TSR 2900-10 Hardware Installation Manual

Table of contents

Chapter 1 Introduction to TSR2900-10

This section describes the characteristics and parameters of TSR2900-10 and gives an overview of TSR2900-10.

1.1 Appearance Description for Standard Configuration

The built-in ports of TSR2900-10 are: 8 10/100/1000M Ethernet RJ45 LAN ports, 2 10/100/1000M Ethernet RJ45 WAN ports, 2 Combo ports (WAN), 1 Console port, 1 USB port. See table 1-1

Port	Attribute
10/100/1000M Ethernet RJ45 LAN port	10/100/1000M self-adaptive; UTP (RJ45) port: Link/ACT indicators
10/100/1000M Ethernet RJ45 WAN port	10/100/1000M self-adaptive; UTP (RJ45) port: Link/ACT indicators
2 Combo ports (WAN)	Multiplexing Base-T port: 10/100/1000M self-adaptive, UTP (RJ45) port SFP: 100/1000M Link/ACT indicators
Console port	A rate of 9600bps, RJ45 port, no indicator
USB port	USB2.0 port

Front template:
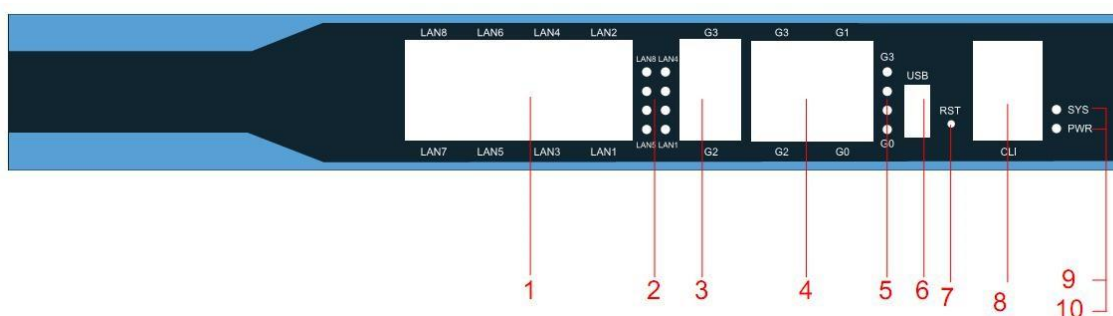
Description

No.	Abbrev	Name	Description
1	LAN1~LAN8	Gigabit Ethernet Base-T port	Gigabit Ethernet Base-T port (LAN), for communication over 10M/100M/1000M Ethernet Base-T ports
2	LAN1~LAN8	Indicators of Base-T ports	If the indicator is on, LINK works; If the indicator flickers, data is

			transmitted.
3	G2~G3	Gigabit Ethernet SFP	1000M/100M SFP(WAN), for communication over 100M/1000M Ethernet SFP; G2, G3 Combo Base-T ports
4	G0-G3	Gigabit Ethernet Base-T port	1000M Ethernet Base-T port (WAN), for communication over 10M/100M/1000M Ethernet Base-T port; G2, G3 Combo ports and G2, G3 Combo Base-T ports
5	G0-G3	Indicators of G0~G3 ports	If the indicator is on, LINK works; If the indicator flickers, data is transmitted.
6	USB	USB2.0 port	
7	RST	Reset	Reset
8	CLI	Console port	Cisco line sequence
9	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally
10	PWR	Power indicator	If the router is powered on, the indicator is on.

