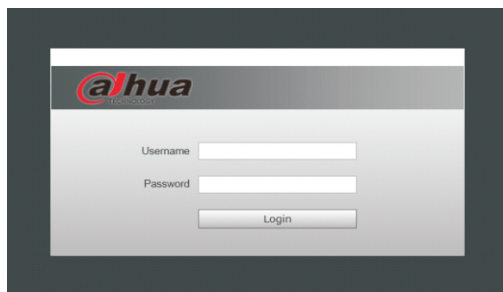and the system displays the interface as shown in Figure 3-1.

Figure 3-1

Step 2
Enter "User name" and "password"; single click "Login", the system will enter the main interface of Web client.

Note:
Device factory default password is empty; users only need to enter user name "admin", and log in without entering password.

3.2 Device Info

⊘ : Greens means link is normal; ⚠ : Yellow means abnormality, general; ⚠ : Red means abnormality, serious. See Figure 3-2 for more details.
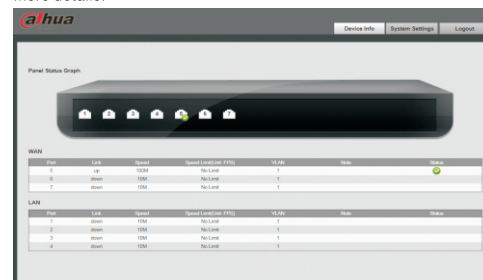
Figure 3-2

3.3 System Settings

Users can check system information in "system settings", and implement the operations of network config, software upgrade, password modification, restore default config and system reboot.

3.3.1 System Info

Select "system settings > System info", you can check the device model and software version; see Figure 3-3 for more details.
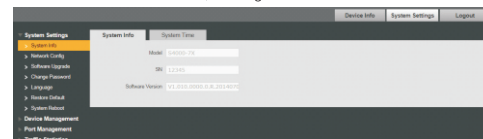
Figure 3-3

3.3.2 Network Config

You can configure device IP address, subnet mask and default gateway via network config.

Step 1
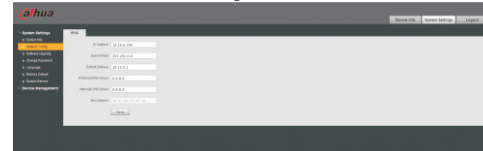Select "System Settings > Network Config", the system will display the interface which is shown in Figure 3-4 below.

Figure 3-4

Step 2
Configure "IP address", "Subnet mask", "Default gateway" and "DNS server".

Step 3
Click "Save" and complete configuration.

3.3.3 Software Upgrade

You can upgrade software to the latest version by software upgrade.

Step 1
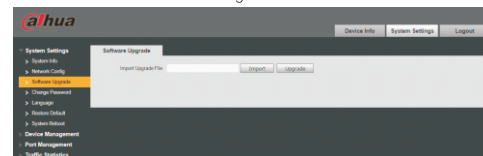Select "System Settings > Software Upgrade", the system will display the interface which is shown in Figure 3-5 below.

Figure 3-5

Step 2
Click "Import" and select the upgrade file.

Step 3
Click "Upgrade".

3.3.4 Change Password

There is no password by default when the device is delivered out of factory. Therefore, you don't need to enter original password when changing password. See Figure 3-6 for more details.

Figure 3-6

3.3.5 Restore Default

After you click "Restore Default Config", the system will restore factory default configuration, please operate carefully.

Note:
After clicking "Restore Default Config", IP address won't restore default configuration. See Figure 3-7 for more details.
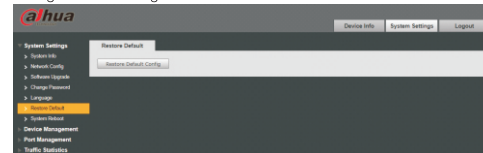
Figure 3-7

3.3.6 System Reboot

You can implement remote reboot operation upon the device via "System Reboot". See Figure 3-8 for more details.
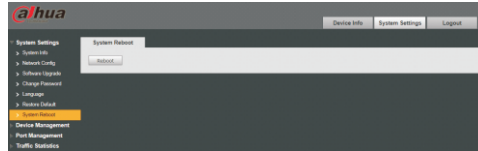

Figure 3-8

3.4 Device Management

You can implement looped network config, serial port config, 802.1Q VLAN config and PORT VLAN config via device management.

