Installation and Configuration Quick Guide

R3000

Industrial Dual SIM Cellular VPN Router

2 Eth + 1 RS-232 + 1 RS-485 + 1 USB Host

Package Contents

Before installing your R3000 Router, verify the kit contents as following.

- 1 x Robustel R3000 Industrial Dual SIM Cellular VPN Router (GPS/WiFi optional)
- 1 x 3-pin 5 mm male terminal block with lock for power supply
- 1 x 7-pin 3.5 mm male terminal block with lock for serial port, I/O and console port
- 1 x *Quick Start Guide* with download link of other documents or tools

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
- Ethernet cable
- AC/DC power adapter (12V DC, 1.5 A; EU/US/UK/AU plug optional)

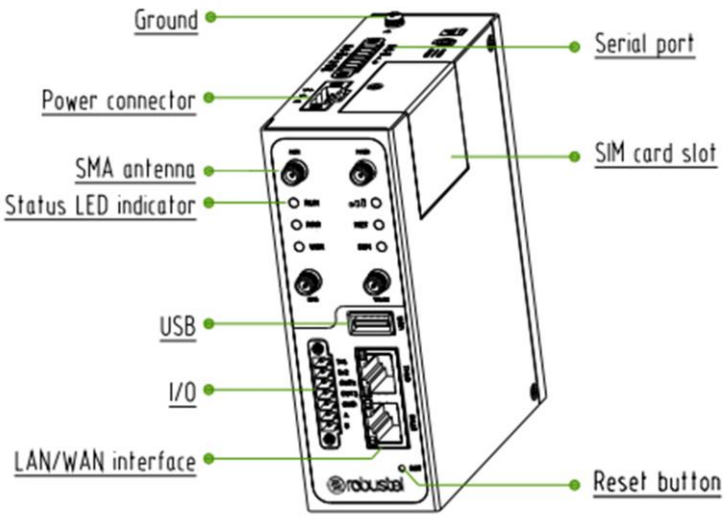
Note: If any of the above items is missing or damaged, please contact your Robustel sales representative.

Environmental Requirements

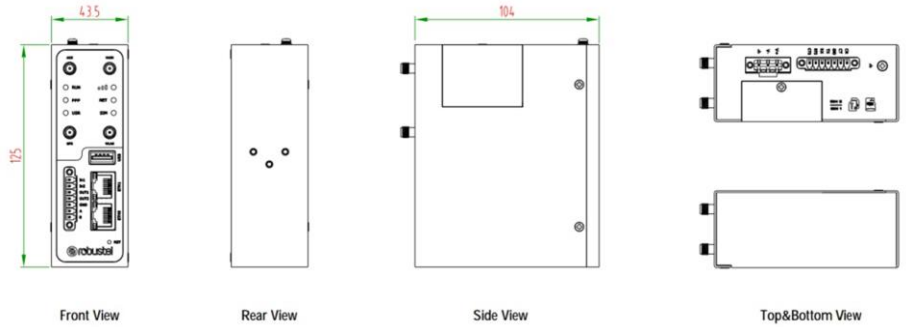
- Input voltage: 9 to 60V DC
- Power consumption: 100 mA@12 V in idle state, 400 mA (peak) @12 V in communication state
- Operating temperature: -40 to +75 °C
- Relative humidity: 5 to 95% RH

Hardware Introduction

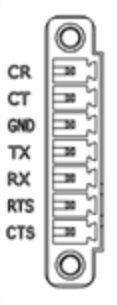
1. Overview



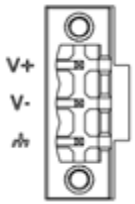
2. Dimensions

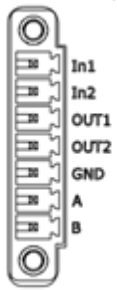


3. PIN Assignment



PIN	Debug	RS-232	Direction
1	CR	--	Router ← Device
2	CT	--	Router → Device
3	GND	GND	--
4	--	TXD	Router → Device
5	--	RXD	Router ← Device
6	--	RTS	Router → Device
7	--	CTS	Router ← Device





