

Installation and Configuration Quick Guide

R3000 Lite

Industrial Dual SIM Cellular VPN Router
(1 Eth + 1 RS-232 + 1 RS-485 + 1 USB Host)

Package Contents

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

- 1 x Robustel R3000 Lite Industrial Dual SIM Cellular VPN Router
- 1 x 3-pin pluggable terminal block for power supply
- 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)
- 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)
- Terminal block with a DB9 male connector for serial port connection

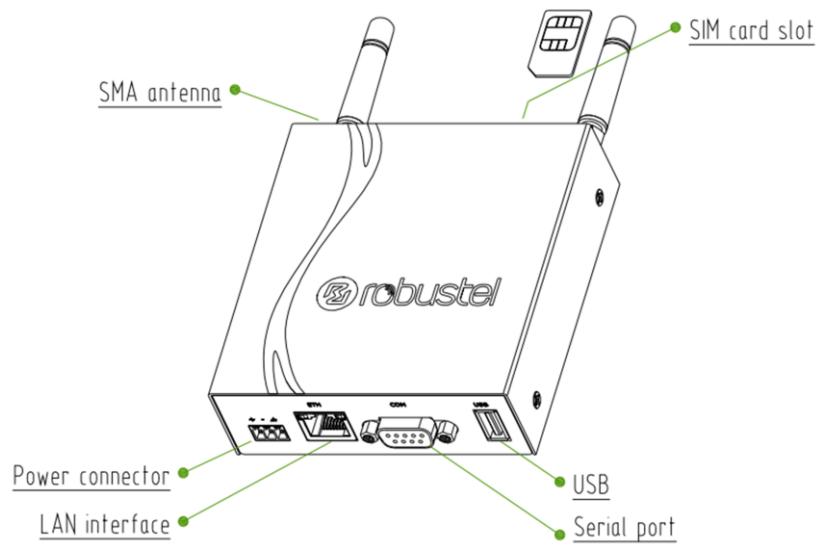
***If any of the above items is missing or damaged, please contact your Robustel sales representative.**

Environmental Requirements

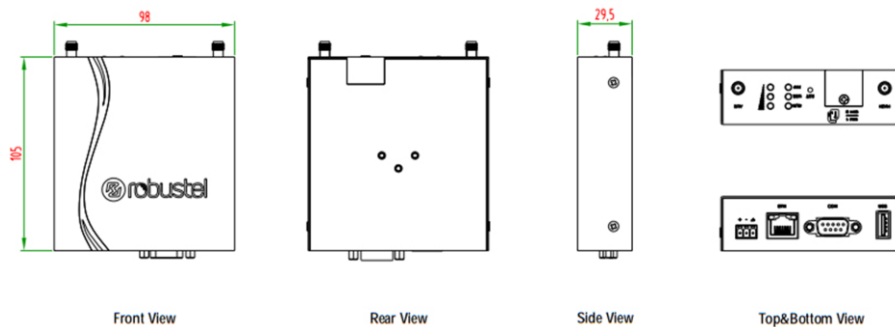
- Power input: 9 to 36V DC
- Power consumption: 100 mA@12 V in idle state, 400 mA (peak) @12 V in communication state
- Operating temperature: -40 °C to 75 °C
- Relative humidity: 5% to 95% RH

