S3800 Series Ethernet

Switches User Manual

Warranty & Safety Information

FS.COM provides a limited warranty for twelve (12) months from Purchaser's receipt of the Equipment represented in this data sheet against defective design or workmanship.

FS.COM provides high quality products, and try to meet customers' requirements, however, in few cases, you are not satisfied with our goods, don' t worry about that, you can always enjoy a 30-day any reason return and replacement policy in FS.COM if you are not satisfied with our products: each party is responsible for the freight (return or shipping cost) respectively. FS.COM will pay the freight if the return is due to quality problems. If, however FS.COM reasonably determines that the item is functional, the customer shall pay any freight. What' s more, if you have some questions about usage of your purchase, you can write an email to our service@fs.com. Tell us your problems, then we will do our best to help you.

Caution: Multiple power sources may be provided. To de-energize, all power connections need to be removed, including RPS cable if provided.

Caution: No user serviceable parts inside. Must be serviced by technically qualified personnel.

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Chapter 1 Ethernet Switches Introduction

1.1 Overview

S3800 series are designed for class-carrier GE access and 10G uplink network, they cover all kinds of enterprise/ operators customer. S3800 Series provide 20/24/48* 10/100/1000Base-T, 1000Base-X SFP or 10G SPF+ for the demand of cost-effective Gigabit access /aggregation. It adopts high performance processor to provide full speed forwarding and line-dormant capacity to coordinate with NGGN unified software. It supports strong ACL and IP+MAC+ports binding etc. FS S3800 series Ethernet switches currently include three configurations: S3800-24F4S, S3800-24T4S, S3800-48T4S.

Figure 1-1

Chapter 2 Product Characteristics

2.1 Carrier-class equipment stability and network resiliency

- Adopt NGBN autonomous intellectual property operating system with largescale application in global network of operators
- Support multiple link redundancy and network redundancy protocols such as VRRP / GARP / MSTP / smartlink

2.2 Perfect security mechanism

- Use the hardware - based packet - by - packet forwarding mechanism, the feature packets are effectively detected and filtered
- Support various protection functions such as DDoS, CPU overcurrent protection and VRRP
- Support DHCP snooping / IP source Guard / 802.1X etc. Rich security features can effectively protect the user, equipment and network availability
- Support link protection such as BFD, FlexLink, dynamic link aggregation, and Ethernet ring network

2.3 Rich business characteristics

- Support DHCP Server and DHCP Relay
- Support L2 - Tunneling transparent encapsulation network edge service protocol
- Support Ethernet OAM protocol

2.4. Strong QoS capability

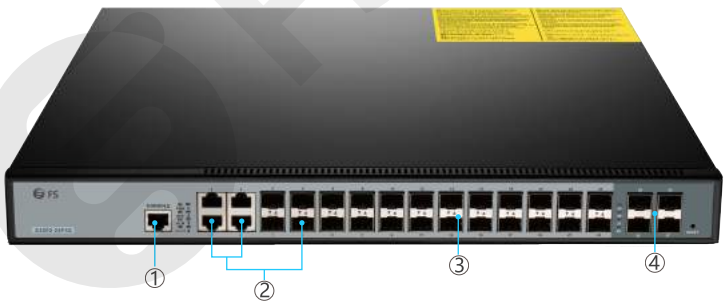
- Support 2Rate3Color-controlled traffic management policies
- Support CAR to implement precise rate limits based on ports and streams
- Support various traffic classification and QoS flow control to guarantee the transmission of high priority packets
- Support SP / WRR and other priority algorithms to protect the transmission of multimedia service

Chapter 3 Product Appearance

3.1 Front and Back Panel Display

S3800-24F4S

Front Panel

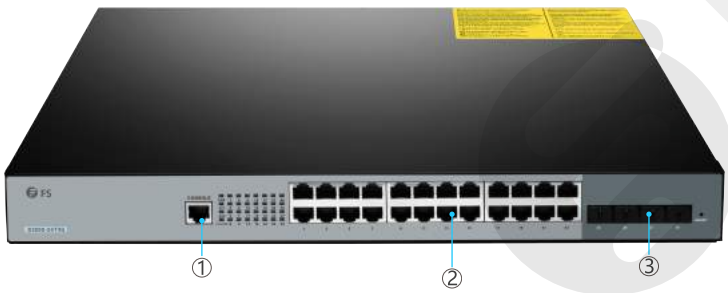


① Console Port
② 4x 1GE Combo Ports
③ 20x 100/1000Base SFP Ports
④ 4x 10GE SFP+ Ports
⑤ 3x Built-in Fans
⑥ Power Supply