3.4.1 Ring Config

Rapid Ring Network Config

Rapid ring network is a link layer protocol which is specially applied in Ethernet ring. It can prevent broadcast storm caused by data loop when Ethernet ring is complete, and it can rapidly recover communication channel between each node of the ring when a link of the Ethernet ring is disconnected, which is equipped with pretty high rate of convergence.
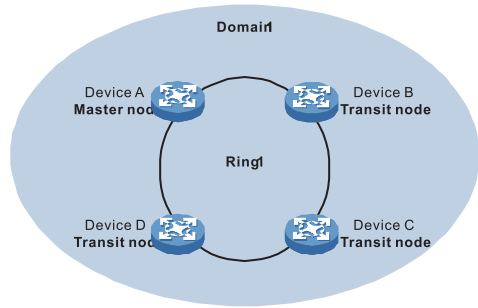
Basic Concept

Figure 3-9

1) Rapid Ring Network Domain

It owns same domain ID and control VLAN, besides, the interconnected devices constitute a rapid ring domain. A rapid ring domain includes a master ring, control VLAN, main node, transit node, master port and slave port. As it is shown in Figure 3-9 that Domain 1 is a rapid ring domain, which includes a master ring called Ring 1.

2) Rapid Network Ring

A looped Ethernet network topology is called a rapid network ring which is divided into master ring and sub ring. Currently the product only supports single ring.

There are two statuses of rapid network ring:

Health status: the entire looped network physical link is connected;
Breaking status: some physical link of the looped network is disconnected.

3) Control VLAN and Data VLAN

Control VLAN: it is used to transmit rapid ring protocol packet. All the ports which are connected to the ring belong to control VLAN, besides only the ports which are connected to rapid network ring can be added to the VLAN.

Data VLAN: compared to control VLAN, data VLAN is used to transmit data packet. The data VLAN can include not only rapid ring network ports, but also non-rapid ring network ports.

4) Node

Each device on the rapid network ring is called a node.

Master node: There is only one master node on each ring. The master node is not only the initiator of active detection mechanism for ring network status, but also the decision maker of implementing operation after network topology is changed.

Transit node: all the other nodes except the master node on the master ring, it is responsible for monitoring the status of its directly-connected link and informing the master node of the link change, and then it is the master node that will decide how to deal with it.

5) Master Port and Slave Port

The master port and slave port of the master node: the master port of the master node is used to send packet which detects the loop, the slave port is used to receive the packet.

The master port and slave port of the transit node: there is no difference between master port and slave port of transit node on function, both of which are used to transmit protocol packet and data packet on rapid network ring.

6) Rapid Network Ring Timer

Hello timer: it has regulated the period of sending Hello packet from master port of the master node.

Fail timer: it has regulated the max delay from when the master node sends Hello packet from master port to when the slave port receives the packet. Before timeout for the timer, if the master node receives its Hello packet sent from master port on slave port, then the master mode considers that the ring network is in a health status; otherwise, the master node considers that the ring network is in a breaking status.

The exact config steps are shown as follows:

Step 1
Connect cable according to the ring mode which is shown in Figure 3-9.
Step 2
Log in WEB interface, select "System Settings > Device Management > Ring Config > Fast Ring Network Configuration", click "Enable".
Step 3
Click "Save".

