MAIPU

NSS3330 NSS4330 NSS5810 Series Switch

Installation Mamnual

(V1)-20210421

Security Statement

Important! Before powering on and starting the product, please read the security and compatibility information of the product.

Environmental protection

This product has been designed to comply with the environmental protection requirements. The storage, use, and disposal of this product must meet the applicable national laws and regulations.

Preface

Manual Introduction

This manual first describes the appearance, hardware, cards, and power modules of NSS3330, NSS4330, and NSS5810 series switch; secondly, describes the installation preparations and installation methods of the device; at last, describes the basic using methods and daily maintenance of the device from the aspects of powering on and running the device, troubleshooting and device maintenance.

Product Version

The corresponding product versions of the manual are as follows:

Product Name	Product Model
NSS3330, NSS4330, NSS5810 series switch	NSS3330-54TXF-AC(V1)
	NSS3330-30TXF-AC(V1)
	NSS4330-56TXF(V1)
	NSS4330-56TXP(V1)
	NSS4330-32TXF(V1)
	NSS5810-50TXFP(V1)
	NSS4330-60GXF(V1)
	NSS4330-36GXF(V1)

Audience

This documentation is intended for:

- Hardware installation engineers

- Commissioning engineers

- Field maintenance engineers

- System maintenance engineers

Conventions

Conventions of screen output format:

Format	Description
Screen print	Represents the output information of the screen
Keywords of Screen print	The red part represents the key information in the screen output

Symbol conventions:

Format	Description
Note	An alert that contains additional or supplementary information.
Caution	An alert that calls attention to important information that if not understood or followed can result in data loss, data corruption, or damage to hardware or software.
Warning	An alert that calls attention to important information that if not understood or followed can result in personal injury or device damage.

Command conventions:

Convention	Description
Boldface	Bold text represents commands and keywords that you enter literally as shown.
Italic	Italic text represents arguments that you replace with actual values.
[ ]	Square brackets enclose syntax choices (keywords or arguments) that are optional.
{ x | y | ... }	Braces enclose a set of required syntax choices separated by vertical bars, from which you select one.
[x | y | ...]	Square brackets enclose a set of optional syntax choices separated by vertical bars, from which you select one or none.

{ x | y | ... } *	Asterisk marked braces enclose a set of required syntax choices separated by vertical bars, from which you select at least one.
&<1-n>	The argument or keyword and argument combination before the ampersand (&) sign can be entered 1 to n times.
#	A line that starts with a pound (#) sign is comments.

The icons used in the manual and the meanings:

Icon	Description
	Represents a generic switch
	Represents a generic router

Supporting Manuals of Product

The supporting manuals of the product:

Manual name	Overview
NSS3330(V1) Series Switch Configuration Manual NSS4330 NSS5810 NSS5820(V1) Series Switch Configuration Manual	Describes the configuration methods and configuration steps of the device software functions, providing typical cases for reference

Technical Support

- Technical supporting hotline: 400-886-8669

- Fax: (+8628)85148948

Revision Records

Version	Revision Date	Revised Content

Version	Revision Date	Revised Content
V1.0	2019-12-24	The first formal release
V1.1	2020-03-12	Add supporting SM4C-2XGEF
V1.2	2020-08-31	V9R6 Phase II, document name revised according to specifications
V1.3	2021-04-20	Add NSS4330-60GXF(V1), NSS4330-36GXF(V1), NM4A-4XGEF(V1), NM4A-6XGEF(V1)

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1 Device Introduction

This chapter describes the hardware of the device, containing the following contents:

1.1 Product Shapes

1.2 Device Appearance and Hardware

1.3 Optional Interface Cards and Their Ports

1.4 Device Air Passage

1.5 Physical Parameters

1.1 Product Shapes

In order to meet the needs of different customers, NSS3330, NSS4330, and NSS5810 series switches provide a variety of product shapes, as shown in the table below.

Table 1-1 NSS3330, NSS4330, NSS5810 device product shapes

Series Name	Product Model	Supported Interfaces and Description
NSS3330	NSS3330-54TXF-AC(V1)	48 10/100/1000Base-T electrical interfaces, 6 SFP+optical interfaces (supporting gigabit and 10 gigabit modes), fixed dual power supply
	NSS3330-30TXF-AC(V1)	24 10/100/1000Base-T electrical interfaces, 6 SFP+optical interfaces (supporting gigabit and 10 gigabit modes), fixed dual power supply
NSS4330	NSS4330-56TXF(V1)	48 10/100/1000Base-T electrical interfaces, 6 SFP+optical interfaces (supporting gigabit and 10 gigabit modes), one expansion slot (2-port 40G can be expanded), modular dual power slots
	NSS4330-32TXF(V1)	24 10/100/1000Base-T electrical interfaces, 6 SFP+optical interfaces (supporting gigabit and 10 gigabit modes), one expansion slot (2-port 40G can be expanded), modular dual power slots
	NSS4330-56TXP(V1)	48 10/100/1000Base-T electrical interfaces, support POE; POE supports 802.3 af, at ; 6

		SFP+optical interfaces (supporting gigabit and 10 gigabit modes), one expansion slot (2-port 40G can be expanded), modular dual power slots
	NSS4330-60GXF(V1)	48 SFP gigabit optical ports, 4 SFP+optical ports (supporting gigabit and 10 gigabit modes), two expansion slots (2-port 10G, 4-port 10G, 2-port 40G can be expanded), and two modular power slots
	NSS4330-36GXF(V1)	24 SFP gigabit optical ports, 4 SFP+optical ports (supporting gigabit and 10 gigabit modes), two expansion slots (2-port 10G, 4-port 10G, 2-port 40G can be expanded), and two modular power slots
NSS5810	NSS5810-50TXFP(V1)	24 10/100/1000Base-T electrical interfaces, 18 SFP+optical ports (supporting gigabit and 10 gigabit modes), eight 25G SFP28 optical ports (supporting 10G and 25G), modular dual power supply slots

1.2 Device Appearance and Hardware

The NSS3330 NSS4330 NSS5810 series switch includes eight product models and four sub cards: NSS3330-54TXF-AC (V1), NSS3330-30TXF-AC (V1), NSS4330-56TXF (V1), NSS4330-32TXF (V1), NSS4330-56TXP (V1), NSS4330-60GXF (V1), NSS4330-36GXF (V1), NSS5810-50TXFP (V1), NM4A-2QXGEF (V1), SM4C-2XGEF (V1), NM4A-4XGEF (V1), NM4A-6XGEF (V1).

Note

● NM4A-2QXGEF(V1), SM4C-2XGEF(V1), NM4A-4XGEF(V1), and NM4A-6XGEF(V1) are the sub cards used in the NSS4330 series products.

1.2.1 NSS3330-54TXF-AC(V1)

NSS3330-54TXF-AC (V1) dimension is 442mm × 320mm × 44.2mm (W × D × H). The front appearance of NSS3330-54TXF-AC (V1) is shown in Figure 1-1. The rear appearance is shown in Figure 1-2.
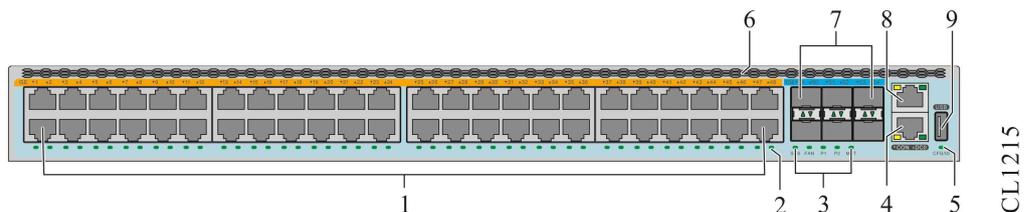
Figure 1-1 NSS3330-54TXF-AC(V1) front appearance

1.Gigabit electrical interface	2. Port status indicator
3.Device status indicator	4. CONSOLE port
5.Device ID indicator	6.Air inlet
7.10 Gigabit optical port	8. DC0 port
9. USB port	
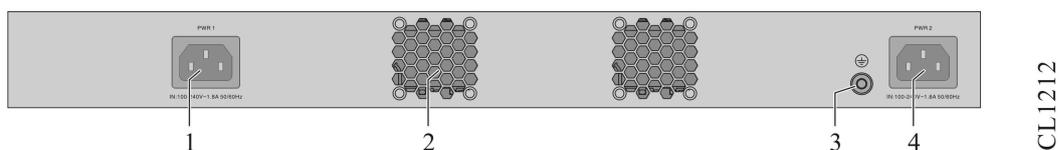
Figure 1-2 NSS3330-54TXF-AC(V1) rear appearance

1.AC power socket 1	2.Device air outlet
3. Grounding terminal	4. AC power socket 2

1.2.2 NSS3330-30TXF-AC(V1)

NSS3330-30XF-AC dimension is 442mm × 320mm × 44.2mm (W × D × H). The front appearance of NSS3330-30XF-AC is shown in Figure 1-3. The rear appearance is shown in Figure 1-4.
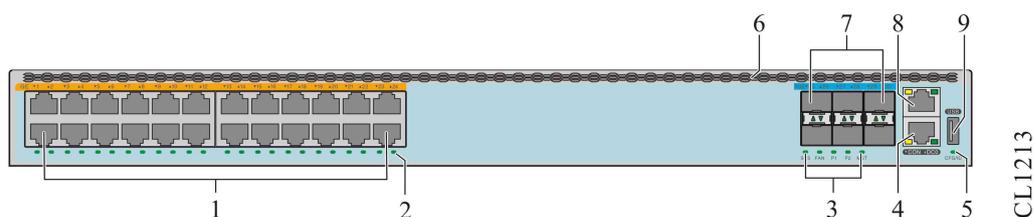
Figure 1-3 NSS3330-30TXF-AC(V1) front appearance

1.Gigabit electrical interface	2. Port status indicator
3.Device status indicator	4. CONSOLE port
5.Device ID indicator	6.Air inlet
7.10 Gigabit optical port	8. DC0 port
9. USB port	
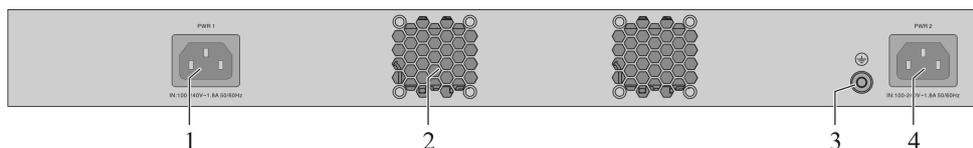
Figure 1-4 NSS3330-30TXF-AC(V1) rear appearance

1. AC power socket 1	2.Device air outlet
3. Grounding terminal	4.AC power socket 2

1.2.3 NSS4330-56TXF(V1)

NSS4330-56TXF(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS4330-56TXF(V1) is shown in Figure 1-5. The rear appearance is shown in Figure 1-6.
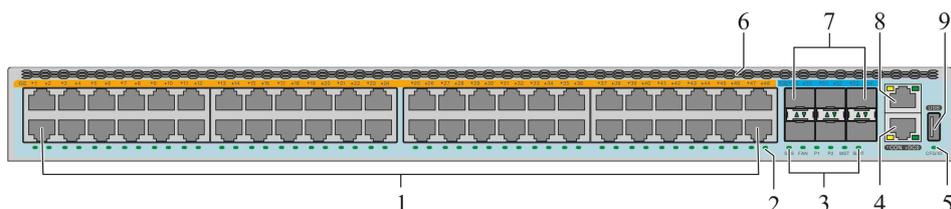
Figure 1-5 NSS4330-56TXF(V1) front appearance

1.Gigabit electrical interface	2. Port status indicator
3.Device status indicator	4. CONSOLE port
5.Device ID indicator	6.Air inlet
7.10 Gigabit optical port	8. DC0 port
9. USB port	
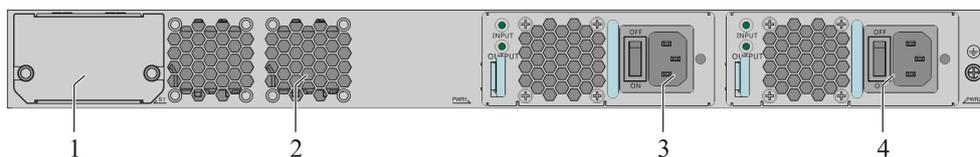
Figure 1-6 NSS4330-56TXF(V1) rear appearance

1.Sub card slot	2.Device air outlet
3.Modular power 1	4.Modular power 2

5.Grounding terminal	

1.2.4 NSS4330-32TXF(V1)

NSS4330-32TXF(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS4330-32TXF(V1) is shown in Figure 1-7. The rear appearance is shown in Figure 1-8.
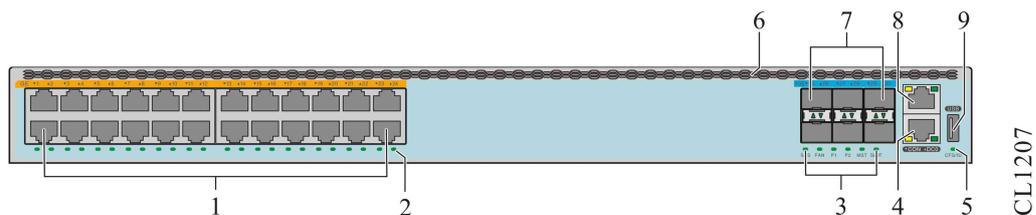
Figure 1-7 NSS4330-32TXF(V1) front appearance

1.Gigabit electrical interface	2. Port status indicator
3.Device status indicator	4. CONSOLE port
5.Device ID indicator	6.Air inlet
7.10 Gigabit optical port	8. DC0 port
9. USB port	
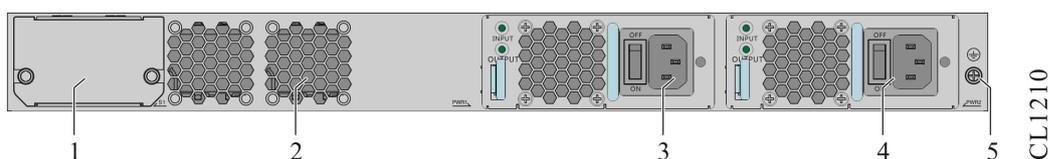
Figure 1-8 NSS4330-32TXF(V1) rear appearance

1.Sub card slot	2.Device air outlet
3.Modular power 1	4.Modular power 2
5.Grounding terminal	

1.2.5 NSS4330-56TXP(V1)

NSS4330-56TXP(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS4330-56TXP(V1) is shown in Figure 1-9. The rear appearance is shown in Figure 1-10.
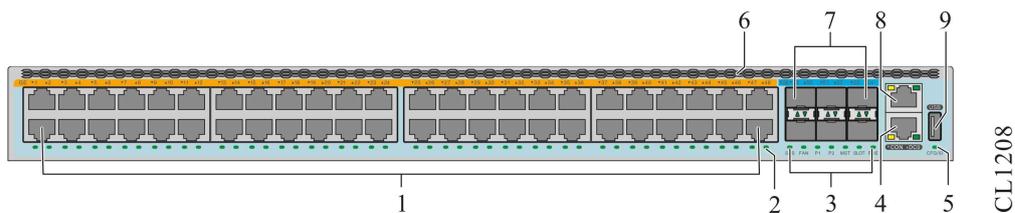
Figure 1-9 NSS4330-56TXP(V1) front appearance

1.Gigabit electrical interface	2. Port status indicator
3.Device status indicator	4. CONSOLE port
5.Device ID indicator	6.Air inlet
7.10 Gigabit optical port	8. DC0 port
9. USB port	
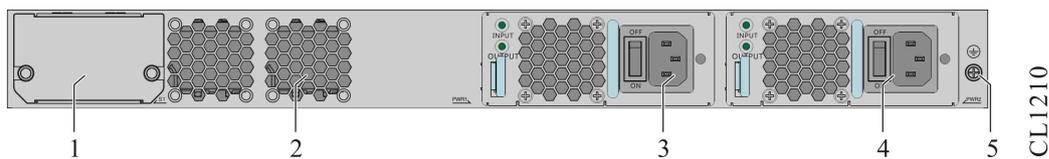
Figure 1-10 NSS4330-56TXP(V1) rear appearance

1.Sub card slot	2.Device air outlet
3.Modular power 1	4.Modular power 2
5.Grounding terminal	

1.2.6 **NSS4330-36GXF(V1)**

NSS4330-36GXF(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS4330-36GXF(V1) is shown in Figure 1-11. The rear appearance is shown in Figure 1-12.
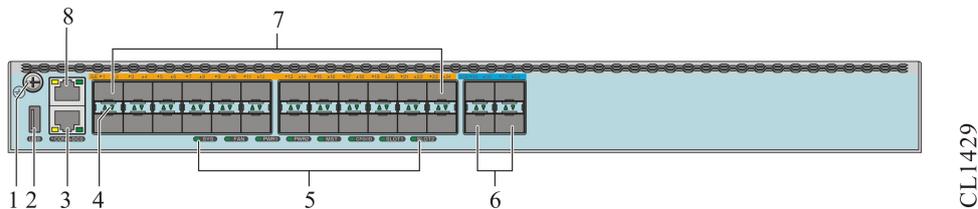
Figure 1-11 NSS4330-36GXF(V1) front appearance

