

TSR 2800-10C Hardware Installation Manual



Table of Contents

Chapter 1 TSR 2800-10C Introduction.....	1
1.1 Appearance Description for Standard Configuration	1
1.2 TSR 2800-10C Systematic Characteristic Parameters	3
1.3 ROHS Description	4
Chapter 2 Installation Preparation.....	5
2.1 Caution of Usage	5
2.2 Safety Advice	5
2.2.1 Safety Principles	5
2.2.2 Safety Notices	5
2.2.3 Safety Principles for Live Working	6
2.2.4 Electrostatic Discharge Damage Prevention	6
2.3 Requirements for Common Locations	7
2.3.1 Environment	7
2.3.2 Location Configuration Prevention.....	7
2.3.3 Cabinet Configuration	7
2.3.4 Power Requirements.....	8
2.4 Installation Tools and Device	8
Chapter 3 Installing the TSR 2800-10C Router	9
3.1 Installation Flow of TSR 2800-10C	9
3.2 Installing the Machine Box of the Router.....	9
3.2.1 Installing the Machine Box on the Desk.....	10
3.2.2 Installing the Machine Box on the Cabinet.....	10
3.3 Connecting the Port.....	10
3.3.1 Connecting the Console Port	10
3.3.2 Connecting Gigabit Ethernet Ports.....	12
3.3.3 Connecting Gigabit Ethernet Optical Ports	13
3.3.4 Connecting to the USB Interface	14
Chapter 4 Maintaining Router	15
4.1 Opening the Machine Box	15
4.2 Closing the Machine Box	16
Chapter 5 Hardware Fault Analysis.....	17
5.1 Fault Separation.....	17
5.1.1 Faults Relative with Power and Cooling System	17
5.1.2 Faults Relative with Port, Cable and Connection.....	17
5.2 Indicator Description	18

Chapter 1 TSR 2800-10C Introduction

The section describes the characteristics and parameters of TSR 2800-10C and gives an overview of TSR 2800-10C.

1.1 Appearance Description for Standard Configuration

The TSR 2800-10C modularized router has three parts: 10 10/100/1000M Ethernet ports, 1 Console port, 1 USB interface. See table 1-1.

Table 1-1 Attributes of the built-in port

Port	Attribute
Gigabit Ethernet ports	10/100/1000M auto-adaptation, UTP (RJ45) ports, LINK/ACT indicators
Console port	A rate of 9600bps, RJ45 interface, no indicator
USB interface	USB2.0 interface, a rate of 1.5Mbps in low-speed mode and a rate of 12Mbps in full-speed mode

Front template of the TSR 2800-10C modularized router

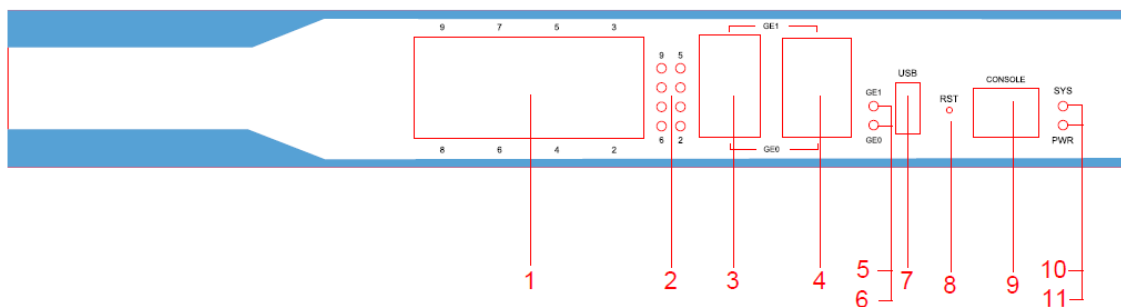


Table 0-1 Parts at the front template of the TSR 2800-10C

No.	Abbrev.	Name	Description
1	2-9	1000M TX ports	Forwards the 10/100/1000M Ethernet electric signals.
2	2-9	1000M ports and their correspondent indicators	If the indicator is always on, the link on the port is normal. If the indicator flickers, the data is received or transmitted through the port.

