



Installation and Configuration Quick Guide

R2000--Industrial Cellular VPN Router



This document is written for the user which in order to let the user more easily install the router and also know the way to configure the router. This guide provides step-by-step instruction on how to setup the connection between R2000 router and PC and how to enter the router configuration mode.

Package Checklist

Before installing the R2000 router, verify that the package contains the following items:

- Robustel R2000 Router
- Terminal Block for Power
- Document and Software CD

Optional Accessories

- AC/DC Power Supply Adapter
- 35mm Din-Rail mounting kit or Wall mounting kit
- SMA cellular antenna (HSPA+/LTE)
- RP-SMA Wi-Fi antenna (stubby or magnet)

Notify your sales representative if any of the above items is missing or damaged.

Preparation before testing

1xR2000 Router, 1xPC, 1xSIM card, 1xEthernet cable, 2xSMA antenna, 1xpower supplies with terminal block, (1x35mm Din-Rail mounting kit or Wall mounting kit, 4xM3 screw, 2xM3 screw with point-end)



Environment Requirements

Power Input 9 to 26 VDC

Power Consumption: Idle: 100 mA @ 12 V, Data Link: 500 mA (peak) @ 12 V

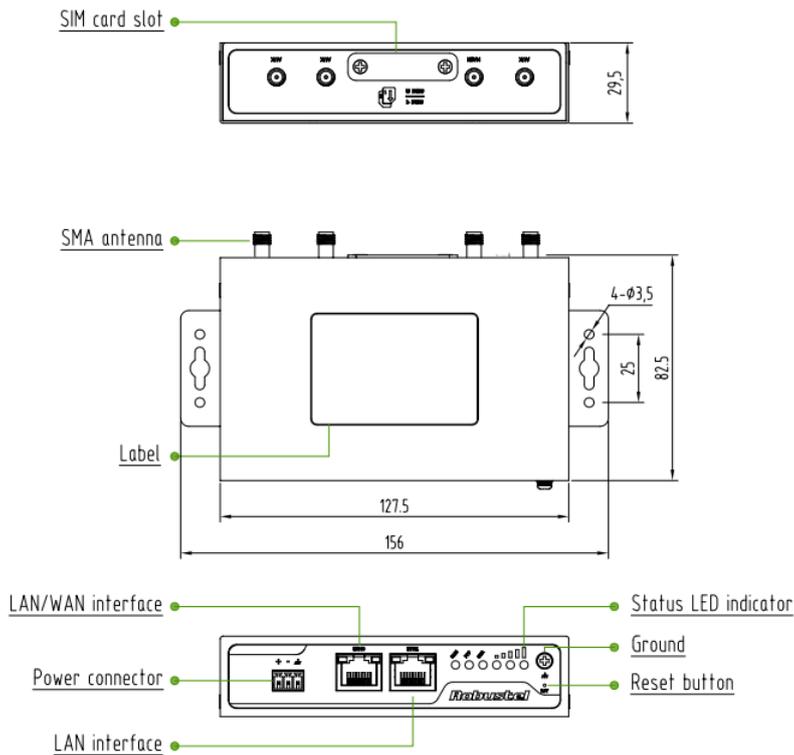
Operating Temperature -20 to +65°C

Operating Humidity 5 to 95% RH

Chapter 1 Interface Introduction

1.1 Overview

As shown in the following figures, R2000 router has two Ethernet ports (2xLAN or 1xLAN+1xWAN) and two cellular SIM card slots.



1.2 LED Indicators

Name	Color	Status	Function
RUN	Green	Blinking	Router is ready.
		On	Router is starting.
		Off	Router is power off.

PPP	Green	Blinking	PPP Indicator: Null
		On	PPP Indicator: PPP connection is up.
		Off	PPP Indicator: PPP connection is down.
USR	Green	Blinking	SIM: using backup SIM card. NET: register to a low level network.
		Off after blinking	SIM: working fine. NET: working fine.
		Light up	OpenVPN: OpenVPN is connected. IPSec: IPSec is connected. GRE: GRE is connected.
		Off after lighting up	OpenVPN: OpenVPN is disconnected. IPSec: IPSec is disconnected. GRE: GRE is disconnected.
	Green	On	Signal level: 21-31 (Perfect signal level).
	Yellow	On	Signal level: 11-20 (Average signal level).
	Red	On	Signal level: 1-10 (Exceptional signal level).
	When the network is disconnected, those three signal LEDs are designed as a binary combination code to indicate a series of error report. (Green Yellow Red) On: 1 Off: 0 001 AT command failed 010 no SIM card detected 011 it need to enter the PIN code 100 it need to enter the PUK code 101 registration failed 110 something wrong happened in the module		

1.3 Reset Button

Function	Operation
Reboot	Push the button for 2~7 seconds under working status.
Restore to factory default setting	Keep pushing the button once you power on the router until all the LED light blink one by one recurrently. It will cost several seconds to finish the reset operation. When all the LED light blinks hold on 2 seconds, it means that the router loads default successfully.