1.Grounding terminal	2. USB port
3. CONSOLE port	4.Port indicator

5.System status indicator	6.10 Gigabit optical port
7.Gigabit optical port	8. DC0 port
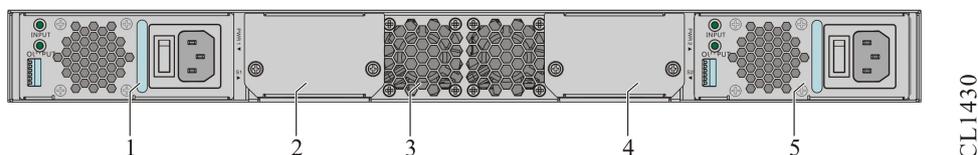
Figure 1-12 NSS4330-36GXF(V1) rear appearance

1.Modular power 1	2.Sub card slot1
3.Device air outlet	4.Sub card slot2
5.Modular power 2	

1.2.7 NSS4330-60GXF(V1)

NSS4330-60GXF(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS4330-60GXF(V1) is shown in Figure 1-13. The rear appearance is shown in Figure 1-14.
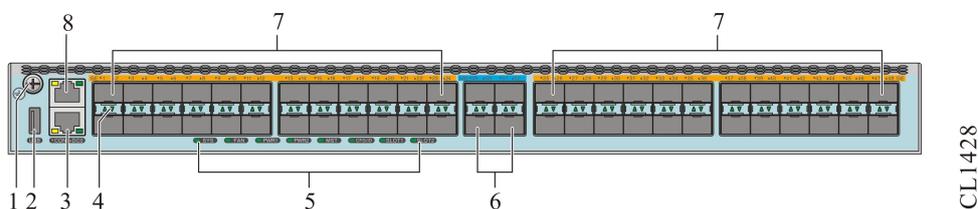
Figure 1-13 NSS4330-60GXF(V1) front appearance

1.Grounding terminal	2. USB port
3. CONSOLE port	4.Port indicator
5.System status indicator	6.10 Gigabit optical port
7.Gigabit optical port	8. DC0 port
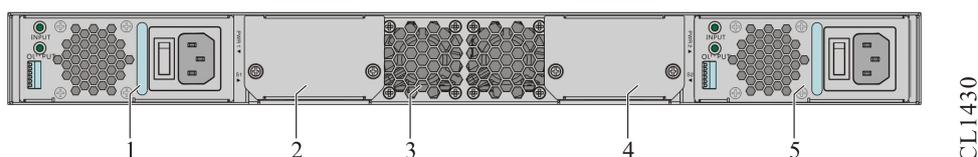
Figure 1-14 NSS4330-60GXF(V1) rear appearance

1.Modular power 1	2.Sub card slot1

3.Device air outlet	4.Sub card slot2
5.Modular power 2	

1.2.8 **NSS5810-50TXFP(V1)**

NSS5810-50TXFP(V1) dimension is 442mm × 420mm × 44.2mm (W × D × H). The front appearance of NSS5810-50TXFP(V1) is shown in Figure 1-15. The rear appearance is shown in Figure 1-16.
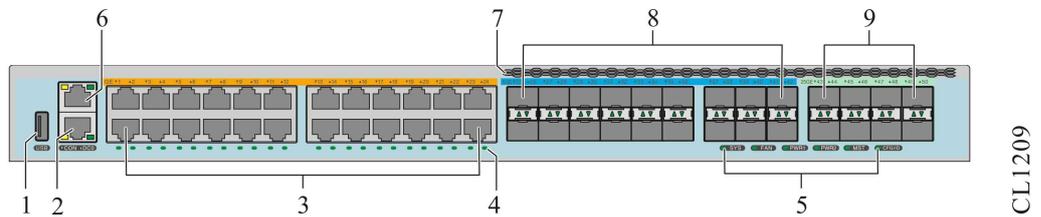
Figure 1-15 NSS5810-50TXFP(V1) front appearance

1. USB port	2. CONSOLE port
3.Gigabit electrical interface	4.Port status indicator
5.Device status indicator	6. DC0 port
7.Air inlet	8.10 Gigabit optical port
9.25G optical port	
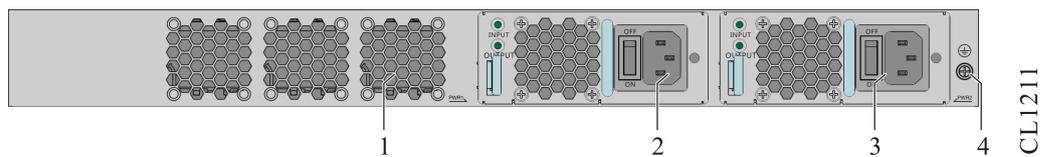
Figure 1-16 NSS5810-50TXFP(V1) rear appearance

1.Air outlet	2.Modular power 1
3.Modular power 2	4.Grounding terminal

1.3 **Optional Interface Cards and Their Ports**

The rear panel of NSS4330 series provides interface card slots. This series of switches now provides four types of interface cards: NM4A-2QXGEF (V1), SM4C-2XGEF (V1), NM4A-4XGEF (V1), and NM4A-6XGEF (V1). NM4A-6XGEF (V1) is only supported on

three models: NSS4330-56TXF (V1), NSS4330-32TXF (V1), and NSS4330-56TXP (V1). NM4A-2QXGEF (V1), SM4C-2XGEF (V1), and NM4A-4XGEF (V1) are supported on all NSS4330 series. See Table 1-2 for details of small cards.

Table 1-2 Interface cards supported by NSS4330

Model	Name	Interface Quantity and Type	Remarks
NM4A-2QXGEF(V1)	NM4A-2QXGEF, 2-port 40G QSFP optical port	2 QSFP+ optical ports	Support two 40G QSFP+ optical module
SM4C-2XGEF(V1)	SM4C-2XGEF, 2-port 10G SFP+ interface card	2 SFP+ optical ports	10G/Gigabit optical modules can be configured, SFP+ cable
NM4A-4XGEF(V1)	NM4A-4XGEF, switch module, 4-port 10G SFP+ optical interface card	4 SFP+ optical ports	10G/Gigabit optical modules can be configured, SFP+ cable
NM4A-6XGEF(V1)	NM4A-6XGEF, switch module, 6-port 10G SFP+ optical interface card	6 SFP+ optical ports	10G/Gigabit optical modules can be configured, SFP+ cable

1.3.1　2-Port 40G QSFP+ Interface Card
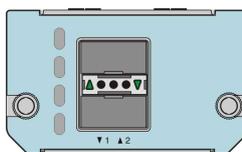
Figure 1-17 2-port 40G QSFP+ interface card panel diagram

1.3.2　2-Port 10G SFP+ Interface Card

Figure 1-18 2-port 10G SFP+ interface card panel diagram

1.3.3 4-Port 10G SFP+ Interface Card
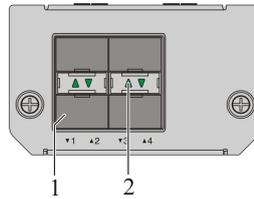
Figure 1-19 4-port 10G SFP+ interface card panel diagram

1.3.4 6-Port 10G SFP+ Interface Card
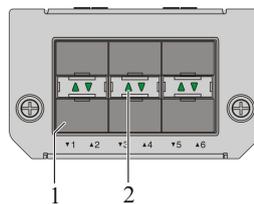
Figure 1-20 6-port 10G SFP+ interface card panel diagram

1.4 Device Air Passage

NSS3330, NSS4330, NSS5810 series devices adopt front and rear air passages. Sufficient space shall be reserved on the front and rear sides of the equipment (the front and rear spaces shall not be less than 60mm respectively) to ensure good ventilation.
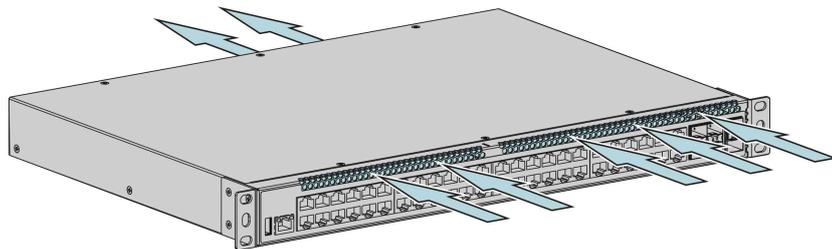
Figure 1-21 NSS3330, NSS4330, NSS5810 series device air passage

1.5 Physical Parameters

Table 1-3 Physical parameters

Item	Description	
Dimension (WxDxH)	NSS3330-54TXF-AC(V1)	442mm×320mm×44.2mm
	NSS3330-30TXF-AC(V1)	442mm×320mm×44.2mm
	NSS4330-56TXF(V1)	442mm×420mm×44.2mm
	NSS4330-32TXF(V1)	442mm×420mm×44.2mm
	NSS4330-56TXP(V1)	442mm×420mm×44.2mm
	NSS4330-36GXF(V1)	442mm×420mm×44.2mm
	NSS4330-60GXF(V1)	442mm×420mm×44.2mm
	NSS5810-50TXFP(V1)	442mm×420mm×44.2mm
Power consumption	NSS3330-54TXF-AC(V1)	66W
	NSS3330-30TXF-AC(V1)	52W
	NSS4330-56TXF(V1)	79W
	NSS4330-32TXF(V1)	65W
	NSS4330-56TXP(V1)	79W
	NSS4330-36GXF(V1)	75W
	NSS4330-60GXF(V1)	111W
	NSS5810-50TXFP(V1)	83W
Weight of the whole device and modules	NSS3330-54TXF-AC(V1)	<5kg
	NSS3330-30TXF-AC(V1)	<5kg
	NSS4330-56TXF(V1)	<6kg (without power supply)
	NSS4330-32TXF(V1)	<5kg (without power supply)
	NSS4330-56TXP(V1)	<6kg (without power supply)
	NSS4330-36GXF(V1)	<6kg (without power supply)

Item	Description	
	NSS4330-60GXF(V1)	<6kg (without power supply)
	NSS5810-50TXFP(V1)	<6kg (without power supply)
Rated input voltage of power supply	AC：100～240V 50/60Hz	
Storage humidity	5%~95%/RH, non-condensation	
Work humidity	10%~90%/RH, non-condensation	
Storage temperature	-40℃~70℃	
Work temperature	-5℃~55℃ Note: the maximum working temperature corresponding to the altitude within 2000m is 55°C; for the altitude between 2000m and 5000m, the working temperature decreases by 1°C for every 200m increase	
Storage altitude	<5000m	

2 Installation Preparations

This chapter describes the precautions and related work before installing the device, containing the following contents:

2.1 Check Device Running Environment

2.2 Safety Precautions

2.3 Open-Package and Inspection

⊘ **Note**

- When the device is delivered, there is the packing list. Please confirm whether the accessories are complete and good according to the items in the packing list. If there is damaged or loss, please contact Maipu technical staff to replace.

2.1 Check Device Running Environment

2.1.1 Check Equipment Room Conditions

To ensure the normal running of the device, take the corresponding measures to meet the environment requirement of the device running:

- Air conditioning and ventilation system can ensure the normal running temperature and humidity conditions of the switch. For details, refer to 5.5E1 Environment Requirement of Equipment Room.

- The good grounding is the basis of the switch running and the important guarantee conditions of preventing lightning and resisting interference. Ensure that grounding meets the grounding specifications. For details, refer to 5.5F1 Device Grounding Specifications.

- Ensure that there is enough installation space and moving path space.

- Ensure that the cleanness of the equipment room meets the requirement. Do not place

the switch in the environment with lots of dust, such as in the being renovated passage.

2.1.2 Check Power Supply System

A good power supply system is the basis for the power-on and stable operation of the switch. To meet the power supply requirements of the switch, please complete the following steps:

Step 1: Estimate the overall power consumption of the switch.

Step 2: Ensure that the power supply system at the installation site is stable and can meet the requirements of the input mode, rated input voltage and other parameters of the selected power module. Refer to "Appendix E2 Power Condition Requirements" for details.

Note

- For the power consumption data of the switch, see Chapter 1.5 Physical Parameters

2.2 Safety Precautions

2.2.1 General Safety

Caution

- Ensure that the ground of the installation place is dry and smooth and you have made the anti-skidding measures.

- Keep the device clean and dust-free; do not place the device in the damp place.

- The whole switch and its related parts (such as power supply, chassis, etc.) are relatively heavy. During handling and lifting, please cooperate with more people to avoid being scratched by sharp parts of the equipment. Please wear labor protection gloves during handling.

- This is a Class-A product. In a living environment, this product may cause radio interference. In this case, users may be required to take practical measures against the interference. When disconnecting power, remove all power cords.

2.2.2 Electrical Safety

⚠ **Caution**

- Please check whether there are potential dangers. For example, the power is not grounded, power supply grounding is not reliable, and the ground is wet.

- Before installation, get to know the location of the power switch in the room; when there is an accident, cut off the power switch at first.

- Before moving the chassis, be sure to unplug all external cables (including power cable).

- When maintaining with power, it is recommended that there are two or more persons in the field.

- When closing the power, do not assume that the power has been turned off, but carefully check and confirm.

2.2.3 Static Safety

To avoid the static from damaging the electronic parts of the switch, we need to take the anti-static measures.

⚠ **Caution**

- When installing the components of the switch, especially installing the components with the circuit board (such as board), we should wear anti-static wrists.

- When holding the circuit board, please hold the edge of the circuit board and do not touch the components or printed circuit.

- For the security, please check the resistance of the anti-static wrists. The resistance between the body and the ground should be 1-10 megohms.

The using steps of the anti-static wrists are as follows:

Step 1: Put his hand into the anti-static wrist.

Step 2: Tighten the fastener and ensure that the piece metal on the anti-static wrist is well contacted with the skin.

Step 3: Insert the anti-static wrist into the anti-static wrist jack of the switch chassis or clip the alligator clip to the grounding terminal of the chassis.

Step 4: Ensure that the anti-static wrist is well-grounded.

The using method of the anti-static wrist is shown in the following figure.
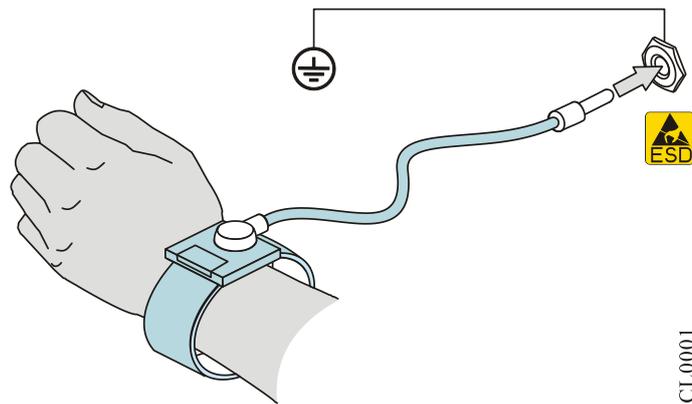
Figure 2-1 Using method diagram of anti-static wrist

2.2.4 Handing Safety

● Before handling or moving the device, unplug all external cables (including power cable).

● If the distance is far when moving the device, it is recommended to use professional mechanical handling tools.

2.2.5 Laser Safety

⊗ Warning

● Some cards of the switch contain optical interfaces, so it is avoided to look directly at the laser beam inside the optical fiber when using. Laser may cause damage to your eyes.

2.3 Open-Package and Inspection

The desktop switch is packed in cartons. The packing box is composed of cartons, plastic bags, protective pearl cotton and other packaging materials. Unpacking steps are as follows:

Step 1: Check the carton label and confirm the equipment model.

Step 2: Use a paper knife to gash the tape along the lid commissure; be careful when using the knife; do not insert too deep, avoiding damaging equipment inside.

Step 3: Open the carton, take out of the protection EPE, and you can take out the device.

Step 4: Take out the equipment list.

Step 5: Check whether the equipment is correct according to the equipment list and equipment label.

Step 6: Check whether other accessories are complete according to the equipment list.

⚠ **Caution**

● Please keep the accessories in the accessory box properly to prevent loss.

2-17

3 Device Installation

This chapter describes the device installation, containing the following contents:

3.1 Install Device to Cabinet

3.2 Install Device to Desktop

3.3 Ground the Device

3.4 (Optional) Install SPD

3.5 (Optional) Install Interface Card

3.6 Connect Power Cable

3.7 Check after Installation

3.1 Install Device to Cabinet

This section describes how to install the NSS3330, NSS4330, and NSS5810 series switch to the 19-inch standard cabinet.

3.1.1 Installation Preparations

● NSS3330, NSS4330, and NSS5810 series switch is 1U high, and the user can fix the switch through one pair of hanging ears.

● Check the grounding and stability of the cabinet and ensure that there is no obstacle inside and around the cabinet affecting the switch installation.

Note

● The 1U is 44.45mm. Here, U is the abbreviation of RU (Rack Unit).