PIN	Power	DI/DO	RS-485	Direction
8	Positive	--	--	--
9	Negative	--	--	--
10	GND	--	--	--
11	--	Input 1	--	Router ← Device
12	--	Input 2	--	Router ← Device
13	--	Output 1	--	Router → Device
14	--	Output 2	--	Router → Device
15	--	GND	--	--
16	--	--	Data+(A)	Router ↔ Device
17	--	--	Data- (B)	Router ↔ Device

4. LED Indicators

Name	Color	Status	Description
RUN	Green	On, fast blinking (250 mSec blink time)	Router is powered on (System is initializing)
		On, blinking (500 mSec blink time)	Router starts operating
		Off	Router is powered off
PPP	Green	On, solid	Link connection is working
		Off	Link connection is not working
USR-OpenVPN	Green	On, solid	OpenVPN connection is established
		Off	OpenVPN 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
	Green	On, solid	High Signal strength (21-31) is available
	Yellow	On, solid	Medium Signal strength (11-20) is available
	Red	On, solid	Low Signal strength (1-10) is available
	--	Off	No signal
NET	Green	On, solid	Connection to 4G network is established
	Yellow	On, solid	Connection to 3G network is established
	Red	On, solid	Connection to 2G network is established
	--	Off	Connection to network is not established or establishing
SIM	Green	On, blinking	Backup card is being used
		Off	Main card is being used

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 at least 5 seconds under the operating status.
Restore to factory default settings	Wait for 5 seconds after powering up the router, press and hold the RST button until all six LEDs start blinking one by one, and release the button to return the router to factory defaults.

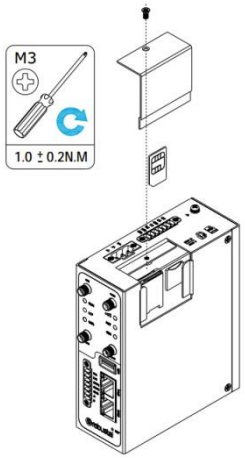
7. Ethernet Ports

There are two Ethernet ports on R3000 Router, including ETH0 and ETH1. Each Ethernet port has two LED indicators. The yellow one is a link indicator, while the green one is a speed indicator. 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
Speed indicator	On, solid	100 Mbps mode
	Off	10 Mbps mode

1. Insert or Remove SIM Card/Micro SD Card

- **Insert SIM card/Micro SD 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/SD card slot.
3. To insert SIM card/Micro SD 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 or Micro SD 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/SD card slot.
3. To remove SIM card/Micro SD card, press the card with finger until it pops out and then take out the 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 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 an external SMA antenna to the router's antenna 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. Connect the Router to a Computer

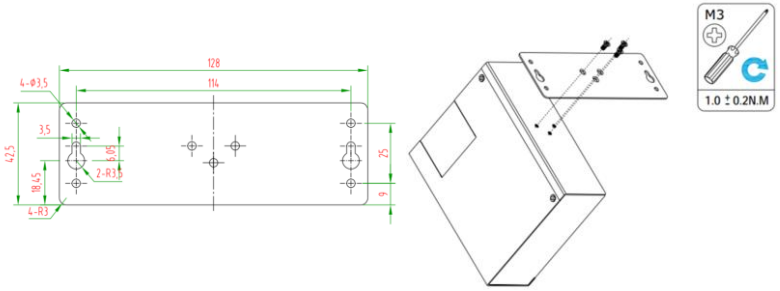
Connect an Ethernet cable to a port marked ETH0 or ETH1 at the front of the R3000, and connect the other end of the cable to your computer.

5. 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

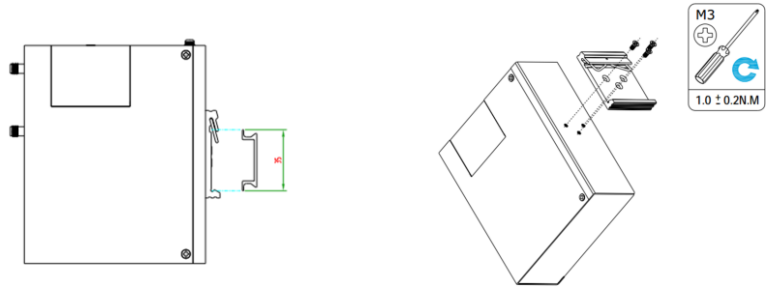
- **Wall mounting** (measured in mm)



Use 3 pcs of M3*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.