1.4 Ethernet port

There are two Ethernet ports in R2000 router, ETH1 is the LAN interface and ETH0 can be the LAN or WAN interface. Each Ethernet port has two LED indicators. The yellow one is **Link indicator** and the green one doesn't mean anything. There are three status of Link indicator. Please refer to the form below.

Indicator	Status	Description
Link Indicator	Off	Connection is down.
	On	Connection is up.
	Blink	Data is being transmitted

Chapter 2 Hardware Installation

2.1 Install SIM Card

- **Remove slot cover**

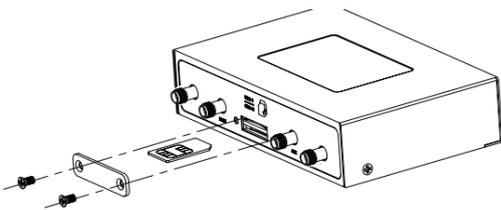
1. Make sure power supply is disconnected.
2. Use a screwdriver to unscrew the screw on the cover, and then remove the cover, you could find the SIM Card slots.

- **Inserting SIM Card**

3. Insert the SIM card, and you need press the card with your fingers until you hear "a cracking sound". Then use a screwdriver to screw the cover.

- **Removing SIM Card**

4. Make sure router is power off.
5. Press the card until you hear "a cracking sound", when the card will pop up to be pulled out.



Note:

1. Recommended torque for inserting is 0.5N.m and the maximum torque is 0.7N.m.
2. Please use the specific M2M SIM card when the device works in extreme temperature (temperature exceeding 0-40 °C), because the long-time working of regular SIM card in harsh environment (temperature exceeding 0-40 °C) may increase the possibility of SIM card failure.
3. Don't forget screw the cover for again-theft.
4. Don't touch the metal surface of the SIM card in case information in the card is lost or destroyed.
5. Don't bend or scratch your SIM card. Keep the card away from electricity and magnetism.
6. Make sure router is power off before inserting or removing your SIM card.

2.2 Connect the External Antenna

Connect router with an external antenna connector. Make sure the antenna is within correct frequency range and is screwed tightly. **Recommended torque for mounting is 0.35N.m**

2.3 Ground the Router

Grounding and wire router helps limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground by screwing to the grounding surface before connecting devices.

Note: This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel.

2.4 Mount the Router

The router may be placed on a horizontal surface such as a desktop, mounted on a DIN-rail, or mounted on the wall.

- **Two ways of mounting the router**

1. Use 4 pcs of M2.5 countersunk head cross recess screws to fix the router on the two metal plates.

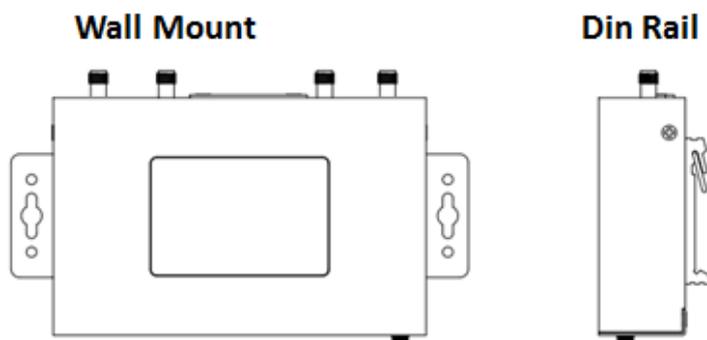
And then use 2 pcs of M3 screw with point-end to mount the router with two metal plates on the wall.

Recommended torque for mounting is 0.5N.m and the maximum torque is 0.7N.m.

2. Mount the router on a DIN rail with 3 pcs of M3 countersunk head cross recess screws, and then hang the DIN-Rail on the holder.

