

# SNR-S2970G-48S Hardware Installation Manual

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## Chapter 1 SNR-S2970G-48S Introduction

The document describes the characteristics and parameters of SNR-S2970G-48S and gives an overview of SNR-S2970G-48S.

### 1.1 Standard Configuration

The accessory ports of SNR-S2970G-48S are formed of 4 1000M-Ethernet RJ45 ports, 48 1000M Ethernet SFP ports and one console port. See table 1-1.

Table 1-1 Attributes of the accessory port

Port	Attribute
1000M Ethernet port	SFP port and UTP port (RJ45), having LINK/ACT indicators
Console port	An RJ45 port with a rate of 9600 bps

The SNR-S2970G-48S switch also has a grounding column, one power socket and one on-off at its back.

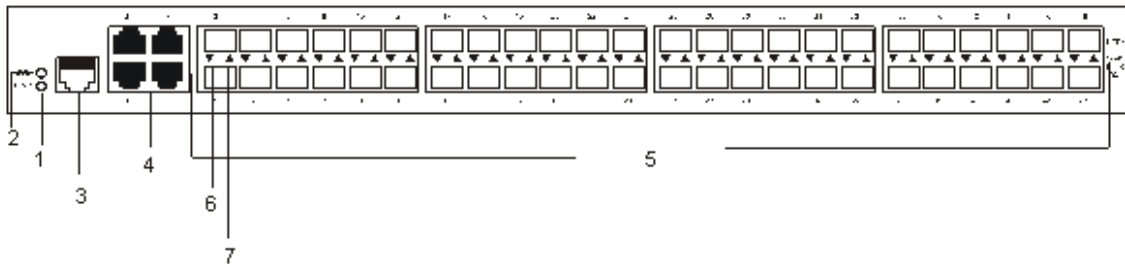


Figure 1-1 Front template of the SNR-S2970G-48S switch

Table 1-2 Parts at the front template of the SNR-S2970G-48S switch

No.	Abbrev.	Name	Description
1	PWR	Power indicator	If the switch is powered on, the indicator is on.
2	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally.
3	CONSOLE	Console port	Manages the switch locally.
4	none	Four RJ45 ports	Forwards the 10/100/1000M-Ethernet electrical signals.
5	none	48 SFP ports	Forward the 1000M Ethernet optical signals.

6	LINK/ACT	Indicator at the bottom of each port	If the indicator is always on, the link on the port is normal. If the indicator flicks, the data is transmitted on the link.
7	LINK/ACT	Indicator at the top of each port	If the indicator is always on, the link on the port is normal. If the indicator flicks, the data is transmitted on the link.

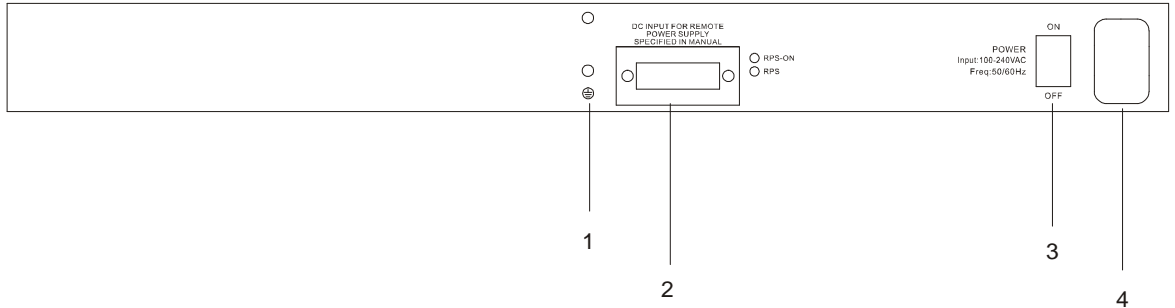


Figure 1-2 Back template of the SNR-S2970G-48S switch

Table 1-3 Parts at the back template of the SNR-S2970G-48S switch

No.	Abbrev.	Name	Description
1	none	Grounding column	The grounding must be fine.
2	none	Standby RPS power socket	DC12V, used by the RPS power
3	none	Power on-off	Pressing upward means opening power, while pressing downward means cutting off the power.
4	none	AC power socket	AC100-240V