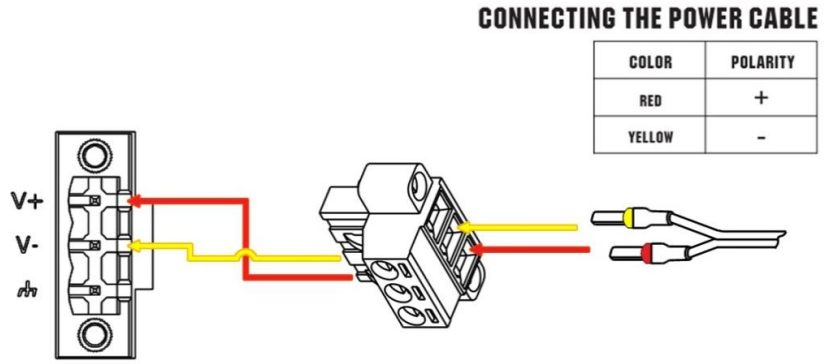
- **DIN rail mounting** (measured in mm)

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.

6. Power Supply



R3000 Router supports reverse polarity protection, but always refers to the figure above to connect the power adapter correctly. There are two cables associated with the power adapter. Following to the color of the head, connect the cable marked red to the positive pole through a terminal block, and connect the yellow one to the negative in the same way. The last step is to plug the power adapter into your socket.

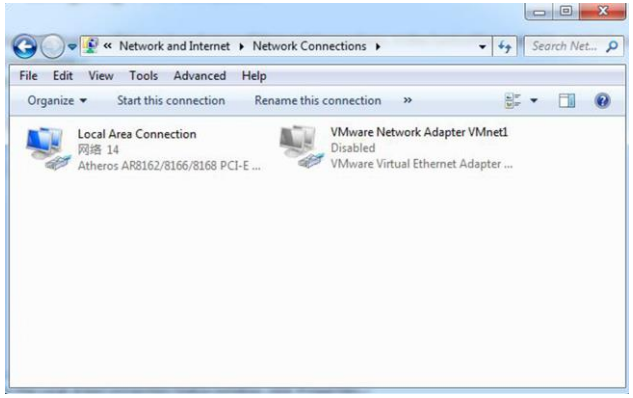
Note: The range of power voltage is 9 to 60V DC.

PC Configuration

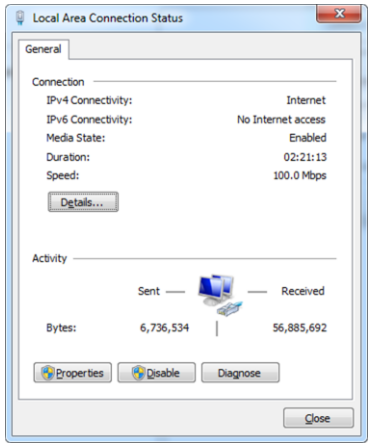
There are two methods to get IP address for the PC. One is to obtain an IP address automatically from “Local Area Connection”, and another is to configure a static IP address manually within the same subnet of the router. Please refer to the steps below.

Here take **Windows 7** as example, and the configuration for windows system is similar.

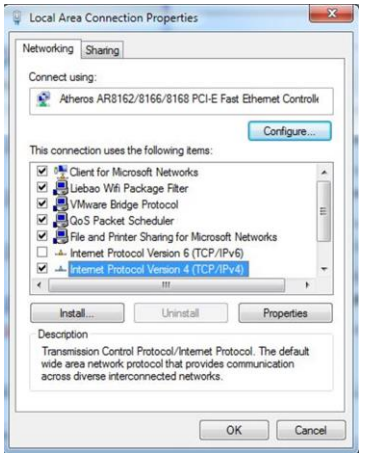
1. Click **Start > Control panel**, double-click **Network and Sharing Center**, and then double-click **Local Area Connection**.