You need to choose a standard holder. **Recommended torque for mounting is 1.0N.m and the maximum torque is 1.2N.m.**

Note: When mounting the unit on a DIN-rail, make sure that it is oriented with the metal springs on top.

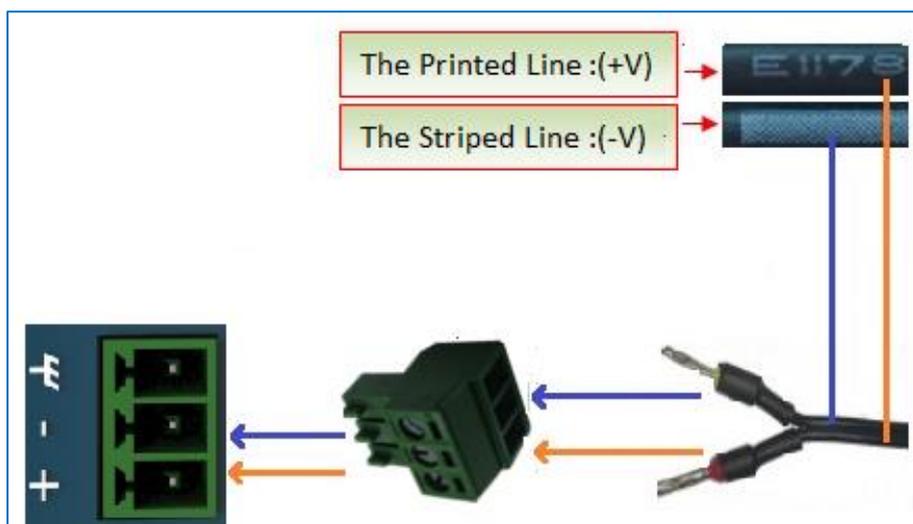


2.5 Connect R2000 to PC with Ethernet cable

Use a standard cross-over Ethernet cable to connect R2000 to PC with Eth0 or Eth1 port.



2.6 Power Supply



The power supply range is 6 to 26 VDC.

Note: Please take care about the polarity, and do not make reverse connection. There are two lines connecting to the power supply adapter, as it illustrates on the power supply adapter label, the line printed with letters needs to be connected with the positive polarity, and the striped line needs to be connected with the negative polarity.

Chapter 3 Initial Configuration

The router can be configured through your web browser that include IE 8.0 or above, Chrome and Firefox. A web browser is included as a standard application in the following operating systems: Linux, Mac OS, Windows 98/NT/2000/XP/Me/Vista/7/8, etc. It provides an easy and user-friendly interface for configuration.

There are various ways to connect the router, either through an external repeater/hub or connect directly to your PC. However, make sure that your PC has an Ethernet interface properly installed prior to connecting the router.

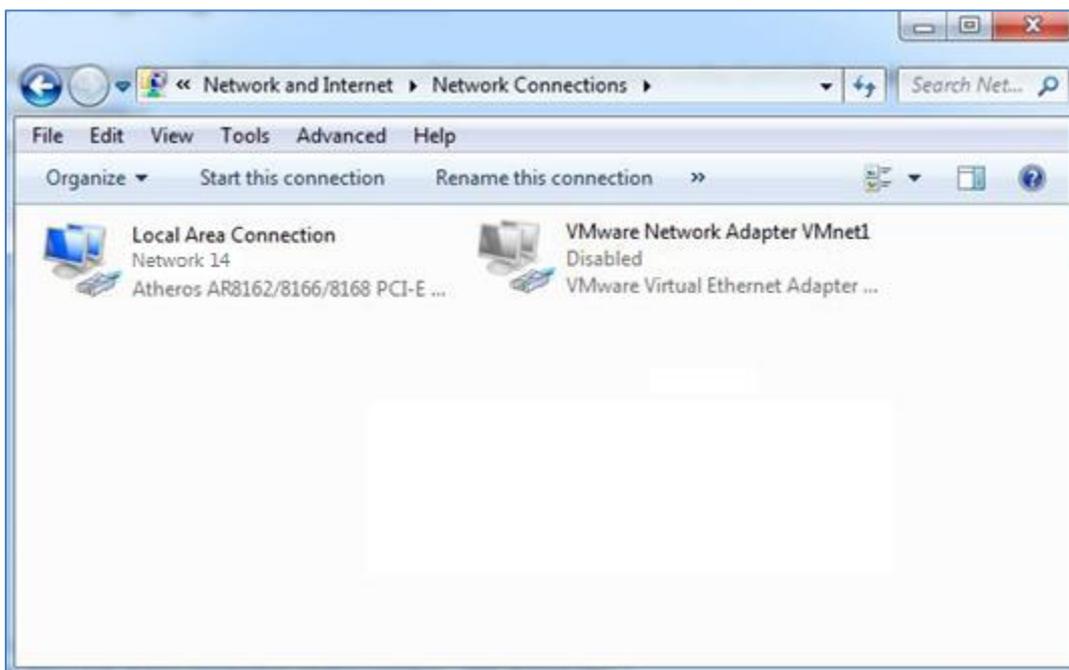
You must configure your PC to obtain an IP address through a DHCP server or a fixed IP address that must be in the same subnet as the router. If you encounter any problems accessing the router web interface it is advisable to uninstall your firewall program on your PC, as this tends to cause problems accessing the IP address of the router.