Back Panel

S3800-24T4S

Front Panel

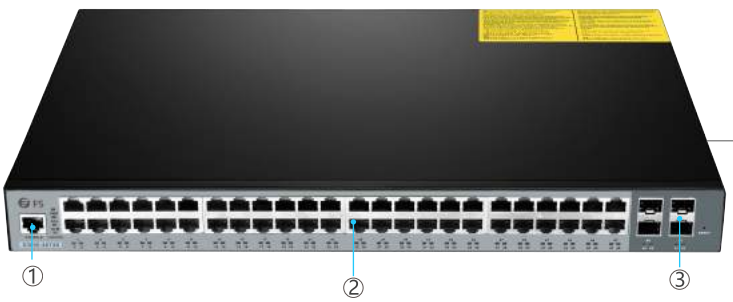


① Console Port
② 24x 100/1000Base -T Ports
③ 4x10GE SFP+ Ports
④ 2x Built-in Fans
⑤ Power Supply

Back Panel

S3800-48T4S

Front Panel



① Console Port
② 48x 100/1000Base -T Ports
③ 4x10GE SFP+ Ports
④ Power Supply

Back Panel

3.2 LED Indicator Description

3.2.1 Port Indicator

S3800 -24T4S Port Indicator

Panel Labeled	Status	Implication
1-24(1G/100M/10M)	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.
25-28（10G）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.

Table3-1

S3800 -24F4S Port Indicator

Panel Labeled	Status	Implication
1-20（100/1000Base-X）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.
21-24（GE Combo Port）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.
25-28（10G）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.

Table 3-2

S3800-48T4S Port Indicator

Panel Labeled	Status	Implication
49-52（10G）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.
1-48（1G/100M/10M）	unlit	Link fails.
	lit	Link succeeds.
	flicker	Link succeeds, and the port is receiving data.

Table3-3

3.2.2 Indicator Introduction of System Status

Panel Labeled	Indicator	Status	Implication
PWR	power indicator	lit	Switch is powered on.
		unlit	Switch is powered off.
SYS	system indicator	flicker	System runs properly.
		lit/ unlit	System does not run properly.
ALM	alarm indicator	lit	Equipment alarms.
		unlit	No equipment alarms.

Table3-4

3.3 Interface Specification of Front Panel

Port Connector	Specification
RJ-45	10/100/1000Mbps MDI/MDI-X Cat-5 UTP:100M Combo port supports 10/100/1000Mbps
SFP	SFP-SX-L: 1000Base-SX SFP (850nm, MMF, 550m) SFP-LX-L: 1000Base-LX SFP (1310nm, SMF, 10km or MMF, 550m) SFP-LX-20-L: 1310nm, 9/125um SMF: 20KM SFP-LX-40: 9/125um SMF: 40 KM SFP-LH-80-L: 9/125um SMF: 80 KM SFP-LH-120-L: 9/125um SMF: 120 KM
SFP-GT	SFP-GT module: 1000Base-T SFP, RJ-45 interface
SFP-FX	SFP-FX: 100Base-FX SFP (1310nm, MMF,2KM), LC interface SFP-FL: 100Base-FL SFP (1310nm, SMF,15KM), LC interface SFP-FL-40: 100Base-FL SFP (1310nm, SMF,40KM), LC interface SFP-FL-80: 100Base-FL SFP (1550nm, SMF,80KM), LC interface