Hardware Introduction

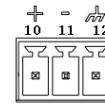
1. Overview



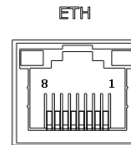
2. Dimensions



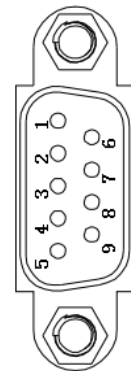
3. Pinouts



PIN	Polarity
10	Positive
11	Negative
12	GND




PIN	Function
1	TX+
2	TX-
3	RX+
6	RX-



PIN	Debug	RS-232	RS-485 (2-wire)	Terminal Block	Direction
1	CR	--	Data+ (A)	485+	--
2	CT	RXD	--	RXD	Router → Device
3	--	TXD	--	TXD	Router ← Device
4	DRXD	--	--	DT	Router ← Device
5	GND	GND	--	GND x 2	--
6	--	--	Data- (B)	485-	--
7	--	RTS	--	RTS	Router ← Device
8	--	CTS	--	CTS	Router → Device
9	DTXD	--	--	DR	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
USR-SIM	Green	On, blinking	Backup card is being used
		Off	Main card is being used
USR-NET	Green	On, solid	Network is joined successfully 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
USR-Open VPN	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
PPP	Green	On, solid	Link connection is established
		Off	Link connection is not established
	Green	Three lights are solid green	High signal strength (21-31) is available
		Two lights are solid green	Medium signal strength (11-20) is available
		One light is solid green	Low signal strength (1-10) is available
		Off	No signal

Function	Operation
	<p>When the network is disconnected, those three signal LEDs are designed as a binary combination code to indicate a series of error report.</p> <p>Blinking: 1 Off: 0</p> <p>001 AT command failed</p> <p>010 no SIM card detected</p> <p>011 need to enter the PIN code</p> <p>100 need to enter the PUK code</p> <p>101 registration failed</p> <p>110 module error</p> <p>111 not support the module</p>

5. USB Interface

Function	Operation
Firmware upgrade	<p>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.</p>

6. Reset Button

Function	Operation
Reboot	Press and hold the RST button for 5 seconds under the operating status.
Restore to factory default settings	Wait for 3 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 Port

R3000 Lite Router has one Ethernet port with two LED indicators. The yellow one is link indicator and the green one is speed indicator. For details about status, see the table below.

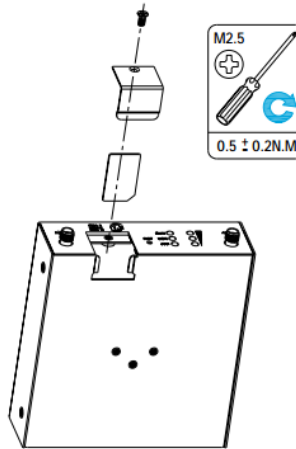
Indicator	State	Description
Link indicator	On, solid	Connection is established
	On, blinking	Data is being transferred
	Off	Connection is not established
Speed indicator	On, solid	100 Mbps mode
	Off	10 Mbps mode

Hardware Installation

1. Insert or Remove SIM Card

● Insert SIM card

1. Make sure router is powered off.
2. To remove 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



● 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 SIM card surface in case information in the card will be lost or destroyed.
5. Do not bend or scratch the SIM card.
6. Keep the SIM card away from electricity and magnetism.
7. Make sure router is powered off before inserting or removing the SIM card.

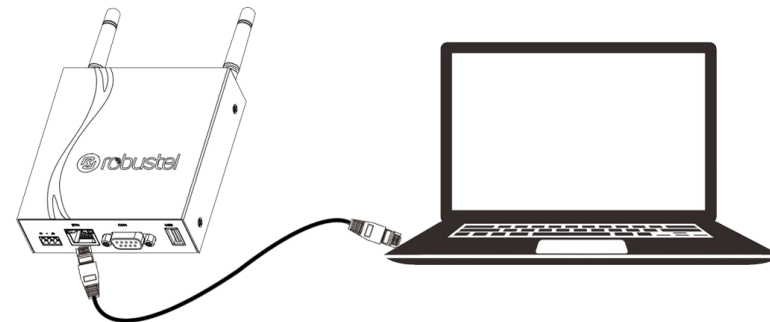
2. Attach External Antenna (SMA Type)

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 operator and with 50 Ohm impedance.

Note: Recommended torque for mounting is 0.35 N.m.

3. Connect the Router to a Computer

Connect an Ethernet cable to the port marked ETH at the bottom of the R3000 Lite, and connect the other end of the cable to your computer.