## 1.2 Characteristic Parameters of SNR-S2970G-48S

<b>Protocol standard</b>	<b>Supported standard</b>	IEEE 802.1d Spanning Tree Protocol IEEE 802.1s multiple spanning trees IEEE 802.1p Class of Service IEEE 802.1q tagged VLAN IEEE 802.3x Flow control IEEE 802.3z asymmetric flow control IEEE 802.3ad Link aggregation
	<b>Network management standard</b>	RFC 1157 SNMP v1/v2 RFC 1213 MIB II RFC 1757 RMON 1,2,3,9

<b>Hardware characteristics</b>	<b>Memory</b>	Flash Memory: 8Mbytes, expandable to 16Mbytes SDRAM: 64Mbytes
	<b>Standard configuration</b>	Four 10/100/1000 Base-T ports 48 1000M Ethernet SFP ports One Console port
	<b>Specifications</b>	442mm×316mm×44mm
	<b>Working temperature/humidity</b>	0°C-60°C; 10%-85%; no condensation
	<b>Storage temperature/humidity</b>	-40°C-80°C; 5%-95%; no condensation
	<b>Power characteristics</b>	Input voltage: AC100-240V Input frequency: 47-63Hz
	<b>Power consumption</b>	Up to 70W

### 1.3 ROHS Description

Parts	Toxic or harmful substances or elements					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
Chasis	X	X	X	X	X	X
Rack	X	X	X	X	X	X
Baseboard	X	X	X	X	X	X
Module	X	X	X	X	X	X
Interface Card	X	X	X	X	X	X

O: The toxic or harmful substances' levels in each homogeneous materials of each part, are under the limitation of SJ/T 11363—2006 regulation  
X: The toxic or harmful substances' levels at least in one homogeneous materials of one part, exceed the limitation of SJ/T 11363—2006 regulation



## Chapter 2 Installation Preparation

### 2.1 Cautions

Similar to other electronic products, the semiconductor chip easily gets damaged if you power on and off abruptly and frequently. To restart up the switch of SNR-S2970G-48S, you have to open the power on-off three or five seconds after the power is cut off.

Avoid severe collision or falling down from the height to protect the parts in the switch.

Use correct outside ports to connect the switch of SNR-S2970G-48S. Do not insert the Ethernet plug into the console port (RJ45 8-line socket). Similarly, do not insert the console cable into the console port (RJ45 8-line socket).

**Note:**

- 1) When you plug or dial out the power line, keep the power line horizontal with the power socket.
- 2) When the lifetime of our products ends, handle them according to national laws and regulations, or send these products to our company for collective processing.

### 2.2 Safety Advice

#### 2.2.1 Safety Principles

- Keep dustless and clean during or after the installation.
- Put the cover at the safe place.
- Put tools at the right place where they are not easily falling down.
- Put on relatively tight clothe, fasten the tie or scarf well and roll up the sleeve, avoiding stumbling the machine box.
- Put on the protective glasses if the environment may cause damage to your eyes.
- Avoid incorrect operations that may cause damage to human or devices.

#### 2.2.2 Safety Notices

- Read the installation guide carefully before you operate the system.
- Only professionals are allowed to install or replace the switch.
- Pull out the AC power socket and close the direct-current power before operating on the machine box or working beside the power source.

- The final configuration of products must comply with relative national laws and regulations.

### 2.2.3 Safety Principles for Live Working

When you work under electricity, following the following principles:

- Put off ornaments, such as ring, necklace, watch and bracelet, before you operate under live working. When metal articles connect the power to the ground, short circuit happens and components may be damaged.
- Pull out the AC power socket and close the direct-current power before operating on the machine box or working beside the power source.
- When the power is on, do not touch the power.
- Correctly connect the device and the power socket.
- Only professionals are allowed to operate and maintain the device.
- Read the installation guide carefully before the system is powered on.