Table3-5

3.4 Basic Parameters

	S3800-24T4S	S3800-24F4S	S3800-48T4S
CPU	ARM	ARM	ARM
Switching Chip	BCM53346	BCM53347	BCM53346
Operating System	Based on VxWorks	Based on VxWorks	Based on VxWorks
Switching Capacity	128Gbps	128Gbps	176Gbps
Forwarding Rate	95Mpps	95Mpps	130Mpps
Power Consumption (Full-load)	≤40W	≤60W	≤60W
Power Consumption (Idle)	≤13W	≤20W	≤25W
Power Supply	AC: Input 100～240V, 50～60Hz		
Working Temperature	-20°C to 55°C		
Storage Temperature	-40°C to 70°C		
Relative Humidity	10%～90%, non-condensing		
Dimensions (WxHxD)	440x220x44mm	440x280x44mm	440x300x44mm
Weight (Full-loaded)	≤3.5kg	≤3kg	≤3kg

Table3-6

Chapter 4 Link Graph

4.1 Application of Connection for S3800 Series Switches with Transceivers and Media Converters

4.1.1 Direct Connection with Optical Transceivers

Below direct connection shows two1000BASE-LX transceivers are connected by a single-mode fiber cable, and then connecting with the Cisco and FS switches to build a lower cost single-mode fiber runs in horizontal and longer-length backbone connection. It also reflects the interoperability between FS S3800 switch and Cisco switch.

Figure 4-1

4.1.2 Interconnection with 2x Media Converters

In this application, the 1000BASE-LX transceivers installed with fiber media converters are connected by a single-mode fiber patch cable, and then applying UTP copper cable to connect the media converter with the Cisco and FS S3800 switches. The connection provides seamless integration of copper and fiber cabling and increases network distances by converting UTP to fiber.

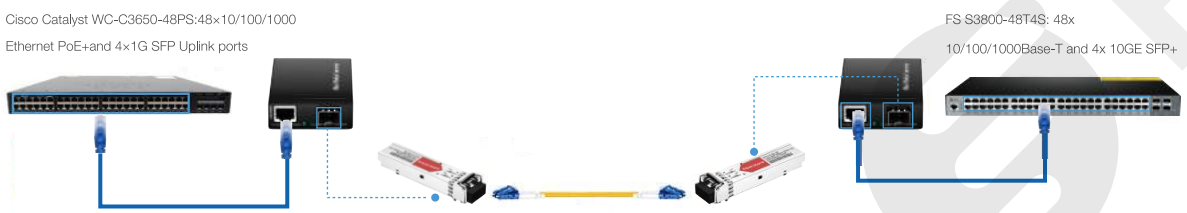
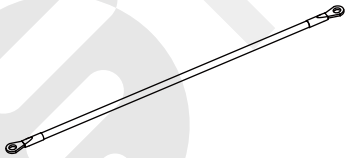
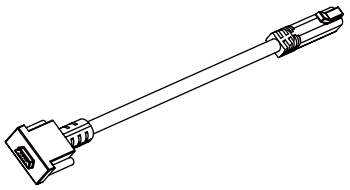


Figure 4-2

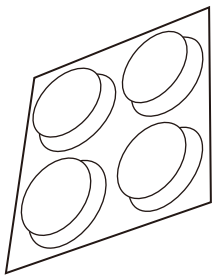
Chapter 5 Introduction to Installation Accessories



Grounding Cable

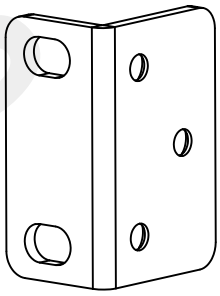


Configuration line



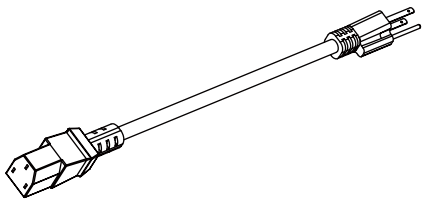
Rubber Pads

(Qty. 4)



Rack Mount Bracket

(Qty. 2)



Power Cord

(Qty.2)

