Ruijie RSR10-01G Router

Hardware Installation Manual (V1.00)

Ruijie RSR10-01G Series Routers Installation Manual

Revision No.:　Version 1.00

Date:

Copyright Statement

Ruijie Networks Ltd. ©2000-2011

All rights reserved.

Title to this manual shall solely remain with Ruijie Networks Ltd. Without our written permission, this document may not be excerpted, reproduced, transmitted, or otherwise in all or in part by any party in any means.

Ruijie Networks Ltd. reserves the right to update this manual without notice.

Preface

Thank you for buying Ruijie series of routers. This manual details the steps that you need to follow to install them.

Version Description

This manual applies to Ruijie RSR10-01G routers.

Contents

This manual provides the hardware features, installation setting, maintenance, and fixing of common problems of Ruijie RSR10-01G routers.

For your safety, the information in this manual must be followed to prevent property damage and personal injury.

✏️ **Suggestion**	It is suggested that the router should be installed and configured by professional technicians who are familiar with electronic environment and cable connection and have experience in installing and configuration routers.

This manual consists of the following chapters:

- **Chapter 1 Product Overview**

  Presents an introduction to Ruijie *RSR10-01G* routers and the system features

- **Chapter 2 Preparing for Installation**

  Concerned with the environmental requirements for installing Ruijie *RSR10-01G* routers, precautions for installation, and the tools needed.

- **Chapter 3 Installing Router**

  Presents mechanical installation, power supply connection, backup port cable connection, and console port connection of Ruijie *RSR10-01G* routers

- **Chapter 4 Starting and Configuring Router**

  Provides initial start information and initial configuration of the router.

- **Chapter 5 Troubleshooting**

  Offers troubleshooting tips during the installation

- **Chapter 6 Use of Cables**

  Introduces the use of affiliated cables.

	This manual only provides information on the installation of Ruijie RSR10-01G routers. The routers must be configured before use. For information on the configuration of the routers, see the *Configuration Reference*. For information about functions supported by the routers, see the release notes of the relating software.
Note	Information found on the by-packed CD about the description and configuration shall prevail. Ruijie Networks Ltd. reserves the right to update it without notice.

Related Documents

For the command description and software configuration guide of the RSR10-01G routers, please refer to the related command reference manual and configuration guide.

Obtaining Documentation

You can obtain the documentation you need through the following channels:

Internet:

You can obtain the latest on-line documentation at:

http://www.ruijie.com.cn

Information Feedback

- If you read the product documentation of Ruijie Networks on the Internet, you can send any of your comments on our documentation on line.
- You can also send any of your comments on our documentation via E-Mail at:
  service@ruijie.com.cn
- You can also mail any of your comments on our documentation to:
  Address: Juyuanzhou 19-22 Star-net Ruijie Science-based Industrial Park, 618 Jinshan Road, Fuzhou city

  Ruijie Networks Ltd.

  Postcode: 350002

Your valuable inputs are highly appreciated.

Obtaining Technical Assistance

Ruijie Networks provides excellent technical support services for all our products. You can obtain the technical assistance you need through any of the following channels:

- **Ruijie Networks Website**

  From which you can obtain the latest product documentation, causes and problems analysis of product faults, application solutions, and software upgrade.

- **Customer service center of Ruijie Networks**

  Customer Service Center of Ruijie Network provides all customers with needed technical assistance: product, technology and solutions. The customer service center provides responsive technical support for your product installation problems, software configuration problems, and other network performance problems.

- **Technical Support Website:** http://support.ruijie.com.cn

- **Technical Support E-mail:** service@ruijie.com.cn

- **Call center hot-line:** 4008-111-000

- **Service complaint hot-line:** 0591-83057315

Target Readers

This manual is intended for the following readers:

- Network engineers
- Technical salespersons
- Network administrators

Conventions in this Document

1. Universal Format Convention

Arial: Arial with the point size 10 is used for the body.

Arial: The warnings and notes use the Arial font, with lines added at the top and bottom for separation from the main body.

Terminal Display: self-defined Terminal Display, in Courier New front, with the size of 8, meaning the message displayed on the screen. User's entries among the information shall be indicated with bolded characters.