Back template:
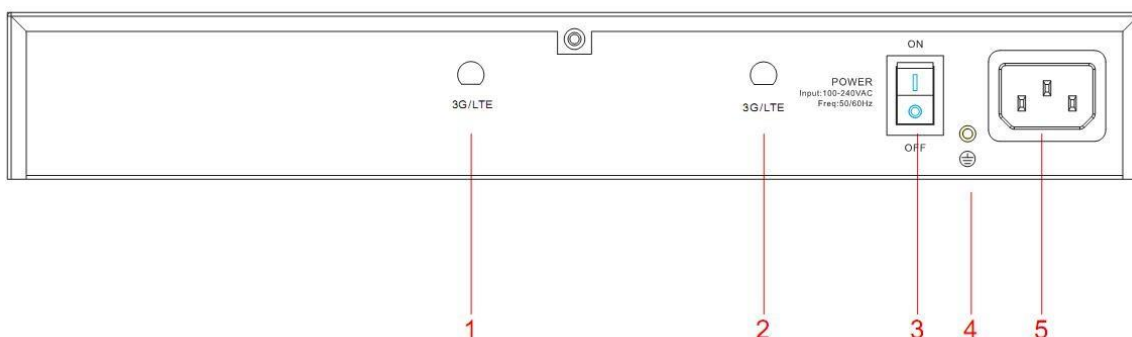
Description

No.	Abbrev.	Name	Description
1、2	3G/LTE	Antenna	None
3	POWER	Power	Power input router
4	GND	Grounding column	The grounding must be fine.

5		AC power input port	Input voltage: 170～264V, frequency: 47～63Hz Current: 1A/230V

1.2 Systematic Characteristic Parameters

CPU	Cavium CN7020
Memory	1GB
Nor Flash	32M
Nand Flash	8Gbit
Standard configuration	2 1000M Ethernet optical and Base-T comb ports（WAN） 2 1000M Ethernet Base-T ports (WAN) 8 1000M Ethernet (LAN) 1 Console port 1 USB interface 1 RESET button
Packet forwarding rate	1.4Mpps
Dimensions mm (W×D×H)	300*200*44
Weight（Kg）	
Power consumption （W）	36W (12V/3A)
Installation	Desktop, rack-mounted
Dissipation	Cooling fin + Complete air cooling
Operating temperature/ humidity	0℃～40℃; 10%～85% non-condensing
Storage temperature/ humidity	-20℃～65℃；5%～95% non-condensing

DC power	Input voltage: 170～264V,	frequency: 47～63Hz
	Current: 1A/230V	

1.3 ROHS Description

Part Name	Toxic or Hazardous Substances and Elements					
	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
PCBA	O	O	O	O	O	O
Mental Parts	O	O	O	O	O	O
Plastic & Polymer Parts	O	O	O	O	O	O
Cables & Cable Assembles	O	O	O	O	O	O
Packaging Materials & Assembles	O	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T26572

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T26572.

The referenced environment-friendly use period logo is determined based on the normal operating conditions (such as temperature and humidity)

(NOTE： These statements apply only to the China RoHS regulations.)

Chapter 2 Installation Preparation

2.1 Caution of Usage

Similar to other electronic products, the semiconductor chip easily gets damaged if you power on or off abruptly and frequently. To restart up the router of TSR2900-10, you have to open the power on-off after the power is cut down for three to five seconds. Avoid severe collision or falling down from the height to protect the parts in the router.

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 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

- 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 clothes fasten the tie or scarf well and roll up the sleeve, v 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.

- Safety Notices

- The safety notices mentioned here means that improper operation may lead to body damage.

- Read the installation guide carefully before you operate the system ● Only professionals are allowed to install or replace the router.

- 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.

- Safety Principles for Live Working

- 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 router 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.

● Electrostatic Discharge Damage Prevention

Electrostatic discharge may damage devices and circuits. Improper treatment may cause the router 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 router 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 router.
● 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 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 router is reliable. The voltage control can be installed if necessary.