Chapter 6 System Installation

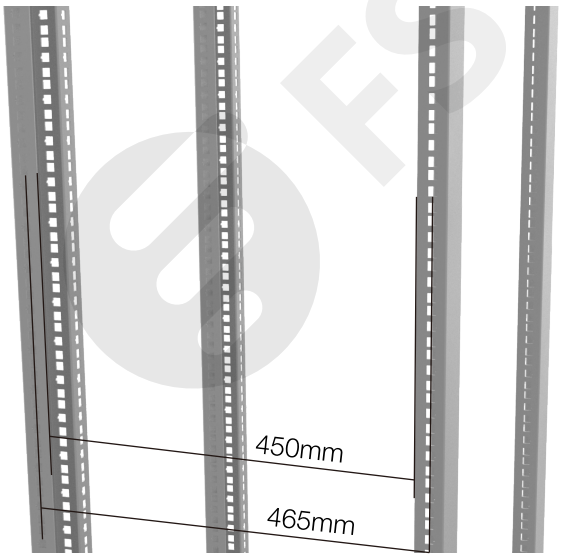
6.1 Preparation before Installation

6.1.1 Tools

Please prepare the following tools before installing the equipment: Cross/straight screwdriver, flat ruler, straight rule, flexible rule, gloves, anti-static wrist, configuration equipment (can be a PC), power cord, CONSOLE cable, RJ-45 connector wire.

6.1.2 Check the cabinet

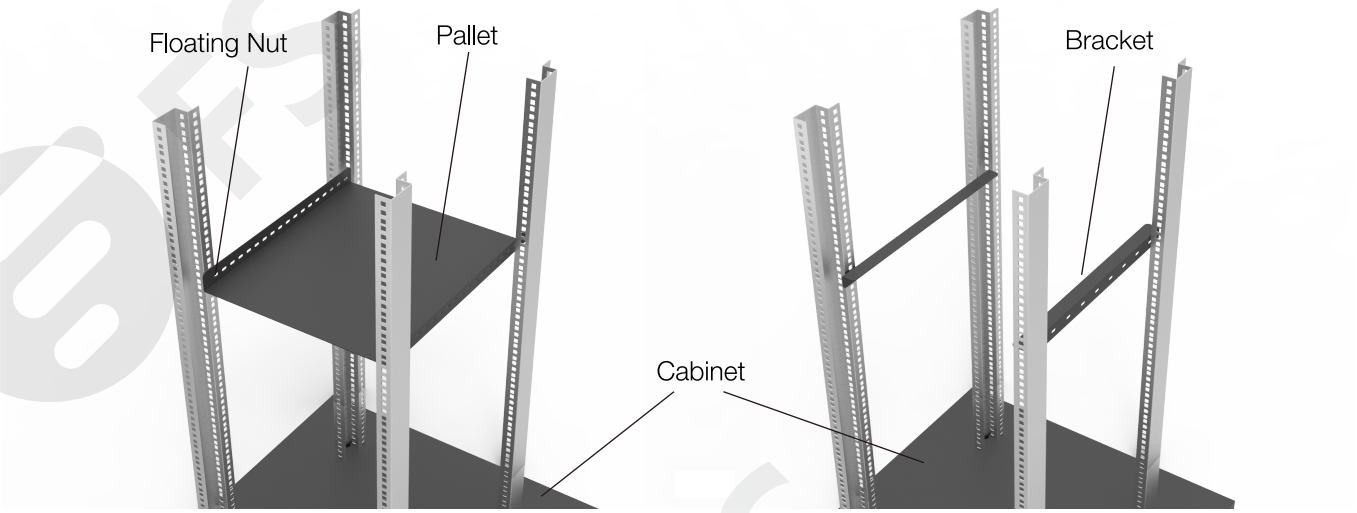
FS equipment can be installed in the cabinet ; before installing the equipment, leave enough empty space for the installation of the equipment.



schematic diagram (1)

Check whether the accessories of the cabinet are complete, such as pallet brackets,floating nuts, fixing screws, empty damper, and so on. If necessary, contact the manufacturer of the cabinet to provide original accessories;

The equipment must be installed on the pallet or bracket (in pairs) of the cabinet.Therefore, install the pallet or bracket in the cabinet before installing the device. As shown above. Check whether the pallet or bracket is horizontal with the straight ruler. If the pallet or bracket is not horizontal, adjust the fixing bolts of the pallet or bracket and then fastened it.



schematic diagram (2)

Check whether the floating nuts which used to fix the equipment have installed in the square holes of the cabinet posts. If not, the floating nuts should be fitted into the corresponding square hole according to the pallet or bracket position. Normally, one device should be placed on one pallet or one pair of brackets. It is not recommended to stack multiple devices on one pallet or one pair of brackets.

