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# Chapter 1 Introduction

## 1.1 Product Brief

S4600 series switches are 1000Mb uplink layer 2 switches. S4600-10P-SI provides 10 fixed ports (8 10/100/1000Base-T fixed ports and 2 1000Mb SFP ports). S4600-28P-SI provides 28 fixed ports (24 10/100/1000Base-T fixed ports and 4 1000Mb SFP ports). S4600-52P-SI provides 52 fixed ports (48 10/100/1000Base-T fixed ports and 4 1000Mb SFP ports). S4600 series switches with advanced intelligent and secure features, can serve ideally as distribution layer switches for the access device of campus networks, enterprise networks and IP metropolitan networks.

S4600 series switches including the following 3 series switch:



Fig 1-1 S4600-10P-SI Switch



Fig 1-2 S4600-28P-SI Switch



Fig 1-3 S4600-52P-SI Switch

## 1.2 Physical Specifications

- Management Port
  - 1 RJ-45 serial console port
- AC Power Input
  - 90 ~ 264VAC, 47Hz ~ 63Hz

- Power Consumption
  - S4600-10P-SI: <20W
  - S4600-28P-SI: <20W
  - S4600-52P-SI: <40W
- Operating Temperature
  - 5 °C~50°C
- Storage Temperature
  - 40°C~ 70°C
- Relative Humidity
  - 5%~95%, no condensate
- Dimension
  - S4600-10P-SI: W×H×D 250mm×180mm×43.6mm
  - S4600-28P-SI: W×H×D 442mm×220mm×43.6mm
  - S4600-52P-SI: W×H×D 442mm×220mm×43.6mm
- Weight
  - S4600-10P-SI: about 1.1kg
  - S4600-28P-SI: about 2.42kg
  - S4600-52P-SI: about 4.7kg
- Average no trouble time
  - At least 21000 hours MTBF

## 1.3 Description of Hardware

### 1.3.1 Front Panel

S4600-10P-SI provides 8 10/100/1000Base-T ports, 2 1000SFP ports, 1 Console port, 1 system reset button, 12 LEDs, 1 220V AC power socket and 1 grounding screw.

The front panel of S4600-10P-SI is shown as follow:



Fig1-4 Front Panel of S4600-10P-SI

S4600-28P-SI provides 24 10/100/1000Base-T ports, 4 1000M SFP ports, 1 Console port, 1 system reset button, 30 LEDs, 1 220V AC power socket and 1 grounding screw.

The front panel of S4600-28P-SI is shown as follow:



Fig 1-5 Front Panel of S4600-28P-SI

S4600-52P-SI provides 48 10/100/1000Base-T ports, 4 1000M SFP ports, 1 Console port, 1 system reset button, 54 LEDs.

The front panel of S4600-52P-SI series is shown as follow:



Fig 1-6 Front Panel of S4600-52P-SI

### 1.3.2 Back Panel

The back panel of S4600-10P-SI is shown below:



Fig 1-7 Back Panel of S4600-10P-SI

The back panel of S4600-28P-SI is shown below:



Fig 1-8 Back Panel of S4600-28P-SI

The back panel of S4600-52P-SI is shown below, and there is 1 220V AC power socket and 1 ground screw hole.



Fig 1-9 Back Panel of S4600-52P-SI

### 1.3.3 Status LEDs

S4600 series switches include port indicator and system status indicator, as shown in below and described in the following table.

### 1.3.3.1 Port Indicator Description

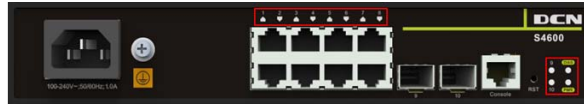


Fig 1-10 S4600-10P-SI LED diagram

Table 1-1 S4600-10P-SI port indicator description

Panel Symbol	Status	Description
Port1-8(Link/Act)	On (Green)	The port is linked successfully
	Flash(Green)	The port is linked successfully, and receive/send data
	Off	The port is not link
Port9/10(Link/Act)	On (Green)	Combo port is linked successfully
	Flash(Green)	Combo port is linked successfully, and receive/send data
	Off	Combo port is not link