**Note:**

- 1) Check potential dangers, such as the humid floor, ungrounded extensible power line and tatty power line.
- 2) Install the emergent on-off at the working room for turning off the power when trouble happens.
- 3) Turn off the power on-off of the switch and plug off the power line before installing or uninstalling the machine box or working beside the power.
- 4) Do not work alone if potential dangers exist.
- 5) Cut off the power before checkout.
- 6) If trouble happens, take the following measures:
  - A. Cut off the system's power.
  - B. Alarm.
  - C. Take proper measures to help persons who are hit by the disaster. Artificial respiration is needed if necessary.
  - D. Seek for medical help, or judge the loss and seek for available help.

### 2.2.4 Electrostatic Discharge Prevention

Electrostatic discharge may damage devices and circuits. Improper treatment may cause the switch to malfunction completely or discontinuously.

Move or locate the devices according to the measures of electrostatic discharge prevention, ensuring the machine box connects the ground. Another measure is to wear the static-proof hand ring. If there is no hand ring, use the metal clip with the metal cable to clip the unpainted metal part of the machine box. In this case, the static is discharged to the ground through the metal cable of the clip. You can also discharge the static to the ground through your body.

## 2.3 Requirements for Common Locations

This part describes the requirements for the installation locations.

### 2.3.1 Environment

The switch can be installed on the desk or the cabinet. The location of the machine box, cabinet planning and indoor cabling are very important for normal system's function. Short distance between devices, bad ventilation and untouchable control plate will cause maintenance problems, systematic faulty and breakdown.

For location planning and device locating, refer to section 2.3.2 "Location Configuration Prevention".

### 2.3.2 Location Configuration Prevention

The following preventive measures assist you to design the proper environment for the switch.

- Make sure that the workshop is well-ventilated, the heat of electrical devices is well-discharged and sufficient air circulation is provided for device cooling.
- Avoid to damage devices by following the electrostatic discharge prevention procedure.
- Put the machine box at the place where cool air can blow off the heat inside the machine box. Make sure the machine box is sealed because the opened machine box will reverse the cool air flow.

### 2.3.3 Cabinet Configuration

The following content assists you to make a proper cabinet configuration:

- Each device on the cabinet gives off heat when it runs. Therefore, the sealed cabinet must have the heat-discharge outlet and the cooling fan. Do not put the devices too close, avoiding bad ventilation.
- When you install the machine box at the open cabinet, prevent the frame of the cabinet from blocking the airway of the machine box.
- Ensure that nice ventilation is provided for the devices installed at the bottom of the cabinet.
- The clapboard separates exhaust gas and inflow air, and boost the cool air to flow in the machine box. The best location of the clapboard is decided by the air



flow mode in the machine box, which can be obtained through different location tests.

### 2.3.4 Power Requirements

Make sure that the power supply has nice grounding and the power at the input side of the switch is reliable. The voltage control can be installed if necessary. At least a 240 V, 10A fuse or a breaker is provided in the phase line if you prepare the short-circuit prevention measures for a building.

**Caution:**

If the power supply system does not have good grounding, or the input power disturbs too much and excessive pulses exist, the error code rate of communication devices increases and even the hardware system will be damaged.

## 2.4 Installation Tools and Device

The tools and devices to install the SNR-S2970G-48S switch are not provided by the SNR-S2970G-48S switch. You yourself need to prepare them. The following are the tools and devices needed for the typical installation of the SNR-S2970G-48S switch:

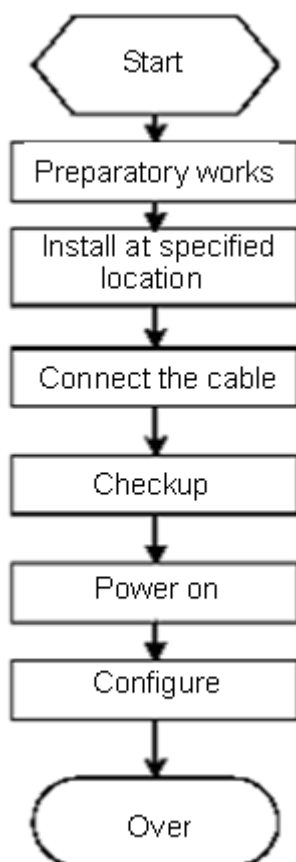
- Screwdriver
- Static armguard
- Bolt
- Ethernet cable
- Other Ethernet terminal devices
- Control terminal

## Chapter 3 Installing the SNR-S2970G-48S Switch

### Caution:

Only professionals are allowed to install or replace the devices of SNR-S2970G-48S.