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

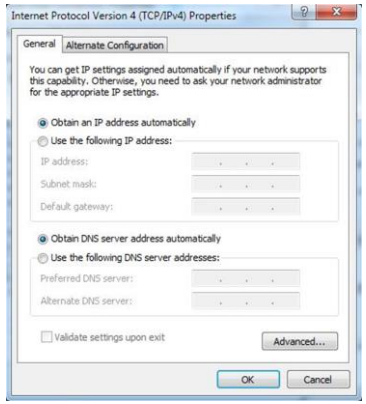


3. Choose **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.



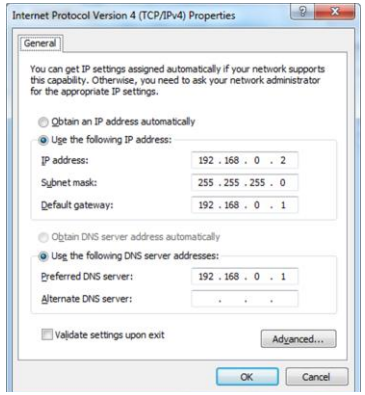
4. Two ways for configuring the IP address of PC

Obtain an IP address automatically:



Use the following IP address

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



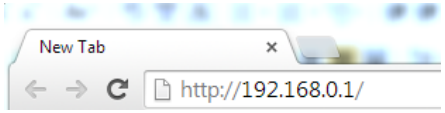
5. Click **OK** to finish the configuration.

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 your PC, open a web browser such as Internet Explorer, Google or 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.

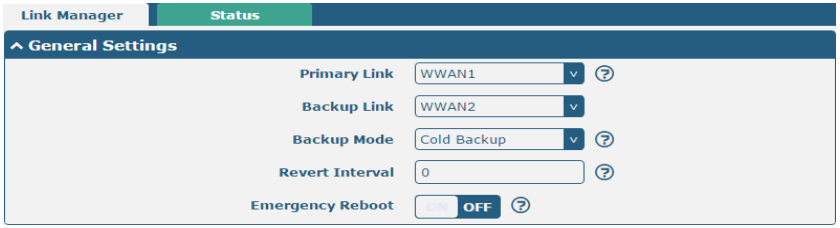
4. After logging in, the home page of the R3000 Router's web interface is displayed, for example.

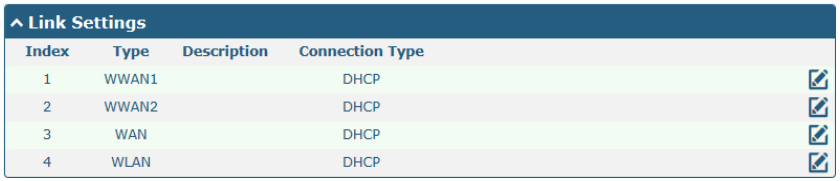
Note: To configure parameters should follow this order "modify parameter 1 > Submit > modify parameter 2 > Submit > Save & Apply".

2. Configure the Cellular Connection

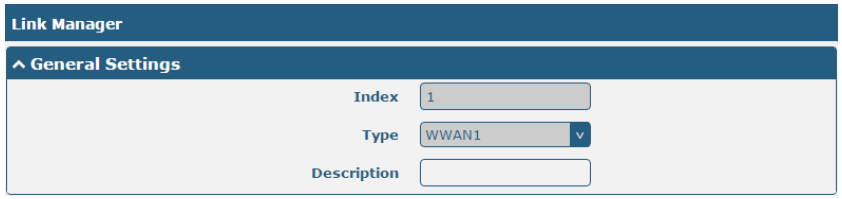
Click **Interface > Link Manager > Link Manager > General Settings**, choose "WWAN1" as the primary link and "WWAN2" as the backup link, and set "Cold Backup" as the backup mode, then click "Submit".

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.