2. Signs

Conspicuous signs are used in this document to alert the special attentions during the operation. The meanings of these signs are described as below:

⚠️ **Warning**	Warning, danger or alert in the operation.

⚠️ **Caution**	Precaution, attention or reminder in the operation.

✏️ **Note**	Note, prompt, tip or any other necessary supplement or explanation for the operation.

Contents

1

Product Overview

The *RSR10-01G* router is a data communication product independently developed by Ruijie Networks Co. Ltd. by using advanced semiconductor technologies and communication control technologies.   Ruijie series routers are developed in full compliance with international standards, therefore, it is similar to major routers in terms of use and configuration approach. Network administrators who are familiar with the configuration commands of major routers may use the routers without receiving training first.

1.1   RSR10-01G Series Routers

1.1.1   RSR10-01G

1.1.1.1   Overview

The RSR10-01G router is an finance-oriented network product independently developed by Ruijie Networks. Designed with the 32-bit high-performance RISC microprocessor technology, it is based on our independently developed high-performance network operating system platform, which is compatible with the standard configuration GUIs of the mainstream products and delivers easy configuration. The RSR10-01G router provides a great variety of network security features.

The RSR10-01G router supports three 3G standards: WCDMA, CDMA2000 and TD-SCDMA. Users could select the routers: RSR10-01G-W, RSR10-01G-C and RSR10-01G-TD, which correspond to the three standards respectively, as needed.

1.1.1.2   Highlights

- **Access density and processing capability**

  RSR10-01G supports one Ethernet interface and one console interface(RJ45).

- **Reliability**

  Backup center technology greatly improving network reliability, various backup modes available for high reliability requirements

- **Compatibility**

  Fully compatible with equipment of other suppliers

- **Power supply**

By using high-quality standard power supplies, it provides protection for surge, overvoltage, undervoltage, overcurrent and other power problems to deliver stable and reliable output, and supports transient power interruption protection.

■ **External structure**

Using the standard chassis shielding electromagnetic radiation, it can be mounted on the rack. It is highly resistant to shock, high/low temperatures, and electromagnetic radiation, and works stably.

1.1.1.3   Indicators and Appearance

Figure 1-1 Front panel of Ruijie RSR10-01G router
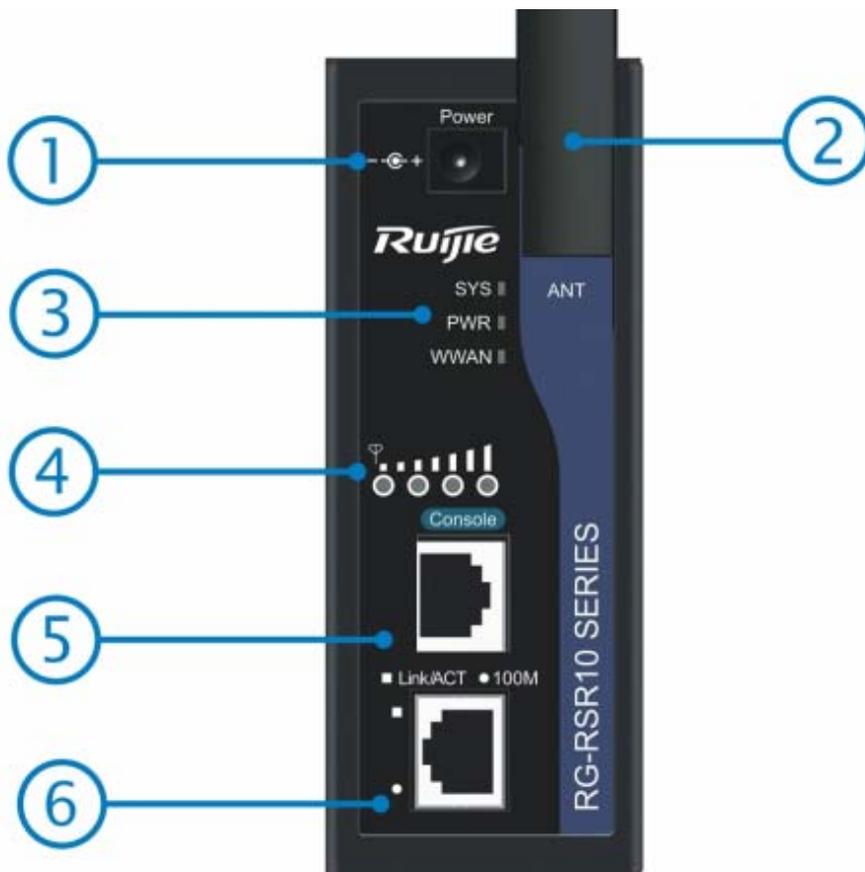
① DC power socket