### 3.1 Installation Flow of SNR-S2970G-48S



### 3.2 Installing the Machine Box of the Switch

The installation of the machine box concludes the following cases:

- Installing the Machine Box on the Desk
- Installing the Machine Box on the Cabinet

### 3.2.1 Installing the Machine Box on the Desk

The SNR-S2970G-48S switch can be directly put on the smooth and safe desk.

**Note: Do not put things weighing 4.5 kg or over 4.5 kg on the top of the switch.**

### 3.2.2 Installing the Machine Box on the Cabinet

The machine box of the switch is fixed on the cabinet through the brackets. When you fix the brackets, the front template of the switch faces forward. The detailed operations are shown in Figure 3-1.

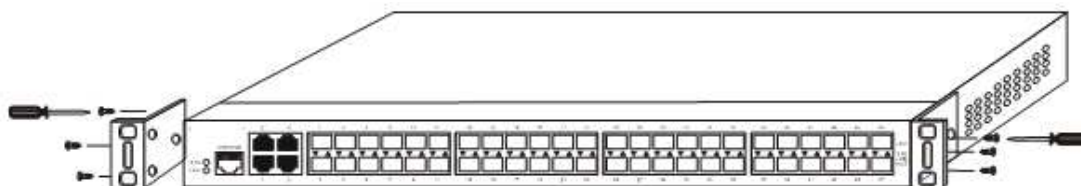


Figure 3-1 Fixing the machine box of the switch

After the brackets are installed, install the switch on the cabinet. See Figure 3-2.

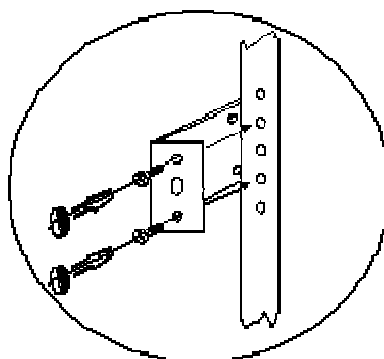


Figure 3-2 Installing the switch on the cabinet

## 3.3 Connecting the Port

### 3.3.1 Connecting the Console Port

The switch of SNR-S2970G-48S has a Console port.

The rate of the console port is a value ranging from 1200bps to 115200bps. It has a standard RJ45 plug. After you connect the console port to the serial port of PC through a console cable, you can configure and monitor the switch of SNR-S2970G-48S by running a terminal emulation software, such as super Windows terminal. The cable is provided according to the host. The communication parameters of the terminal serial port can be set to a rate of 9600bps, eight data bits, one stop bit, no sum check bit and traffic control.

The RJ45 connector of the console port is shown in Figure 3-3. The RJ45 plug corresponds to the RJ45 socket, whose pins can be aligned from left to right with the value from 1 to 8.