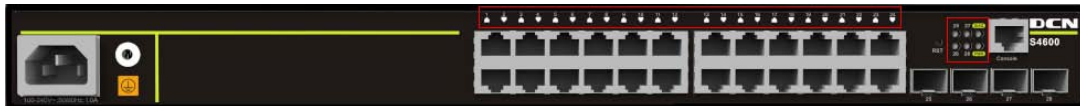


Fig 1-11 S4600-28P-SI LED diagram

Table 1-2 S4600-28P-SI port indicator description

Panel Symbol	Status	Description
Port1-24(Link/Act)	On (Green)	The port is linked successfully
	Flash(Green)	The port is linked successfully, and receive/send data
	Off	The port is not link
Port25-28(Link/Act)	On (Green)	SFP port is linked successfully
	Flash(Green)	SFP port is linked successfully, and receive/send data
	Off	SFP port is not link

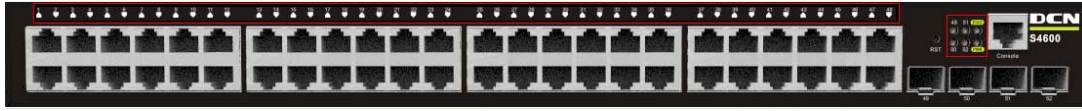


Fig 1-12 S4600-52P-SI LED diagram

Table 1-3 S4600-52P-SI port indicator description

Panel Symbol	Status	Description
Port1-48(Link/Act)	On (Green)	The port is linked successfully
	Flash(Green)	The port is linked successfully, and receive/send data
	Off	The port is not link
Port49-52(Link/Act)	On (Green)	SFP port is linked successfully
	Flash(Green)	SFP port is linked successfully, and receive/send data
	Off	SFP port is not link

### 1.3.3.2 System Status Indicator Description



Fig 1-13 S4600-10P-SI system LED diagram

Table 1-4 S4600-10P-SI system indicator description

LED	Status	Description
Power	On (Green)	The internal power is operating normally
	Off	Power is off or error
DIAG	Flash(Green)	Operating state is normal
	Flash(Green)	Operating state is normal
	Off	Power is off or system is abnormal



Fig 1-14 S4600-28P-SI system LED diagram

Table 1-4 S4600-28P-SI system indicator description

LED	Status	Description
Power	On (Green)	The internal power is operating normally
	Off	Power is off or error
DIAG	Flash(Green)	Operating state is normal
	Flash(Green)	Operating state is normal
	Off	Power is off or system is abnormal



Fig 1-15 S4600-52P-SI system LED diagram

Table 1-4 S4600-52P-SI system indicator description

LED	Status	Description
Power	On (Green)	The internal power is operating normally
	Off	Power is off or error
DIAG	Flash(Green)	Operating state is normal
	Flash(Green)	Operating state is normal
	Off	Power is off or system is abnormal

### 1.3.4 Front Panel Port Description

Each port description is shown below:

Table 1-5 S4600 port description

Interface mode	Spec
RJ-45 port	<ul style="list-style-type: none"> <li>• 10/100/1000Mbps auto negotiation</li> <li>• MDI/MDI-X cable mode auto negotiation</li> <li>• 5 kinds of UTP: 100 m</li> </ul>
SFP	<ul style="list-style-type: none"> <li>• SFP-SX-L transceiver 1000Base-SX SFP(850nm, MMF, 550m)</li> <li>• SFP-LX-L transceiver 1000Base-LX SFP(1310nm, SMF, 10km or MMF, 550m)</li> <li>• SFP-LX-20-L transceiver 1310nm lightwave, 9/125um single mode fiber: 20km</li> <li>• SFP-LX-40 transceiver 9/125um single mode fiber: 40km</li> <li>• SFP-LH-70-L transceiver 9/125um single mode fiber: 70km</li> <li>• SFP-LH-120-L transceiver 9/125um single mode fiber: 120km</li> </ul>
SFP+	<ul style="list-style-type: none"> <li>• SFP-SR 62.5/125um multimode fiber: 32m 50.0/125um,500MHz/km multimode fiber: 85m 50.0/125um,2000MHz/km multimode fiber: 300m</li> <li>• SFP-LR 9/125um single mode fiber:10km</li> <li>• SFP-ER 9/125um single mode fiber: 40km</li> </ul>



# Chapter 2 Hardware Installation

## 2.1 Installation Notice

To ensure the proper operation of S4600 series and your physical security, please read carefully the following installation guide.