Figure 3-10

Step 1
Click "Add" to enter the interface of fast ring network config.
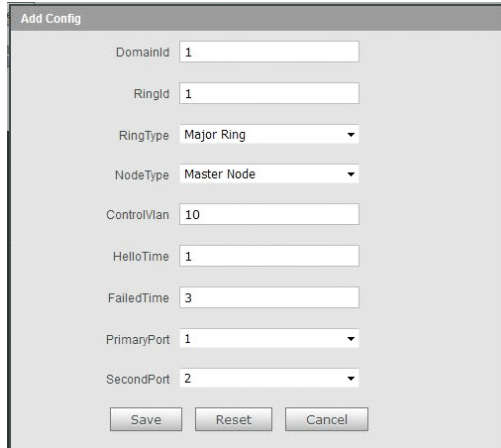**Step 2**
Click "Save".

Figure 3-11

The domain config interface is shown in Figure 3-11, here you can configure domain ID, ring type and ring ID etc.

Domain ID: It is to set domain ID. The interconnected devices which own same domain ID and control VLAN constitute a domain.

Ring ID: It is to set ring ID.

Ring type: it includes major ring and subring.

Node type: It is to configure the ring node, which includes master node and transit node.

Control VLAN: It is to configure control VLAN, which is used to transmit protocol packet.

Hello time: It is to configure Hello timer and regulate the master node to send the period of Hello packet from master port, which is used to detect the completeness of the loop.

Failed time: It is to configure Fail timer, and regulate the max delay from when the master node sends Hello packet from master port to when the slave port receives the packet. Before timeout for the timer, if the master node receives its Hello packet sent from master port on slave port, then the master mode considers that the ring network is in a health status; otherwise, the master node considers that the ring network is in a breaking status.

Primary port: It is to configure the master port of ring, and it is used to send packet which detects the loop.

Second port: It is to configure the slave port of ring, which is used to receive the packet.

RSTP

Step 1
Connect cable according to the ring network mode shown in Figure 3-9.
Step 2
Log in WEB interface, select "System Settings > Device Management > Ring Config > RSTP", click "Enable".
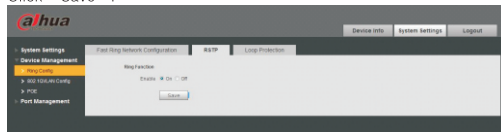**Step 3**
Click "Save".

Figure 3-12

Loop Protection

Redundancy ring function can be realized via ring network config. Please be noted that the function has to be applied with convergence switch DH-PFS5424-24T or DH-PFS5924-24X. The fastest convergence time is 5s.
Step 1
Connect cable according to the ring network mode which is shown in Figure 3-9.
Step 2
Log in WEB interface, select "System settings > Device Management > Ring Config >Loop Protection", click "Enable".
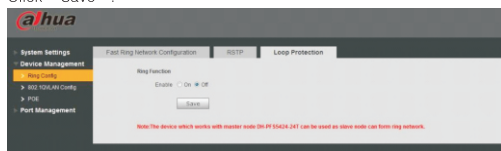**Step 3**
Click "Save".

Figure 3-13

3.4.2 802.1Q VLAN Config

IEEE802.1Q is a protocol with VLAN identifying information for data frame which is authenticated by IEEE, which is also called "Tagging VLAN". It can recognize max 4096 VLAN, the current configurable range is 1 ~ 4094.

● **Default VLAN ID number**

When the port receives a packet without VLAN Tag, the system will add default VLAN ID of the port, and forward the packet to a port with default VLAN ID.

● **VLAN ID number which is allowed to pass**

It means the VLAN which is allowed to pass by this port, and the range is 1 ~ 4094. When the port sends packet, and if the VLAN ID of this packet is the same as the default VLAN ID, then the system will remove the VLAN Tag of the packet, and send this packet.

Step 1
Select "Device Management > 802.1Q VLAN Config", which is shown in Figure 3-11.
Step 2
Check "Enable 802.1QVLAN Config", which means it is enabled.
Step 3
Set "default VLAN ID"; under the situation of default, the default VLAN ID of port is 1.
Step 4
Set VLAN ID which is allowed to pass.
Step 5
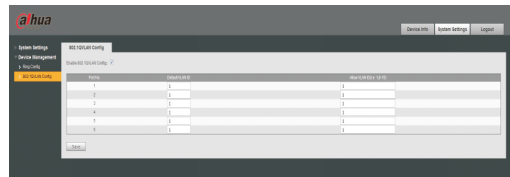Click "Save", and complete the config.