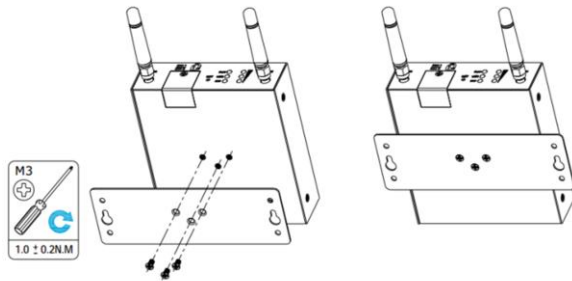


4. Mount the Router

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

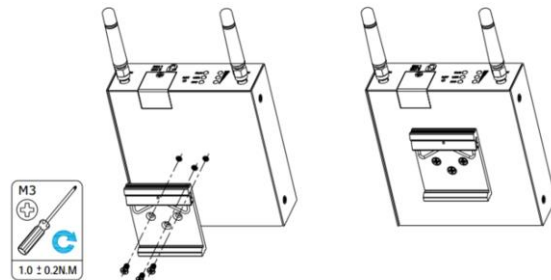
- **Wall mounting**



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.

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

- **DIN rail mounting**



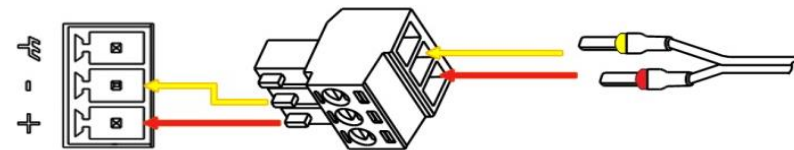
Use 3 pcs of M3*6 flat head Phillips screws to fix the DIN rail to the router, and then hang the DIN rail on the bracket. It is necessary to choose the standard bracket.

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

5. Power Supply

CONNECTING THE POWER CABLE

COLOR	POLARITY
RED	+
YELLOW	-



R3000 Lite 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.

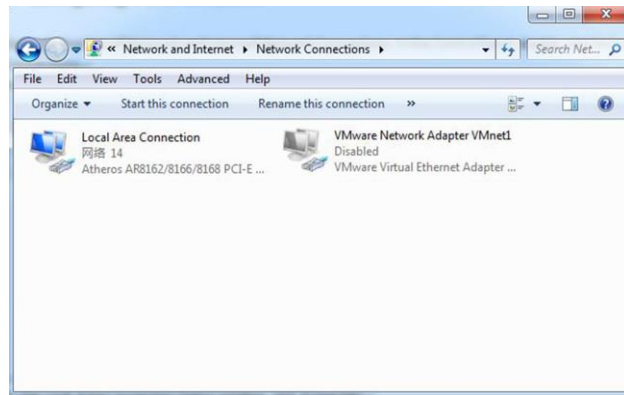
Note: The range of power voltage is 9 to 36V DC.

PC Configuration

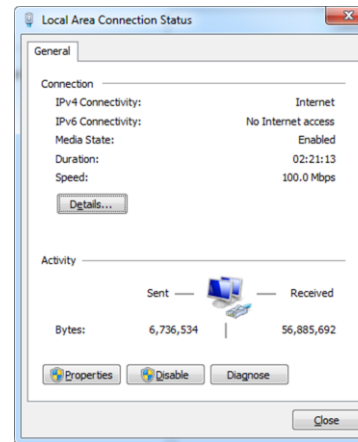
There are two methods to get IP address for the PC, one is to obtain an IP address automatically from “Local Area Connection”, and another is to configure a static IP address manually within the same subnet of the router. Please refer to the steps below.

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

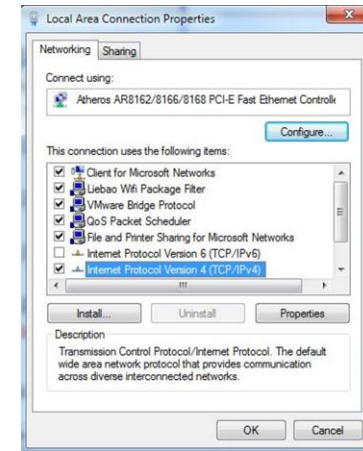
1. Click **Start > Control panel**, double-click **Network and Sharing Center**, and then double-click **Local Area Connection**.



