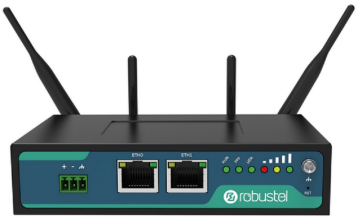


robustel R2000 cellular VPN router Installation Guide

Contents

Installation and Configuration Quick Guide
R2000 Ent

Industrial Dual Module Cellular VPN Router with Voice
5 Eth + 1 Voice/RS232/RS485 + 1 USB Host

Package Contents

Before installing your R2000 Ent Router, verify the kit contents as following.

- 1 x Robustel R2000 Ent Industrial Dual Module Cellular VPN Router with Voice
- 1 x Quick Start Guide with download link of other documents or tools

Note: If any of the above items is missing or damaged, please contact your Robustel sales representative.

Optional Accessories (sold separately)

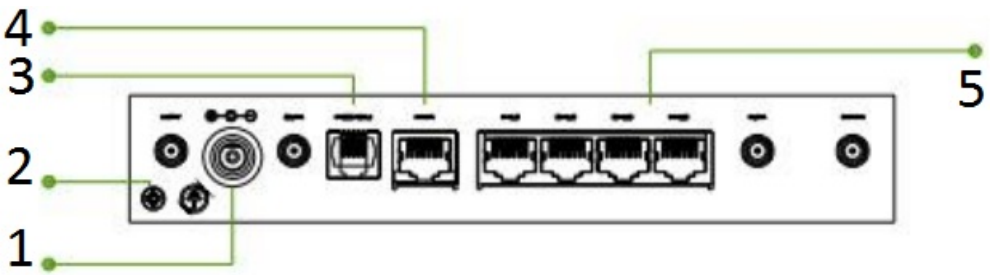
- 3G/4G SMA cellular antenna
  (stubby/magnet optional)
- RP-SMA WiFi antenna
  (stubby/magnet optional)
- Wall mounting kit
- 35 mm DIN rail mounting kit
- L-type screwdriver
- Ethernet cable
- RJ11 to RJ11 phoneconnectivity cable
- AC/DC power adapter
  (12V DC, 1.0 A; EU/US/UK/AU plug optional)

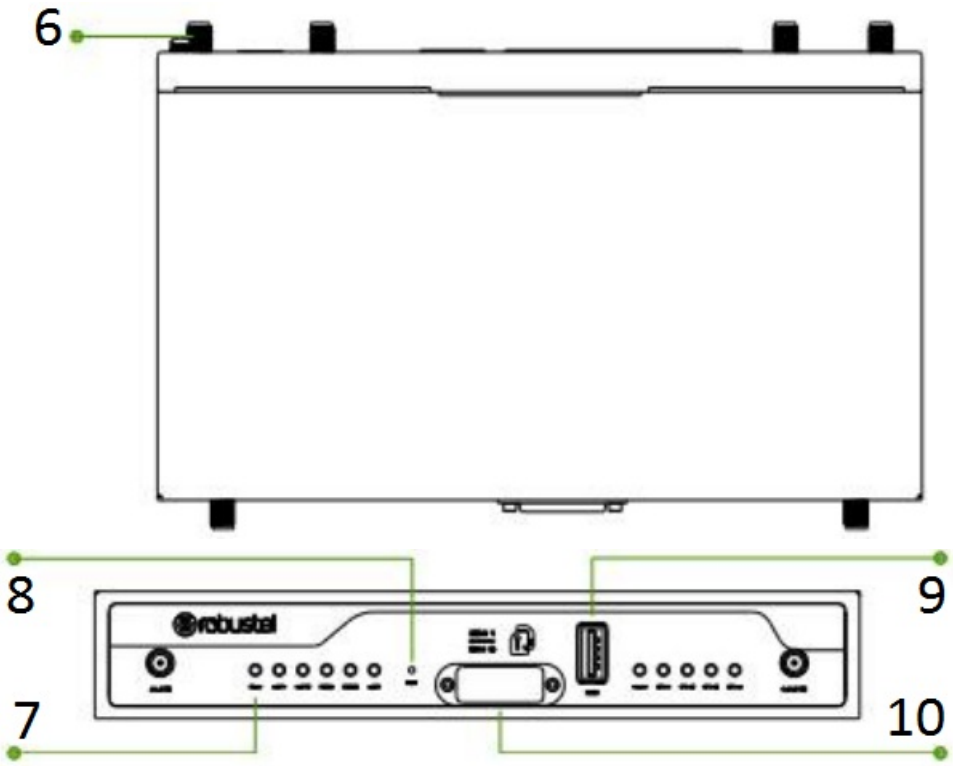
Environmental Requirements

- Input voltage: 9 to 36V DC
- Power consumption: 350 mA@12 V in idle state, 500 mA (peak) @12 V in communication state
- Operating temperature: -25 to +70 °C
- Relative humidity: 5 to 95% RH