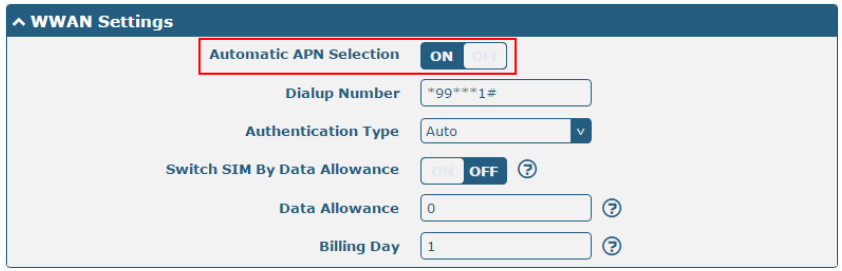




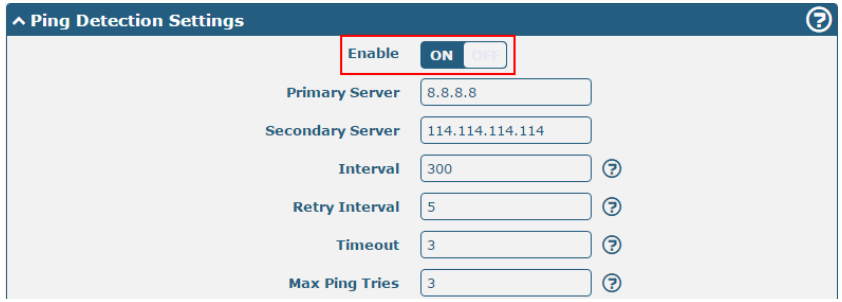
Click on the right-most of WWAN1 to enter the configuration window.

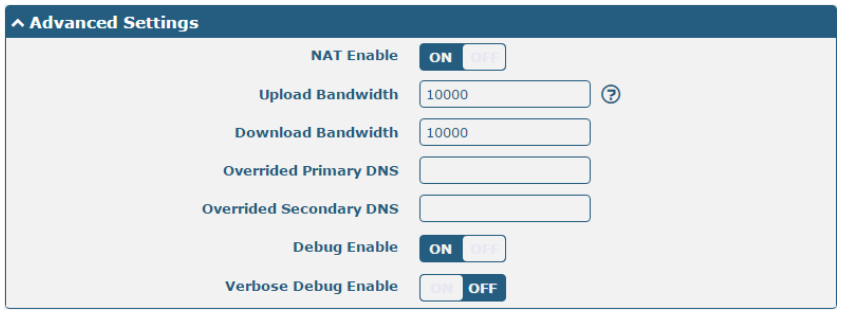


The window is displayed as below when enabling the “Automatic APN Selection” option.



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

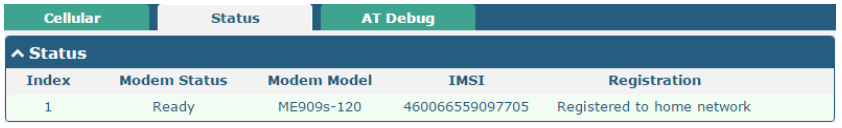


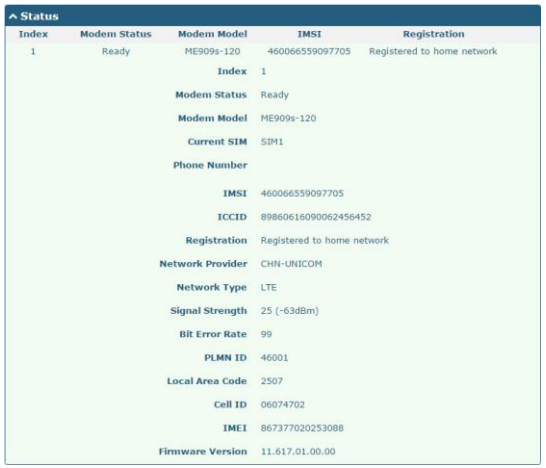


When finished, click **Submit > Save & Apply** for the configuration to take effect.

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.