② Antenna SMA connector

③ Status indicator

④ Signal intensity indicator

⑤ Console port

⑥ FE RJ45 port

Indicator	Description
SYS	Solid on: the system has finished the initialization. OFF: The system is initializing or the initialization failed.
PWR	Solid on: The power supply is normal. OFF: The power supply is abnormal.
WWAN	Solid on: The link is connected. OFF: The link is not connected. Flashing: Wireless data is being transmitted.
Link/ACT	Solid on: The link is connected. OFF: The link is not connected. Flashing: The data is being transmitted.
100M	Solid on: The data is transmitted at the rate of 100Mbps. OFF: The data is transmitted at the rate of 10Mbps or the link is not connected.

1.1.1.4   Parameters

The following table lists the parameters of RSR10-01G:

Item	RSR10-01G
Default Configuration	One Console port, one 10/100M Ethernet port
Processor	RISC high performance processor
SDRAM	128MB
Boot Rom	2MB
Data NAND FLASH	32MB
Dimensions (W×H×D)	120mm×46mm×100mm
Input voltage	Power adapter, AC input: 100~240V 50~60Hz
Whole-system power consumption	< 12W
Operating ambient temperature	0~50°C
Storage ambient temperature	-40~70°C
Operating humidity	10~90%RH

For the RSR10-01G routers, the FE RJ-45 port can use the standard cat-5 8-core UTP with RJ-45 connectors.

In the auto-negotiation mode, both the crossover cable and straight through cable are supported; while in the forced mode, only the crossover cable is supported.

Note

The following table shows the line order of standard network cables:

Pin Number	A	B
1	orange-white	orange-white
2	orange	orange
3	green-white	green-white
4	blue	blue
5	blue-white	blue-white
6	green	green
7	brown-white	brown-white
8	brown	brown

The following table shows the line order of crossover cables:

Pin Number	A	B
1	orange-white	green-white
2	orange	green
3	green-white	orange-white
4	blue	blue
5	blue-white	blue-white
6	green	orange
7	brown-white	brown-white
8	brown	brown

1.2   Features of RSR10-01G Routers

For software functions, refer to the supporting software description.

As some interfaces such as asyn serial interface and CE1 interface are not supported by the RSR10-01G, the related software functions described in the software manual are not supported.

Note

1.2.1   Rich Protocol Support

■   Ruijie RSR10-01G routers are applicable to various network environments.

■   Providing RJ45 interfaces for twisted pairs, supporting Ethernet, ARP, and 802.1Q protocols.

■   Supporting various WAN protocols, including X.25, frame relay, HDLC, PPP, and SLIP.

■   The network layer supports the TCP/IP and implements the protocols such as IP, ICMP, IGMP, TCP and UDP.

■   It supports multiple dynamic routing protocols over IP, including RIP (V1/V2), OSPF (V1/V2), and policy-based routing.

■   It supports the SNMP.

■   It supports TELNET and reverse TELNET.

■   It supports DHCP Server, DHCP Client, DHCP Relay, and TFTP.

■   It supports backup, VRRP protocol, and provides high reliability.

■   It supports PPPOE.

■   It supports DNS static domain name resolution and DDNS.

■   It supports upgrade via the asynchronous file transfer protocols of X-MODEM.

■   It supports NAT, ACL and AAA.

■   It supports IPSEC, L2TP, and PPTP.