3	GE0-GE1	Gigabit Ethernet optical ports	Gigabit combo ports, forwards 100M/1000M Ethernet optical signals.
4	GE0-GE1	Gigabit Ethernet TX ports	Gigabit combo ports, forwards 100M/1000M Ethernet electric signals.
5	GE1	Gigabit ports and its corresponding indicators	If the indicator is always on, the link on the port is normal. If the indicator flickers, the data is received or transmitted through the port.
6	GE0	Gigabit ports and its corresponding indicators	If the indicator is always on, the link on the port is normal. If the indicator flickers, the data is received or transmitted through the port.
7	USB	USB interface	
8	RST	Reset	System reset
9	CON	Console port	A port used for system control
10	SYS	System indicator	If the indicator is always on, the system is being started. If the indicator flickers, the system works normally.
11	PWR	Power indicator	If the router is powered on, the indicator is on.

Back template of the TSR 2800-10C

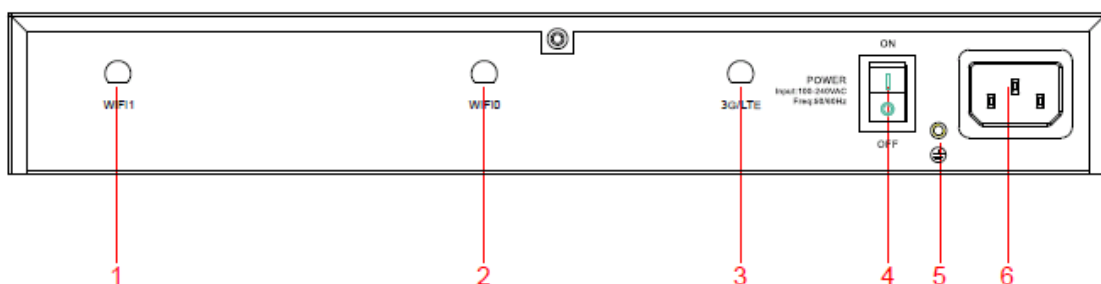


Table 0-3 Parts at the back template of the TSR 2800-10C

No.	Abbrev.	Name	Description
1	WIFI1	antenna	/
2	WIFI0	antenna	/
3	3G/LTE	antenna	/
4	POWER	power on-off	Power on-off

5	GND	grounding column	The grounding must be fine.
6		AC power supply input interface	Input voltage: 170~264V, Input frequency: 47~63Hz, Input current: 1A/230V

1.2 TSR 2800-10C Systematic Characteristic Parameters

CPU	Cavium CN5020
Memory	512MB
Nor Flash	32M
Nand Flash	4Gbit
BootRom	512K (the patch design)
Standard configuration	2 gigabit Ethernet combo TX/optical ports 8 gigabit Ethernet TX ports 1 Console port 1 USB interface 1 RESET key
Packet forwarding rate	1Mpps
Dimensions (W x H x D) (mm)	300 x 200 x 44
Weight (Kg)	
Power consumption (W)	36W (12V/3A)
Installation	Desktop installation, rack-mounted installation
Heat dissipation	The cooling fin + the whole machine air cooling
Operating temperature/humidity	0°C~50°C; 10%~85% non-condensing
Storage temperature/humidity	-20°C~65°C; 5%~95% non-condensing

AC power supply	Input voltage: 170~264V, Input frequency: 47~63Hz, Input current: 1A/230V
-----------------	---

1.3 ROHS Description

Part Number, Name and Description	Toxic or Hazardous Substances and Elements					
	Pb	Hg	Cd	Cr (VI)	PBB	PBDE
Machine Box	○	○	○	○	○	○
Cabinet	○	○	○	○	○	○
Module	○	○	○	○	○	○
Basic Board	○	○	○	○	○	○
Interface Card	○	○	○	○	○	○

O: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C is below the limit requirement in SJ/T11363-2006.