3.1.2 Install Hanging Ears to Switch

Step 1: When installing the hanging ears to the chassis, the screw holes fixed between the

hanging ears and the switch are aligned with the screw holes on the side panel of the chassis, as shown in Figure 3-1.
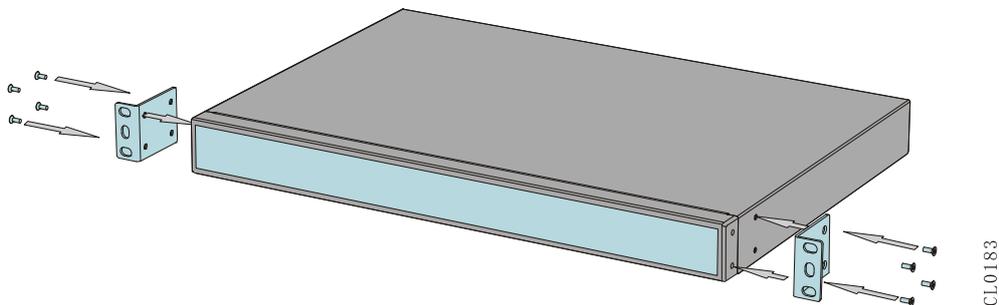
Figure 3-1 Install hanging ears to the switch

Step 2:   Tighten the screws clockwise to fix the hanging ears to the chassis. After installation is complete, it is shown in Figure 3-2.
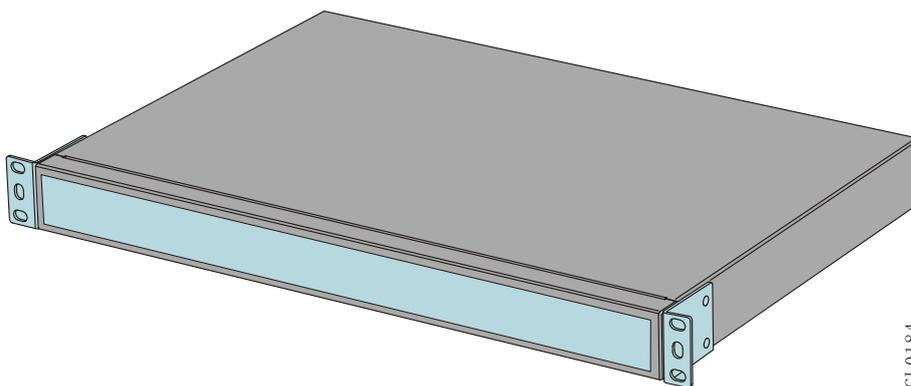
Figure 3-2 The hanging ears are installed

3.1.3   Install the Device to the Cabinet

> ⚠ **Caution**
>
> ● Before installing the device to the cabinet, ensure that the corresponding positions on the cabinet are installed with slide (tray) and the slide (tray) can support the weight of device and its accessories.

The following is a brief description of the steps to install the device to the cabinet.

Step 1:   Wear anti-static wrist strap and check the grounding and stability of the cabinet.

Step 2:   Compare the position of the floating nut on the square hole strip of the cabinet column

with the hanging ears, and mark it with a marking pen.

Step 3: Install the floating nuts on the marked positions, as shown in Figure 3-3.
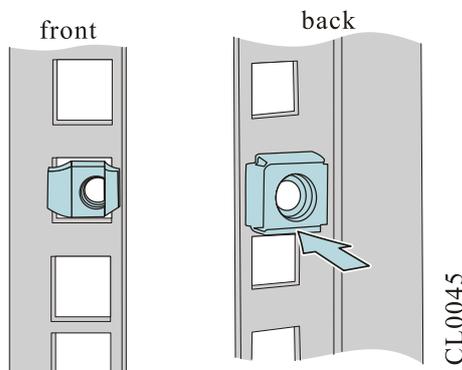
Figure 3-3 Install the floating nut

Step 4: Fix the hanging ears on both sides of the switch with screws. For the installation method, see "3.1.2 Install Hanging Ears to Switch".

Step 5: According to the actual situation and the installation position of the hanging ears, move the switch along the cabinet to the appropriate position.

Step 6: Fix the switch to the square hole strip of the cabinet column through the hanging ears with the screws meeting the installation dimension requirements of the cabinet (the switch is not attached with the cabinet screws, the screws are provided by the cabinet manufacturer, the surface is rust proof and matched with the floating nut). The installation method is shown in Figure 3-4. Pay attention to ensure that the position is horizontal and firm.
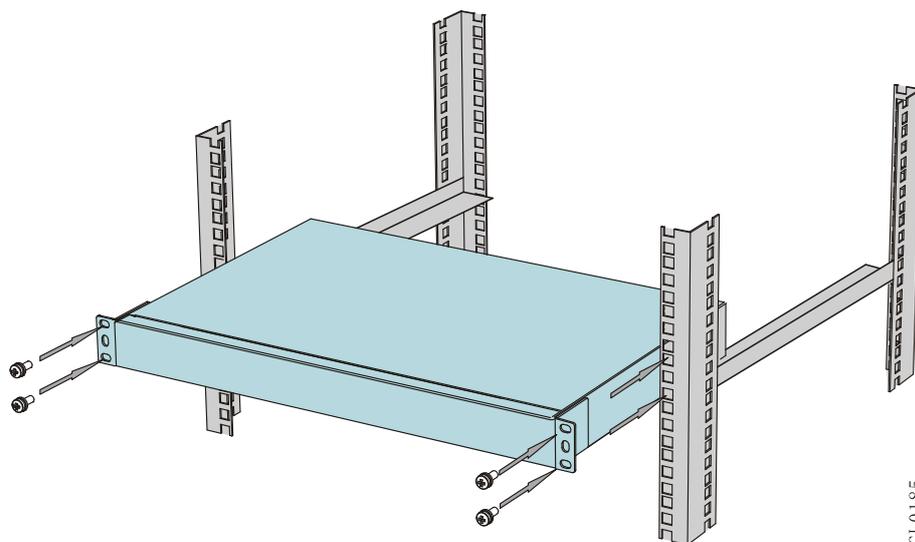
Figure 3-4 Install the host to the cabinet

3.1.4 Check Installation

After the switch is installed to the cabinet, check the installation according to the following items and ensure all the items are normal.

- Confirm that the switch is installed in the correct position.

- Confirm that the switch hanging ears are well fastened to the cabinet.

- Confirm that enough space is reserved around the switch for heat dissipation.

3.2 Install Device to Desktop

Place the switch on a clean workbench. This operation is relatively simple. The installation process is as follows:

Step 1: Carefully invert the switch. Check whether the footpads in the circular stamping area on the chassis base plate are all in good condition. If they are in good condition, skip to step 3; otherwise, proceed to step 2.

Step 2: Clean the circular stamping area on the chassis bottom plate with a dry soft cloth to ensure that there is no oil or dust absorption. Remove the foot pad from the adhesive paper and paste it into a circular stamping area on the chassis bottom plate without foot pad, as shown in Figure 3-5.
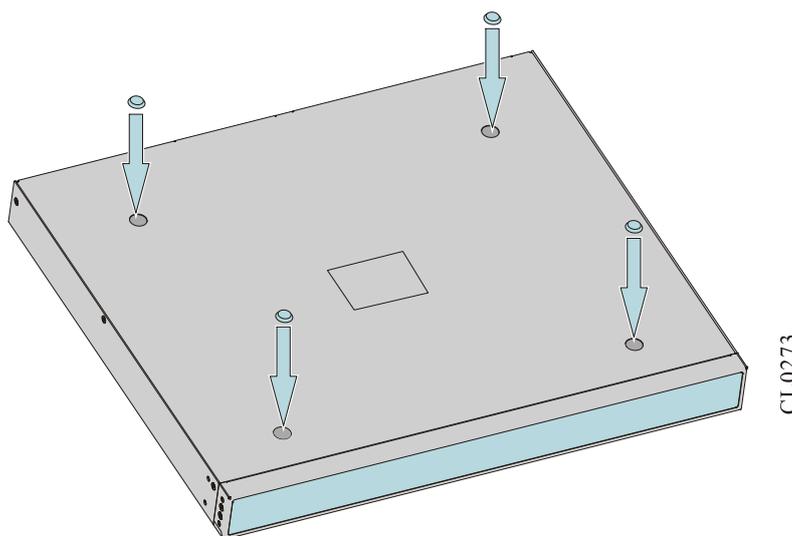
Figure 3-5 Install the rubber foot pad of 1U device

Step 3: Place the switch in the front position on the workbench.

⚠ Caution

- Ensure the stability and good grounding of the workbench.

- 10 cm heat dissipation space shall be reserved around the switch.

- Do not place heavy objects on the switch.

3.3 Ground the Device

Generally, there is the grounding bar on the cabinet and we can connect the ground cable of the switch to the grounding bar.

📝 Note

- Please use the ground cable carried by the switch.

The steps of installing the ground cable are as follows:

Step 1:   Remove the ground screw on the chassis of the switch.

Step 2:   Bind the wiring terminal of the ground cable carried by the switch to the ground screw of the chassis.

Step 3:   Install the ground screw with the ground cable to the grounding hole and tighten it.

Step 4:   Use the same method to install the other side of the ground cable to the grounding terminal of the cabinet.
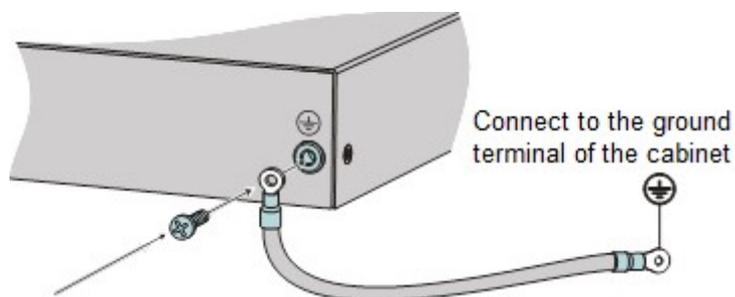
Figure 3-6 Connect the ground cable

⚠ Caution

- If there is no appropriate grounding point on the cabinet, we also can connect the grounding cable of the switch to other grounding bar of the installation place.

- Fire hose and lightning rod grounding of the building are not the proper grounding location; the grounding cable of the switch should be connected to the engineering grounding of the equipment room.

⊗ Warning

- For the switch and human security, the switch must be grounded well. The resistance between the device chassis and the ground should be less than1 ohm.

3.4 (Optional) Install SPD

3.4.1 Install AC Power SPD

The AC power SPD (surge protection device) suppresses the transient overvoltage caused by lightning inductance shock or other reasons on the power transmission line. When a SPD is used, the AC power first enters the SPD and then enters the device.
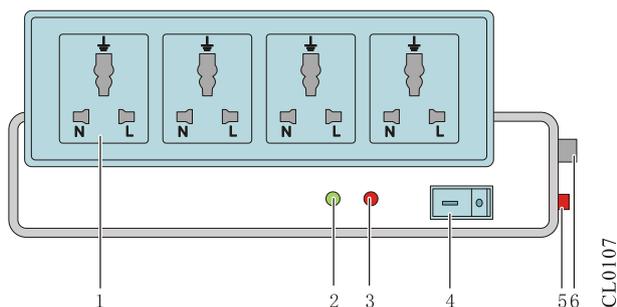
Figure 3-7 The power SPD

1.Socket	Connects the device power.
2.Normal work indicator (green)	on: indicates that the circuit is running normally.
	Off: indicates that the protection circuit is damaged.
3.Grounding and polarity detection indicator (red)	on: indicates the wiring error (the PE is not connected or the live wire and naught wire

	are reversely connected). At this time, check the power supply circuit.
4.Power switch	Turn on or turn off the power.
5.Automatic overload protector	Overload closed, auto reset after load returns to normal
6.Standard socket	Connects to the power in the equipment room via the power cable.

⚠ Caution

- The power SPD is not provided with the switch. The user can purchase it as required.

- When using the power SPD, ensure the PE terminal is grounded.

- Insert the AC power plug of the switch into the socket of the power SPD (surge protection connector bar). When only the green indicator indicating the running power SPD is always on without red indicator alarms, the SPD function works.

- If the red alarms occur to the power SPD, check and ensure whether the live wire, naught wire, and PE are connected correctly. If the PE is connected correctly, perform further detection. Switching the multimeter to the AC power, test whether the voltage between the naught wire and the PE is less than 5 V and whether the voltage between the live wire and the PE is about 220 V. If no, it indicates that the live wire and the naught wire are reversely connected.

3.5 (Optional) Install Interface Card

If the interface card is already installed on the switch, please skip this chapter.

3.5.1 Installation Preparations

Step 1: Take the interface card by hand, and insert the interface card smoothly along the interface card slot rail of the switch chassis, as shown in Figure 3-8.

Step 2: Push the interface card panel by hand to make the interface card panel and the host panel fit.

Step 3: Tighten the screws on the interface card with a cross screwdriver to fix the interface card.

3-7
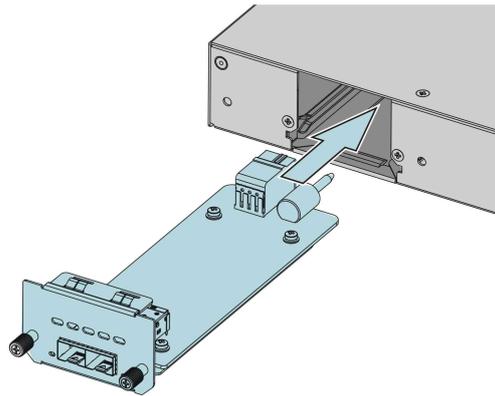
CL1165

Figure 3-8 Install the interface card

3.6 Connect Power Cable

3.6.1 Installation Preparations

● Considering the lightning protection requirements of the switch, it is suggested that the AC power introduced into the switch should pass through the external lightning protection device.

3.6.2 Connect AC Power Cable

Step 1: Connect the one side of the AC power cable to the AC power interface on the rear panel of the switch chassis, as shown in Figure 3-9.

Connected to device power input port   Connected to socket   CL0188
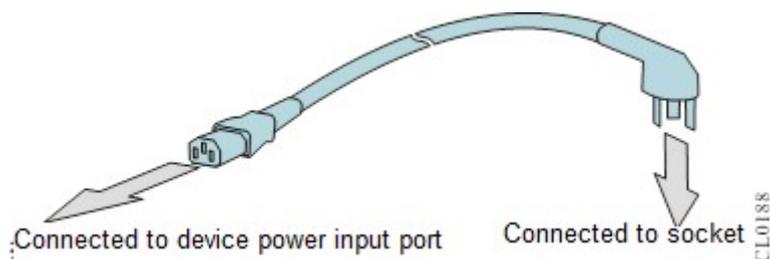
Figure 3-9 Connect to the AC power cable

Step 2: Insert the other end of the AC power cable into the socket of the external AC power supply system.

3.7 Check after Installation

● Confirm that the ground wire connection is correct.

- Confirm that the power modules are installed fixedly.

- Confirm that the power cables are connected correctly.

⊗Warning

- Before checking whether the installation is correct, close the power, avoiding the connection error from damaging the body and device parts.

4 Power on and Run Device

The chapter describes the related operations of powering on and running the device, containing the following contents:

4.1 Log into Device

4.2 Access Network

4.3 Hardware Management

4.1 Log into Device

When logging into the device for the first time, you can only log in via Console port. This is the most basic mode of logging into the device and also the basis of configuring other login modes.

4.1.1 Connect Configuration Cables

NSS3330, NSS4330, and NSS5810 switch provides EIA/TIA-232 serial port. With the interface, the user can adopt the PC (or laptop) with the RS-232 serial port to configure the switch.

To configure the switch via the PC (or laptop), connect according to the following steps:

Step 1: Prepare one PC (or laptop). Confirm that the PC (or laptop) has the RS-232 serial port.

Step 2: After confirming that the switch or PC (or laptop) is powered off, connect the RS-232 serial port of the PC (or laptop) with the RJ45 serial port of the switch via the configuration cable. For details about the Console cables, refer to 5.5D1Console Port Cables.
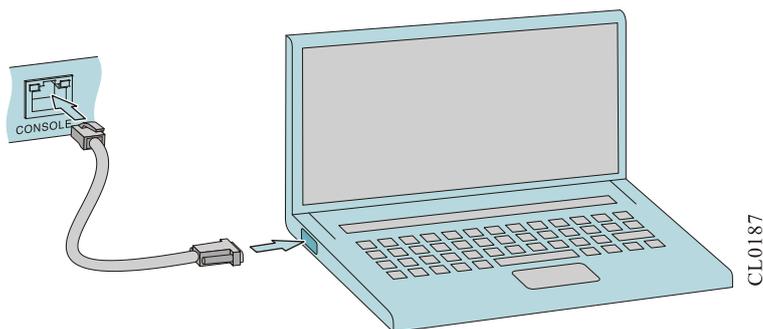
Figure 4-1 Connect the switch and PC via RS-232 serial port

Note

- The configuration cable used by RS-232 serial port (delivered with the device) is one eight-core unshielded cable. One side is the crimped RJ-45 plug, inserted to the Console port of the switch; the other side is one DB-9 (female), inserted to the nine-core (male) serial port socket of the PC (or laptop), as shown in Figure 4-1.

Caution

- When the PC (or laptop) is connected with the switch via the configuration cable, first connect the DB-9 side of the configuration cable to the PC and then connect the RJ-45 side of the configuration cable to the Console port of the switch.

- When removing the configuration cable that connect the PC (or laptop) with the switch, first remove the RJ-45 side of the configuration cable, and then remove the DB-9 side of the configuration cable.

4.1.2 Set PC HyperTerminal Parameters

The following takes running Windows XP HyperTerminal on the PC (or laptop) as an example to describe the setting of the serial interface parameters of the PC (or laptop).