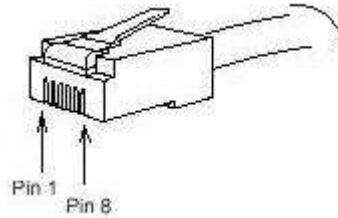


Figure 3-3 RJ-45 connector of the console port

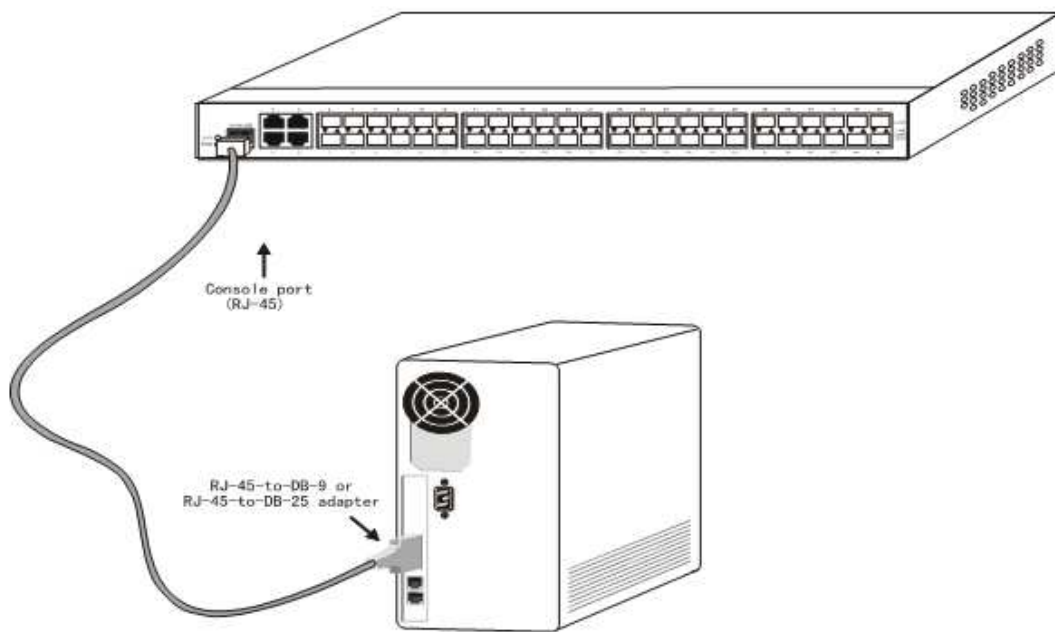


Figure 3-4 Connecting the console port of SNR-S2970G-48S and computer

Table 3-1 Definition of the pins of the UTP port

No.	Name	Symbol	Remarks
1	Carrier Detecting	CD	No connect
2	Data receiving	RXD	Input
3	Data-line device ready	DSR	No connect
4	Data transmitting	TXD	Output
5	Transmission requesting	RTS	No connect
6	Response transmitting	CTS	No connect
7	Data terminal ready	DTR	No connect
8	Signal ground	SG	GND

**Note:**

The console port of the SNR-S2970G-48S switch does not support traffic control. Therefore, you must set the option **data traffic control** to **none** when you configure the switch with the super terminal. Otherwise, the single-pass problem will arise on the super terminal.

The cable is used to connect the console port of the SNR-S2970G-48S switch and the outside console terminal device. One end of the cable is a 8-pin RJ45 plug and the other end is a 9-hole plug (DB9). The RJ45 plug is put into the socket of the console port on the SNR-S2970G-48S switch. The inner line connection in the cable is shown in figure 3-5. The console cable is numbered as RLC0301.