1.2.2   Friendly User Interfaces

■   It provides standard operating interfaces and intuitive configuration procedures with each command offering detailed on-line help.

■   The operation manual provides descriptions and examples of each command and offers comprehensive fault analysis.

1.2.3   Powerful Backup Function

■   It supports route backup through the routing protocols.

■   It supports the interface backup function.

1.2.4   Rich Diagnosis and Management Tools

■   It provides complete debug and tracing means and offers a full range of DEBUG commands for easier accurate location of various network faults.

■   It provides a great array of statistics and information display functions to allow the users to easily know the network performance and running status.

■   It supports SNMP for monitoring and control via various general NM software.

■   It supports login through via terminals:

●   Configuration via the Console port

- Login and configuration via TELNET
- Login and configuration via remote dial-up

1.2.5   Superior Security

- Using perfect IP packet filtering technology, it enforces strict check on network addresses, port numbers or protocol types.
- It supports AAA and RADIUS.
- Realizing PAP and CHAP protocols on PPP, and supporting callback function.
- It provides level-based password check and security log.
- It implements dynamic routing protocol password/key authentication in OSPF and RIP V2.
- It supports NAT.
- Providing IPSEC/IKE data encryption.
- Supporting GRE tunnel encapsulation.
- VLAN technology

1.2.6   Easy Upgrade

- It supports the asynchronous file transfer X-MODEM protocol, which allows the download of new versions via the Console port in various operation environments (Windows XP, Windows NT, UNIX, and DOS).
- It supports the download of the new software versions via TFTP.
- It supports BOOTROM on-line upgrade.

2 Preparing for Installation

2.1 Safety Precautions

Routers play an important role in the network connection, and their normal working affects the operation of the whole network.

The following suggestions are reccommended during the installation and use of routers:

- Do not place the router in a wet place and prevent any liquid from entering into it.
- Install the router in a place away from heating sources.
- Make sure the normal grounding.
- Always wear anti-static wrist straps during installation and maintenance.
- Do not plug/unplug the antenna when power on
- Do not plug/unplug any cables when energized.
- Do not wear any loose clothes as they may hook the components to avoid damages. Therefore, fasten your belts, scarves and tuck well the sleeves.
- Keep the tools and components away from human passages.
- UPS is recommended to avoid power failure as well as power interference.

2.2 Installation Environment Requirements

Ruijie routers are intended for use indoors. For their normal operation and maximum service life, they must be installed at locations that meet the following requirements:

- Temperature and Humidity Requirements
- Cleanness Requirements
- Anti-static Requirements
- Anti-interference Requirements
- Anti-lightning Requirements
- Installation platform check

2.2.1 Temperature and Humidity Requirements

To ensure the normal operation and prolong the service life of the router, you should keep proper temperature and humidity in the equipment room. If the equipment room has a high

humidity for a long time, the insulating materials may have poor insulation, electrical leakage or other mechanical performance degrade may be caused. On the other hand, if the relative humidity is too low, the insulating washers may become dry and shrink, which may cause loosened screws. In addition, static electricity may easily occur in dry weathers, harming the internal circuitry of the routers. High temperature will speed the aging of insulation materials, lowering routers' reliability and shorten their lives.

The temperate and humidity requirements of Ruijie RSR10-01G router are as follows:

- Temperature: 0°C~50°C
- Relative humidity: 10%–90%

Note	The ambient temperature and humidity refer to the values measured at the place 1.5 m above the floor and 0.4 m in the front of the router rack without protective boards. The temperature and humidity requirement may be different for different products. For the specifics, refer to the information of the characteristic parameters of each product.

2.2.2   Cleanness Requirements

Dust also poses a major threat to the safe running of the routers. Indoor dust may be absorbed by the static electricity on the routers, causing loose contact, which may not only shorten the service life of the equipment, but also cause communication faults. The electrostatic attraction is easier to occur when the relative humility is low.

The following table gives Ruijie routers' requirements on dusts density and diameter in equipment room.