Hardware Introduction

1. Overview

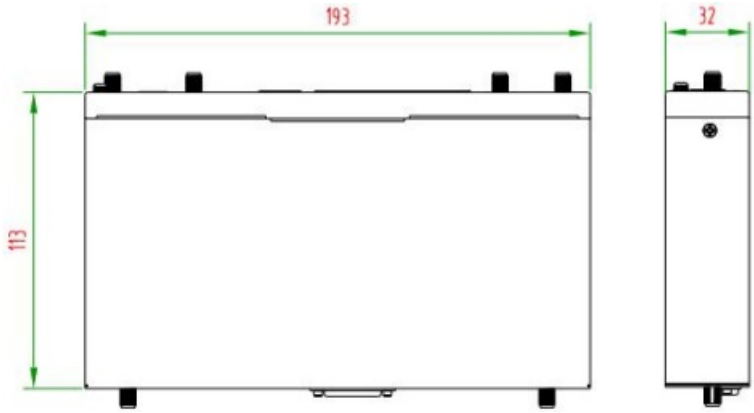




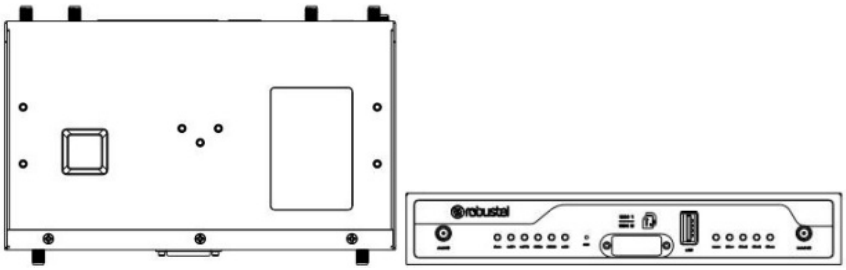
1. Power connector
2. Ground
3. FXS/COM interface
4. LAN/WAN interface
5. LAN interface
6. SMA antenna
7. Status LED indicator
8. Reset button
9. USB
10. SIM card slot

2. Dimensions

Top View



Front View Side View



Rear View Bottom View

3. RJ11 Interface

PIN	Voice	Direction
1	NC	—
2	NC	—
3	RINGD/RDC	I/O
4	TIPD/TDC	I/O
5	NC	—
6	NC	—

PIN	RS-232	Direction
1	NC	—
2	GND	—
3	RXD	Router ← Device
4	TXD	Router → Device
5	GND	—
6	NC	—

PIN	RS-485	Direction
1	NC	—
2	GND	—
3	B	RS485_D-
4	A	RS485_D+
5	GND	—
6	NC	—

4. LED Indicators

Name	Color	Status	Description
RUN	Green	On, fast blinking (250 mSec b link time)	Router is powered on (System is initializing)
		On, blinking (500 mSec blink t ime)	Router starts operating
		Off	Router is powered off
NET1 (Repre sents for the Module1)	Green	On, solid	Network is joined successfully by using the M odule1 card and worked in an optimum one
		On, blinking	Network is joined successfully but worked in a lower-level than standard
		Off	Network is not joined or joining
NET2 (Repre sents for the Module2)	Green	On, solid	Network is joined successfully byusing the Mo dule2 card and workedin an optimum one
		On, blinking	Network is joined successfully but worked in a lower-level than standard
		Off	Network is not joined or joining
RSSI1 (Repr esents for the signal value o f Module1)	Green	On, solid	High signal strength (21-31) is available
		On, slow blinking (1 sec blink time)	Medium signal strength (11-20) is available
		On, fast blinking	Low signal strength (1-10) is available
		Off	No signal
		On, solid	High signal strength (21-31) is available

RSSI2 (Represents for the signal value of Module2)	Green	On, slow blinking	Medium signal strength (11-20) is available
		On, fast blinking	Low signal strength (1-10) is available
		Off	No signal
USR-SIM	Green	On, blinking	Backup card is being used
		Off	Main card is being used
USR- Open VPN	Green	On, solid	Open VPN connection is established
		Off	Open VPN connection is not established
USR-IPsec	Green	On, solid	IPsec connection is established
		Off	IPsec connection is not established
USR-WiFi	Green	On, solid	WiFi is enabled and working properly
		Off	WiFi is disabled or not working properly
WAN/ETH1/ ETH2/ETH3/ ETH4	Green	On, solid	Connection is established
		On, blinking	Data is being transferred
		Off	Connection is not established

5. USB Interface

Function	**Operation**
Firmware upgrade	USB interface is used for batch firmware upgrading, but cannot be used for sending or receiving data from slave devices which connected to it. You can insert a USB storage device into the router's USB interface, such as a U disk or a hard disk. If there have a supported configuration file or a router firmware in this USB storage device, the router will automatically update the configuration file or the firmware.

6. Reset Button

Function	Operation
Reboot	Press and hold the RST button for 2 to 7 seconds under the operating status.
Restore to factory defaul t settings	Wait for 5 seconds after powering up the router, press and hold the RST button for a bout 16 seconds until all six LEDs start blinking one by one, and release the button t o return the router to factory defaults.