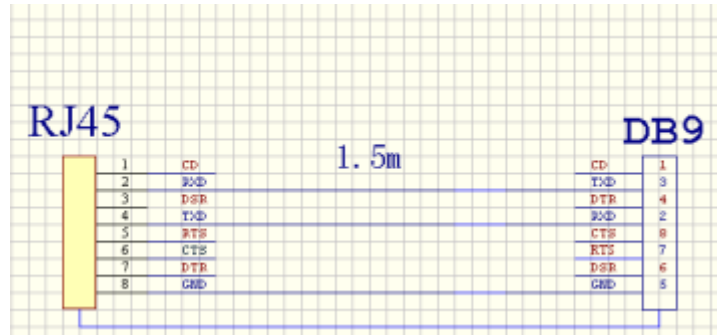
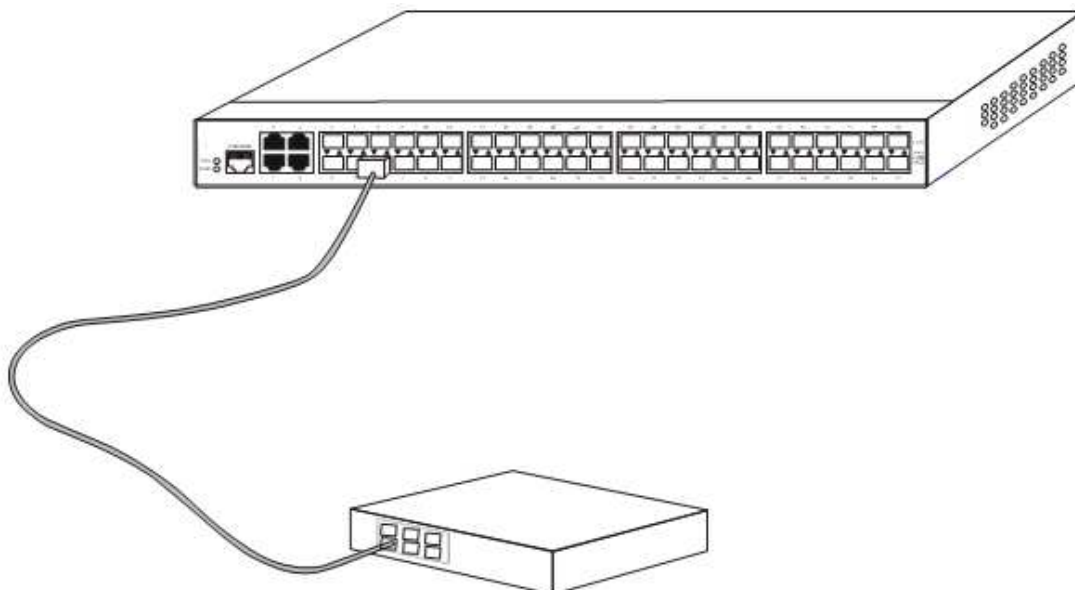


Figure 3-5 Cable connection at the console port

### 3.3.2 Connecting the 1000M Ethernet SFP Port

SNR-S2970G-48S provides 48 1000M SFP ports. The upper indicators of the ports are used to indicate the LINK state of the port, while the bottom indicators of the ports are used to indicate the ACT state of the port. You can insert the SFP module and then connect it to other Ethernet terminal devices through the optical fiber if you want to use the 1000M SFP port.



### 3.3.3 Connecting the Ethernet Electrical Port

The SNR-S2970G-48S switch has four 10/100/1000Base-T ports. Each electrical port uses the two indicators corresponding to those of the SFP port, indicating the LINK/ACT state of the port. You can connect other Ethernet terminal devices to the UTP port through the cut-through or cross network cable. The numbering order of the pins in the UTP port is the same as the console port.

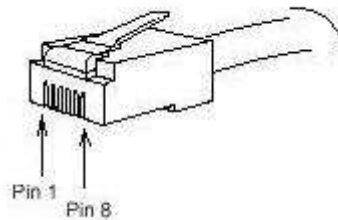


Figure 3-6 RJ-45 connector of the console port

Because four 10/100/1000Base-T ports of SNR-S2970G-48S support the MDI/MDIX auto-identification of the cable, SNR-S2970G-48S can adopt five classes of direct-through/cross network cables when it connects other Ethernet terminals.