Maximum diameter (μm)	0.5	1	3	5
Maximum density (number of particles per cubic meters)	1.4×10^7	7×10^5	2.4×10^5	1.3×10^5

In addition to dusts, there are also strict requirements for the sulphides in the air of the equipment room. Such harmful gases will accelerate the corrosion of the metal and the aging of some components. The specific restrictions for the harmful gases such as SO_2, H_2S, NO_2, NH_3 and Cl_2 are as shown below:

Gas	Average (mg/m^3)	Maximum (mg/m^3)
SO_2	0.2	1.5
H_2S	0	0.03
NO_2	0.04	0.15
NH_3	0.05	0.15
Cl_2	0.01	0.3

2.2.3   Anti-static Requirements

The circuitry of the routers is designed with electrostatic protection, but excessive static electricity may still damage the circuit boards of the routers. The static electricity of the network connected with the routers comes largely from the following sources:

■   Outdoor electric field produced by the high-voltage supply cable, lightning, etc;

■   Indoor systems such as the indoor floor and the entire structure.

Therefore, the following should be done to avoid damage from static electricity:

■   Proper grounding of the equipment and floor

■   Indoor dust prevention

■   Proper temperature and humidity

■   Wear antistatic wrist straps and antistatic lab coat when touching the circuit board

■   Put the removed circuit board face up on an antistatic workbench or in an electromagnetic shielding bag.

■   When observing or carrying the detached circuit board, touch the external edge of the board and avoid touching the parts on the board directly with hand.

2.2.4   Anti-interference Requirements

Anti-interference means the electromagnetic and current interference. Below please find the anti-interference requirements:

■   Effective measures should be taken for the power system to prevent the interference from the electric grid.

■   The working ground of the network output engine should be preferably separated from the grounding device of the power equipment or the anti-lightning grounding device, with a large distance.

■   Keep away from the high-frequency large-current devices like high-power radio transmitters and radar transmitters.

■   Take electromagnetic measures when necessary.

2.2.5   Anti-lightning Requirements

The network output engine is provided with anti-lighting protection. However, as an electric device, it is still vulnerable to powerful lightning. Therefore, measures must be taken to prevent lightning:

■   Ensure good contact between the grounding cable of the router and the ground.

■   Ensure that the neutral point of the AC power socket is in good contact with the ground.

■   To enhance the anti-lightning effect of the power supply, a lighting arrester may be added in front of the input of the power supply.

2.2.6   Checking the Installation

Whether the router is installed in a cabinet or placed on a workbench, make sure:

■ Make sure sufficient spacing is reserved at the air inlets and outlets of the routers for good heat dissipation of the routers.

■ The cabinet or workbench is firm enough for supporting the router and its mount accessories.

■ Verify that the cabinet and workbench are properly mounted.

2.3   Installation Tools and Equipment

For smooth installation, please make ready the following:

■ Installation tools

■ Connection cables

■ Related devices

Installation tools include:

■ Cross screwdrivers

■ Straight screwdrivers

■ Anti-static wrist straps

Connection cables include:

■ Power cable

■ Configuration cable

■ Ethernet cable

■ Module interface cable

|	
Note	The Ruijie RSR10-01G routers are attached with power adapters, pole-shaped antennas, power cables, and configuration cables. The other cables should be purchased separately.

Related devices include:

■ HUB or switch

■ The configuration terminal can be a terminal or a PC installed with the HyperTerminal