X: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-B, EIP-C is above the limit requirement in SJ/T11363-2006.

The referenced environment-friendly use period logo is determined based on 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 TSR 2800-10C, 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 (RJ11 4-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

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 clothes 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

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 supply.
- 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 supply.
- 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.

2.2.4 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. 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 TSR 2800-10C router are not provided by the TSR 2800-10C router. You yourself need to prepare them. The following are the tools and devices needed for the typical installation of the TSR 2800-10C router:

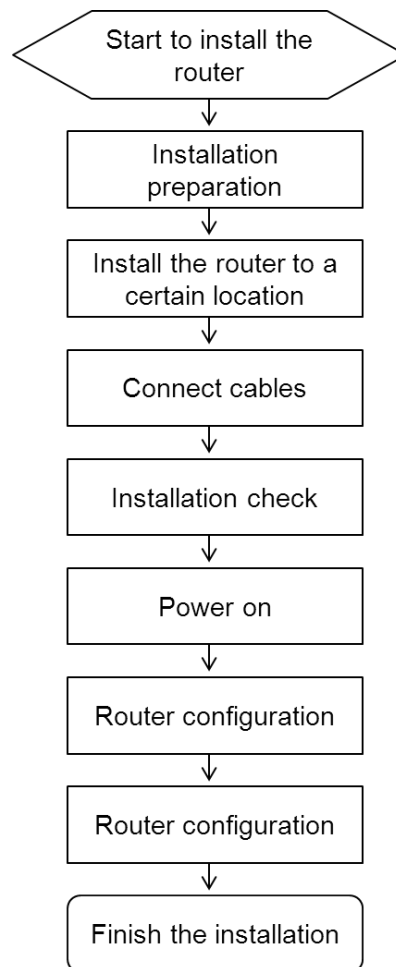
- Screwdriver
- Static armguard
- Bolt
- WAN and LAN Ethernet cable
- HUB or PC with Ethernet card
- Control terminal
- MODEM

Chapter 3 Installing the TSR 2800-10C Router

Caution:

Only professionals are allowed to install or replace the devices.

3.1 Installation Flow of TSR 2800-10C



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 TSR 2800-10C 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.

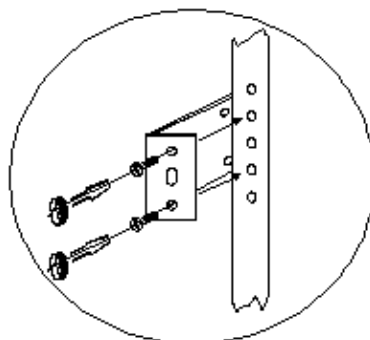
3.2.2 Installing the Machine Box on the Cabinet

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 the following figure:

Caution:

The previous example only describes how to install the router's hull on one side of a bracket. The installation on the other side of the bracket is same.

After the brackets are installed, install the router on the cabinet. See the following figure:



3.3 Connecting the Port

3.3.1 Connecting the Console Port

TSR 2800-10C modularized router has one console port and one remote assistant console port. Its attributes and usage method are described in this section.

The console port has a rate of 9600bps and a standard RJ45 plug, the parity check is an option for the console port and the flow on the console port can be controlled. Before configuring and monitoring the router, you must connect the console port and the terminal (such as STAR-510G⁺) or PC's serial port through specific monitor cable and then run terminal imitation software (Windows super-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.