Step 1: Enable the PC (or laptop), select **Start** > **All Programs** > **Accessories** > **Communication** > **HyperTerminal**, and click 🟨 to set up the new connection. If it is the first time to set the Hyperterminal, the system displays the interface of **Location Information**, as shown in Figure 4-2. Fill in according to the red indication in the fiugre and click **OK**.
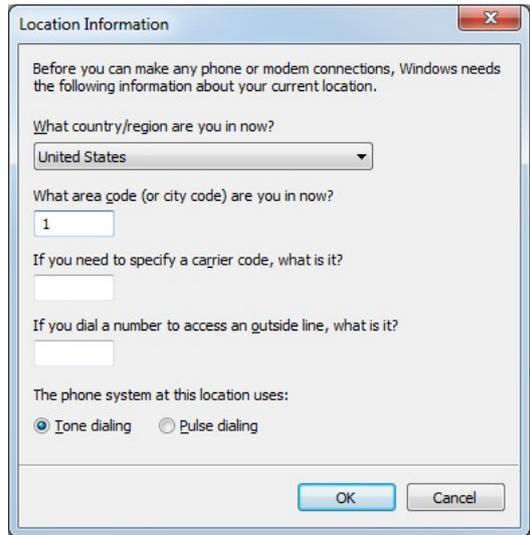
Figure 4-2 "Location information" interface

Step 2: Display the following **Telephone and Modem** interface and click **OK**.

Figure 4-3 The **Telephone and Modem** interface

Step 3: Display the following **Connection Description** interface, and fill in the name in **Name (N)**, such as test, and click **OK**.
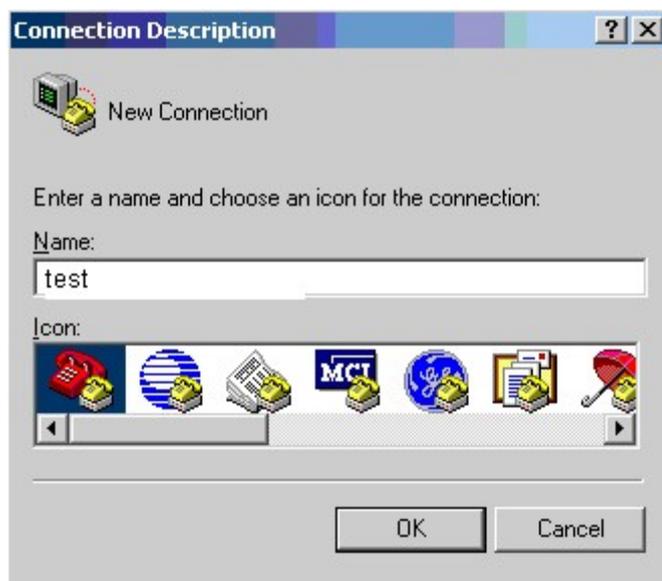
Figure 4-4 "Connection Description" interface

Step 4:   Display the following **Connect to** interface, select the serial interface used by the connection in the **Connect using**, and click **OK**.

Figure 4-5 "Connect to" interface

Step 5:   Display the following **COM1 Properties** interface, set the baud rate as 9600, data bit as 8, parity check as none, stop bit as 1, and data flow control as none, and then click **OK**.
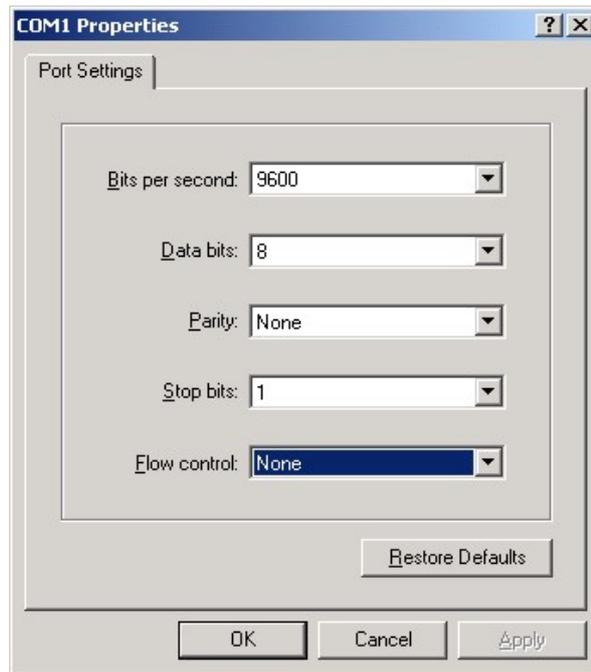
Figure 4-6 "com* properties" interface

Step 6:   Display the following **test-HyperTerminal** interface, and click **Properties**.
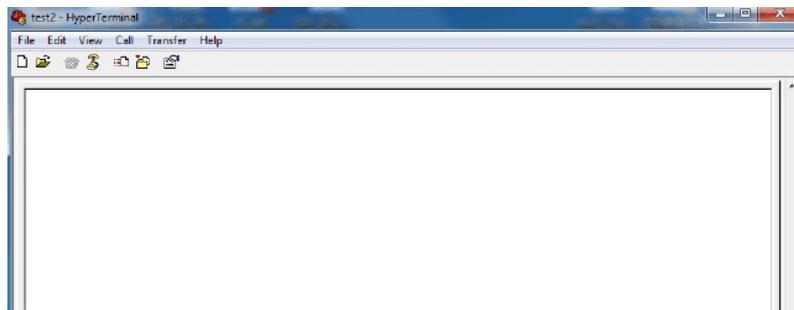
Figure 4-7 "test-HyperTerminal" interface

Step 7:   Display the following "**test properties**" interface, click **Setting**, select VT100 in **Terminal emulation**, and click **OK**.
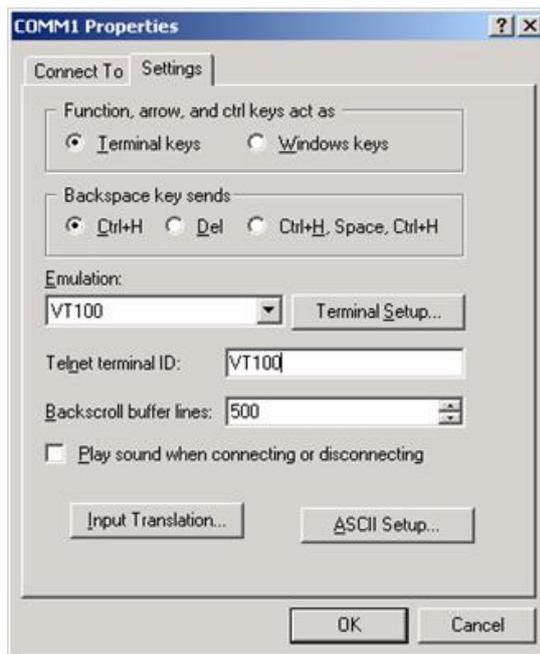
Figure 4-8 "Test properties" interface

Step 8:   Display the following **test-HyperTerminal** interface, press **Enter** at the blank place, and the
serial port displays the print information. The setting of the HyperTerminal is complete.
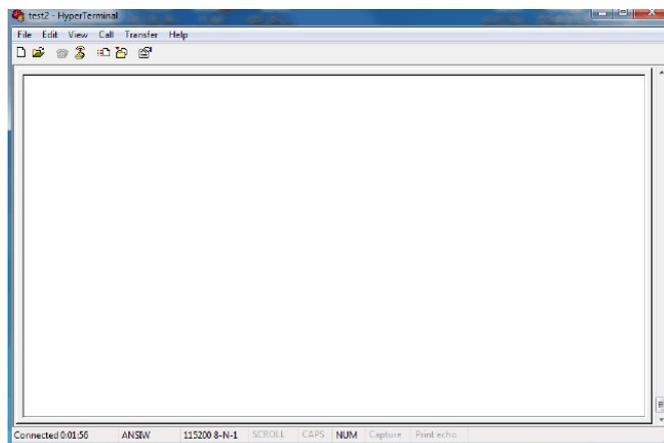
Figure 4-9 **test-Hyperterminal** interface after setting

4.1.3 Power on and Start

Check before Power on

Check the switch before powering on:

● The interface cables, power cables, and PEs are connected correctly.

● Power supply voltage meets the power requirement of the device. For details, refer to
5.5E2 Requirements for Power Supply.

● The configuration cable is connected correctly; the PC for configuration is enabled; the setting of the terminal parameters is complete.

⚠ Caution

● Before the switch is powered on, confirm the position of the power switch of the equipment room where the switch is located, so as to cut off the power in time when there is an accident.

Power on Switch

Please power on in the following order:

● Turn on the power supply switch of the switch.

After the switch is powered on and starts, the configuration terminal will display some basic manufacturing information of the switch, such as:

MyPower (R) Operating System Software
NSS4330 system image file (flash0: /flash/sp26-g-9.5.0(49)(T)(v3.6.0.104)-dbg.pck), version 9.5.0(49)(integrity),
Compiled on Sep 20 2019, 23:55:36
Copyright (C) 2019 Maipu Communication Technology Co.,Ltd.All Rights Reserved.

System ID   : 00017affffff
Hardware Model   : NSS4330-56TXF(V1)
Hardware Version   : 001(Hotswap Supported)
MPU CPLD Version   : 103
Bootloader Version   : 1.0.0.9
Software Version   : 9.5.0(49)(integrity)
Software Image File : flash0: /flash/sp26-g-9.5.0(49)(T)(v3.6.0.104)-dbg.pck
Compiled   : Sep 20 2019, 23:55:36

✎ Note

● The above displayed information on the start interface is just for reference. Please refer to the actual display.

4.1.4 Check after Power on

After the switch is powered on, it is better to conduct the following checks to ensure the normal operation of the following configuration:

● After the switch is powered on, the ventilation system works and check whether there is the sound of the fan rotation and whether there is air discharged from the ventilation holes of the switch.

- View whether the indicators on the switch are normal. For the details, refer to 5.5C2 Interface Status Indicators.

⚠️ **Caution**

- Different models of switch devices have different indicators. For details, refer to 1.2 Device Appearance and Hardware.

4.2 Access Network

4.2.1 Access Network via Ethernet Twisted Pair

The 10/100/1000Base-T electrical interface of the device adopts the RJ-45 connector. The port supports MDI/MDIX auto-sensing and adopts class-5 or above twisted-pair to connect the network.

Connection steps:

Step 1: Insert one side of the Ethernet twisted pair to the Ethernet electrical interface of the switch (RJ-45 port).

Step 2: Insert the other side of the Ethernet twisted pair to the RJ-45 port of the device connected to the network.

📝 **Note**

- There is no Ethernet twisted pair attached to the switch, please provide the cables required for connection in advance.

4.2.2 Access Network via Fiber

For the SFP, SFP+ optical interface of the switch, you can use the LC fiber to connect the network. Before connecting fiber, first install the optical module to the switch and then insert the fiber connector to the optical module. The appearance of the general LC fiber connector is as shown in the following figure:
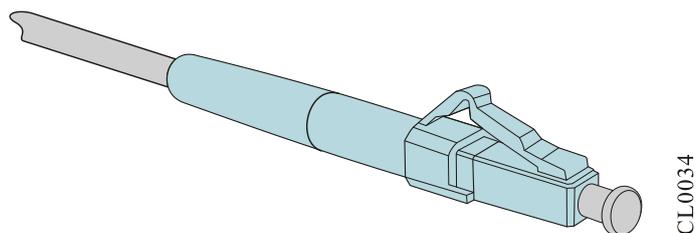
Figure 4-10 Appearance of the LC fiber connector

Install Optical Module

The installation steps of the SFP/SFP+ modules are similar. The following takes the SFP module as an example. The steps are as follows:

⚠ **Caution**

- When installing the SFP module, do not use the hands to touch the gold-finger of the SFP module directly.

- The TX wire should be connected to the RX wire of the peer device; the RX wire should be connected to the TX wire of the peer device.

Step 1: Wear the anti-static wrist and confirm that the anti-static wrist is well contacted with the skin and well-grounded.

Step 2: Pull out the dust plug on the optical port of the switch, as shown in Figure 4-11.

Step 3: Get the SFP module out from the packing box. The diagram of the SFP module is as shown in Figure 4-12 Use the hands to hold the two sides of the SFP module and push it into the interface slot of the switch horizontally until the SFP module is close-contact with the slot (you can feel that the shrapnel at the top and bottom of the SFP module stuck the interface slot), as shown in Figure 4-13.
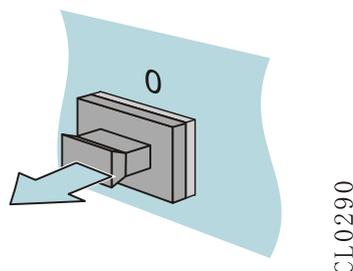
Figure 4-11 Pull out the dust plug
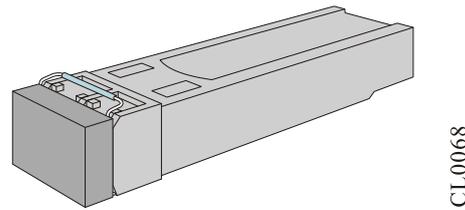
Figure 4-12 SFP module
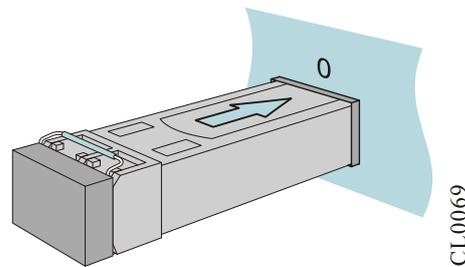
Figure 4-13 Install the SFP module

⚠ Caution

- Before installing the fiber, do not pull out the dust plug on the SFP module.

- For the unused optical port, do not unplug the dust plug on the optical port of the switch.

- It is recommended not to insert the SFP module with the fiber into the interface slot directly. Please install after unplugging the fiber.

- When installing the SFP module, do not use the hands to touch the gold-finger of the SFP module directly.

- The TX wire should connect to the RX wire of the peer device; the RX wire should connected to the TX wire of the peer device.

Connect Fiber on Optical Module

Step 1: Wear the anti-static wrist and confirm that the anti-static wrist is well contacted with the skin and well-grounded.

Step 2: Remove the dust cap of the fiber connector, as shown in Figure 4-14.
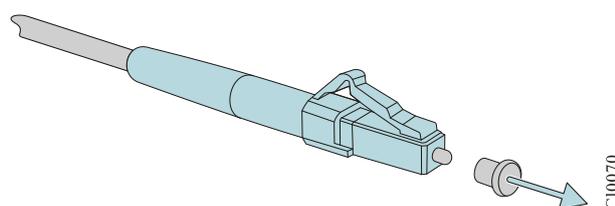
Figure 4-14 Remove the dust cap of the fiber

Step 3:   Remove the dust plug of the SFP module, as shown in Figure 4-15.
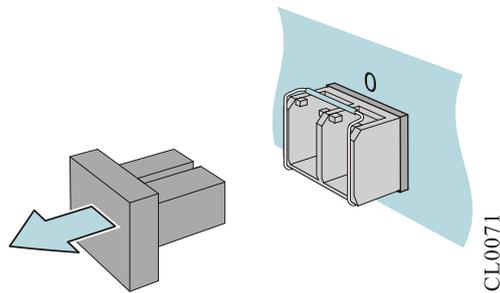
Figure 4-15 Remove the dust plug of the SFP module

Step 4:   Insert the prepared fibers to the ports of the optical module in order, as shown in Figure 4-16.
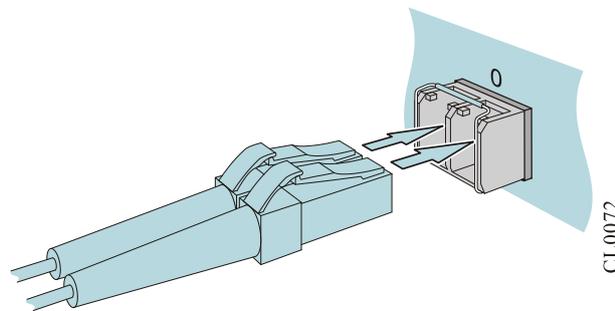
Figure 4-16 Connect the fiber

Step 5:   Connect the other side of the fiber to the peer device.

⚠ Caution

- When using the uni-directional dual fiber to connect the optical module, pay attention to make the receiving and sending signals of the modules at the two sides cross-connected.

- If the fiber connector ferrule has dust, please use the air-laid paper to stick the absolute alcohol and clean the face of the fiber connector ferrule.

4.3 Hardware Management

This section describes various hardware management functions of the device. With the function interfaces, the user can conveniently view the software and hardware version

information of the device, as well as the work status information of the hardware modules.