Warning：

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 router are not provided by the router. You yourself need to prepare them. The following are the tools and devices needed for the typical installation of the router:
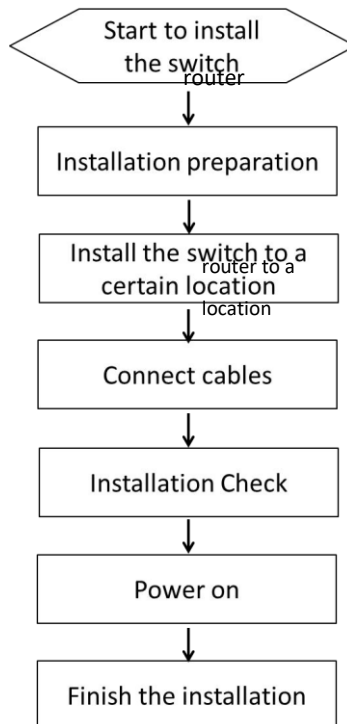
- Screwdriver
- Static armguard
- Bolt
- Ethernet cable
- HUB or PC with Ethernet card
- Control terminal
- MODEM

Chapter 3 Installing TSR2900-10

Caution:

Only professionals are allowed to install or replace the devices.

3.1 Installation Flow of TSR2900-10

```
           ┌─────────────────────┐
           │    Start to install  │
           │    the switch        │
           │         router       │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │ Installation preparation │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │ Install the switch to a │
           │    router to a      │
           │   certain location  │
           │       location      │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │   Connect cables    │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │  Installation Check │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │      Power on       │
           └──────────┬──────────┘
                      ↓
           ┌─────────────────────┐
           │ Finish the installation │
           └─────────────────────┘
```

3.2 Installing the Machine Box of the Router

The installation of the machine box has two modes:

- 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 TSR2900-10 router 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 router.

3.2.2 Installing the Machine Box on the Cabinet

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

After the brackets are installed, install the router on the cabinet.
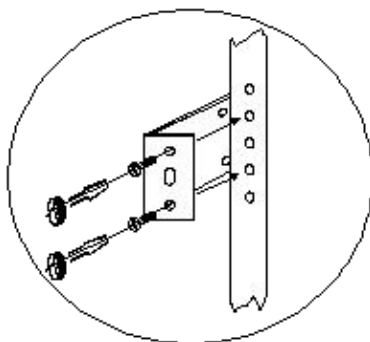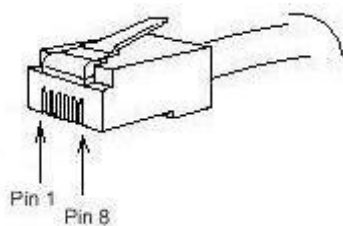
3.3 Connecting the Port

3.3.1 Connecting the Console Port

The TSR2900-10 router has a console port and a remote aux console port.

Console port

The rate of the console port is a value of 9600bps. It has a standard RJ45 plug with odd-even check. After you connect the console port to the serial port of PC through a console cable, you can configure and monitor the router of TSR2900-10 by running the 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 RJ-45 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.