■ Power socket

3 Installing Router

3.1   Procedure for Installing Router

Please follow the following procedure to install the Ruijie series routers to ensure a smooth installation and avoid any damage to the unit:
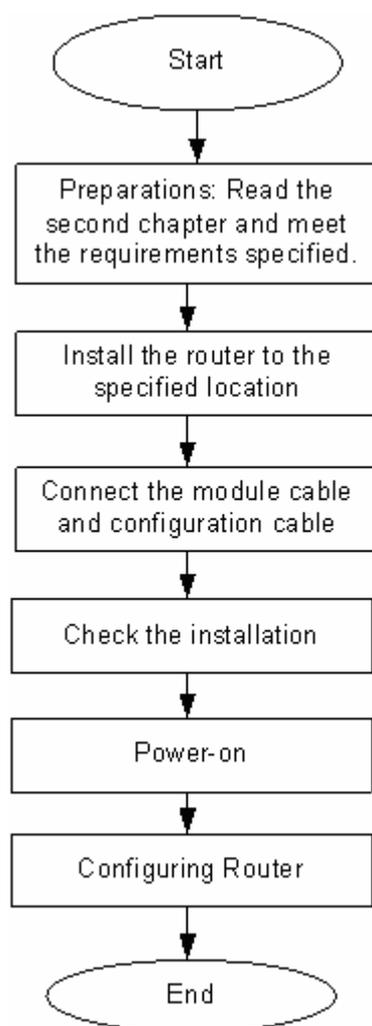
3.2　　Fastening Router

The process to mount the router to the specified location is to fasten it. At the end of the installation preparation, you need to fasten the router to the specified location. Routers are usually mounted in or on:

- Mounting in the Cabinet
- Mounting on the Workbench

3.2.1　　Mounting in the Cabinet

RSR10-01G can be mounting in the cabinet though the aluminium alloy slot and fixing accessories(the fixing accessories should be purchased separately) , as shown in the following figure.

Hanger:

3.2.2　　Mounting on the Workbench

In real environment, more often the router is placed on a clean workbench. This case is easy as long as you pay attention to the following:

- Ensure that the workbench is stable and is properly grounded.
- The supplied plastic cushion is stuck to the small hole at the bottom of the router and a room of 10cm is set aside around the router for dissipation.
- No weight is placed on the top of the router.

3.3   Installing the Power Cable and
Grounding Cable

Ruijie RSR10-01G routers support this AC power supply.

Power adapter: Input AC: 100–240V; 50-60Hz

Output DC: 12V/1.25A

Make sure that your power supply meets the requirement.

The power cable of the router is composed of three wires. You are recommended to use a single-phase power socket with a neutral connector or a multifunctional PC power socket. The neutral point of the power supply should be reliably grounded in the building. For common buildings, the neutral points have been buried into the ground during construction and wiring. You must verify if the power supply of the building has been properly grounded.

3.4   Connecting the Console

Ruijie series routers supply an EIA/TIA-232 configuration console for local configuration.Through this interface, user can complete the local configuration of the routers.

Configuration attributes:

Connector	RJ-45
Interface standard	Asyn EIA/TIA-232
Baud rate	The default is 9600bps.
Supported services	1. Command line interface 2. Connection to the character terminal

To connect the console port of the router:

Connect one end of the supplied configuration cable to the RJ45 console port of the router and the other to the DB-9 male connector used to configure the router. Please verify that a SuperTerminal is running on the PC.

4 Starting and Configuring Router

4.1   Starting Router

4.1.1   Setting Up the Configuration Environment

When you use the router for the very first time, you will need to configure the router through a console port as follows:

Step 1	As shown in the following diagram, connect the serial port of a character terminal or PC to the Console port of the router through the standard RS232 cable. Set up the local configuration environment through the Console port.
Step 2	Configure the communication setting parameters of the terminal. If a PC is used, you must run the terminal simulation program, for example, Windows HyperTerminal. The following describes the procedure with the HyperTerminal as example. Run the HyperTerminal software to set up a new connection. Select the serial port to be connected with the Console port of the router. Set the communication parameters: 9600 for baud rate, 8 data bits, 1 stop bit, no parity check, and no flow control. In addition, select VT100 as the simulation terminal type.

When you have finished building the configuration environment, you may power on the router.

4.1.2   Powering on Router

4.1.2.1   Check before Power-on

Before powering on the router, please check

- if the power cable and the grounding cable are connected correctly.
- if the power supply voltage meets the requirement.
- Whether the cable connection is correct and the PC or terminal for configuration has been started and set up.

⚠

Warning

Before powering on the router, check the position of the power switch so that you may cut power supply in time in case of accident.

4.1.2.2   Powering on Router

■   Connect the power cable to the router.

4.1.2.3   Check after Power-on

After powering on the router, please check

■   if the indicators on the front panel of the router are operating normally.