4.3.1 View Software and Hardware Version Information of Switch

You can use the **show version** command to view the software and hardware version information, including system serial number, hardware general information, hardware version, Monitor version, software version and other information. For example:

```
NSS4330-VST#show version
                MyPower (R) Operating System Software
NSS4330 system image file (flash0: /flash/sp26-g-9.5.0(49)(T)(v3.6.0.104)-dbg.pck), version 9.5.0(49)(integrity),
Compiled on Sep 20 2019, 23:55:36
Copyright (C) 2019 Maipu Communication Technology Co.,Ltd.All Rights Reserved.

NSS4330 Version Information
        System ID          : 00017affffff
        Hardware Model      : NSS4330-56TXF(V1)
        Hardware Version    : 001(Hotswap Supported)
        MPU CPLD Version     : 103
        Bootloader Version  : 1.0.0.9
        Software Version     : 9.5.0(49)(integrity)
        Software Image File : flash0: /flash/sp26-g-9.5.0(49)(T)(v3.6.0.104)-dbg.pck
        Compiled            : Sep 20 2019, 23:55:36

System Uptime is 118 weeks 2 days
```

Table 4-1 Key field description of the information displayed via **show version**

Field	Description
System ID	Switch equipment number, provided by the equipment supplier, such as:00017affffff
Hardware Model	The hardware information, such as NSS4330-56TXF(V1)
Hardware Version	PCB version, such as 001(Hotswap Unsupported)
CPLD Version	CPLD version, such as 103
Bootloader Version	Bootloader version, such as 1.0.0.9
Software Version	Software version, such as 9.5.0(49)(integrity)
Software Image File	The software mirror file, such as sp26-g-9.5.0(49)(T)(v3.6.0.104)-dbg.pck
Compiled	Compiling time of the version, such as Sep 20 2019, 23:55:36

4.3.2 View Interface Card Hardware Version Information

For NSS4330 series model with interface card, you can view the software and hardware version information of the device interface card through the **show system lpu** command, including: interface card online status, interface card type, interface card status, interface card alarm information, interface card power input status, interface card serial number, the number of times that the interface card is swapped, the number of errors in the swapping process, and other information, such as:

```
switch#show system lpu
 System Card Information(Lpu 1 - ONLINE)
 ---------------------------------------------------------------
                         Type:    NM4A-2QXGEF(V1)
                       Status:    Start Ok
                   Last-Alarm:    Normal
                Card-Port-Num:    2
             Card-SubSlot-Num:    0
            Power-INTF-Status:    Normal
            Power-Card-Status:    On
                   Serial No.:
                  Description:
          Hardware-Information:
                         PCB-Version: 001
 ---------------------------------------------------------------
 STATISTICS:            1 IN, 0 OUT, 0 IERR, 0 OERR
```

Table 4-2 Key field description of the information displayed via **show system lpu**

Field	Description
System Card Information	The online information of the interface card, such as Lpu 1 - ONLINE
Type	The type of the interface card, such as NM4A-2QXGEF (V1)
Status	The loading status information of the interface card, such as Start Ok
Last-Alarm	Alarm information of the sub card: normal (no alarm), abnormal (with alarm)
Card-Port-Num	The port quantity information of the interface card, such as 2
Card-SubSlot-Num	The sub slot information of the interface card, "0" by default
Power-INTF-Status	The power status information of the interface card, such as Normal
Power-Card-Status	The power-on information of the interface card, such as On

Field	Description
Serial No	Serial number of interface card, provided by equipment supplier
Description	Description information field, configured by the user
Hardware-Information	Version information of interface card printed board, such as: PCB-Version: 001
STATISTICS	Statistics of the times of swapping the sub card and the times of swapping errors, such as 1 IN, 0 IERR, 0 OUT, 0 OERR, indicate that the power module has been correctly inserted once, of which: IN: Physical insertion times of sub card, such as 1 IERR: Number of physical insertion errors of the sub card, such as 0 OUT: physical unplugging times of sub card, such as 0 OERR: Number of physical unplugging errors of the sub card, such as 0

4.3.3 View Power Module Status Information

You can use the **show system power** command to view the information of the power module used on the device, including the online information of the power module, status information, serial number, swapping times of the power module and the error swapping times. For example:

```
NSS4330-VST#show system power
 System Power Information(Device:1 - Power 1 - ONLINE)
 --------------------------------------------------------------
              Power Name:    AD120-1S005E(V1)
                  Status:    Normal
              Last-Alarm:    Normal
              Serial No.:    B55418D571801277
             Description:    N/A
 --------------------------------------------------------------
 STATISTICS:            1 IN, 0 OUT, 0 IERR, 0 OERR

 System Power Information(Device:1 - Power 2 - ONLINE)
 --------------------------------------------------------------
              Power Name:    AD120-1S005E(V1)
                  Status:    Normal
              Last-Alarm:    Normal
              Serial No.:    B55418D571801278
             Description:    N/A
 --------------------------------------------------------------
 STATISTICS:            1 IN, 0 OUT, 0 IERR, 0 OERR
```

Table 4-3 Key field description of the information displayed via **show system power**

Field	Description
System Power Information	The power online information, such as Power 2 - ONLINE
Power Name	The name of the power module, such as AD120-1S005E (V1)
Status	The work status of the power module, such as Normal ● Normal: The power module works normally ● Abnormal: The power module works abnormally
Last-Alarm	The power module alarm information, such as Normal ● Normal: The power module has no alarm information ● Abnormal: The power module has alarm information
Description	The description information field, configured by the user
STATISTICS	The swapping times of the power module and the error swapping times; for example 1 IN, 0 IERR, 0 OUT, 0 OERR indicates that the power module is correctly inserted for once. Here: IN: The physical inserting times of the power module, such as 1 IERR: The physical error inserting times, such as 0 OUT: The physical pull-out times, such as 0 OERR: The physical error pull-out times, such as 0

4.3.4 View System Environment Temperature Information

You can use the **show environment** command to view the temperature information of the cards on the device card and the main chips on the cards.

```
NSS4330-VST#show environment
        Device 1 system switch temperature is 45 C
        Device 1 system mainboard temperature is 34 C
```

4.3.5 View Fan Status Information

You can view the relevant information of the fans used on the device through the **show system fan** command, including: the online information of the fans, fan speed, fan working status, statistics of the swapping times of the fan modules, and the statistics of the errors in the swapping process, for example:

```
switch#show system fan
 System FAN Information(Fan 1 - ONLINE)
 -----------------------------------------------------------
                    Status:    Normal
             Description:   N/A
             Speed Rate:    40%
 -----------------------------------------------------------
 STATISTICS:             1 IN, 0 OUT, 0 IERR, 0 OERR
```

Table 4-4 Key field description of the information displayed via **show system fan**

Field	Description
System FAN Information	Fan online information, such as Fan 1 - ONLINE
Status	Fan work status, such as Normal
Description	The description information field, configured by the user
Speed Rate	Fan speed percentage, such as 40%
STATISTICS	The swapping times of the fan module and the error swapping times; for example 1 IN, 0 IERR, 0 OUT, 0 OERR indicates that the power module is correctly inserted for once. Here: IN: The physical inserting times of the fan, such as 1 IERR: The physical error inserting times, such as 0 OUT: The physical pull-out times, such as 0 OERR: The physical error pull-out times, such as 0

4.3.6 View Swappable Optical Module Information

You can use the **show optical all** command to view the work parameters of all optical modules used on the switch.

For example:

switch#show optical all

Name	VendorName	LaserWaveLen(nm)	Temperature(C)	Voltage(V)	TxPower(dBm)	RxPower(dBm)
te0/49	Eoptolink	850	11.773438	3.300200	-2.771194	-1.999706
te0/50	Eoptolink	850	11.335938	3.286100	-2.261405	-2.263598
te0/51	Eoptolink	850	10.398438	3.290900	-1.907771	-1.685782
te0/52	Eoptolink	850	11.128906	3.269900	-2.407856	-1.133965

Table 4-5 Key field description of the information displayed via **show optical all**

Field	Description
Name	The name of the port where the optical module is located, such as ten0/49
VendorName	The name of the manufacturer of the optical module, such as Eoptolink
LaserWaveLen(nm)	The center wavelength of the sent laser, such as 850nm
Temperature(C)	The temperature of the optical module (only for the optical module supporting the DDMI function), such as 11.773438
Voltage(V)	The work voltage of the optical module (only for the optical module supporting the DDMI function), such as 3.300200
TxPower(dBm)	The sending power of the optical module (only for the optical module supporting the DDMI function), such as -2.771194
RxPower(dBm)	The receiving power of the optical module (only for the optical module supporting the DDMI function), such as -1.999706

Besides, you can use the following commands to view the details of the inserted optical module on one specified port of the device, including the optical module name, interface type, supplier name, optical module model, optical module serial number, the production date of the optical module, the sending power of the optical module and so on. If the used optical module supports the DDMI function, you can use the command to get the internal monitor parameters of the optical module and the corresponding alarm threshold information. The command format: **show optical interface interface-name detail**. For example, view the details of the optical module on port 49 of the front panel.

switch#show optical interface tengigabitethernet 0/52 detail
tengigabitethernet0/52 optical information
        Device Name   : SFP
        Connector Name   : LC

```
Encoding Code        : 8B/10B
Transmit Distance    : 270m(OM1),550m(OM2)
Vendor OUI           : 00-00-00
Vendor Name          : TRIXON INC.
Part Number          : TSS-GEM5-85NCR
Revision Number      : 10
Serial Number        : 10G15C000114
Production Date       : 15/12/22(y/m/d)
Laser WaveLength     : 850(nm)
Vendor Specific      : 0000000000000000000000000000000000000000000000000000000000000000
Monitor Parameters   :
                                T - ThresHold, S - Status
```

Type	Value	Alarm-High(T/S)	Alarm-Low(T/S)	Warning-High(T/S)	Warning-Low(T/S)
Temperature(C)	35.394531	90.000000(N)	-10.000000(N)	85.000000(N)	-5.000000(N)
Voltage(V)	3.279100	3.600000(N)	3.000000(N)	3.500000(N)	3.050000(N)
Tx Bias(mA)	4.886000	50.000000(N)	1.000000(N)	40.000000(N)	2.000000(N)
Rx Power(dBm)	-36.989700	0.999912(N)	-13.098040(Y)	0.000000(N)	-12.097148(Y)
Tx Power(dBm)	-2.886146	0.999912(N)	-9.299622(N)	0.000000(N)	-8.300319(N)

Table 4-6 Key field description of the information displayed via **show optical interface interface-name detail**

Field	Description
Device Name	The optical module name, such as SFP
Connector Name	Optical module connector type, such as LC
Encoding Code	Coding mode of the optical module, such as 8B/10B
Transmit Distance	The transmission distance of the optical module, such as 270m(OM1),550m(OM2)
Vendor OUI	The supplier ID, such as 00-00-00
Vendor Name	The supplier name, such as TRIXON INC.
Part Number	The optical module model, such as TSS-GEM5-85NCR
Revision Number	The version number of the optical module, such as 10
Serial Number	The serial number of the optical module, such as: 10G15C000114
Production Date	The production date of the optical module, such as 15/12/22(y/m/d)
Laser WaveLength	The center wavelength of the sent laser, such as 850(nm)
Vendor Specific	The detailed information of the supplier, such as 00000000000000000000000000000000000 0000000000000000000000000000000
Monitor Parameters	Monitor parameters (only for the optical module supporting the DDMI function)

Field	Description
	• Temperature/Alarm-High/Alarm-low/Warning-High/Warning-Low Temperature/alarm upper threshold/alarm lower threshold/warning upper threshold/warning lower threshold • Voltage/Alarm-High/Alarm-low/Warning-High/Warning-Low Voltage/alarm upper threshold/alarm lower threshold/warning upper threshold/warning lower threshold • Tx Bias/Alarm-High/Alarm-low/Warning-High/Warning-Low Tx bias current/alarm upper threshold/alarm lower threshold/warning upper threshold/warning lower threshold • RxPower /Alarm-High/Alarm-low/Warning-High/Warning-Low Rx optical power/alarm upper threshold/alarm lower threshold/warning upper threshold/warning lower threshold • TxPower /Alarm-High/Alarm-low/Warning-High/Warning-Low Tx optical power/alarm upper threshold/alarm lower threshold/warning upper threshold/warning lower threshold

5 Troubleshooting

This chapter describes how to exclude the installation failure of NSS3330, NSS4330, and NSS5810 series switch, and the maintenance of the device modules, including:

5.1 Troubleshooting of Configuration System

5.2 Troubleshooting about Power Fault

5.3 Device Maintenance

5.4 De-dust the Device

5.5 Get Technical Support

5.1 Troubleshooting of Configuration System

After the switch is powered on and if the system is normal, the start information is displayed on the configuration terminal. If the configuration system fails, there may be no display or messy code on the configuration terminal.

5.1.1 Troubleshooting about no Display on Terminal

If there is no display information on the configuration terminal after being powered on, check according to the following steps:

Step 1: Check whether the power system of the switch works normally (observe whether the power indicator on the panel is always on. If not, indicate that the power supply is abnormal.). Refer to "错误!未找到引用源。 错误!未找到引用源。" for specific indicator status.

Step 2: Check whether the configuration cable is connected to the Console port of the switch.

Step 3: Check whether the indicator of the switch is working properly. For specific indicator status, refer to "5.5C2 Interface Status Indicators".

If no problem is found in the above checks, there may be the following reasons:

1. The serial port connected to the configuration cable is wrong (the actual selected serial port is not consistent with the set serial port of the terminal).

2. The setting of the configuration terminal parameters is wrong (the parameter requirement: set the baud rate as 9600, data bit as 8, parity check as none, stop bit as 1, traffic control as none, and select the terminal emulation as VT100). For details, refer to 4.1.2 Set PC HyperTerminal Parameters.

3. There is something wrong with the configuration cable and you can try to change the configuration cable.

5.1.2 Troubleshooting about Messy Code on Terminal

If messy code is displayed on the configuration terminal, maybe the setting of the configuration terminal parameters is wrong (set the baud rate as 9600, data bit as 8, parity check as none, stop bit as 1, traffic control as none, and select the terminal emulation as VT100), and please check correspondingly. For details, refer to 4.1.2 Set PC HyperTerminal Parameters.

5.2 Troubleshooting about Power Fault

There are two power status indicators on the front panel of the NSS3330, NSS4330, and NSS5810 series. The two indicators can respectively indicate the working status of the two power supplies. The indicators indicate whether the overall status of the power supplies is normal. For the specific status of each power supply, you need to query the indicators on the power module on the rear panel of the power supply. See "Appendix C1 System status indicator" for specific indicator status.

NSS3330 is inbuilt with dual fixed power supplies. The P1 or P2 indicator on the front panel of the device is off, indicating that the corresponding power supply in the device is faulty. Please refer to the following steps for troubleshooting:

Step 1:   Check the power supply system connected to the switch to confirm whether the power supply system supplies power normally and whether the voltage is normal.

Step 2:   Check the connection of the power cable on the faulty built-in power socket, unplug the power cable again, and confirm whether the power cord is loose.

Step 3:   Unplug the power cord connected to the failed built-in power supply slot, connect it to another built-in power supply slot, and check whether the other built-in power supply LED is normally lit as green. If yes, the original built-in power supply may be damaged; If not, the power cable

may be damaged, and then proceed to the next step.

Step 4:   Replace the power cable of the failed built-in power supply, and then check whether the power indicator returns to normal. If yes, confirm that the original power cord connected to the built-in power supply has been damaged; If not, please contact the agent or local technical service engineer for handling.

The NSS4330 and NSS5810 devices are dual Modular power devices. The P1 (PWR1) or P2 (PWR2) indicator on the front panel of the device is off, indicating that the corresponding power supply in the device is faulty. Please refer to the following steps for troubleshooting:

Step 1:   Observe whether the "P (PWR)" indicator of the faulty power supply is green (indicating that the power supply system is normal). If not, check the power supply system connected to the switch to confirm whether the power supply system is normal and whether the voltage is normal.

Step 2:   Check the connection of the power cable on the faulty power supply slot, unplug the power cord again, and confirm whether the power cable is loose.

Step 3:   Unplug the power cord connected to the faulty power supply slot and connect it to another power supply slot. Then check whether the other power supply indicator is lit normally. If it is, the original power supply may be damaged; If not, the power cord may be damaged, and then proceed to the next step.

Step 4:   Replace the failed power cable, and then check whether the power module indicator returns to normal. If yes, confirm that the original power cable connected to the power supply is damaged; If no, please contact the agent or local technical service engineer for handling.

5.3 Device Maintenance

Device maintenance is mainly reflected in module replacement, including: interface card and swappable optical module.

⚠ Caution

- Please place the replaced hardware module properly. It is recommended to put it on the anti-static bag or in the packing box.

5.3.1 Replace Interface Card

The following describes the operation steps of replacing the interface card.

Preparations before Changing

Step 1:   Wear anti-static wrist, and make sure the anti-static wrist is reliably grounded.

Step 2:   Prepare the cards to be installed.

Replace Interface Card

The steps of replacing the NSS4330 series switch interface card are as follows:

Step 1:   Wear anti-static wrist, and use a cross screwdriver to unscrew the screws on both sides of the interface card to be replaced, as shown in Figure 5-1.

Step 2:   Grasp the screws on both sides of the interface card with both hands, slide smoothly along the slot guide rail, and pull out the interface card, as shown in Figure 5-1. Place the unloaded interface card on the anti-static mat or in the initial packaging box.
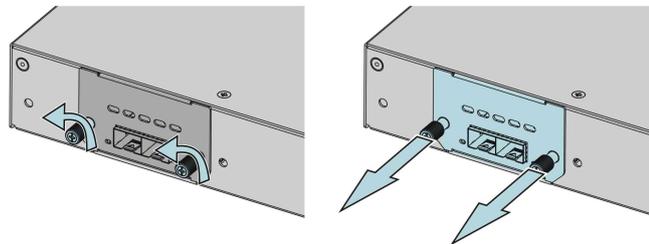
CL1164

Figure 5-1 Uninstall the interface card

Step 3:   Slowly and horizontally push the other interface card along the slot guide until the interface card is in good contact with the motherboard slot, as shown in Figure 5-2.
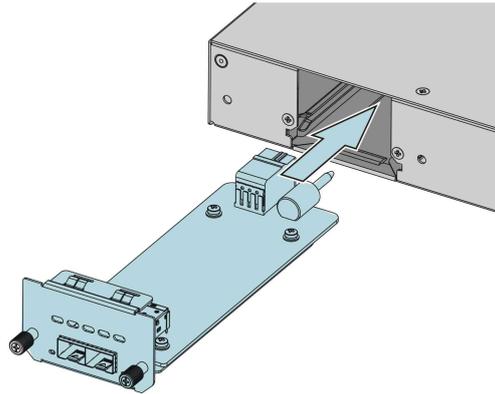
Figure 5-2 Install the interface card

Step 4: First, screw in the screws on both sides of the interface card by hand, and then tighten the screws with a screwdriver to fix the interface card.