3.1 Configuring PC in Windows 7

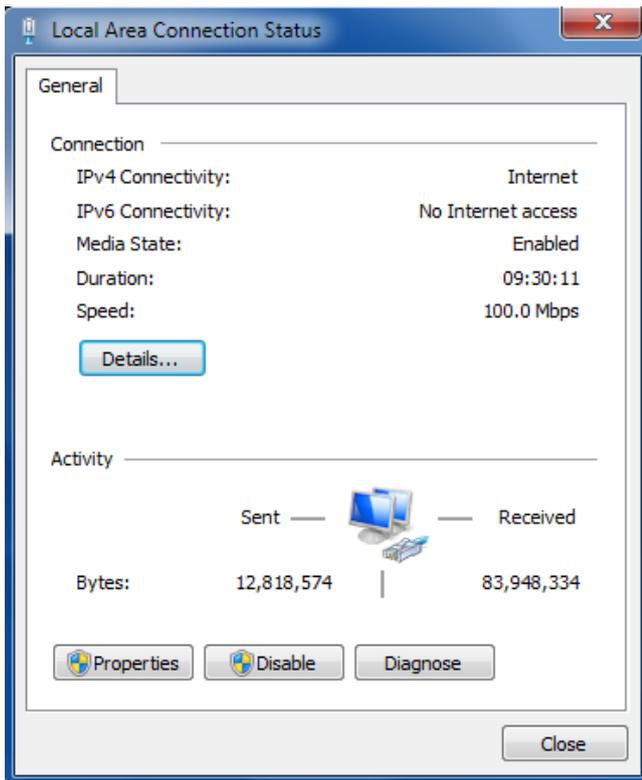
There are two methods to obtain IP address for the PC, one is automatically obtain IP address from DHCP server, and another is manually configured static IP address within the same subnet of R2000 router.

The configuration for windows system is similar.

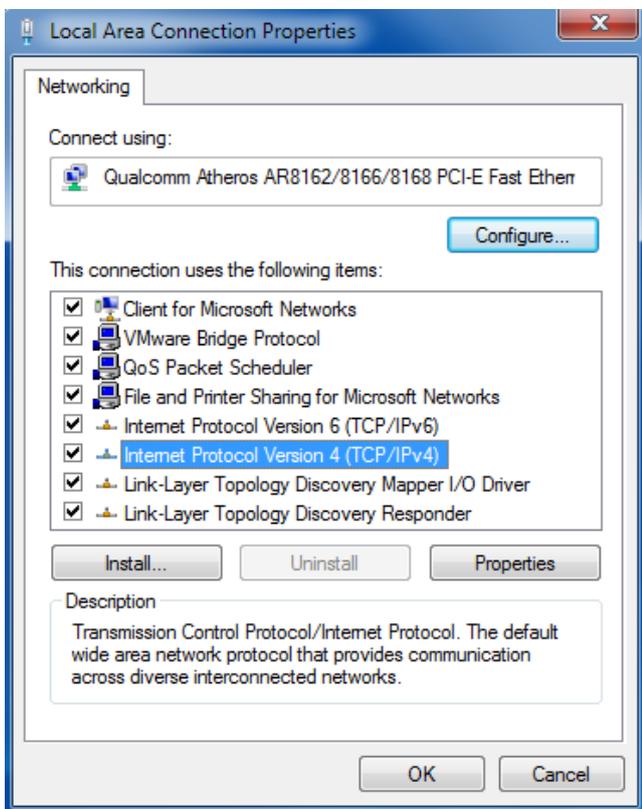
1. Go to *Start \Control Panel \Network and Internet\Network Connections*. Double-click *Local Area Connection*.