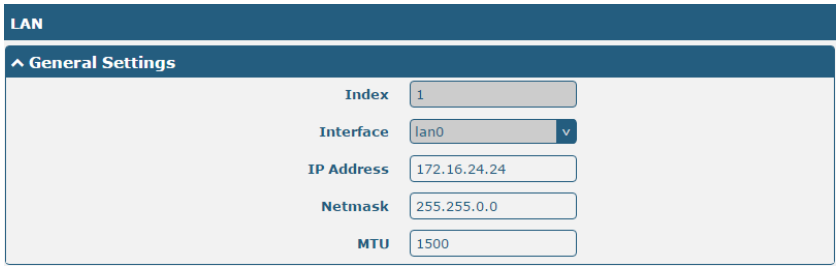


4. Configure the IP of the Router

There are two Ethernet ports on R3000 Router, including ETH0 and ETH1. The ETH0 on the router can be configured as either a WAN or a LAN port, while ETH1 can only be configured as a LAN port. By default, ETH0 and ETH1 are lan0, and their IP are 192.168.0.1/255.255.255.0. Since lan0 must be assigned to one port and WAN port must be assigned to the ETH0, there are four configurations. You can choose the appropriate configuration to fit your current needs. The specific port configurations are shown below.

- **Configure lan0**

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

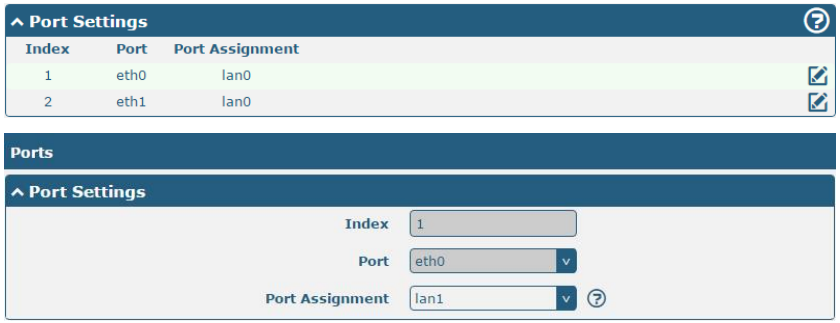


When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure lan1**

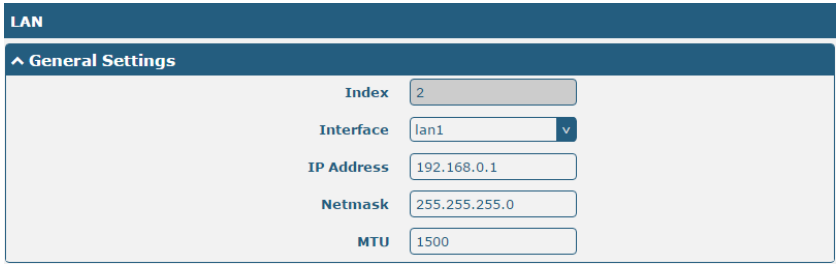
  Click **Interface > Ethernet > Ports**, click eth0's edit button, choose lan1 as the assigned port, and click "Submit".

  Note: By default, there is a LAN port (lan0) in the list. To begin adding a new LAN port (lan1), please configure eth0 or eth1 as lan1 first in Ethernet > Ports > Port Settings. Otherwise, the operation will be prompted 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.

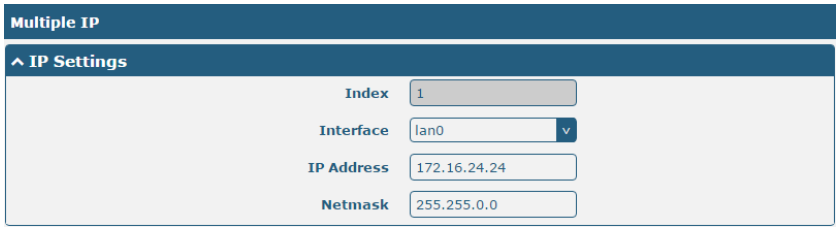


When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure Multiple IP**

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

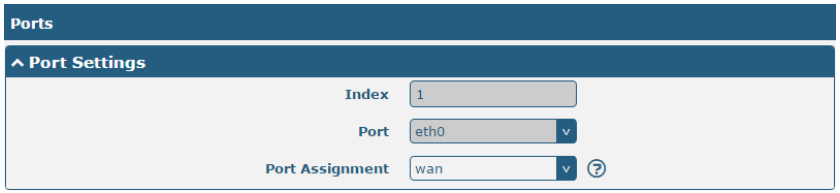
Note: You may click to edit the multiple IP of the LAN port, or click to delete the multiple IP of the LAN port. Now, click to add a multiple IP to the LAN port.