5.3.2 Replace Swappable Optical Module

The replacement process of the SFP/SFP + module is the same. The following description takes the SFP + module as an example.

⊗**Warning**

- When installing or uninstalling the SFP+ module, do not use the hands to touch the gold-finger part of the SFP+ module directly.

- Do not directly stare at the fiber connection holes of the optical module when the fiber is pulled down, but the optical module is not pulled out.

Step 1: Wear the anti-static wrist and pull out the fiber connected to the SFP+ module.

Step 2: Pull the handle of the SFP+ module down to the horizontal position, and then pull out the SFP+ module, as shown in the following figure.
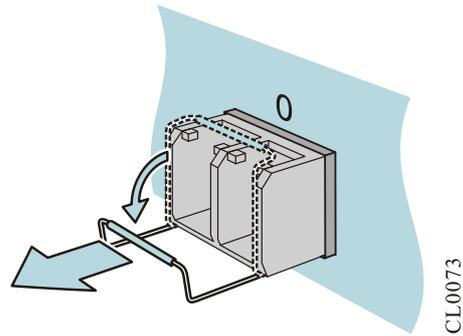
Figure 5-3 Uninstall the SFP+ module

Step 3: Fit the removed SFP+ module with the dust cap and put it in the anti-static bag or packaging box, as shown in the following figure.
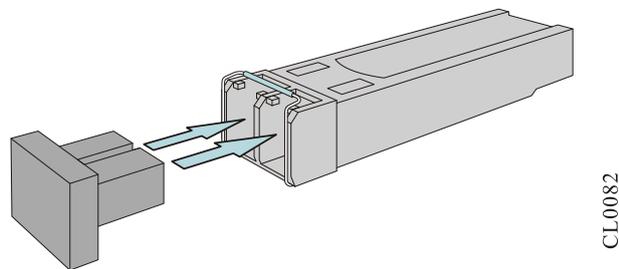
Figure 5-4 Install the dust cap of the SFP+ module

Step 4: Up-turn the handle of the installed SFP+ module to the vertical position to lock the buckle at the top of the module. Use the hands to hold the two sides of the SFP+ module and push it into the SFP+ slot horizontally until the SFP+ module closely-contacts the slot (you can feel that the shrapnel at the bottom and top of the SFP+ module locks the SFP+ slot), as shown in the following figure.
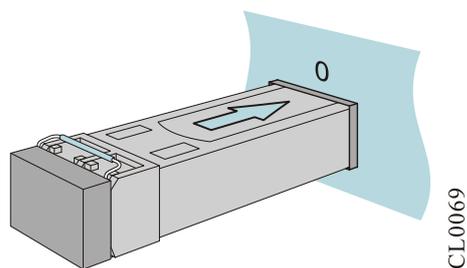
Figure 5-5 Install SFP+ module

Step 5: Remove the dust cap of the SFP+ module, as shown in the following figure.
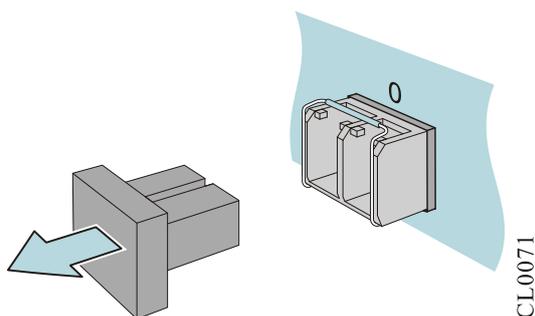
Figure 5-6 Uninstall the dust cap of the SFP+ module

Step 6:   Insert the fibers into the SFP+ ports in order, as shown in the following figure.
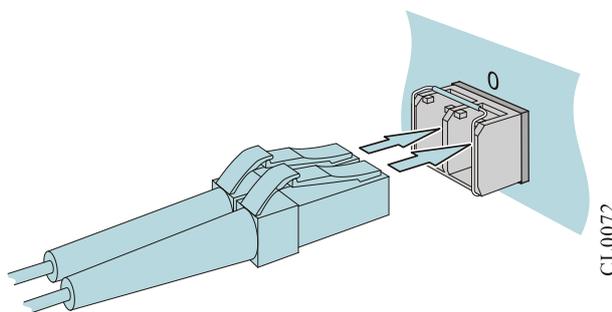
Figure 5-7 Connect the fibers to SFP+

Note

● It is suggested not to insert the SFP+ module with the fiber into the slot directly. Please first pull out the fiber and then install.

5.3.3   Replace Power Module

This chapter is only for NSS4330 and NSS5810 series devices with modular power.

Reparations before Replacing:

Step 1:   Wear anti-static wrist, and make sure the anti-static wrist is reliably grounded.

Step 2:   Turn off the power switch of the power module to be uninstalled (the switch is set to "off" state).

Step 3:   Unplug the power cable from the power module.

⚠️ **Caution**

● The power module supports hot swap and can be replaced during operation. Please pay attention to ensure safety.

● Do not touch any terminal marked with power or maybe with power, avoiding the risk of electric shock.

Replace Power Module

The interface, dimension, and installation position of S4330 series and S3330-54TXP(V1) switch power module are the same, and the steps of replacing the power module are as follows:

Step 1:   Wear anti-static wrist, and use a screwdriver to unscrew the screws on the power module, as shown in Figure 5-8:
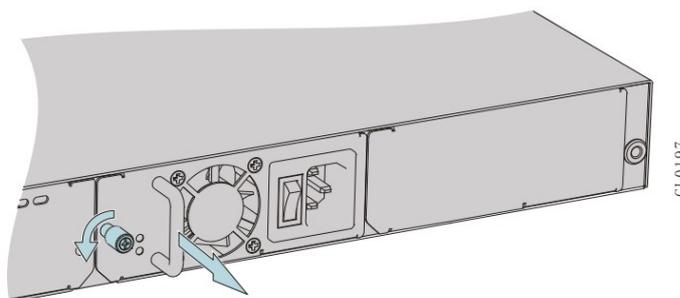
Figure 5-8 Uninstall the power module

Step 2:   Pull the handle of the power module with one hand, hold the bottom of the power module with the other hand, and slowly pull the power module out of the device guide slot, as shown in Figure 5-9:
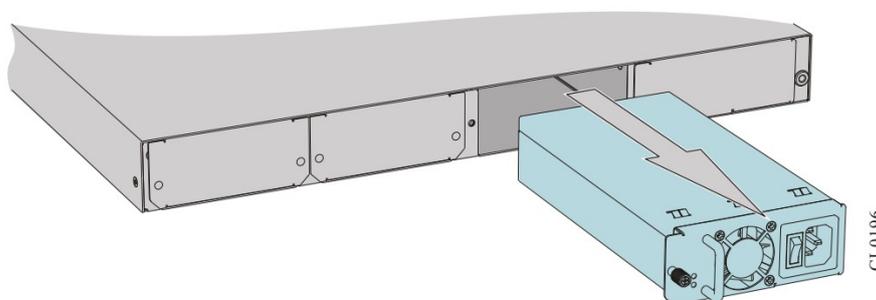
Figure 5-9 Pull out the power module

Step 3:   Place the removed power module on an antistatic mat or in a box.

Step 4:   Slowly and horizontally push the other power module along the guide until the back of the power module makes good contact with the motherboard slot, as shown in figure 5-10:
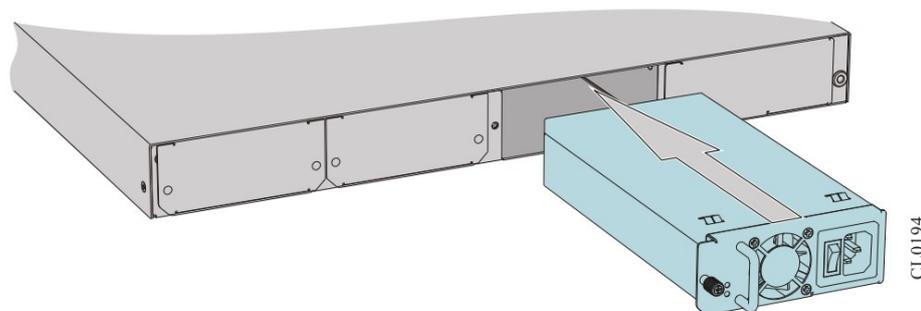
Figure 5-10 Insert the power module

Step 5:   Use a screwdriver to tighten the screws on the power module.

5.4 De-dust the Device

This section describes how to de-dust the switch.

⊗Warning

- All de-dusting must be operated based on the anti-static requirements. For example, the staff must wear the anti-static overalls, anti-static wrist, and anti-wrist gloves if they'll work on the workbench.

- The de-dusting tool and cleaning agent are selected based on a certain standard. Otherwise, the board of the device will be severely damaged.

5.4.1 De-dust Optical Interface and Pigtail Connector

To ensure the stable running of the device, de-dusting the optical interface and pigtail connector on the device regularly is necessary.

The de-dusting process is as follows:

Step 1:   Unplug the interface sub card where the optical interface is located: when cleaning the optical interface, first unplug the optical fiber connected to the optical interface, and then

unplug the corresponding interface sub card for cleaning operation.

Step 2:   Use the dedicated cleaning tools and materials when cleaning the optical interface and pigtail connector. These materials can be purchased from the optical fiber or optical cable manufacturer.

⊘Note

- Use the dust cap to cover the unused optical interfaces on the board and pigtail.
- For the optical interface in using, use a dust cap to cover the optical interface and the pigtail connector connected by the optical interface when the pigtail requires to be removed. In this way, on the one hand, the invisible laser sent by the laser maser can be prevented radiating human eyes. On the other hand, the dustproof function is available to avoid the loss of the optical interface contaminated with dust or pigtail connector being increased.

⊙Caution

- Before de-dusting the optical interface, remove the corresponding interface daughter card at first and ensure that the normal deployment of the system service will not be affected.
- For the high-power laser interface, use the cleaning tool and material for cleaning.
- For the small-power optical interface, use the clean and dry anti-static soft rush to remove the dust on the surface of the optical interface if the dedicated cleaning tool and material cannot be obtained.

⊗Warning

- The laser sent by the laser maser on the optical interface is invisible infrared light. When the laser directly radiates the human eyes, it may cause permanent injury for the human eyes.
- It is forbidden to use any unapproved cleaning tools or materials to clean the optical interface or the pigtail connector.

5.5 Get Technical Support

If the fault remains via the above contents of the chapter, please contact the agent or local technical engineers in time. Before you contact the customer service, please prepare the

following information, which is convenient for the customer service staff to help you solve the problem.

1. The arrival time of the switch

2. The serial number of the chassis (labeled on the chassis)

3. Software version number (it can be viewed via **show version** in the command line view)

4. Maintenance agreement or warranty card

5. Simple description of the fault problem

6. Simple introduction of the taken troubleshooting steps

You can contact the customer service via the customer service hotline and you can also search for help via the website or email.

Customer service: 400-886-8669

Website: http://www.maipu.com

E-mail: techsupport@maipu.com

Appendix

A Common Module Specifications

A1 Interface Card Specifications

The interface card is the user line interface card, which provides a variety of different interface forms for users to choose and meet the needs of various application scenarios.

The interface card has the following specifications:

Specification	Overview
NM4A-2QXGEF(V1)	2-port 40G optical port card
SM4C-2XGEF(V1)	2-port 10 Gigabit optical port card
NM4A-4XGEF(V1)	4-port 10 Gigabit optical port card
NM4A-6XGEF(V1)	6-port 10 Gigabit optical port card

A1.1 NM4A-2QXGEF(V1)

The NM4A-2QXGEF (V1) interface card is a 10 Gigabit Ethernet optical signal interface card. The card supports two 40G QSFP+optical interfaces.
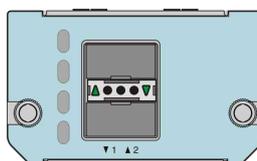
Appendix Figure A-1 NM4A-2QXGEF(V1) panel diagram

The interfaces of NM4A-2QXGEF(V1) interface card are described as follows:

Appendix Table A-1 Introduction to the interfaces of NM4A-2QXGEF(V1) interface card

Interface Name	Description

Interface Name	Description
1~2	40GBase-SR4/LR4 QSFP+ optical interface

The meanings of the indicators on the NM4A-2QXGEF(V1) interface card are as follows:

Appendix Table A-2 The meanings of the indicators on NM4A-2QXGEF(V1) interface card

Name	Indicator Color	Status Description
LINK/ACT	Single green	Off: link interface is not connected On: link interface is connected Blinking: the link interface has data transmitted and sent.

A1.2   SM4C-2XGEF(V1)

SM4C-2XGEF(V1) interface card is a 10G Ethernet optical signal interface card, which supports two 10GBase-SR/LR/ER SFP+ optical interfaces.
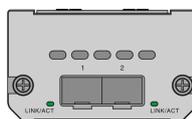
Appendix Figure A-2 SM4C-2XGEF(V1) panel diagram

The interfaces of SM4C-2XGEF(V1) interface card are described as follows:

Appendix Table A-3 Introduction to the interfaces of SM4C-2XGEF(V1) interface card

Interface Name	Description
1~2	10GBase-SR/LR/ER SFP+ optical interface

The meanings of the indicators on the SM4C-2XGEF interface card are as follows:

Appendix Table A-4 The meanings of the indicators on SM4C-2XGEF interface card

Name	Indicator Color	Status Description
LINK/ACT	Single green	Off: link interface is not connected

Name	Indicator Color	Status Description
		On: link interface is connected
		Blinking: the link interface has data transmitted and sent.

A1.3 NM4A-4XGEF(V1)

The NM4A-4XGEF (V1) interface card is a 10 Gigabit Ethernet signal interface card. The card supports four 10GBase SR/LR/ER SFP+optical interfaces.
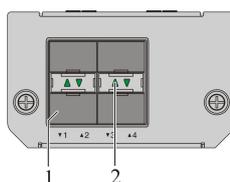
Appendix Figure A-3 NM4A-4XGEF(V1) panel diagram

The interfaces of NM4A-4XGEF (V1) interface card are described as follows:

Appendix Table A-5 Introduction to the interfaces of NM4A-4XGEF (V1) interface card

Interface Name	Description
1~4	10GBase-SR/LR/ER SFP+ optical interface

The meanings of the indicators on the NM4A-4XGEF interface card are as follows:

Appendix Table A-6 The meanings of the indicators on the NM4A-4XGEF interface card

Name	Indicator Color	Status Description
LINK/ACT	Single green	Off: link interface is not connected
		On: link interface is connected
		Blinking: the link interface has data transmitted and sent.

A1.4 NM4A-6XGEF(V1)

The NM4A-6XGEF (V1) interface card is a 10 Gigabit Ethernet signal interface card. This card supports six 10GBase SR/LR/ER SFP+optical interfaces.
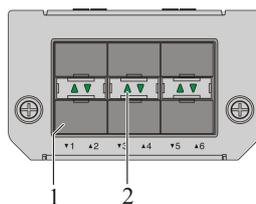
Appendix Figure A-4 NM4A-6XGEF(V1) panel diagram

The interfaces of NM4A-6XGEF (V1) interface card are described as follows:

Appendix Table A-7 Introduction to the interface of NM4A-6XGEF(V1) interface card

Interface Name	Description
1~6	10GBase-SR/LR/ER SFP+ optical interface

The meanings of the indicators on the NM4A-6XGEF interface card are as follows:

Appendix Table A-8 The meanings of the indicators on the NM4A-6XGEF interface card

Name	Indicator Color	Status Description
LINK/ACT	Single green	Off: link interface is not connected On: link interface is connected Blinking: the link interface has data transmitted and sent.