Connecting the console port of TSR2900-10 with the computer:
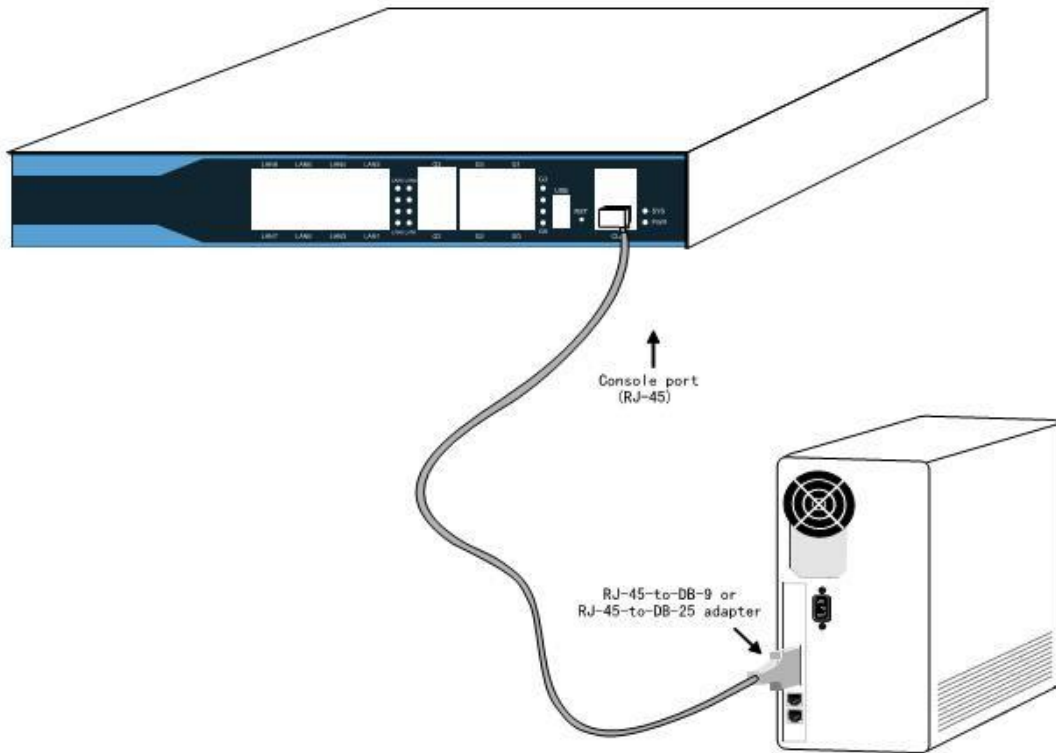
Definition of the pins of the Console port

No.	Name	Abbrev.	Remark
1	None		
2	None		
3	Send data	TXD	Output
4	None		
5	Signal ground	GND	GND
6	Receive data	RXD	Input
7	None		
8	None		

The cable is used to connect TSR2900-10 Console port with other terminal devices.

3.3.2 Connecting Gigabit Ethernet Ports

TSR2900-10 provides 8 10/100/1000Mbps Base-T ports, 2 1000M combo ports and UTP(RJ45) ports with ACT, Link indicators. In use, the ports can connect other Ethernet terminal devices through the UTP port. The numbering order of the pins in the UTP port is the same as the console port. See the following figure:
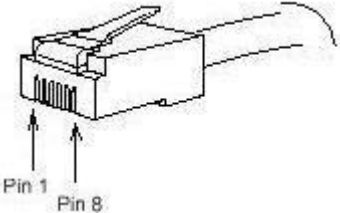
RJ45 Connector of the console port

10/100/1000Mbps ports - HUB linking figure

SWITCH
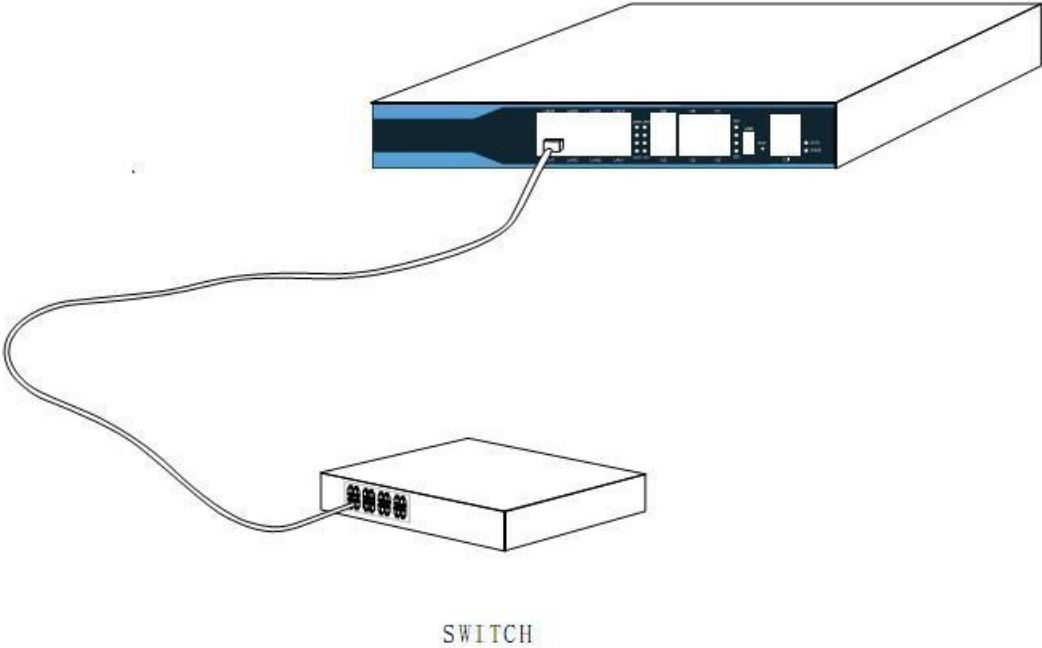
Pins of UTP port:

No.	Pin name	Abbrev
1	Receiving and sending the normal phase of the data 0	TP0+

2	Receiving and sending the paraphrase of the data 0	TP0-
3	Receiving and sending the normal phase of the data 1	TP1+
6	Receiving and sending the of paraphrase data 1 the	TP1-
4	Receiving and sending the normal phase of the data 2	TP2+
5	Receiving and sending the paraphrase of the data 2	TP2-
7	Receiving and sending the normal phase of the data 3	TP3+
8	Receiving and sending the paraphrase of the data 3	TP3-

3.3.3 Connecting Gigabit Ethernet SFP Ports

The TSR2900-10 router has 2 gigabit Ethernet SFP ports. In use the SFP optical module can be connected to other Ethernet terminal devices through the optical cable.

Fiber cable

SWITCH
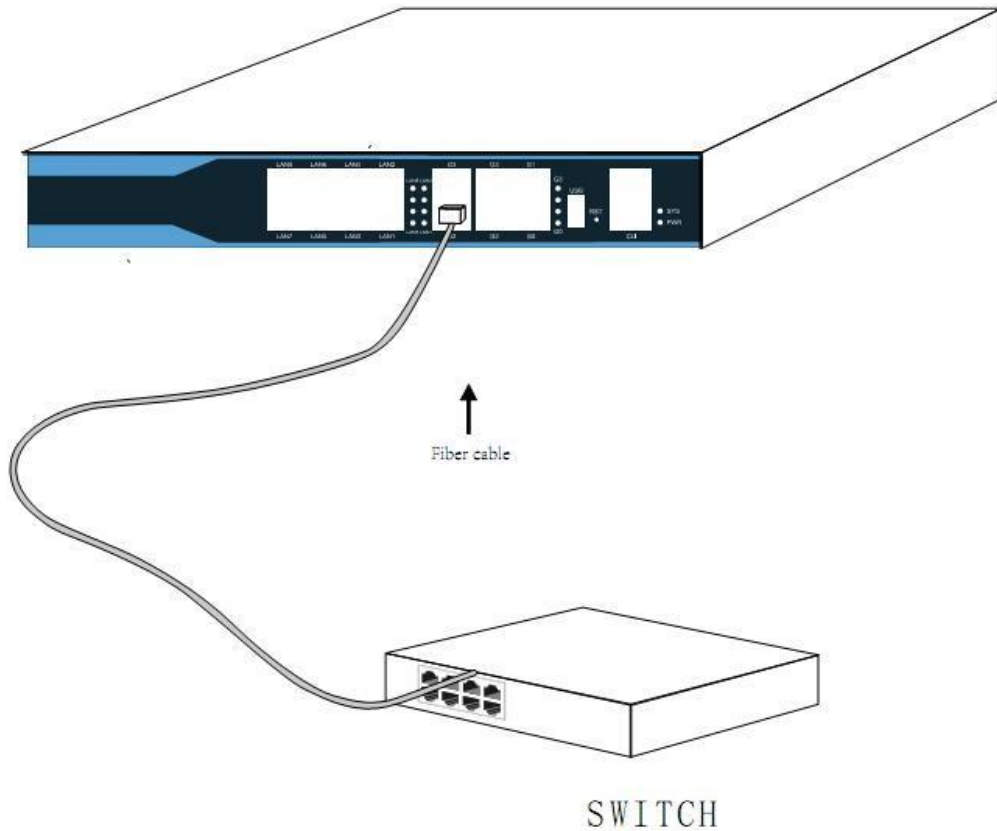
3.3.4 Connecting the USB port

The USB port support USB2.0 physical layer protocol

USB works in main mode and is connected to the devices with USB interface.