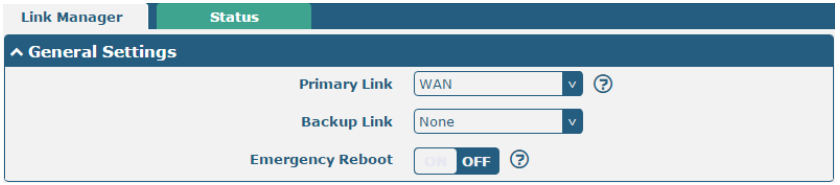
When finished, click **Submit > Save & Apply** for the configuration to take effect.

- **Configure WAN**

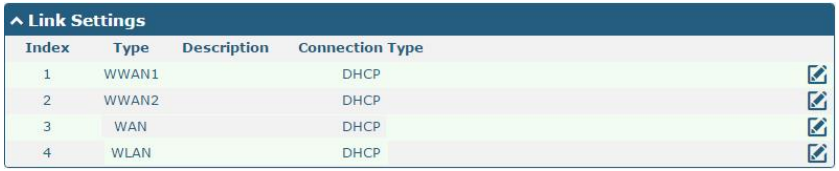
Click **Interface > Ethernet > Ports**, click the edit button of eth0, choose "wan" as the port assignment, and click "Submit";



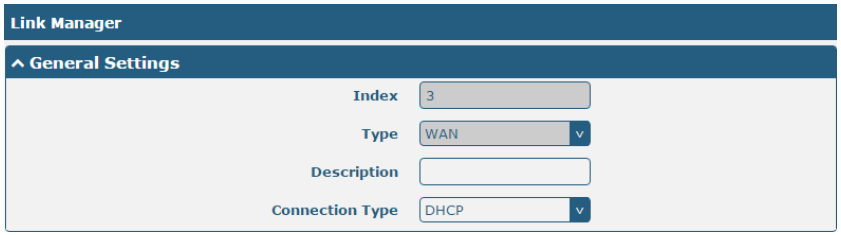
Click **Interface > Link Manager > General Settings**, choose "WAN" as the primary link, and choose "None" as the backup link.



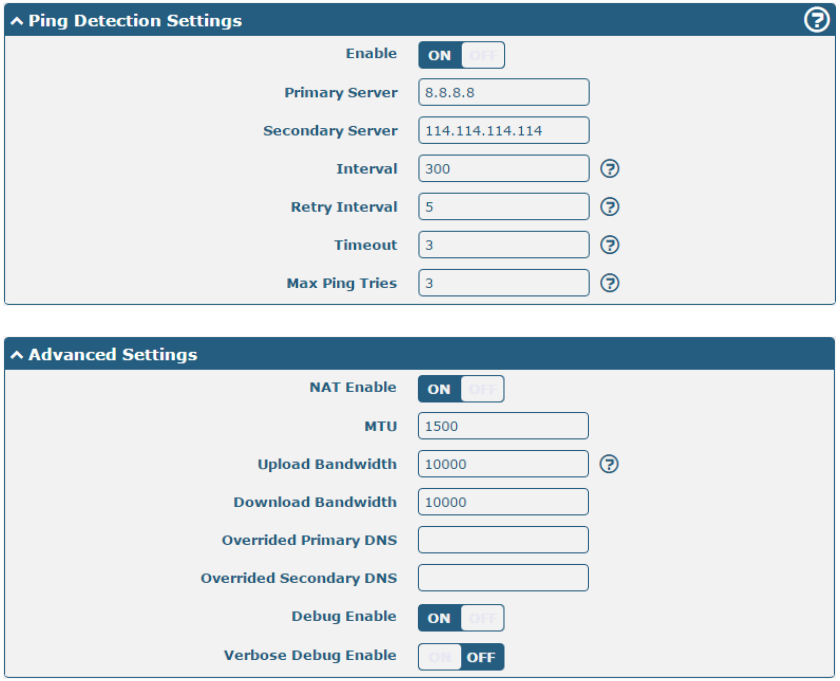
Click the edit button of WAN to enter its configuration window.



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.

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