### 2.1.1 Environmental Requirements

- The switch must be installed in a clean area. Otherwise, the switch may be damaged by electrostatic adherence.
- Maintain the temperature and the humidity within the set environment.
- The switch must be put in a dry and cool place. Leave sufficient spacing around the switch for good air circulation.
- The switch must work in the right range of power input.
- The switch must be well grounded in order to avoid ESD damage and physical injury of people.
- The switch should avoid the sunlight perpendicular incidence. Keep the switch away from heat sources and strong electromagnetic interference sources.
- The switch must be mounted to a standard 19" rack or placed on a clean level desktop.

#### 2.1.1.1 Dust and Particles

Dust is harmful to the safe operation of switch. Dust can lead to electrostatic adherence, especially likely under low relative humidity, causing poor contact of metal connectors or contacts. Electrostatic adherence will result in not only reduced product lifespan, but also increased chance of communication failures. The recommended value for dust content and particle diameter in the site is shown below:

Max Diameter ( $\mu\text{m}$ )	0.5	1	3	5
Max Density (particles/ $\text{m}^3$ )	$1.4 \times 10^5$	$7 \times 10^5$	$2.4 \times 10^5$	$1.3 \times 10^5$

Table 2-1 Environmental Requirements: Dust content

In addition, salt, acid and sulfide in the air are also harmful to the switch. Such harmful gases will aggravate metal corrosion and the aging of some parts. The site should

avoid harmful gases, such as SO<sub>2</sub>, H<sub>2</sub>S, NO<sub>2</sub>, NH<sub>3</sub> and Cl<sub>2</sub>, etc. The table below details the threshold value.

Gas	Average (mg/m <sup>3</sup> )	Max (mg/m <sup>3</sup> )
SO <sub>2</sub>	0.2	1.5
H <sub>2</sub> S	0.006	0.03
NO <sub>2</sub>	0.04	0.15
NH <sub>3</sub>	0.05	0.15
Cl <sub>2</sub>	0.01	0.3

Table 2-2 Environmental Requirements: Particles

### 2.1.1.2 Temperature and Humidity

The switch installation site should maintain a desirable temperature and humidity. High-humidity conditions can cause electrical resistance degradation or even electric leakage, degradation of mechanical properties and corrosion of internal components. Extreme low relative humidity may cause the insulation spacer to contract, making the fastening screw insecure. Furthermore, in dry environments, static electricity is liable to be produced and cause harm to internal circuits. Temperature extremes can cause reduced reliability and premature aging of insulation materials, thus reducing the switch's working lifespan. In the hot summer, it is recommended to use air-conditioners to cool down the site. And the cold winter, it is recommended to use heaters. The recommended temperature and humidity are shown below:

Temperature:		Relative humidity	
Long term condition	Short term condition	Long term condition	Short term condition
15~30℃	-10~50℃	40~65%	5% ~95%

Table 2-3 Environmental Requirements: Temperature and Humidity

#### Caution!

A sample of ambient temperature and humidity should be taken at 1.5m above the floor and 0.4m in front of the switch rack, with no protective panel covering the front and rear of the rack. Short term working conditions refer to a maximum of 48 hours of continued operation and an annual cumulative total of less than 15 days. Formidable operation conditions refers to the ambient temperature and relative humidity value that may occur during an air-conditioning system failure, and normal operation conditions should be recovered within 5 hours.

### 2.1.1.3 Power Supply

It is adopted module switch power for the switch, the input parameters of power are shown below:

The AC input voltage: 90~300VAC

The frequency: 47Hz ~ 63Hz

The DC input voltage: 12V/3.3A

Before powering on the power supply, please check the input power to ensure proper grounding of the power supply system. The input power for the switch should be reliable and secure; a voltage adaptor can be used if necessary. The building's circuit protection system should include in the circuit a fuse or circuit-breaker of no greater than 240 V, 10 A. It is recommended to use a UPS for more reliable power supplying. .

#### Caution!

Improper power supply system grounding, extreme fluctuation of the input source, and transients (or spikes) can result in larger error rate, or even hardware damage!

### 2.1.1.4 Preventing Electrostatic Discharge Damage

Static electric can cause damage to internal circuits, even the entire switch. Follow these guidelines for avoiding ESD damage:

- Ensure proper earth grounding of the device;
- Perform regular cleaning to reduce dust;
- Maintain proper temperature and humidity;
- Always wear an ESD wrist strap and antistatic uniform when in contact with circuit boards.