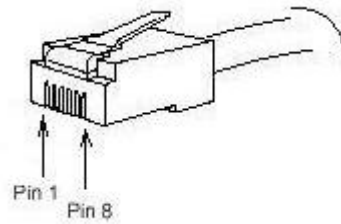


Figure 3-1 Pin1 to Pin 8

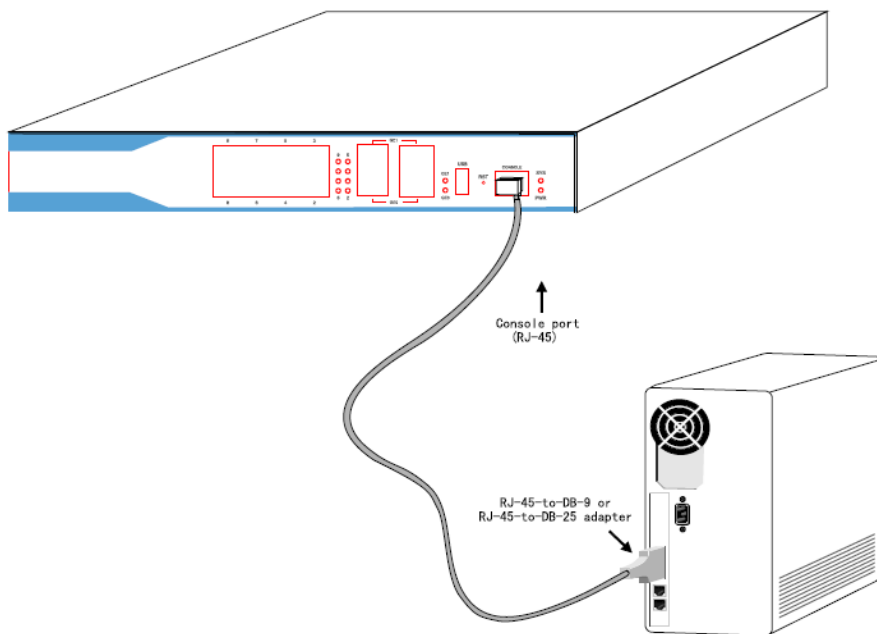


Figure 3-2 Connecting the console port of TSR 2800-10C and computer

Table 3-1 Pins of the console port

No.	Name	Remarks
1	CD	It is used for connecting MODEM.
2	RXD	Input
3	DSR	It is used for connecting MODEM.
4	TXD	Output
5	RTS	It is used for connecting MODEM.

6	DTR	It is used for connecting MODEM.
7	SG	

The cable is used to connect the console port of TSR 2800-10C and the outside console terminal device. One end of the cable is a RJ45 8-pin plug and the other end is a 9-hole plug (DB9). The RJ45 plug is put into the socket of the console port on TSR 2800-10C. The console cable is numbered as RLC0301.

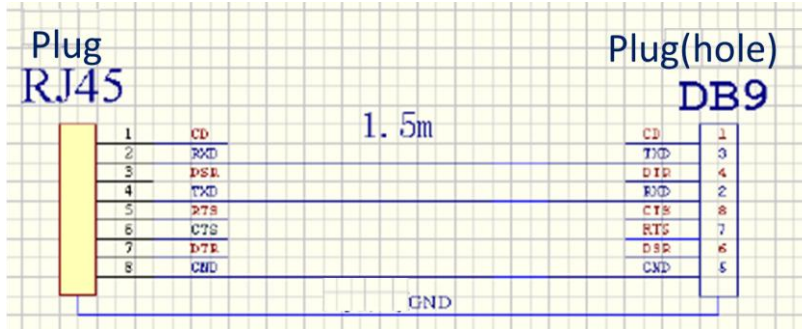


Figure 3-3 RLC0301 inner line connection

3.3.2 Connecting Gigabit Ethernet Ports

TSR 2800-10C supports 8 10/100/1000M auto-adaptation Ethernet TX ports, 2 gigabit Ethernet combo ports, UTP (RJ45) interface, and ACT, Link indicators. The 10/100/1000M auto-adaptation Ethernet port can be connected to the UTP port of the router and then to HUB through the twisted pair. The numbering order of the pins in the UTP port is the same as the console port.