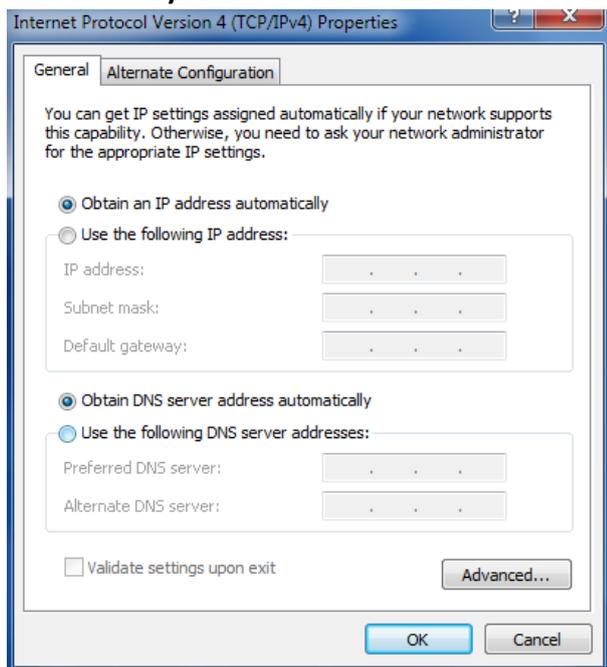
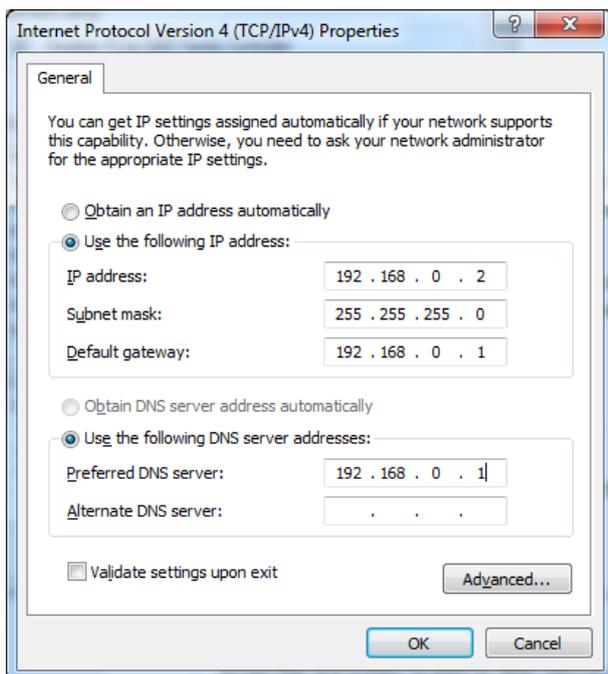
2. In the *Local Area Connection Status* window, click *Properties*.



3. Select *Internet Protocol (TCP/IP)* and click *Properties*.



4. Configure the IP address of PC.

Automatically obtain IP address from DHCP server**Manually configured static IP address within the same subnet of R2000 router**5. Click *OK* to finish the configuration.

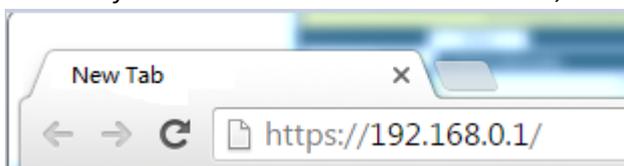
3.2 Login Router

Before configuring your router, you need to know the following default settings.

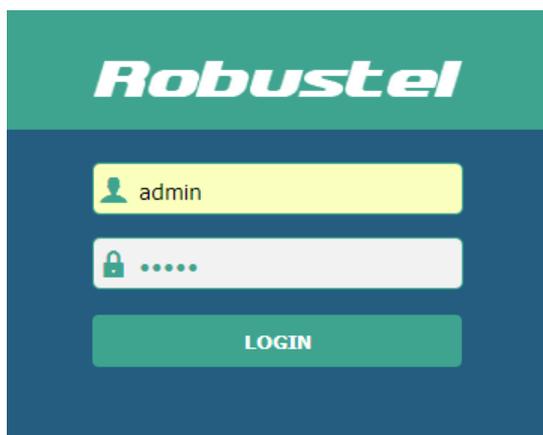
Item	default setting
Username	admin
Password	admin
LAN	192.168.0.1/255.255.255.0
DHCP Server	Enabled

1. On the PC, open a web browser such as Internet Explorer.
2. In the browser's address bar, enter the IP address of the Router. The default IP address is 192.168.0.1, though the actual address may vary.