### 2.1.1.5 Anti-interference

All sources of interference, whether from the device/system itself or the outside environment, will affect operations in various ways, such as capacitive coupling, inductive coupling, electromagnetic radiation, common impedance (including the grounding system) and cables/lines (power cables, signal lines, and output lines). The following should be noted:

- Precautions should be taken to prevent power source interruptions;
- Provide the system with a dedicated grounding, rather than sharing the grounding with the electronic equipment or lightning protection devices.
- Keep away from high power radio transmitters, radar transmitters, and high frequency strong circuit devices.
- Provide electromagnetic shielding if necessary.

### 2.1.1.6 Rack Configuration

The dimension of the switch is designed to be mounted on a standard 19" rack. Please ensure good ventilation for the rack.

- Every device in the rack will generate heat during operation, therefore vent and fans must be provided for an enclosed rack, and devices should not be stacked closely.
- When mounting devices in an open rack, care should be taken to prevent the rack frame from obstructing the switch ventilation openings. Be sure to check the positioning of the switch after installation to avoid the aforementioned.

#### Caution!

If a standard 19" rack is not available, the switch can be placed on a clean level desktop, leave a clearance of 10mm around the switch for ventilation, and do not place anything on top of the switch.

### 2.1.2 Installation Notice

- Read through the installation instruction carefully before operating on the system. Make sure the installation materials and tools are prepared. And make sure the installation site is well prepared.
- During the installation, users must use the brackets and screws provided in the accessory kit. Users should use the proper tools to perform the installation. Users should always wear antistatic uniform and ESD wrist straps. Users should use standard cables and connectors.
- After the installation, users should clean the site. Before powering on the switch, users should ensure the switch is well grounded. Users should maintain the switch regularly to extend the lifespan of the switch.

### 2.1.3 Security Warnings

- When using SFP transceiver, do not stare directly at the fiber bore when the switch is in operation. Otherwise the laser may hurt your eyes.
- Do not attempt to conduct the operations which can damage the switch or which can cause physical injury.
- Do not install, move or disclose the switch and its modules when the switch is in operation.
- Do not open the switch shell.
- Do not drop metals into the switch. It can cause short-circuit.

- Do not touch the power plug and power socket.
- Do not place the tinder near the switch.
- Do not configure the switch alone in a dangerous situation.
- Use standard power sockets which have overload and leakage protection.
- Inspect and maintain the site and the switch regularly.
- Have the emergence power switch on the site. In case of emergence, switch off the power immediately.
- According to the require of standard GB9254-2008 information technology equipment radio disturbance limits and methods of measurement, information technology equipment divided into A level ITE and B level ITE.  
A level ITE is the information technology equipment that satisfied A level limit but not satisfied B level limit.  
Note: For this king of equipment, the sales should not be limited but it must includes the following statement in related direction for use.

**Warning**

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

**Caution!**

Potential risk include: Electric leakage, Power supply arcing, Power line breakage, Imperfect earth, Overload circuit and Electrical short circuit..If electric shock, fire, electrical short circuit occurs, please cut off the electricity supply and alarm rapidly. Rescue the injured person in the contingency under inherently safe, give the injured person proper first aid treatment according to the injury state, and seek help from the Medical Emergency using various ways.

## **2.2 Installation Preparation**

### **2.2.1 Verify the Package Contents**

First, open the package, please check the contents of the switch container and accessory kit. (If you are concerned that any item is missing or an incorrect item has been supplied, please contact your dealer as soon as possible.)

### **2.2.2 Required Tools and Materials**

The required tools and utilities are shown below:

- Cross screwdrivers
- Flat-blade screwdriver
- ESD wrist strap
- Antistatic uniform

#### Caution!

Users should prepare the required tools by themselves.

## 2.3 Installation Guide

### 2.3.1 Installing the Switch

Please mount the switch as below:

1. Attach the 2 brackets on the switch with screws provided in the accessory kit.



Fig 2-1 Fasten the Brackets to the Switch

2. Put the bracket-mounted switch smoothly into a standard 19" rack. Fasten the switch to the rack with the screws provided. Leave enough space around the switch for good air circulation.



Fig 2-2 Fasten the Switch to the Rack

#### Caution!

The brackets are used to fix the switch on the rack. They can't serve as a bearing. Please place a rack shelf under the switch. Do not place anything on top of the switch. Do not block the blowholes on the switch to ensure the proper operation of the switch.