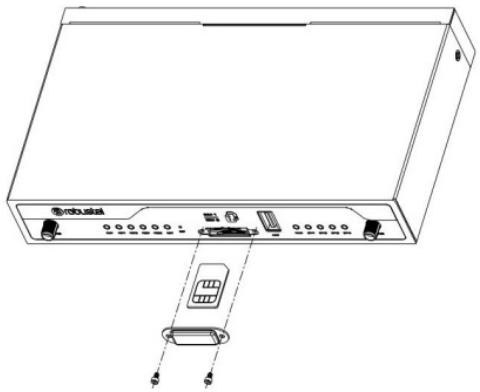
7. Ethernet Port

R2000 Ent Router has five Ethernet ports, including WAN, ETH1, ETH2, ETH3 and ETH4. And every Ethernet port corresponds to a specific LED indicator in the bottom view of the router. For details about status, see the table below.

Indicator	State	Description
Link Indicator	On, solid	Connection is established
	On, blinking	Data is being transferred
	Off	Connection is not established

Hardware Installation

1. Insert or Remove SIM Card



- **Insert SIM card**

1. Make sure router is powered off.
2. To remove slot cover, loosen the screws associated with the cover by using a screwdriver and then find the SIM card slot.
3. To insert SIM card, press the card with finger until you hear a click and then tighten the screws associated with the cover by using a screwdriver.
4. To put back the cover and tighten the screws associated with the cover by using a screwdriver.

- **Remove SIM card**

1. Make sure router is powered off.
2. To remove slot cover, loosen the screws associated with the cover by using a screwdriver and then find the SIM card slot.
3. To remove SIM card, press the card with finger until it pops out and then take out the SIM card.
4. To put back the cover and tighten the screws associated with the cover by using a screwdriver.

Note:

1. Recommended torque for inserting is 0.5 N.m, and the maximum allowed is 0.7 N.m.
2. Use the specific M2M SIM card when the device is working in extreme temperature (temperature exceeding 40 °C), because the regular card for long-time working in harsh environment will be disconnected frequently.
3. Do not forget to twist the cover tightly to avoid being stolen.
4. Do not touch the metal of the card surface in case information in the card will lose or be destroyed.
5. Do not bend or scratch the card.
6. Keep the card away from electricity and magnetism.
7. Make sure router is powered off before inserting or removing the card.

2. Attach External Antenna (SMA Type)

Attach the SMA external antenna to the router's connector and twist tightly. Make sure the antenna is within the correct frequency range provided by the ISP and with 50 Ohm impedance.
Note: Recommended torque for tightening is 0.35 N.m.

3. Ground the Router

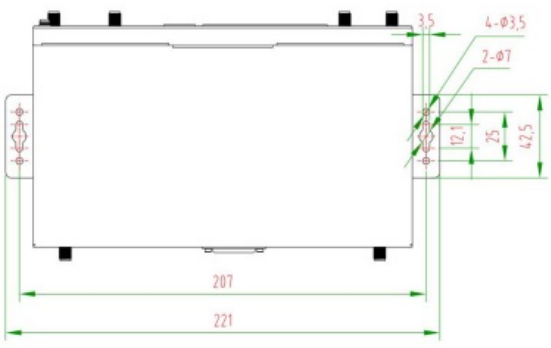
Router grounding helps prevent the noise effect due to electromagnetic interference (EMI). Connect the router to the site ground wire by the ground screw before powering on.
Note: This product is appropriate to be mounted on a sound grounded device surface, such as a metal panel.

4. Mount the Router

The router can be placed on a desktop or mounted to a wall or a 35 mm DIN rail.

Two methods for mounting the router

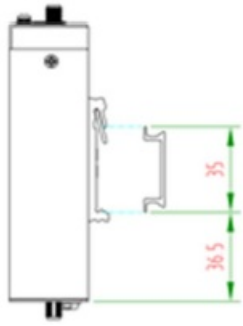
- **Wall mounting** (measured in mm)



Use 4 pcs of M2.5*4 flat head Phillips screws to fix the wall mounting kit to the router, and then use 2 pcs of M3 drywall screws to mount the router associated with the wall mounting kit on the wall.

Note: Recommended torque for mounting is 0.5 N.m, and the maximum allowed is 0.7 N.m.

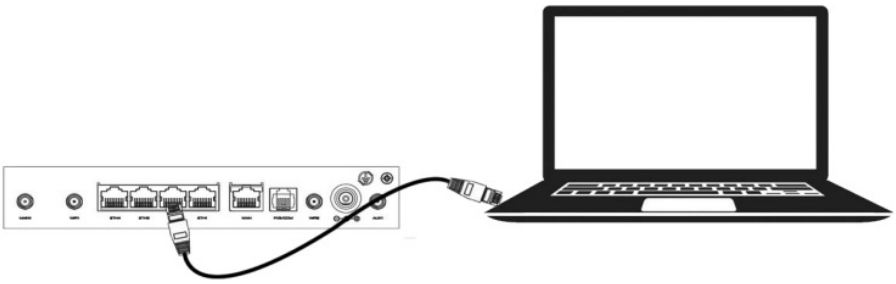
- **DIN rail mounting** (measured in mm)



Use 3 pcs of M3*6 flat head Phillips screws to fix the DIN rail to the router, and then hang the DIN rail on the bracket. It is necessary to choose a standard bracket.