6.1.3 Checks on Equipment and Accessories

After confirming that the installation environment meets the requirements, you can open the equipment box and check the packing list to check whether the equipment and accessories in the box are complete;

If any items in the box are found to be missing or damaged, please contact the dealer or salesperson who sells the equipment immediately and provide timely feedback.

During the inspection, place the equipment and accessories in a safe place to prevent the equipment from falling or being impacted; the equipment should be placed away from the presence of liquids, harmful gases and dust to prevent damage to the equipment;

During the inspection or handling of the equipment, operate with gloves to prevent metal parts from being corroded by sweat;

Please keep all the packing materials in case you need to re-use the equipment for transport.

6.2 Installation Steps

Install the S3800 in the cabinet:

- Step 1: Wear gloves and anti-static wrist, and correctly connect the anti-static wrist to ground;
- Step 2: Place the equipment horizontally on a sturdy platform. Align the bracket mounting holes with the corresponding holes on the side of the equipment. Secure the bracket to the sides of the device with screws. As shown below:

schematic diagram (3)

- Step 3: Face the front side of the equipment, holding the equipment firmly with both hands, keeping the equipment horizontal, carefully placing the device from the front of the cabinet on the pallet or bracket. During the placement process, you should avoid collisions between the equipment and the cabinet posts. For heavy equipment or a higher height of the equipment, the operation should be co-operation by two people;
- Step 4: Push the device at the same time with both hands so that the equipment can be laid closely on the surface of the cabinet column;
- Step 5: Install the device on the column of the cabinet with the fixing screw. As shown below:

install the host to the cabinet

- Step 6: Check whether the equipment is installed tight and straight;

- Step 7: Check the gap between the installed equipment, select the appropriate cabinet damper (standard accessory) and place it between the equipment, and then fix the damper to the chassis with screws.

Installation Recommendations:
When installing a variety of equipment on the same cabinet, it is recommended to install the heavy equipment at the bottom or near the bottom of the cabinet to reduce the center of gravity of the cabinet.

When installing the equipment in the cabinet, it is recommended to reserve 1U height between the equipment to ensure the cooling space. Install the empty damper in the space between the equipment.

6.3 Connection of the Host Cable

This section details how to connect the S3800 cable to the network, including the connection of the switch configuration port.

6.3.1 Connection of Configuration Port

S3800 provides an EIA / TIA-232 asynchronous serial configuration port. Through this interface, you can use character terminal (usually a common PC) of RS-232 serial port to configure the switch.

For detailed connection and configuration methods, see the following sections.
Follow the steps below to configure the switch through the terminal:

- Step 1: Find a character terminal which can be a standard terminal with RS-232 serial port or a common PC (The latter is more commonly used) .
- Step 2: In the case that the switch or character terminal is in the status of powered off, connect the RS-232 serial port of the character terminal to the console port of the switch through the configuration cable.

Note:
When connecting, check the identification on the interface to avoid mistakenly inserting other interfaces.

6.4 Connection of the Ground Wire

The normal connection of the S3800 ground wire is the primary guarantee for the lightning protection and interference of the switch. So the user must connect the ground wire carefully and properly.

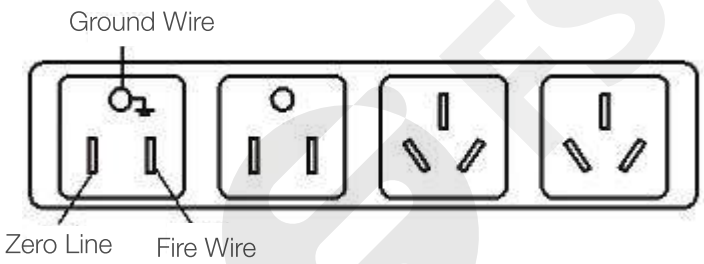
The chassis ground must be well connected to improve the anti-electromagnetic interference of the whole machine. This ground line also provides protection for the external network connection, such as lightning high pressure protection of E1 interface, PSTN and other cable.