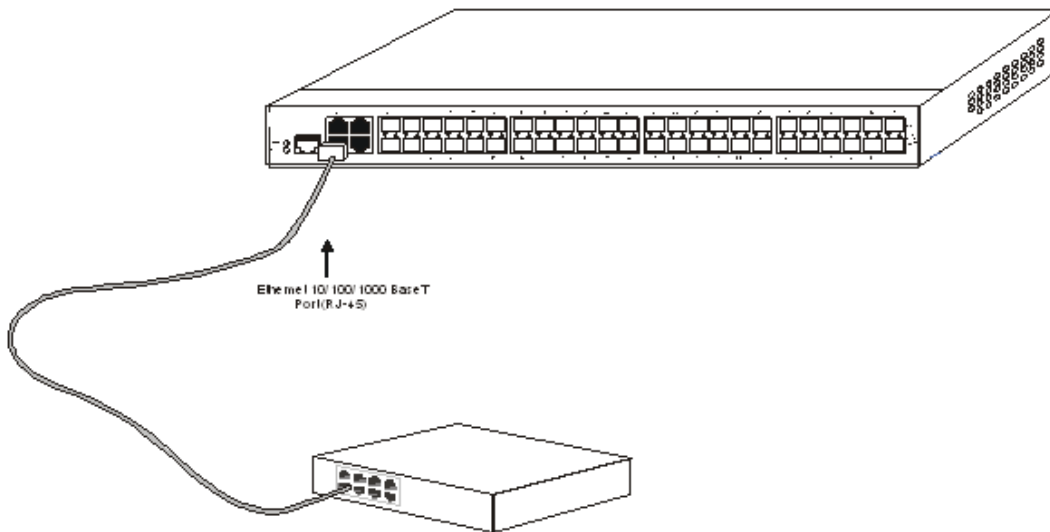


Figure 3-7 Connecting the 1000Base-TX port and other Ethernet terminals

Table 3-2 Definition of the pins of the UTP port

No.	Name	Symbol	Remarks
1	Sending the normal phase of the data	TXD1+	Output
2	Sending the paraphase of the data	TXD1-	Output
3	Receiving the normal phase of the data	RXD1+	Input
4	Sending the normal phase of the data	TXD2+	Output
5	Sending the paraphase of the data	TXD2-	Output
6	Receiving the paraphase of the data	RXD1-	Input
7	Receiving the normal phase of the data	RXD2+	Input
8	Receiving the paraphase of the data	RXD1-	Input

The direct-through or cross network cable has the function of auto-identification, so the five classes of direct-through/cross network cables can be used to connect other Ethernet devices.

### 3.4 Checking After Installation

Before electrically starting up the switch, perform the following checkups after the switch is installed:

- If the switch is installed on the cabinet, check whether the installation point between the cabinet and the switch is strong. If the switch is installed on the desk, check whether there is enough space for the switch to discharge its heat and whether the desk is stable.
- Check whether the connected power meets the power requirements of the switch.
- Check whether the grounding line is correctly connected.
- Check whether the switch is correctly connected to other terminal devices.

## Chapter 4 Maintaining the Switch

### Caution:

Before opening the machine box, make sure that you have released the static you carried and then turn off the power on-off of the switch. Before operating any step in Appendix B, read the section “Safety Advice”.

Before performing operations beside the power source or on the machine box, turn off the power on-off and plug out the power cable.

### 4.1 Opening the Machine Box

This section describes how to open the cover of the switch, required tools and operation methods.

### Caution:

When the power cable still connects the power source, do not touch it.

When you open the cover the switch, you may use the following tools:

- Crossed screwdriver
- Static armguard

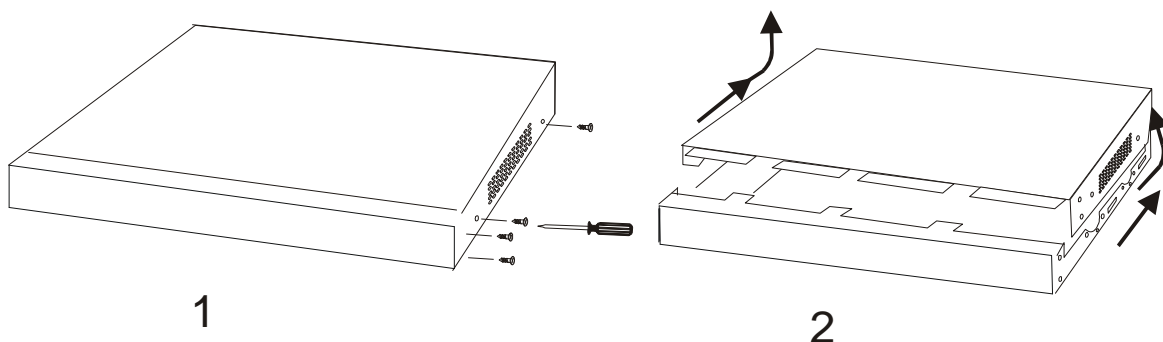
Perform the following steps to open the cover of the switch:

- (1) Turn off the power on-off of the switch.
- (2) Plug out all cables connected the back of the switch.
- (3) Take out the bolt from the machine box with the screwdriver.