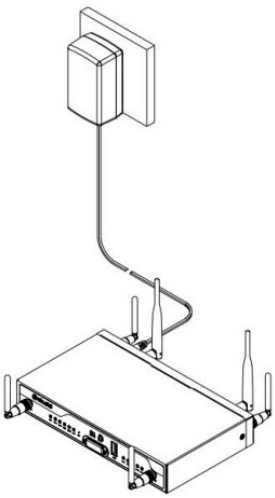
Note: Recommended torque for mounting is 1.0 N.m, and the maximum allowed is 1.2 N.m.

5. Connect the Router to a Computer



Connect an Ethernet cable to any port marked ETH1~4 at the top of the R2000 Ent, and connect the other end of the cable to your computer.

6. Power Supply

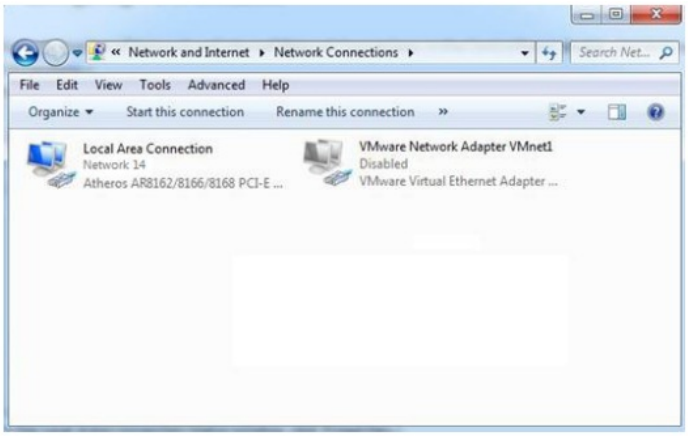


Use a DC Jack adapter to connect the router's power connector to the power supply.
Note: The range of power voltage is 9 to 36V DC.

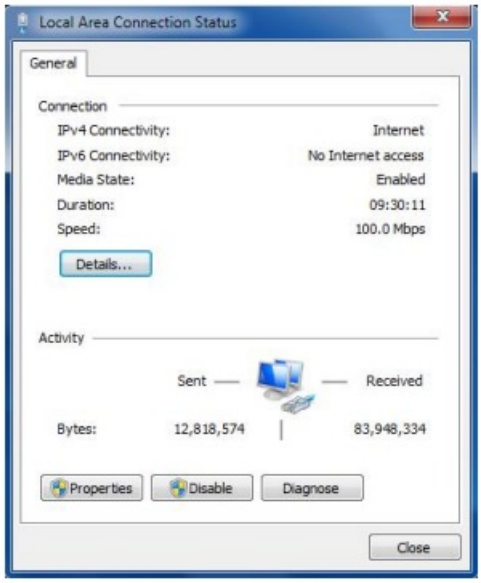
PC Configuration

There are two methods to get IP address for the PC. One is to obtain an IP address automatically from "Local Area Connection", and another is to configureastatic IP address manually within the same subnet of the router. Please refer to the steps below.
Here take **Windows 7** as example, and the configuration for windows system is similar.

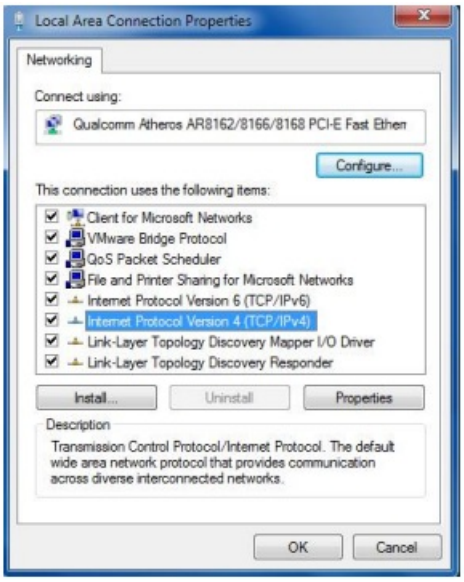
1. Click **Start > Control panel**, double-click **Network and Sharing Center**, and then double-click **Local Area Connection**.



2. Click **Properties** in the window of **Local Area Connection Status**.

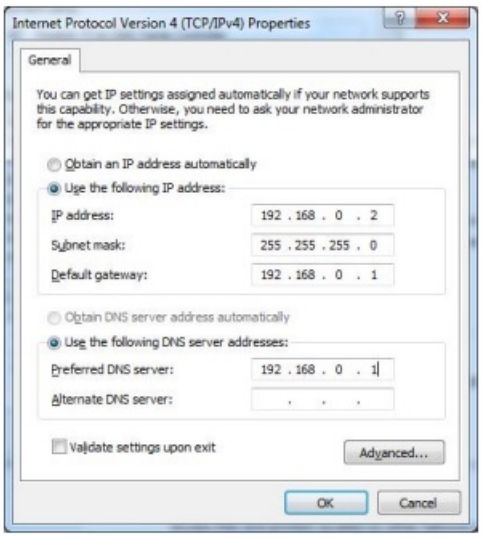


3. Choose **Internet Protocol Version4 (TCP/IPv4)** and click **Properties**.



4. Two ways for configuring the IP address of PC **Obtain an IP address automatically:**

Use the following IP address:
(Configured a static IP address manually within the same subnet of the router)