A2 Modular Power Specifications

Appendix Table A-9 Modular power specification

Model	Name
AD500-1D005E(V1)	500W AC power supply (screw)
AD120-1S005E(V1)	120W AC power supply (screw)
AD120M-HS0N(V1)	120W AC power supply (buckle)
AD250-1S005E-B(V1)	250W AC power supply (buckle)

A2.1 AD500-1D005E(V1) Power Module
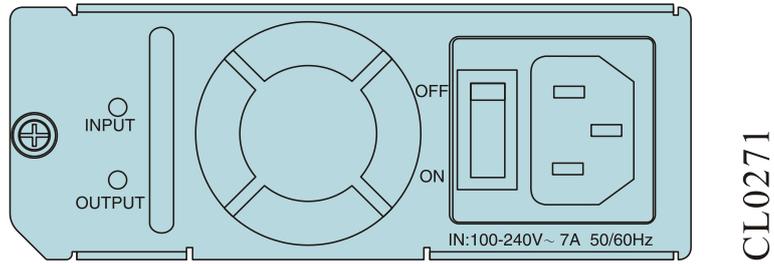
Appendix Figure A-5 AD500-1D005E(V1) power module panel diagram

A2.2 AD120-1S005E(V1) Power Module
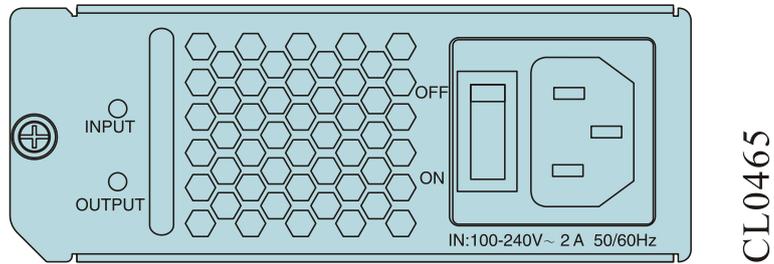
Appendix Figure A-6 AD120-1S005E(V1) power module panel diagram

A2.3 AD120M-HS0N(V1) Power Module
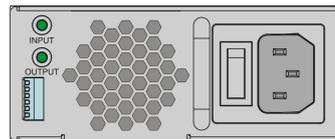
Appendix Figure A-7 AD120M-HS0N(V1) power module panel diagram

A2.4 AD250-1S005E-B(V1) Power Module
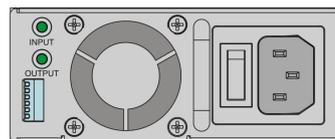
Appendix Figure A-8 AD250-1S005E-B(V1) power module panel diagram

B Common Interface Specifications

Describe the attributes of the device interfaces

B1 Console Port Attributes

Appendix Table B-1 Console port attributes

Attribute	Description
Interface Standard	Asyn EIA/TIA-232
Connector type	RJ45
Rate	9600bit/s-115200bit/s (default value: 9600bit/s)
Supported services	Connect with local terminal (such as PC) serial port and run terminal simulation program on the terminal

B2 10Base-T/100Base-T/1000Base-T RJ45 Electrical Interface Attributes

Appendix Table B-2 10Base-T/100Base-TX/1000Base-T RJ45 electrical interface attributes

Attribute	Description
Interface Standard	IEEE 802.3, IEEE802.3u, IEEE802.3ab
Connector type	RJ45
Work mode	10Mbps/100Mbps/1000Mbps Half-duplex/full duplex/auto negotiation
Max. transmission distance	100m
Connection cables	Category-5 and above twisted pair

B3 SFP Optical Interface Attributes

Appendix Table B-3 SFP optical interface attributes

Attribute	Description

Attribute	Description
Interface Standard	Comply with the standard IEEE 802.3ab
Connector type	SFP
Supported swappable module or cable	1000M SFP optical module
Interface transmission rate	1000Mbps

B4 SFP+ Optical Interface Attributes

Appendix Table B-4 SFP+ optical interface attributes

Attribute	Description
Interface Standard	Comply with the standard IEEE 802.3ae, IEEE 802.3z
Connector type	SFP+
Supported swappable module or cable	SFP+ optical module SFP optical module 10G optical interface passive cable
Interface transmission rate	10Gbps/1000Mbps

B5 SFP28 Optical Interface Attributes

Appendix Table B-5 SFP28 optical interface attributes

Attribute	Description
Interface Standard	Comply with the standard IEEE 802.3by
Connector type	SFP28
Supported swappable module or cable	SFP28 optical module 10G optical interface passive cable
Interface transmission rate	25Gbps

B6 QSFP+ Optical Interface Attributes

Appendix Table B-6 QSFP+ optical interface attributes

Attribute	Description
Interface Standard	Comply with the standard IEEE 802.3ba
Connector type	QSFP+
Supported swappable module or cable	QSFP+ optical module 40G optical interface passive cable
Interface transmission rate	40Gbps

B7 USB Interface Attribute

Appendix Table B-7 USB interface attributes

Attribute	Description
Interface Standard	USB2.0, USB 1.1
Interface type	USB Type-A
Work mode	1.5M, 12Mbps, 480Mbps Host, support controlled (command mode) hot-swap mode. (Hot-swap operation is not allowed during data transmission)
Cable	No

C Device Indicator Description

C1 System status indicator

The working status of the switch can be preliminarily determined by the system status indicator. For details, see Appendix table C-1~C-3.

Appendix Table C-1 System status indicators of NSS3330 series switch

Indicator Type	Indicator Name	Indicator Color	Status

Indicator Type	Indicator Name	Indicator Color	Status
System status indicator	SYS	Green	Fast Flash (5hz flash frequency): indicates that the hardware starts to work after power on Slow flashing (0.5Hz flashing frequency): indicates that the system is working normally on/off: indicates that the system works abnormally
External configuration information loading indicator	CFG	Green	Flash: loading external configuration information Off: no start loading On: external configuration information loading completed
Power status indicator	P1	Green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
	P2	Green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
Fan indicator	FAN	Green	On: indicates that the fan system is working normally Off: indicates that the fan system is working abnormally
Stacking indicator	MST	Green	On: indicates that the device is the active device in the stack group Flash: indicates that the device is a slave device in the stack group Off: indicates that the device is an independent device

Appendix Table C-2 System status indicators of NSS4330 series switch

Indicator Type	Indicator Name	Indicator Color	Status

Indicator Type	Indicator Name	Indicator Color	Status
System status indicator	SYS	green	Fast Flash (5hz flash frequency): indicates that the hardware starts to work after power on Slow flashing (0.5Hz flashing frequency): indicates that the system is working normally on/off: indicates that the system works abnormally
External configuration information loading indicator	CFG	green	Flash: loading external configuration information Off: no start loading On: external configuration information loading completed
Power status indicator	P1	green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
	P2	green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
POE indicator (POE model)	POE	green	on: indicates that the system POE works normally off: indicates that the system POE is abnormal
Fan indicator	FAN	Green	On: indicates that the fan system is working normally Off: indicates that the fan system is working abnormally
SLOT status indicator	SLOT	green	on: indicates that the slot has been inserted with the interface card and is working normally off: indicates that the slot is not inserted with the interface card or the interface card of the slot is abnormal
Stacking indicator	MST	Green	On: indicates that the device is the active device in the stack group Flash: indicates that the device is a

Indicator Type	Indicator Name	Indicator Color	Status
			slave device in the stack group Off: indicates that the device is an independent device

Appendix Table C-3 System status indicators of NSS5810 series switch

Indicator Type	Indicator Name	Indicator Color	Status
System status indicator	SYS	green	Fast Flash (5hz flash frequency): indicates that the hardware starts to work after power on Slow flashing (0.5Hz flashing frequency): indicates that the system is working normally on/off: indicates that the system works abnormally
External configuration information loading indicator	CFG	green	Flash: loading external configuration information Off: no start loading On: external configuration information loading completed
Power status indicator	PWR1	green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
	PWR2	green	On: indicates that power supply works normally Off: indicates that power supply is working abnormally
Fan indicator	FAN	Green	On: indicates that the fan system is working normally Off: indicates that the fan system is working abnormally
Stacking indicator	MST	Green	On: indicates that the device is the active device in the stack group Flash: indicates that the device is a slave device in the stack group

Indicator Type	Indicator Name	Indicator Color	Status
			Off: indicates that the device is an independent device

C2 Interface Status Indicators

With the interface status indicator, you can judge the interface working status of the switch. Refer to the following for details.

Appendix Table C-4 Switch interface status indicators

Indicator Type	Indicator Name	Indicator Color	Status
Serial port indicator	TXD	yellow	Flash: indicates that the serial port has data sent Off: indicates that the serial port does not have data sent
	RXD	green	Flash: indicates that the serial port has data received Off: indicates that the serial port does not have data received
Port status indicator	LINK/ACT	green	On: The Ethernet port is connected successfully Flash: The Ethernet port has data received and sent Off: The Ethernet port is not connected
DC0 port indicator (note: DC0 port only supports 10/100/1000M)	1000M	Single yellow indicator	Off: always off
	ACT	Single green indicator	Off: The interface link is not connected On: The interface link is connected Flash: The interface has data sent and received

C3 Power Module Status Indicator

With the power module status indicator, you can judge the power module working status of the switch. For details, refer to Appendix Table C-3.

Appendix Table C-5 Power module status indicators

Indicator Type	Indicator Name	Indicator Color	Status
Power input status indicator	INPUT	Dual-color light (red, green)	Green on: Indicates that the power input is normal Red on: Indicates that the power input is abnormal Off: Indicates that the power input is not connected
Power output status indicator	OUTPUT	Dual-color light (red, green)	Green on: Indicates that the power output is normal Red on: Indicates that the power output is abnormal or power fan does not turn Off: Indicates that the power input is not connected

⊘Note

● NSS4330, NSS5810 devices with the modular power has the indicator.

D Cables or Modules

Note

- It is recommended to use the relevant modules of Maipu on the equipment.

- The following information is for reference only, please consult the marketing personnel or technical support personnel of Maipu for details.

D1 Console Port Cables

Connected to the nine-core serial interface socket of the PC, the console cable of NSS333, NSS4330, NSS5810 series switch is an eight-core unshielded cable. One side of the cable is the crimping RJ-45 crystal plug and the other side is a DB9 (hole). The diagram of the console cable is shown in the following figure.
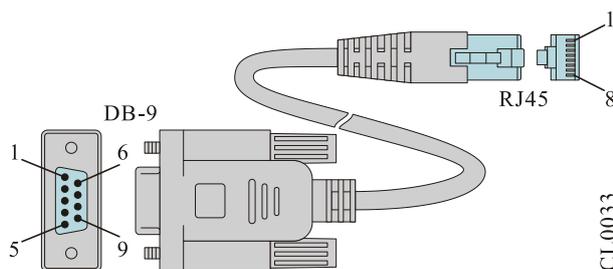
Appendix Figure D-1 Console cable

The connection relationship of the internal signal of the console cable is shown in the following table.

Appendix Table D-1 Connection relationship of the console cable

RJ45	Signal	Direction	DB-9
1	RTS	→	8
2	DTR	→	6
3	TXD	→	2
4	GND	——	5
5	GND	——	5
6	RXD	←	3

RJ45	Signal	Direction	DB-9
7	DSR	←	4
8	CTS	←	7
	——	——	1
	——	——	9

D2 Ethernet Electrical Interface Cable

It is recommended that the Ethernet interface cable of NSS3330, NSS4330, NSS5810 series switch is eight-core un-shielded category-5 or above straight-through twisted pair.

Appendix Table D-2 Connection relation table of RJ45 cable (category-5 twisted pair)

RJ45	Signal	Direction	RJ45	Description	Length
1	TRD0+	←→	1	Twisted pair1	
2	TRD0-	←→	2		
3	TRD1+	←→	3	Twisted pair2	
6	TRD1-	←→	6		Support 100m
4	TRD2+	←→	4	Twisted pair3	
5	TRD2-	←→	5		
7	TRD3+	←→	7	Twisted pair4	
8	TRD3-	←→	8		

The line sequence of Ethernet RJ45 port is as shown in Appendix Figure D-2:
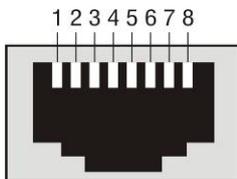
Appendix Figure D-2 RJ45 socket

D3 1000Base-X SFP 1000M Optical Module

Appendix Table D-3 Relationship of 1000Base-FX SFP Gigabit Optical Module Model Parameters and Corresponding Interface Cables

Optical Module	Center Wavelength	User Interface	Interface Cable Specification	Max. transmission distance	Remarks
SFP-M1-L24P8	850nm	LC	50/125μm multi-mode fiber	500M	—
			62.5/125μm multi-mode fiber	275M	—
SFP-S2-L24P3	1310nm	LC	9/125μm single-mode fiber	20KM	—
SFP-S4-L24P3	1310nm	LC	9/125μm single-mode fiber	40KM	—
SFP-S4-L24P5	1550nm	LC	9/125μm single-mode fiber	40KM	Support DDMI
SFP-S8-L24P5	1550nm	LC	9/125μm single-mode fiber	80KM	—
SFP-S10-L24P5	1550nm	LC	9/125μm single-mode fiber	100KM	—

D4 10GBase-SR/LR/ER SFP+10G Optical Module Model and Corresponding Interface Cables

Appendix Table D-4 Relationship of 10GBASE-SR/LR/ER SFP+ 10G optical module model and corresponding interface cables

Optical Module Model	Center Wavelength	User Interface Type	Interface Cable Specifications	Max. transmission distance
SFP-M1-L192P8	850nm	LC	50/125μm multi-mode fiber	300M
SFP-S1-L192P3	1310nm	LC	9/125μm single-mode fiber	10KM
SFP-S4-L192P5	1550nm	LC	9/125μm single-mode fiber	40KM

D5 10G Optical Interface Passive Cables

Appendix Table D-5 Relationship of 10G optical interface passive cables

Cable Model	User Interface Type	Cable Specifications	Electrical characteristics
SFP-STACK-15	SFP+←to→SFP+	1.5M	Passive
SFP-STACK-30	SFP+←to→SFP+	3M	Passive
SFP-STACK-50	SFP+←to→SFP+	5M	Passive

D6 25GBase-SR/LR SFP28 25G Optical Module Model and Corresponding Interface Cables

Appendix Table D-6 Relationship of 25GBASE-SR/LR SFP+ 10G optical module model and corresponding interface cables

Optical Module Model	Center Wavelength	User Interface Type	Interface Cable Specifications	Max. transmission distance
SFP28-M1-M768C8	850nm	LC	50/125μm multi-mode fiber (OM3)	70M
			50/125μm multi-mode fiber (OM4)	100M

Optical Module Model	Center Wavelength	User Interface Type	Interface Cable Specifications	Max. transmission distance
SFP28-S1-L768C3	1310nm	LC	9/125µm single-mode fiber	10KM

D7 25G Optical Interface Passive Cables

Appendix Table D-7 Relationship of 25G optical interface passive cables

Cable Model	User Interface Type	Cable Specifications	Electrical characteristics
SFP28-STACK-15	SFP28←to→SFP28	1.5M	Passive
SFP28-STACK-30	SFP28←to→SFP28	3M	Passive
SFP28-STACK-50	SFP28←to→SFP28	5M	Passive

D8 40GBase-SR/LR QSFP+ 40G Optical Module Model and Corresponding Interface Cables

Appendix Table D-8 Relationship of 40GBASE-SR/LR QSFP+ 40G optical module model and corresponding interface cables

Optical Module Model	Center Wavelength	User Interface Type	Interface Cable Specifications	Max. transmission distance
QSFP-M1-M768C8	850nm	MPO	50/125µm multi-mode fiber (OM3)	100M
			50/125µm multi-mode fiber (OM4)	150M
QSFP-S1-L768C3	1310nm	LC	9/125µm single-mode fiber	10KM
QSFP-M1-L768C8	850/900nm	LC	50/125µm multi-mode fiber	100M

Optical Module Model	Center Wavelength	User Interface Type	Interface Cable Specifications	Max. transmission distance
QSFP-M3-L768C8	850nm	LC	50/125μm multi-mode fiber (OM3)	240M
			50/125μm multi-mode fiber (OM4)	350M
QSFP-M3-M768C8	850nm	MPO	50/125μm multi-mode fiber (OM3)	300M
			50/125μm multi-mode fiber (OM4)	400M

D9 40G Optical Interface Passive Cables

Appendix Table D-9 Relationship of 40G optical interface passive cables

Cable Model	User Interface Type	Cable Specifications	Electrical characteristics
QSFP-STACK-10	QSFP+←to→QSFP+	1M	Passive
QSFP-STACK-30	QSFP+←to→QSFP+	3M	Passive
QSFP-STACK-50	QSFP+←to→QSFP+	5M	Passive

D10   AC Power Cables

NSS3330-54TXF-AC(V1), NSS3330-30TXF-AC(V1), NSS4330-56TXF(V1), NSS4330-32TXF(V1), NSS4330-60GXF(V1), NSS4330-36GXF(V1), and NSS5810-50TXFP(V1) use 6A power cables. NSS4330-56TXP(V1) uses 10A power cables. The specific parameters are as follows.

Appendix Table D-10 Technical parameters of 6A AC power cable

Item	Description

AC power cable	Sectional area of conductor 3×0.75mm^2
Flame retardant grade	V-0
Cable length	1.5m
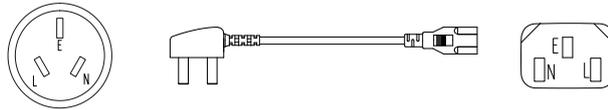
Appendix Figure 6A AC power cable

Appendix Table D-11 Technical parameters of 10A AC power cable

Item	Description
AC power cable	Sectional area of conductor 3×1mm^2
Flame retardant grade	V-0
Cable length	1.5m
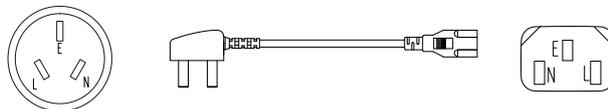
Appendix Figure 10A AC power cable

D11   2.5mm² Ground Wire

The diagram for the standard 2.5mm²grounding wire of NSS3330, NSS4330, NSS5810 device is shown in the following figure:
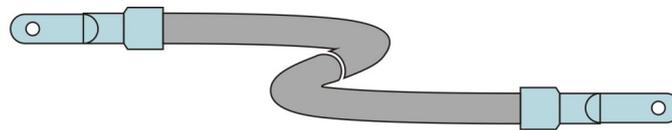
CL0779

Appendix Figure D-3 2.5mm² grounding wire

E Device Running Environment Requirement

E1 Environment Requirement of Equipment Room

E1.1   Building Requirement of Equipment Room

It is recommended that the equipment room adopts the anti-static floor, which is dust-free. It is required to lay the static floor. The laying of the floor plate should be tight and sturdy and the level error per square meter should be less than 2mm. When there is no raised floor, lay the static conductive ground material (the volume resistivity should be $1.0×10^7$ Ω*m -$1.0×10^{10}$ Ω*m). The static conductive ground material or raised floor should be static grounding. We can use the current limiting resistor and connection line to connect with the grounding device. The resistance of the current limiting resistor is 1MΩ.