## 2.3.2 Connecting Console

S4600 series provide a RJ45 serial console port.



Fig 2-3 Connecting Console to switch

The connection procedure is listed below:

1. Find the console cable provided in the accessory kit. Attach the RJ45 end to console port of the switch.
2. Connect the other side of the console cable to a character terminal (PC).
3. Power on the switch and the character terminal. Configure the switch through the character terminal.

## 2.3.3 SFP Transceiver Installation

S4600 series provide multiple 1000Mb SFP transceiver slots.

The procedure for installing the SFP transceiver is shown below:

Step 1: Put on a ESD wrist strap (or antistatic gloves)

Step 2: Insert the SFP transceiver to the guide rail inside the fiber interface line card.

Do not put the SFP transceiver up-side-down.

Step 3: Push the SFP transceiver along the guide rail gently until you feel the transceiver snap into place at the bottom of the line card.

Note: The SFP transceiver is hot swappable.

Caution!

Do not stare directly at the 2 fiber bore in the SFP transceiver when the switch is in operation, otherwise the laser may hurt your eyes.

## 2.3.4 Copper Cable/Fiber Cable Connection

Copper cables should be connected as below:

Step 1: Insert one end of the Ethernet cable to the RJ-45 Ethernet port in the switch copper cable line card;

Step 2: Insert the other end of the Ethernet cable to the RJ-45 Ethernet port of other device;

Step 3: Check all status indicators for the corresponding ports; a lighted LED indicates that the link has been established, otherwise the link is not ready and the cable should be examined.

Caution!

Please verify the sign above the port to ensure using the right port. Connecting to wrong ports might damage the switch.

Fiber cables should be connected as below:

Step 1: Remove the protective plug from the SFP/XFP fiber transceiver bore; Remove the protective cap from one end of the fiber cable. Keep the fiber end clean and neat.

Step 2: Attach one end of the fiber cable to the SFP/XFP transceiver, and attach the other end to the transceiver of the corresponding devices. **Note: The SFP/XFP transceiver's TX port should be connected to the RX port of the corresponding device, and vice versa.**

Step 3: Check the fiber port status indicator, a lighted LED indicates that the link has been established; otherwise the link is not ready and should be examined.

Caution!

Please verify the sign above the port to ensure using the other ports. Connecting to wrong ports might damage the transceiver or the other ports. When connecting other devices through a fiber cable to the switch, the output power of the fiber cable must not exceed the maximum received power of the corresponding modules. Otherwise, it will damage the fiber transceiver. Do not stare at the fiber bore when the switch is in operation. That may hurt your eyes.

## 2.3.5 Power Supply Connection

S4600 series use the power is 220VAC. Please read the power input specification for the detailed information.

Power supply connection procedure is described as below:



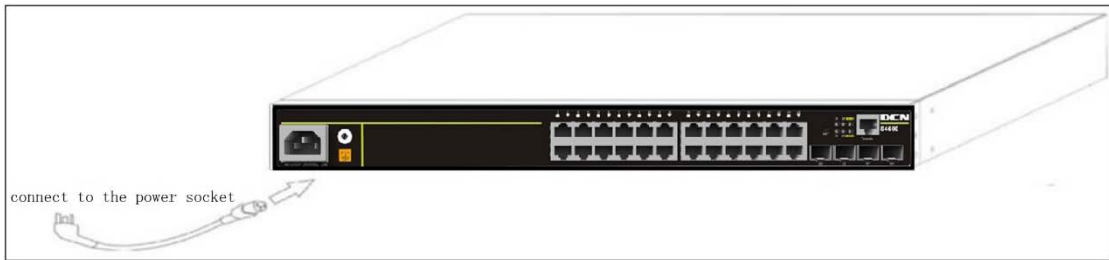


Fig 2-4 Connecting power to switch

1. Insert one end of the power cable provided in the accessory kit into the power source socket (with overload and leakage protection), and the other end to the power socket in the back panel of the switch.
2. Check the power status indicator in the front panel of the switch. The corresponding power indicator should light. S4600 series is self-adjustable for the input voltage. As soon as the input voltage is in the range printed on the switch surface, the switch can operate correctly.
3. When the switch is powered on, it executes self-test procedure and startups.

**Caution!**

The input voltage must be within the required range, otherwise the switch can be damaged or malfunction. Do not open the switch shell without permission. It can cause physical injury.