5. Click **OK** to finish the configuration.

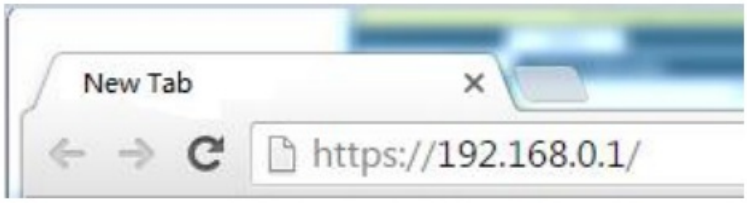
Router Configuration

1. Log in the Router

To log in to the management page and view the configuration status of your router, please follow the steps below:

1. On the PC, open a web browser such as Internet Explorer, Google and Firefox etc.

2. From your web browser, type the IP address of the router into the address bar and press enter. The default IP address of the router is 192.168.0.1, though the actual address may vary



3. In the login page, enter the username and password, choose language and then click **LOGIN**. The default username and password are “admin”.
Note: If enter the wrong username or password over six times, the login web will be locked for 5 minutes.

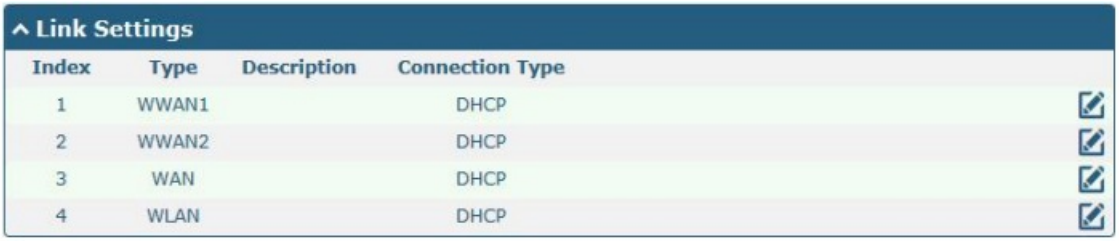
4. After logging in, the home page of the R2000 Ent Router’s web interface is displayed, for example.

Note: To configure parameters should follow this order **modify parameter 1 > Submit > modify parameter 2 > Submit > Save & Apply.**

2. Configure the Cellular Connection

Click **Interface > Link Manager > Link Manager > General Settings** , choose “WWAN1” as the primary link and “WWAN2” as the backuplink, and set “Warm Backup” as the backup mode, then click “Submit”. **Note:** Link

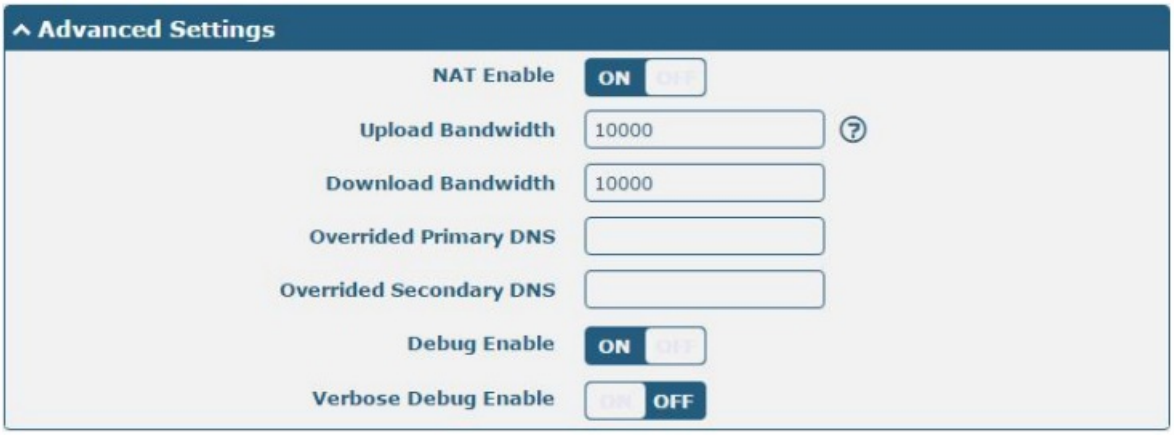
Settings allows you to configure the parameters of link connection, including WWAN1/WWAN2, WAN and WLAN. It is recommended to enable Ping detection to keep the router always online. The Ping detection increases the reliability and also costs the data traffic.



Click  on the right-most of WWAN1 to enter the configuration window.

The window is displayed as below when enabling the “Automatic APN Selection” option.

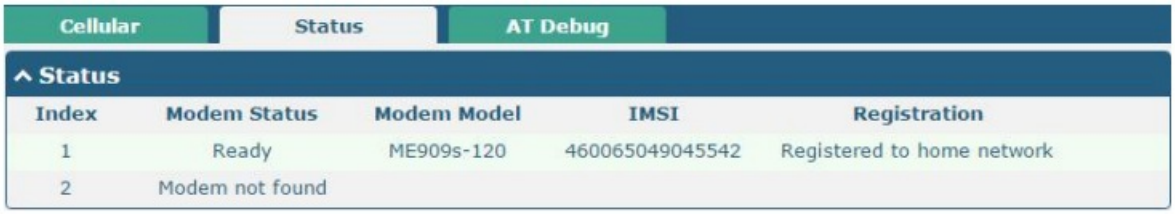
The window is displayed as below when enabling the “Ping Detection” option.