Use a thick wire to connect the point to the earth, and the grounding resistance should less than 4 ohms. If the switch is installed in the cabinet, the cabinet is also required ground connection.

6.5 Link Power

S3800 adopts a stable switching power supply system, and it can support 100V/240V, 50 / 60Hz AC. The quality of electricity supply in different regions may be different, while S3800 has a greater ease on the input power supply.

Input power: AC power supply【100～240V, 50/60Hz】
The following figure is a shape diagram of the commonly-used AC power socket.



commonly-used AC outlet

Follow these steps to link the power supply:
1: For AC models:

- Step 1: Connect one end of the chassis grounding wire that delivered with the switch to the grounding post of the rear panel of the switch, and ensure the other end well-grounded.
- Step 2: Plug one end of the power cord delivered with the switch into the power outlet on the front panel of the switch chassis and the other end into the AC outlet.
- Step 3: Check whether the power indicator on the front panel of the switch is on. If the indicator is on, it indicates that the power supply is connected correctly.

Note:
If the power indicator does not light up after repeating the above steps, please contact your dealer.

Chapter 7 Cable Specification

7.1 Ethernet Copper Interface Cable

S3800 interface cable is the 8-pin shielded twisted pair, with 1 and 2 to be the sending side, 3 and 6 to be the receiving side.

Connection table of RJ45 straight through cable

RJ45	Signal	Direction	RJ45	Description	Length
1	TX0+	→	1	twisted pair 1	2m
2	TX0-	→	2		
3	RX0+	←	3	twisted pair 1	
6	RX0-	←	6		
4	48V	→	4	twisted pair 1	
5	48V	→	5		
7	0V	←	7	twisted pair 1	
8	0V	←	8		

Connection table of RJ45 crossover cable

RJ45	Signal	Direction	RJ45	Description	Length
1	TX+	→	3	twisted pair 1	2m
2	TX-	→	6		
3	RX+	←	1	twisted pair 1	
6	RX-	←	2		
4	48V	→	7	twisted pair 1	
5	48V	→	8		
7	0V	←	4	twisted pair 1	
8	0V	←	5		

7.2 Ethernet Optical Interface Cable

S3800 Ethernet optical interface cable adopts LC SMF or MMF.

7.3 Interface Cable

Standard DB9 interface

Connection Table

RJ45	Signal	Direction	DB9	Length
1	CTS	→	8	3m
2	DSR	→	6	
3	RXD	→	2	
6	GND	—	5	
4	—	—	—	
5	TXD	←	3	
7	DTR	←	4	
8	RTS	←	7	
	—	—	1	
	—	—	9	

Chapter 8 Troubleshooting

8.1 Power System Fault

According to the power indicator on the front panel, the S3800 fast Ethernet switches can be used to determine whether the power supply system of the switch is faulty. If the power supply system is working normally, the power indicator should remain lit. If the power indicator light is unlit, please check the following:

- Whether the switch's power cable is connected correctly.
- Whether the power supply of the switch matches the required power supply.

8.2 Configuration System Fault

After the S3800 fast Ethernet switch is powered on, if the system is normal, the startup information will be displayed on the configuration terminal. If there is something wrong with the configuration system, the configuration terminal may not display or display error codes.

8.3 Troubleshooting for Terminal No-show

After power-on, if the configuration terminal shows nothing, you can firstly check the following:

- Whether the power supply is normal
- Whether the Console cable is properly connected

If there is no problem with the above, it is very likely that there is a problem with the configuration cable or the terminal (such as the HyperTerminal) parameters were set incorrectly.

8.4 Troubleshooting for Terminal Show Error Codes

If the configuration terminal shows error codes, it is likely that the terminal (such as HyperTerminal) parameters are set incorrectly. Please confirm the parameters of the terminal (such as HyperTerminal): baud rate is “115200”, data bits is “8”, parity is “none”, stop bits is “1”, flow control is “none”, select Terminal emulation is “auto detect”.

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