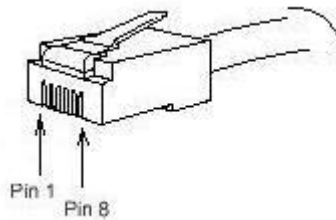
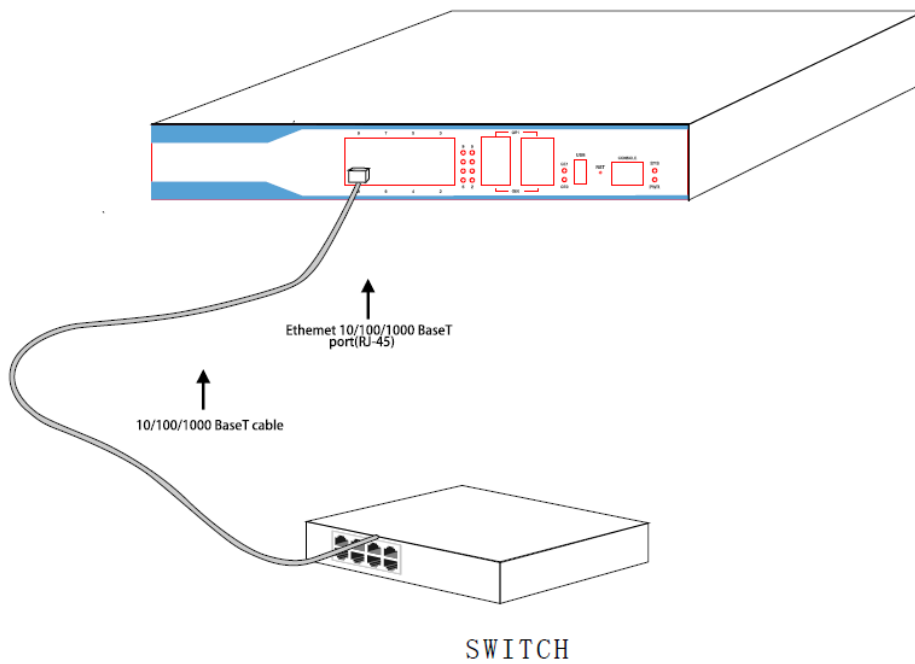