Figure 3-14

3.4.3 PoE

The PoE management page can provide a switch which can control PoE power supply function to the port, set reserved power and overload power and display the current overload situation.

Step 1
Log in WEB interface, select "System Settings > Device Management > PoE", and set remain power and overload, the remain power is 81W by default and the overload is 87W by default.
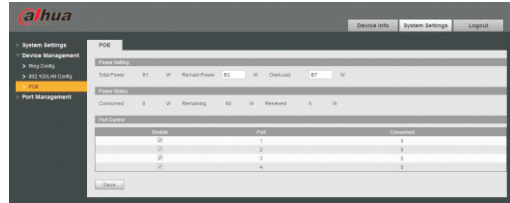**Step 2**
Click "Save".

Figure 3-15

● Remain power: the total power of access devices, the new access device will fail to power on if the total power of access devices exceeds the value of remain power.

● Overload power: when the total power of access devices exceeds the value of overload power, power failure will happen in sequence to the device with low priority, the port priority will decrease in sequence.

3.5 Port management

You can implement port mirroring config via port management.

3.5.1 Port Mirroring Config

You can mirror the data of one port to another port by port mirroring, which can help the maintenance staff to locate problems. See Figure 3-16 for more details.
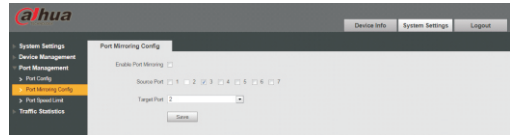

Figure 3-16

Step 1
Log in WEB interface, select "System Settings > Port Management > Port Mirroring Config".
Step 2
Enable port mirroring.
Step 3
Select "Source Port" and "Target Port".
Step 4
Click "Save".

3.6 SNMP Function

SNMP (Simple Network Management Protocol) is a type of industrial standard which is widely accepted and applied; the purpose of SNMP is to guarantee the transmission of management info between any two spots and makes it convenient for network administrator to search info at any network node and realize modification, capacity planning and report generation. It adopts polling mechanism and provides the most basic functionality set. The device supports SNMP V1 and V2C and provides basic information inquiry of the device status.

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4 Installation Guide

PoE switch supports DIN rail mounting. Lay the switch hook on the rail, press the PoE switch to make the buckle get into the slide, see Figure 4-1.

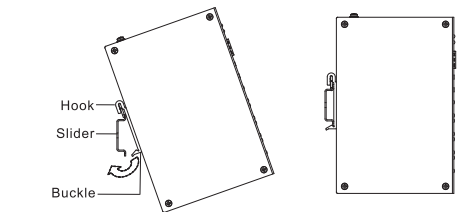**Note:**
4-port PoE switch supports the slide width of 28mm.

Figure 4-1

5 Appendix | Technical Specifications

Technical parameters	DH-PFS3206-4P-96	DH-PFS3206-4P-120	DH-PFS4206-4P-96	DH-PFS4206-4P-120
Physical interface				
Business port	2*1000 Base-X 1*10/100/1000 Base-T（PoE power supply） 3*10/100 Base-T（PoE power supply）			
Technical index				
Exchange capacity	6.80Gbps			
Packet forwarding rate	4.91Mpps			
Exchange mode	Store and forward			
MAC study	MAC auto study, address list capacity 8K			
Technical parameter				
WEB network management	N/A		Support	
VLAN	N/A		4K 802.1Q VLAN	
Port mirroring	N/A		Support	
Ring network	N/A		Support	
SNMP management	N/A		Support	
Lightning protection level	Level three lightning protection			
Indicator light	Power indicator light（PoE management indicator light used in Common), optical port status indicator light			
Power	96W	120W	96W	120W
Operation humidity	10% ~ 90%			
High and low temperature	−30℃ ~ 65℃			
Unit weight	480g			
Dimension	150mm × 100mm × 30mm			

Note:

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● **Slight difference may be found in user interface.**
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