When finished, click **Submit > Save & Apply** for the configuration to take effect.

3. Check the Cellular Connection Status

Click **Interface > Cellular > Status** to view the status of the cellular connection, and click the row of status, the details status information will be displayed under the row.

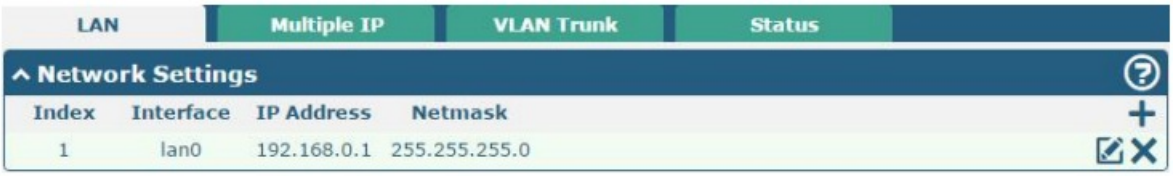


4. Configure the IP of the Router

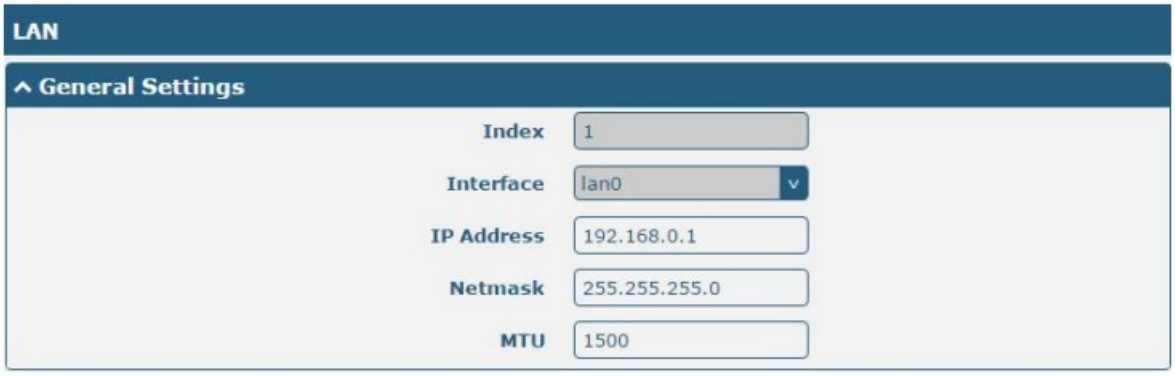
There are five Ethernet ports on R2000 Ent Router, including WAN, ETH1, ETH2, ETH3 and ETH4. The WAN on the router can only be configured as a WAN port, while ETH1~ETH4 can only be configured as LAN ports. The ETH1~ETH4 can freely choose from lan0~lan3, but at least one LAN port must be assigned as lan0. The default settings of ETH1~ETH4 are lan0 and their default IP are 192.168.0.1/255.255.255.0.

- **Configure Lan0**

Click **Interface > LAN > LAN**, click lan0's edit button to configure its configuration, and modify its IPv4 address and Netmask.



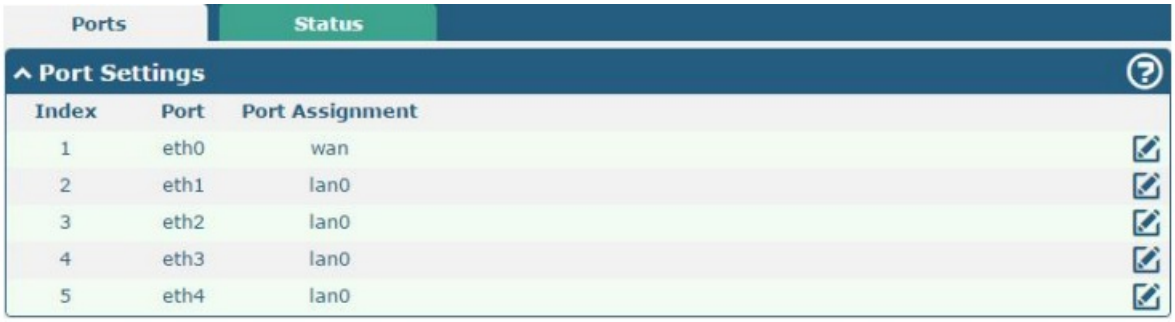
Click lan0's edit button and configure its parameters in the pop up window.