Figure 3-4 RJ-45 connector of the console port

Connecting the 10/100/1000M auto-adaptation Ethernet port and HUB

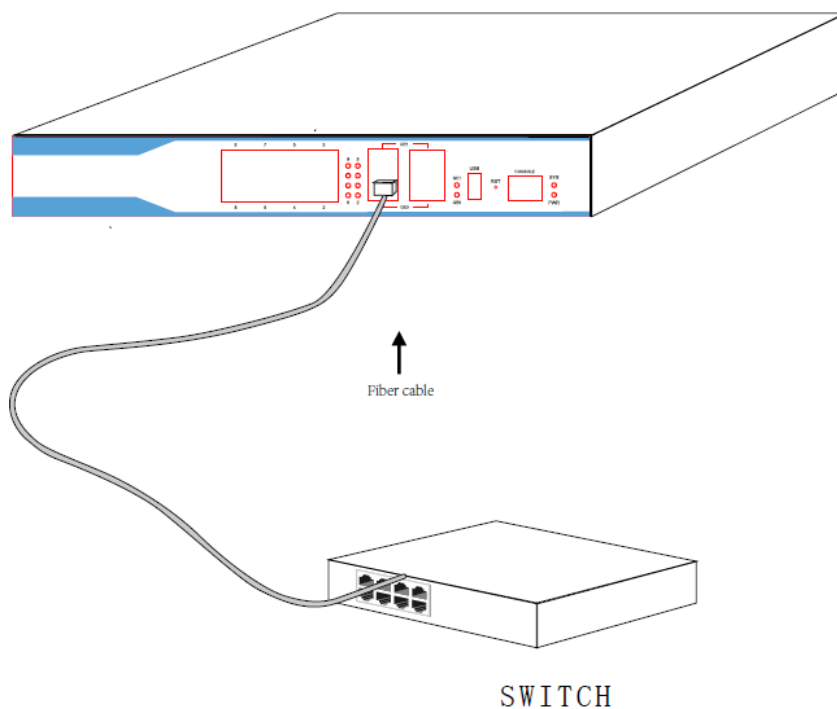


Pins of the UTP port

No.	Pin Name	English Name
1	Sending/receiving the normal phase of data 0	TP0+
2	Sending/receiving the paraphase of the data 0	TP0-
3	Sending/receiving the normal phase of data 1	TP1+
4	Sending/receiving the paraphase of the data 1	TP1-
5	Sending/receiving the normal phase of data 2	TP2+
6	Sending/receiving the paraphase of the data 2	TP2-
7	Sending/receiving the normal phase of data 3	TP3+
8	Sending/receiving the paraphase of the data 3	TP3-

3.3.3 Connecting Gigabit Ethernet Optical Ports

TSR 2800-10C supports 2 gigabit Ethernet combo ports, which can connect with other switching devices by the optical fiber cables. See the following figure:



3.3.4 Connecting to the USB Interface

The USB interface supports the physical-layer protocol of USB2.0.

The USB interface works in main mode, which can be plugged into the sub-device.

Chapter 4 Maintaining Router

Caution:

1. 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".
2. Before performing operations beside the power supply 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

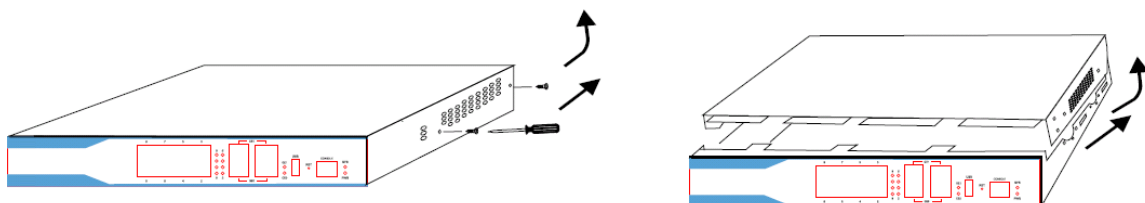
Perform the following steps to open the cover of the router:

- (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:



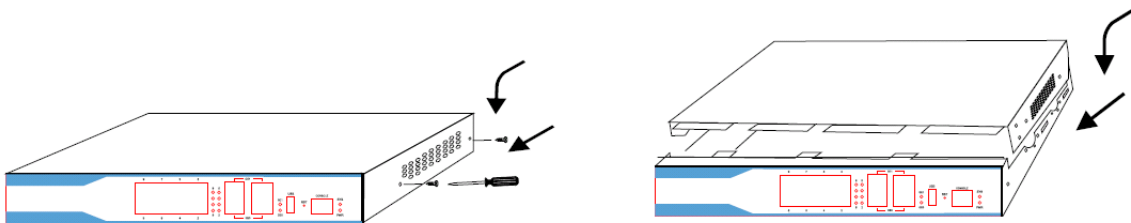
Note:

After taking off the cover, put it horizontally and avoid it to be crushed or collided.

4.2 Closing the Machine Box

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

- Put them well according to their locations and joint them together along their sides. See the following figure.



- When the cover and the bottom are closely tied, let the cover slide the slot of the front template at the bottom.
- Nail the bolt and screw it tightly with the screwdriver.
- Reinstall the router on the cabinet or the desk.
- 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 and cooling systems—power and 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.
- 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”. The working temperature of the router is from 0 to 40 Celsius degrees (32-104 Fahrenheit degrees)
- 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

- 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 supply 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 router is running. The following table shows the indicators of the TSR 2800-10C 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 system is started up, the indicator flicks.
3	0-9	1000M ports and their corresponding indicators	If the indicator is always on, the link on the port is normal. If the indicator flickers, the data is received or transmitted through the port.

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.