Chapter 4 Maintaining Router

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 router. 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 router, required tools and operation methods.

Caution：

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

When you open the cover of the router, you may use the following tools:

● Crossed screwdriver

● Static armguard

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

(1)   Turn off the power on-off of the router.

(2)   Plug out all cables connected the back of the router.

(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:
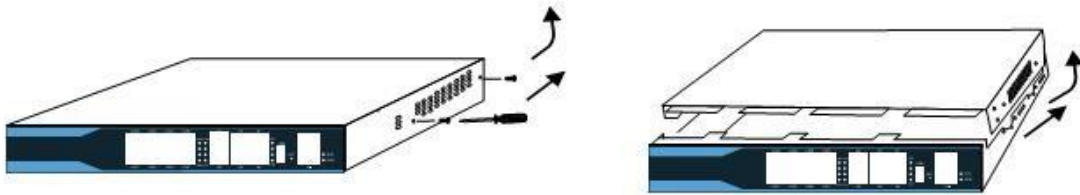

Attention：

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 the 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. See the following figure.
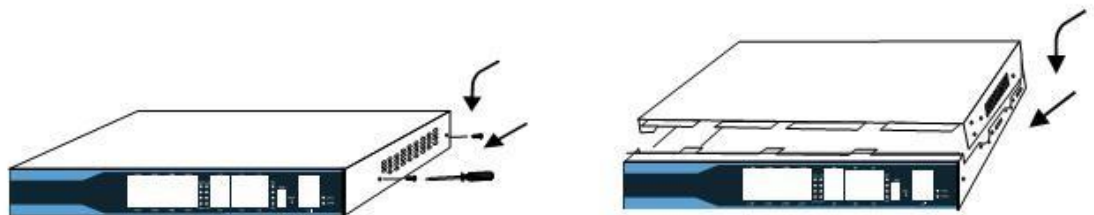
(2)   When the cover and the bottom are closely tied, let the cover slide the slot of the front template at the bottom.

(3)   Nail the bolt and screw it tightly with the screwdriver.

(4)   Reinstall the router on the cabinet or the desk.

(5)   Reconnect all cables of the router.

Chapter 5 Hardware Fault Analysis

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

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——power, cable；

- Port, cable and connection—ports on the front template of the router 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.

- The working temperature of the router is from 0 to 40 Celsius degrees. If the router 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".

- If the router 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 router 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 following table shows the indicators of the TSR2900-10 router and their description:

No.	Abbrev	Name	Description
1	PWR	Power indicator	When the router is powered on, the indicator is on.
2	SYS	System indicator	When the indicator is always on, the system is being started up. When the indicator

			flickers, the system works well.
3	LAN1LAN8	（LAN）indicator	If the indicator is always on, the LINK works; If the indicator flickers, data is transmitted
4	G0-G3	（WAN）indicator	If the indicator is always on, the LINK works; If the indicator flickers, data is transmitted

Copyright Claims

Without the written approval of the company , any person or group cannot transcribe, copy or change partial or all contents of this manual, and must not broadcast it in any manner.

Trademark claims

Trademarks, product names, service names and company names, which are written in this manual but do not belong to the company, belong to their owners respectively.

Disclaimer of warranty provides no evident or hinted guarantee towards the contents

of this manual. In no

event, except for the company's breach of law, shall the company be liable for incidental, consequential, indirect or special damages of any kind or for loss of profits or revenue or loss of business arising out of or relating to this manual.

Note: Customer shall not be notified of this manual's content amendments.