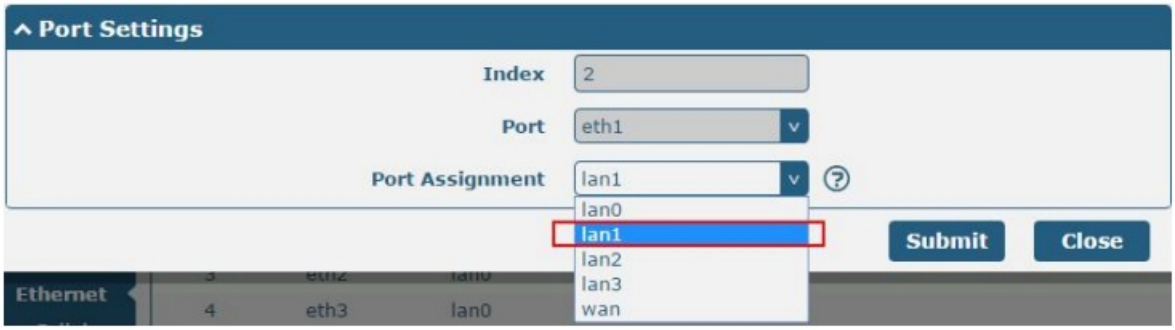
When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure Lan1**

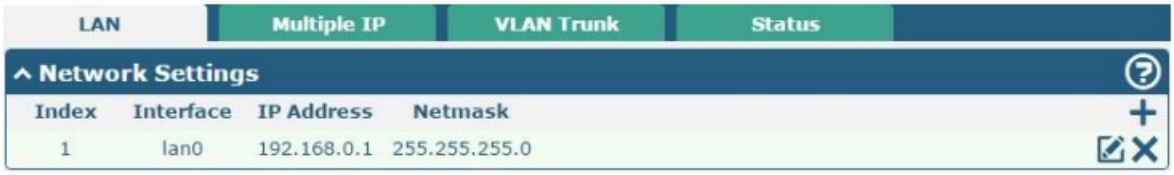
Click **Interface > Ethernet > Ports**, click eth1's edit button, chooselan1as the assigned port, and click "Submit".



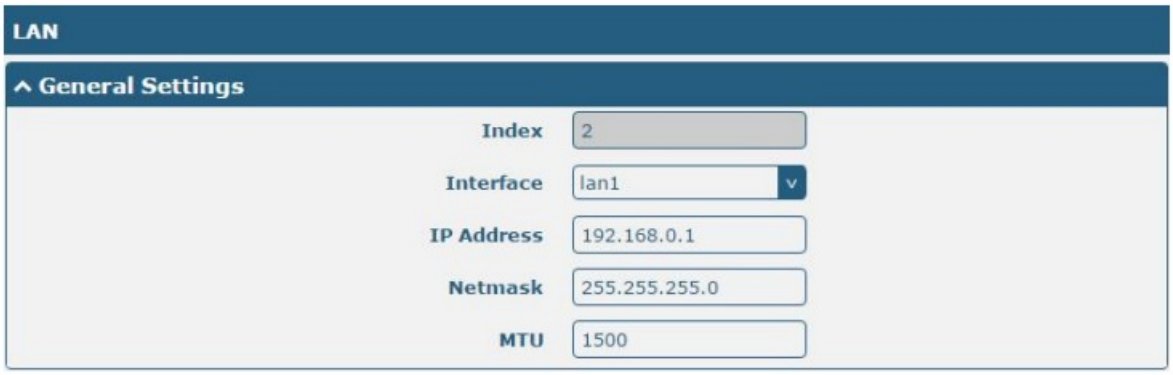
Note: By default, there is a LAN port (lan0) in the list. To beginaddinganew LAN port (lan1), please configure eth0 or eth1 as lan1 first in **Ethernet > Ports > Port Settings**. Otherwise, the operation will beprompted as "List is full".



Click **Interface > LAN** in the homepage, and click the add button.



Choose lan1 as the interface, and configure its IPv4 address and Netmask.

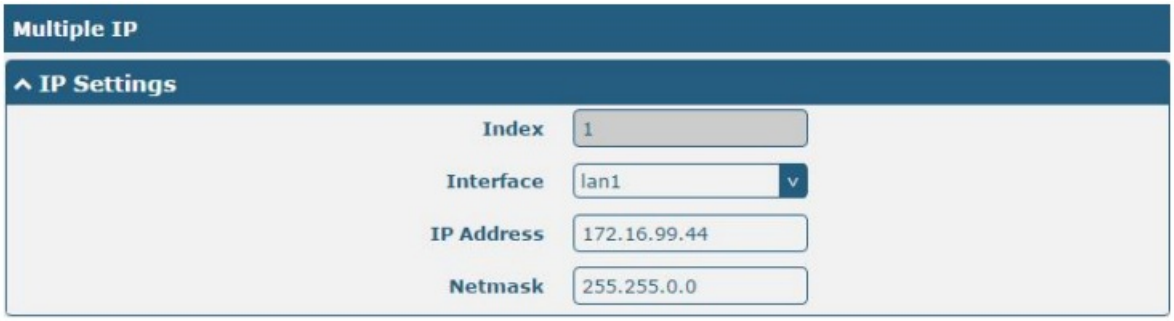


When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure Multiple IP**

Click **Interface > LAN > Multiple IP**, and click the edit button of lan0.

Note: You may click  to edit the multiple IP of the LAN port, or click  to delete the multiple IP of the LAN port. Now, click  to add a multiple IP to the LAN port.