E1.2   Environmental Adaptability Requirements

Appendix Table E-1 Environmental adaptability requirements

Description	Temperature
Storage temperature	-40°C – 70°C
Storage humidity	5%~95%/RH, no-condensing
Work temperature	-5°C – 55°C
Work humidity	10%~90%/RH, no-condensing

⚠ Caution

● If the temperature is too high, the reliability of the switch reduces greatly. The long-time high temperature affects the life and speeds up the aging of insulation materials.

● If the humidity in the equipment room is too high for long time, it causes the poor insulation and even electricity leak of insulation materials easily. Sometimes, the mechanical performances of materials change and the metal parts are corroded easily, too. If the relative humidity in the equipment room is too low, insulation pads shrink, which causes the fastened screws loose. Meanwhile, in dry environment, static electricity appears easily, which harms the circuits on the switch.

● Measuring points of the working temperature and humidity in the equipment room mean the values measured from the floor above 1.5 m and 0.4 m from the front of the rack when there are no protection boards.

● When the switch enters the high-temperature environment from the

low-temperature environment and if there is condensed water on the switch, be sure to take some measures (such as drying and airing) before the switch is powered on, so as to prevent the internal components of the switch from short-circuit and being burned.

● Working altitude: 55℃@2000m. If it is greater than 2000m and less than 4000m, the temperature will drop by 1℃ for every 220m increase, that is, 1℃/220m derating.

● Storage altitude: <5000m

E1.3 Load-bearing Requirement

According to the actual weight of the installed switch and its accessories (such as cabinet, switch chassis, board, power supply, etc.), estimate the ground load-bearing requirement and ensure that the ground load-bearing capability of the installation place meets the requirement. For the weights of the switch components, refer to 1.5 Physical Parameters.

⚠ Caution

● When estimating the ground load-bearing, consider the capacity expanding of the switch in the future (for example, add a card).

E1.4 Space Requirement

To ensure that there is enough operation space for moving the chassis and plugging the module, it is recommended that the aisle width of the equipment room is no less than 0.8m. If installing the switch in the cabinet, the net height of the equipment room cannot be less than 3m.

To be convenient for cooling and maintaining the switch, do not install the switch against the wall. The front and rear space of the switch should be no less than 0.7m.

E1.5 Cleanliness Requirement

Dust is harmful for the switch operation. Dust causes electrostatic absorption, which makes the poor contact of metal connectors. Electrostatic absorption appears especially when the temperature and humidity are lower, which affects the device life and easily causes communication fault. The requirement for the dust content and particle diameter in the equipment room is as shown in the following table:

Appendix Table E-2 Dust requirement for equipment room

Max. Diameter (μm)	0.5	1	3	5

Max. Diameter (μm)	0.5	1	3	5
Max. density (tablets/m3)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

⚠ Caution

- If there is no visible dust on the desk within three days, it meets the cleanliness requirement.

Apart from dust, the switch equipment room has the strict requirements for salts, acids, and sulfides contained in the air, because these harmful gases speed up the eroding of metals and the aging of some components.

We should prevent the harmful gases, such as SO2, H2S, NO2, NH3 and Cl2, from entering the equipment room. The specific limited values are as shown in the following table:

Appendix table E-3 Limitations for the harmful gases in the equipment room

Gas	Max. (mg/m3)
SO2	0.2
H2S	0.006
NO2	0.2
NH3	0.05
Cl2	0.01

E1.6 Anti-interference Requirement

The various interference sources no matter from the exterior of devices or application systems or from the interior affect the devices through capacitance coupling, inductance coupling, electromagnetic radiation, public impedance (including grounding system) and lead (such as power lines, signal lines and output lines). Therefore, pay attention to the following:

Caution

- Take valid anti-grid disturbance measures for the power system.

- The working place of the switch had better not be used with the grounding settings of power devices or lightning protection grounding settings and the distance between them had better be as long as possible.

- Be away from the strong power radio transmitters, radar transmitter, and high frequency high-current equipment; take electromagnetic shielding methods when necessary.

E1.7   Grounding Requirement

The well grounding system is the basis for the switch to run stably and reliably, and the important guarantee for anti-lightning, anti-jamming, and anti-static of the switch. The user should provide the well grounding system for the switch. The resistance between the switch chassis and the ground should be smaller than 1ohm.

E2 Requirements for Power Supply

E2.1   AC Power Supply Requirement

Caution

- The low-voltage power supply system should adopt the three-phase five-wire or single-phase three-wire system. The voltage of the low-voltage power supply system is 110V/220V and the frequency is 50Hz/60Hz.

- It is required to adopt the un-interruptible power, such as UPS, as the AC backup power supply. The AC backup power and AC should keep the same phase and the switching time with the AC should be smaller than 10ms. Otherwise, the device may restart or reset.

- The AC capacity of the equipment room should consider the work current and faulty current of the device. Ensure that the independent device has the independent AC power distribution protection device. The configuration protection switch should be larger than the protection switch of the post powered device.

Use the AC device and its power input allowed range is described in the following table:

Appendix Table E-4 AC basic power requirement

Item	Index
Input voltage range	100-240V

Item	Index
Input frequency range	50/60Hz

⚠ Caution

- AC wire should adopt the flame-retardant wire. The wire layout should be done according to Code for fire protection design of tall buildings GB50045-95. The low-voltage distribution is done according to Specifications for the design of low-voltage electric power distribution systems GB50045-95.

E2.2 AC Power Supply Suggestions

Suggestions for AC power supply:

- If electricity directly provides power for the device, the power supply voltage exceeds −10% to 5% of the rated voltage, or exceeds the permitted voltage range of the device. We should adopt the voltage regulator to meet the requirement.

- It is required that the AC uninterruptible or transient communication load should adopt the UPS power supply system or inverter power supply system to provide power.

- When electricity becomes abnormal, to ensure the important communication load and important power load, the telecommunications site should be configured with the generator set as the self power supply. The capacity should be no less than 1.5-2 multiples of the total capacity of the AC uninterruptible powered device.

F Device Grounding Specification and Protection

F1 Device Grounding Specifications

The grounding specifications include universal grounding specification, building grounding specifications of equipment room, device grounding specifications, grounding specifications of communication power, and grounding wire laying specifications.

F1.1   Universal Grounding Specifications

The universal grounding specifications are as shown in the following table:

Appendix Table F-1 Universal grounding specifications

No.	Description
1	Grounding design should comply with the voltage sharing and equipotential principle, that is, the work grounding and protect grounding (including the shielded grounding and lightning grounding of distribution frame) share one group of grounding.
2	The cabling rack, hanging metal frame, rack or cabinet, metal ventilation pipe, metal doors and windows in the equipment room should be connected to the earth for protection.
3	The unpowered metal parts of the device should be connected to the earth for protection.
4	Ensure that the grounding wire well contacts with the protection grounding bar of the equipment room.
5	Do not use other device as an integral part of the grounding wire in electrical communication.

F1.2   Building Grounding Specifications of Equipment Room

The specific requirements for the building grounding specifications of the equipment room:

The grounding resistance of the integrated communication building should be no more than 1ohm; in the common communication site, it should be smaller than 5ohm (for the area with high soil resistivity, it can be raised to 10ohm).

F1.3   Device Grounding Specifications

The device grounding specifications are as shown in the following table:

Appendix Table F-2 Device grounding specifications

No.	Description
1	The communications devices and corollary equipment (mobile base station, transmission, switching, power, and so on) in the equipment room should be connected to the earth for protection. The protection groundings of the devices should be integrated to one total grounding bar. The protection groundings of the devices in the same equipment room should be integrated to the protection grounding bar of the same equipment room.
2	The protection ground (PGND) of the device should be connected to the nearest protection grounding bar provided by the consumer. The short-circuit wire should be yellow and green plastic insulated copper wire 2.5mm^2 above.
3	There is the ground terminal and ground symbol below the front, back and side doors of the cabinet, which should be connected to the ground terminals of the cabinet via the connection cable with the cross-sectional area no less than 2.5mm^2 respectively.
4	The metal components of the device cabinet should have good conductivity. The metal component connections of the cabinet cannot be painted with the insulation paint.
5	The frame body of the same line cabinet is interconnected closely via the top fastening bolts and washers. Do not spray at the 30mm*50mm rectangular surface around the connection hole of the fastening bolts, but we should do the anti-rust and anti-corrosion treatment. Washers and nuts should also be color zinc plated to ensure good electrical contact.
6	When combining the cabinets of the same type, the ground bus bars of the neighboring cabinets (if any) need to be interconnected via the bus bar short-circuit cable. The cross-sectional area of the short-circuit cable is 6mm^2 and the length is no more than 300mm. Connect the two ends to the ground bus bar terminals of the neighboring cabinets respectively and tighten.

F1.4 Grounding Specifications of Communication Power

The grounding specifications of the communication power are as shown in the following table:

Appendix Table F-3 Grounding specifications of communication power

No.	Description
1	The AC power supply system of the communication equipment room should adopt the TN-S power supply mode.
2	At the entrance of the AC power wire entering the equipment room, we should configure the AC power mine (C-class mine) with the discharge current no less

No.	Description
	than 20KA.
3	The protection ground of the communications power should share one group of ground body with the protection ground of the communication device. When the communication power and the communication device are at the same equipment room, they should share the protection ground bar of the same equipment room.
4	AC power port should be added with lightning protection circuit.
5	The positive pole of the -48V DC power shall be grounded at the output of the DC power.
6	For the working ground of DC power equipment, the protective ground shall share a group of grounding body with the protective ground of AC equipment. When the communication power supply and communication equipment are in the same machine room, the same machine room protective grounding bar shall be used.
7	DC power port shall be equipped with surge protection circuit.

F1.5　Laying Specifications of Ground Wires

The laying specifications of the ground wire are as shown in the following table:

Appendix Table F-4 Laying specifications of ground wire

No.	Description
1	Ground lead should not be intertwined or parallel with the signal line.
2	Grounding cable cannot be led aerially, but should be buried in the earth or routed indoor.
3	On the protection ground wire, prohibit the connectors; prohibit installing the switch or fuse.
4	The protection ground wire should adopt the yellow and green plastic insulated copper wire.
5	The neutral line of the AC power cable in the equipment room cannot be connected with the protection ground of the transmission and communication devices in the equipment room.
6	The length of the protection ground wire should not exceed 45m, but should be as short as possible. When exceeding 45m, it is required that the consumer re-sets the ground row at the nearest.

F2 Device Protection

This section mainly describes the precautions for the lightning protection of the device during installation.

F2.1 General Requirement of Lightning Protection Wires

The device cables can be divided to indoor cables and outdoor cables according to the location of connecting the terminal. They have different requirements for the wiring in the lightning protection design.

⚠ Caution

- Communication connection cable should be routed indoors, which can effectively reduce the damage rate of the induction lightning of the device. The Ethernet cable is the interconnection line of the indoor signals and should not be overhead outdoors.

The general requirements for the wiring of the indoor cables:

- The cable installation is required to be done by category, avoiding that the cables of different categories are bundled with each other.

- It is recommended that the cable is bundled with one line deduction every 100 mm, strengthening the combing and fixing.

- The ground wire should be as short and thick as possible. The connection of the ground wire and grounding bar needs to use the screw to tighten or welding and preservative treatment.

The general requirements for the wiring of the outdoor cables:

- If the actual conditions cannot meet the indoor wiring, the outdoor cables should be laid and buried (introduced to the indoor from the underground).

- If you cannot lay and bury all outdoor cables, the aerial cables should be dressed with the metal pipes 15m before entering the indoor. The two sides of the metal pipe are grounded and we should install the signal mine at the corresponding interface of the device after the cable enters the indoor.

- If using the shielded cable, ensure that the shielded layer well contacts with the metal shell of the device at the device interface. We should install the signal mine at the corresponding interface of the device after the cable enters the indoor.

- When the outdoor cable without any protection is connected to the device, we should install the signal mine at the corresponding port.

- When laying the fibers, it is required that the wiring is smooth and the bundling the neat. It is required that the internal core wire is grounded before the outdoor fiber enters the indoor. The fiber cannot be stretched or bundled too tightly.

F2.2 Installation Method of Cable Wiring

Installation Method of Power Cable

One end of the power cable is connected to the device and the other end is connected to the power strip or lightning protection bar. The excessive part is folded to the shape of S and fixed in the chassis. Keep a distance of more than 20cm with other cables.

Installation Method of Cables

The signal cables should be installed and bundled by indoor and outdoor, drawn from the outlet holes of different chassis to the user terminal or cascading device.

Precautions for Using Fiber

⚠ Caution

- When using the fiber to connect the network device, first confirm whether the type of the optical connector and the fiber type conform to the used optical port type.

- Before connecting the fiber, first confirm that the optical power of the receiving end does not exceed the upper threshold of the receiving optical power of the optical module. Otherwise, it may burn the optical module.

- If the optical port is not connected to the optical connector, please be sure to wear a protective cap.

- If the optical port is not connected to the optical connector and the protective cap is opened, maybe some invisible rays emitted from the optical port, so you do not directly look at the optical port.

- The fiber connector should have the safe and reliable packaging and the connector should have the dust cap. When not using, the fiber connector should wear the dust cap, avoiding scratching the end face of the insert core of the fiber connector, and affecting the performance index. If the dust cap is too loose or polluted, change it in time.

- Before connection, we should use the dust-free paper to soak the absolute alcohol and wipe the end face of the insert core of the fiber connector. You can wipe in one direction only and you also need to wipe the end face of the peer fiber connector.

- When connecting, you cannot twist or bend the fiber. After installation, the bent radius of the fiber cannot be smaller than 40 mm (In dynamic bending case, the minimum bend radius is 20D; in the static bending case, the minimum bend radius is 10D; D is the fiber sheath diameter).

- If the fiber needs to pass through the metal board hole when connecting, the metal board hole should have the smooth and fully-filleted surface (the filleting radius should be no less than 2 mm). When passing through the metal board hole and turning along the sharp edge of the structural part, we should add the protective sleeve or pad.

- Be careful when plugging the connector and avoid damaging the connector or fracturing the fiber because of too much force. Avoid pulling, pressing, and extruding the fiber. The permitted maximum tensile force and crush force of the fiber are as shown in the following table.

Appendix Table F-5 Permitted force of the fiber

Force Time	Tensile Force (N)	Crush Force (N/100mm)
Short-term force	150	500
Long-term force	80	100

Installation Method of Fiber

After the fiber is drawn out from the optical port, the fiber directly connected to the photoelectric converter can be coiled to hang in the inner side of the chassis. The fiber cascaded with other devices should slip over the PVC pipe to draw out, avoiding traction and stretching.

⚠ **Caution**

- Fiber itself does not belong to the conductor, and it does not sense or transduce the over-voltage, but the strengthen core of the fiber optic cable (the armored component installed to prevent the fiber from being affected by the environment event) can easily sense and transduce the lightning overvoltage, so we should treat properly. It is recommended that the user performs the ground protection at the user end of the fiber optic cable.

F2.3　Equipotential Connection Requirement and Method

⚠️ **Caution**

- The interconnected devices in the same work range need the equipotential connection. For example, the interconnected devices, the metal sheath of the cable, power supply PE line, and the installed metal structure should ensure the equipotential connection.

For the equipotential connection of the interconnected devices, refer to the following figure. After connection, use the multimeter to measure whether each equipotential connection point well contacts and the impedance is low enough.
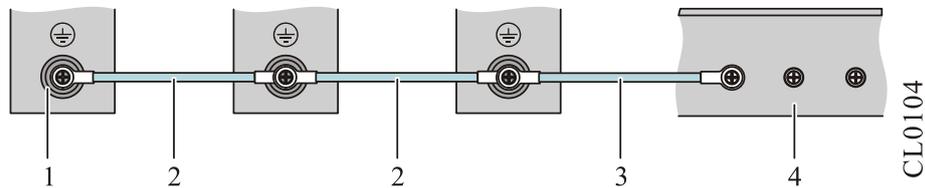
Appendix Figure F-1 Device equipotential connection

1. Device grounding terminal	2. Device equipotential connection line
3. Ground protection cable	4. Ground bar

G Environmental Substance Statement

Appendix Table G-1 Toxic and hazardous substance name and content

Part Name 1	Toxic and Hazardous Substance or Element					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Printed circuit board component 2	×	O	O	O	O	O
Switch power	×	O	O	O	×	×
Shell/frame (metal)	O	O	O	O	O	O
Chassis mat	O	O	O	O	×	×
Screw	×	O	×	O	O	O

Dust cap (Plastic)	×	×	×	×	×	×
Heat dissipation	O	O	O	O	O	O
Fan	O	O	O	O	O	O
Cable	×	×	×	×	×	×
Lithium battery	O	O	O	O	O	O
Memory	O	O	O	O	O	O

O: It indicates that the content of the toxic and hazardous substance in all homogeneous materials of the component is below the limit requirement in SJ/T11363-2006 standard.

×: It indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the component exceeds the limit requirement in SJ/T11363-2006 standard.

In the environmental protection use period, only strictly complying with the using conditions in the environmental protection use period, the environmental substances or elements contained in the product do not leak or mutate.

The environmental protection use period of the Li battery of the product is 5 years; the environmental protection use period of the other components is 50 years.

For the use conditions of the product in the environmental protection use period, refer to the requirements for the use environment in the product manuals.

Note

- In the statement, list all components that may be configured in Maipu products. For the actual components contained in each product, please prevail in kind.

- PCB components include the printed circuit boards and the formed IC devices and the discrete devices, such as resistors, capacitors, integrated circuits, and connectors.