Check procedure: when the router is powered-on, the SYS indicator should be solid green when the router is working normally.

■   Whether the configuration terminal displays normally

When the router is powered on, information on router software self-decompression will appear on the terminal display.

4.1.3   Startup Process

When the router is started for the first time, the following information appears

```
************************************************

System bootstrap ...

Boot Version: RGOS 10.3(5T30), Release(113148)

Nor Flash ID: 0x00010049, SIZE: 2097152Bytes

MTD_DRIVER-5-MTD_NAND_FOUND: 1 NAND chips(chip size : 33554432) detected

MTD_DRIVER-5-MTD_NAND_FOUND: 1 nand chip(s) found on the target.

Press Ctrl+C to enter Boot Menu ......

Main Program File Name rgos.bin, Load Main Program ...



Executing program, launch at: 0x00010000

Ruijie General Operating System Software

Release Software (tm), RGOS 10.3(5T30), Release(113148), Compiled Wed Apr  6 17:01:22
CST 2011 by ngcf61
```

```
Copyright (c) 1998-2011s by Ruijie Networks.

All Rights Reserved.

Decompiling or Reverse Engineering is Not Allowed.



*Apr 14 08:45:33: %MTD_DRIVER-5-MTD_NAND_FOUND: 1 NAND chips(chip size : 33554432)
detected

*Apr 14 08:45:33: %MTD_DRIVER-5-MTD_NAND_FOUND: 1 nand chip(s) found on the target.

*Apr 14 08:45:55: %7: this is a main board, it will creat factory menu.

*Apr 14 08:46:11: %SYS-5-COLDSTART: System coldstart.

Ruijie>

Ruijie>
```

（Such information may vary with hardware configuration or software version.）

Suggestion   When using the router for the first time, it is recommended setting basic parameters using the configuration function.

4.2   Configuring Router

Before using the router, you will have to configure it as needed. For more information on router configuration, see the related *Configuration Guide* and *Command Reference.*

5 Troubleshooting

5.1   Troubleshooting Power Faults

For RSR10-01G series, you can determine whether the power system has any fault by the PWR indicator on the front panel. For the normal status of the indicator, see the description on the first chapter. If any abnormal situations occur, please make the following checks:

■   If the router power switch is in the on position.

■   If the power supply switch of the router is in the on position.

■   If the power cable is connected correctly.

■   If the power supply meets the requirements.

> If the check shows everything is normal but the SYS/PWR indicator is still off, please contact the local distributor or technical support team.
>
> **Warning**

5.2   Troubleshooting Configuration Faults

After the router is powered on, the terminal will show the startup messages described in Chapter 4 if the system is normal. If the configuration system fails, the terminal may display no messages or illegible codes.

If the terminal does not display any messages, please make the following checks:

■   Whether the power system is normal.

■   Whether the Console cable is properly connected.

If the steps above did not solve your problem, it is likely because of wrong configuration cable or wrong terminal parameter setting. Please check terminal parameters.

If illegible codes occur on the terminal, the possible cause is that terminal parameters configured do not match. Please check the terminal parameters: baud rate of 9600; 8 data bits; no parity check; 1 stop bit; no flow control; VT100 for simulation terminal.

> When the console port parameters of your router are modified, this may also lead to no display on the terminal.
>
> **Note**

6 **Cable Connection**

This chapter introduces the use of various cables and converter adapters.

6.1   Physical Cable Connection

6.1.1   Connecting the Console Interface

Generally, the console interface of a rotuer comes with the RJ45 socket to connect RJ45 cables through DB9F or connect to the DB9M serial port of PC through the RJ45-DB9 jack matching rollover cable.

Table 6-9 Connecting the Console interface

Equipment	Cable 1	Cable 2	Peer
CONSOLE interface of a router	DB9F-to-RJ45 cable	/	PC's DB9M serial interface

6.1.2   Connecting and Selecting the Antenna

The RSR10-01G router is shipped with a pole-shaped antenna. You just connect the pole-shaped antenna to the the ANT interface on the host.

In addition, users could select the sucker-shaped or helix-shaped antennas with extension cables as needed.