Note: If you had inserted a public IP SIM card in R2000, you can enter the public IP of the SIM card which was obtained from ISP in the browser's address bar, so that you can wireless access R2000 through this public IP.



3. Input the username and password and login the R2000.



- After logging in the R2000, the home page of the R2000 router’s web interface is displayed, just like the screenshot below.

This section allows users to save configuration, reboot router, logout.



Control Panel		
Item	Description	Button
Save & Apply	Click to save the current configuration into router’s flash and apply the modification on every configuration page, to make the modification taking effect.	Save & Apply
Reboot	Click to reboot the router.	Reboot
Logout	Click to exit safely, then it will switch to login page. Shut down web page directly without logout, the next one can login web on this browser without a password before timeout.	Logout
Submit	Click to submit the modification on current configuration page.	Submit
Cancel	Click to cancel the modification on current configuration page.	Cancel

Note: The steps of how to modify configuration are as bellow:

1. Modify in one page;
2. Click  under this page;
3. Modify in another page;
4. Click  under this page;
5. Complete all modification;
6. Click .

3.3 Troubleshoot

All the configuration in R2000 are correct, if it still could not login R2000, there will maybe the following cause:

1. Check if the Ethernet cable is connected well;
2. Check if the status of the LAN port's link indicator (yellow) is normal: lit or flashing;
3. Check if your PC has obtained IP address;
4. If the R2000 is installed in the LAN network, please check if there is any other DHCP server in the LAN. If yes, it may cause conflict. In this case, you may connect your PC to the R2000 directly and have a test again;
5. If the R2000 is installed in the LAN network, please check if there are other devices using same IP in the LAN. If yes, it may cause conflict. You may change the LAN port IP of the R2000 directly.
6. If R2000 is not used at the first time, the DHCP server function may be turned off by someone else. In this case, you can configure your PC's IP address manually, or you can restore the router to factory default configuration by the reset button.

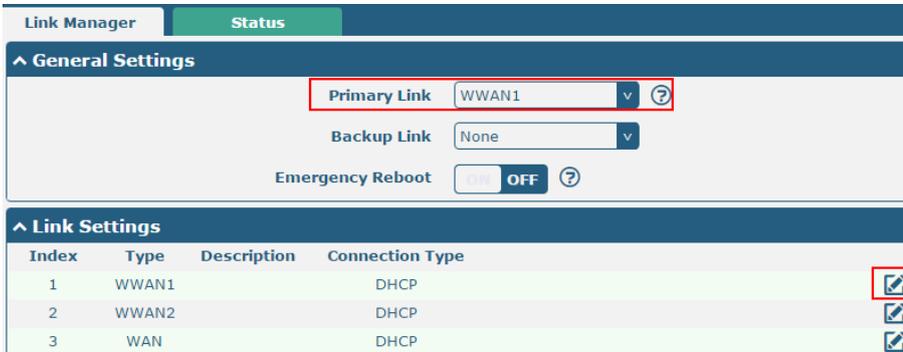
If the IP of R2000 is forgot, how to do?

1. Press the "RST" button to restore the router to factory default configuration, then login R2000 with the IP: "192.168.0.1". (Reset process please refer to **Interface Introduction->Reset button** section)

3.4 Configure Cellular

1. Configure cellular

Go to Interface->Link Manager->General Setting, select WWAN1/WWAN2 as the Primary Link.



Link Manager **Status**

^ General Settings

Primary Link ?

Backup Link

Emergency Reboot OFF ?