### Note:

The machine box comprises of two parts: cover and bottom.

- (4) Open the cover by holding two sides of the cover towards the direction of the arrow key shown in the following figure:





- (5) When the cover is opened, put it aside. The mainboard of the system appears.

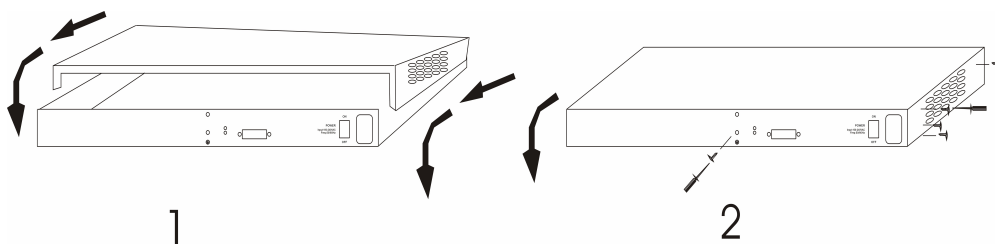
**Note:**

After taking off the cover, put it horizontally and avoid it to be crushed or collided. Otherwise, the machine box is hard to install.

## 4.2 Closing Machine Box

The section mainly describes how to put the cover and close the machine box. Do as follows:

- (1) Put them well according to their locations and joint them together along their sides.



- (2) See the following figure.
- (3) When the cover and the bottom are closely tied, let the cover slide the slot of the front template at the bottom.
- (4) Nail the bolt and screw it tightly with the screwdriver.
- (5) Reinstall the switch on the cabinet or the desk.
- (6) Reconnect all cables of the switch.

## 4.3 Memory Upgrade

### 4.3.1 SDRAM Expansion

Because SDRAM of SNR-S2970G-48S adopts the patch design, you have to offer your SDRAM expansion requirement before purchase.

## Chapter 5 Hardware Fault Analysis

The part describes how to remove the fault from the switch.

### 5.1 Fault Separation

The key for resolving the systematic faults is to separate the fault from the system. You can compare what the system is doing with what the system should do to detect the fault. You need to check the following subsystems:

- Power and cooling systems—power and fan
- Port, cable and connection—ports on the front template of the switch and the cables connecting these ports

#### 5.1.1 Faults Relative with Power and Cooling System

Do the following checkups to help remove the fault:

- When the power on-off is at the “ON” location, check whether the fan works normally. If the fan does not work well, check the fan.
- If the switch is too hot, check whether the air outlet and air inlet are clean and then do relative operations in section 2.3 “Requirements for Common Locations”. The working temperature of the switch is from 0 to 40 Celsius degrees.
- If the switch cannot be started and the PWR indicator is off, check the power.

#### 5.1.2 Faults Relative with Port, Cable and Connection

Do the following checkups to help remove the fault:

- If the port of the switch cannot be linked, check whether the cable is correctly connected and whether the peer connection is normal.
- If the power on-off is at the “ON” location, check the power source and the power cable.
- If the console port does not work after the system is started up, check whether the console port is set to a baud rate of 9600 bps, eight data bits, no sum check bit, one stop bit and no traffic control.

## 5.2 Indicator Description

The LED indicator shows that the switch is running. The following table shows the indicators of the SNR-S2970G-48S switch and their description:

No.	Abbrev.	Name	Description
1	PWR	Power indicator	If the switch is powered on, the indicator is on.
2	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally.
3	none	Indicator at the top of each port	If the indicator is always on, the link on the port is normal. If the indicator is off, the link on the port is cut off.
4	none	Indicator at the bottom of each port	If the indicator flickers, the data is received or transmitted through the port. If the indicator flickers, the data is received or transmitted through the port.