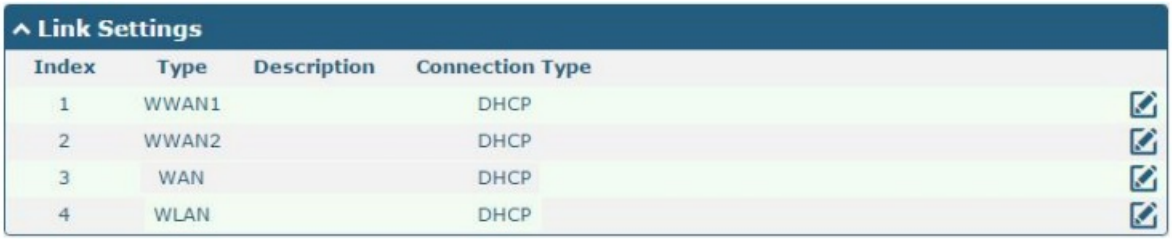


When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure WAN**

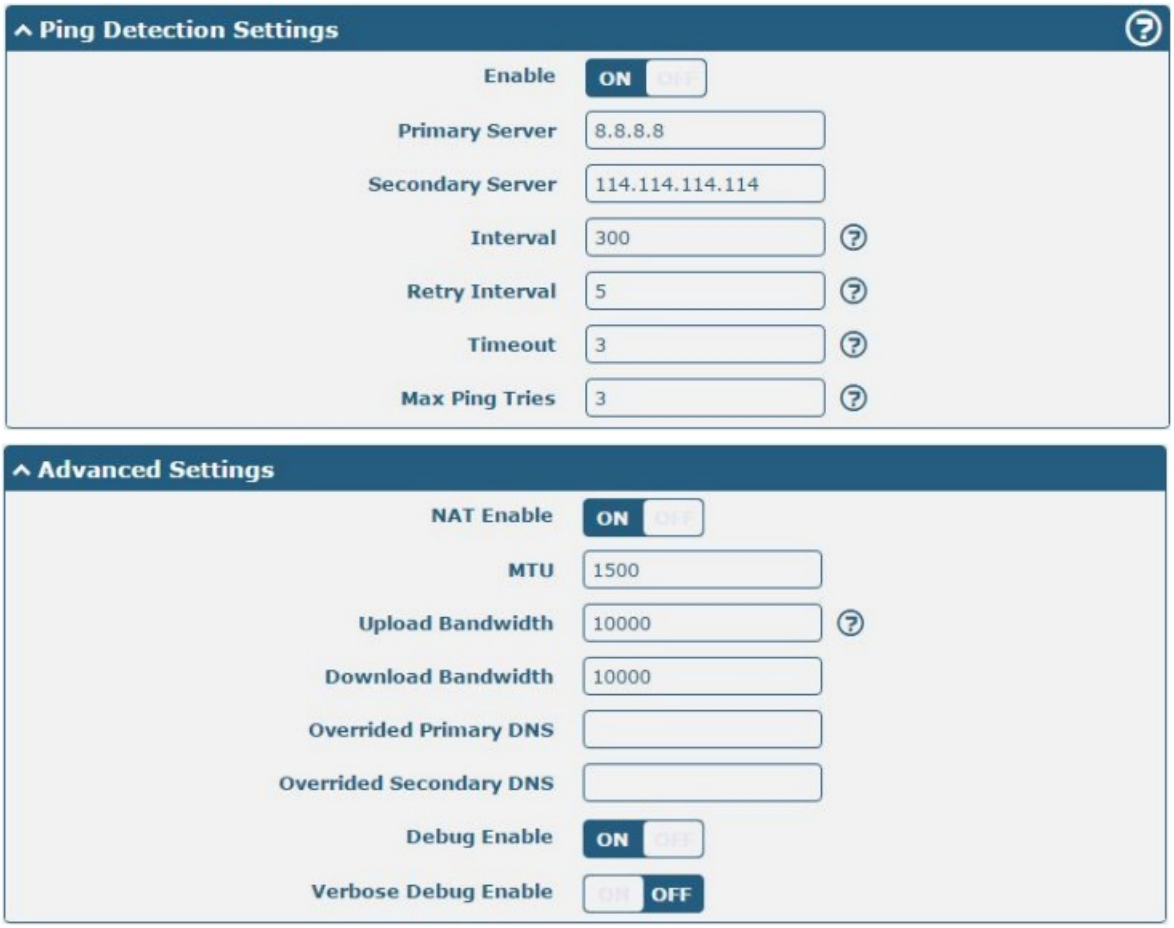
Click **Interface > Link Manager > General Settings**, choose “WAN”asthe primary link, and choose “None” as the backup link.

Click the edit button of WAN to enter its configuration window.



Configure WAN’s related parameters as below.

The window is displayed as below when enabling the “Ping Detection”option.



When finished, click **Submit > Save & Apply** for the configuration to take effect.

Guangzhou Robustel Co., Ltd.

Add: 501, Building 2, No.63 Yong'an Avenue, Huangpu District, Guangzhou, China 510660
Tel: 86-20-82321505
Email: support@robustel.com
Web: www.robustel.com

Documents / Resources

	robustel R2000 cellular VPN router [pdf] Installation Guide R2000 cellular VPN router, cellular VPN router, VPN router

References

- 4G/LTE/5G/Cellular Routers, Gateways and Modems for Industrial IoT - Robustel