^ Link Settings

Index	Type	Description	Connection Type
1	WWAN1		DHCP
2	WWAN2		DHCP
3	WAN		DHCP

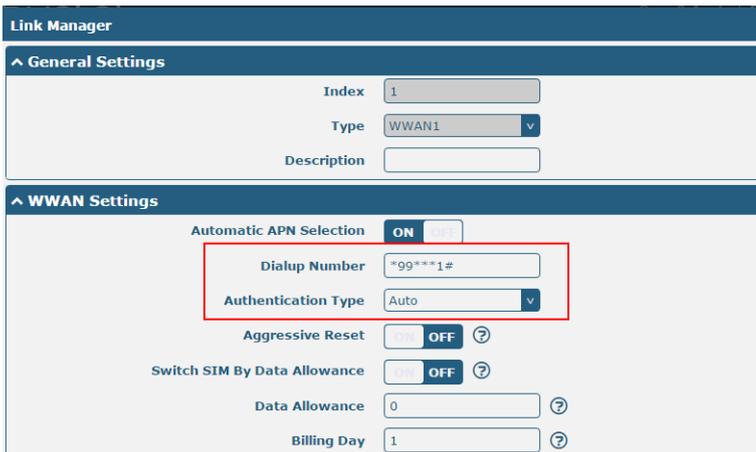
Click  to enter the WWAN1/WWAN2 window, and then configure the parameters based on the requirement, click

Submit

and

Save & Apply

to make the modification take effect.



Link Manager

^ General Settings

Index

Type

Description

^ WWAN Settings

Automatic APN Selection ON ?

Dialup Number

Authentication Type

Aggressive Reset OFF ?

Switch SIM By Data Allowance OFF ?

Data Allowance

Billing Day

2. Check the cellular connection status

Go to Status->Cellular Information & Internet Status; Check the cellular information and confirm whether the Router had obtained the IP. If router had obtained an IP, it means the cellular connection is up.



^ Cellular Information

Modem Status Ready

Model ME909s-821

Firmware Version 11.617.00.00.00

IMEI 867223020050860

SIM Status SIM2 using, total 1 SIMs

Network Registration Registered to home network

Network Operator CHN-UNICOM

Network Type LTE

Signal Strength 19 (-75dBm)

^ Internet Status	
Active Link	WWAN1
Uptime	0 days, 00:05:02
IP Address	10.151.84.17/255.255.255.252
Gateway	10.151.84.18
DNS	210.21.4.130 221.5.88.88

3.5 Change the IP of router

There are two LANs for Ethernet to choose: lan0 and lan1. The lan0's default IP is 192.168.0.1, and the IP of lan1 default null.

Eth0 and Eth1 default be the lan0, it means that both of Eth0 and Eth1's IP is 192.168.0.1.

Configure lan0

Go to **Interface->LAN** tab, click  to enter lan0 setting window, modify the IP and Netmask of lan0. And then click

Submit and **Save & Apply** to make the modification take effect.

LAN	
^ General Settings	
Index	1
Interface	lan0
IP Address	192.168.0.1
Netmask	255.255.255.0
MTU	1500

Note: If you want to add the multiple IP to lan0, please go to **Interface->Multiple** tab, click  to enter the multiple setting window, and set the multiple IP of lano.

Multiple IP	
^ IP Settings	
Index	1
Interface	lan0
IP Address	172.16.99.11
Netmask	255.255.0.0

Configure lan1

Go to the **Ethernet** tab, click  to configure eth0 or eth1. Choose lan1 as the port assignment, click  and

 to make the modification take effect.

Ports	
^ Port Settings	
Index	<input type="text" value="2"/>
Port	<input type="text" value="eth1"/>
Port Assignment	<input type="text" value="lan1"/>

Note: lan1 is available only when it was chosen by Eth0 or Eth1 in **Ethernet** tab.

Configure WAN

Go to the **System->Device Configuration**, switch "ON" to enable Eth0 used as WAN. Click  and reboot device to make the modification take effect.

Device Configuration	
All settings on this page can not be exported. You need to reboot system for the changes to take effect. Please note that some configurations may restore to default after reboot. You need to clear web browser's cache before next login at most of time.	
^ Advanced Device Settings	
Eth0 Used As WAN	<input checked="" type="checkbox"/>
WiFi Mode	<input type="text" value="Client"/>
WiFi Region	<input type="text" value="US"/>

After router reboot, please clear the browser cache and go to **Link Manager->General Settings**, select WAN as the Primary and go to **Link Setting->WAN**, click  to enter the WAN setting window and then configure the WAN interface parameters.

Link Manager			
Status			
^ General Settings			
Primary Link	<input type="text" value="WWAN1"/>		
Backup Link	<input type="text" value="None"/>		
Emergency Reboot	<input type="checkbox"/> OFF		
^ Link Settings			
Index	Type	Description	Connection Type
1	WWAN1		DHCP
2	WWAN2		DHCP
3	WAN		DHCP