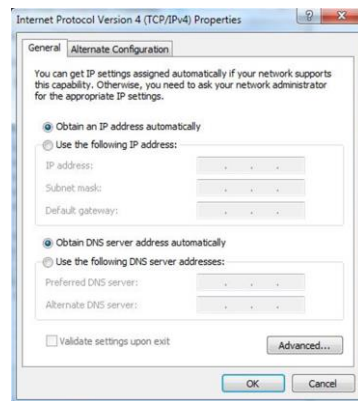
2. Click **Properties** in the window of **Local Area Connection Status**.



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



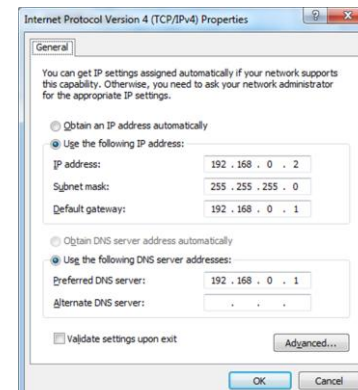
4. Two ways for configuring the IP address of PC
Obtain an IP address automatically:



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.

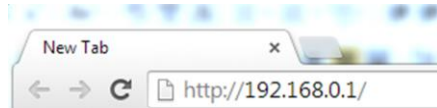


Router Configuration

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 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.

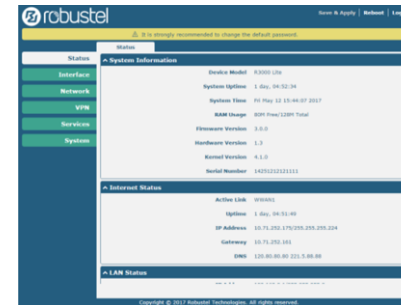


3. In the login page, enter the username and password, choose language and then click **LOGIN**. The default username and password are “admin”.



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 R3000 Lite 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 and WWAN2. 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.



^ Link Settings			
Index	Type	Description	Connection Type
1	WWAN1		DHCP
2	WWAN2		DHCP

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

^ General Settings	
Index	1
Type	WWAN1
Description	

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

^ WWAN Settings	
Automatic APN Selection	ON
Dialup Number	*99***1#
Authentication Type	Auto
Switch SIM By Data Allowance	OFF
Data Allowance	0
Billing Day	1

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

^ Ping Detection Settings	
Enable	ON
Primary Server	8.8.8.8
Secondary Server	114.114.114.114
Interval	300
Retry Interval	5
Timeout	3
Max Ping Tries	3

^ Advanced Settings	
NAT Enable	ON
Upload Bandwidth	10000
Download Bandwidth	10000
Overridden Primary DNS	
Overridden Secondary DNS	
Debug Enable	ON
Verbose Debug Enable	OFF

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.

Cellular	Status	AT Debug		
^ Status				
Index	Modem Status	Modem Model	IMSI	Registration
1	Ready	ME909s-120	460015866618891	Registered to home network

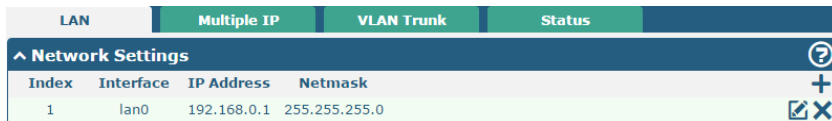
^ Status				
Index	Modem Status	Modem Model	IMSI	Registration
1	Ready	ME909s-120	460015866618891	Registered to home network
Index 1				
Modem Status		Ready		
Modem Model		ME909s-120		
Current SIM		SIM1		
Phone Number				
IMSI		460015866618891		
ICCID		89860116851118801636		
Registration				
Registered to home network				
Network Provider				
CHN-UNICOM				
Network Type				
LTE				
Signal Strength				
15 (-83dBm)				
Bit Error Rate				
99				
PLMN ID				
46001				
Local Area Code				
2507				
Cell ID				
06074702				
IMEI				
867377020977280				
Firmware Version				
11.617.01.00.00				

4. Configure the IP of LAN

There is one LAN port on R3000 Lite Router, which is ETH. The default settings of ETH is lan0 and its default IP is 192.168.0.1/255.255.255.0.

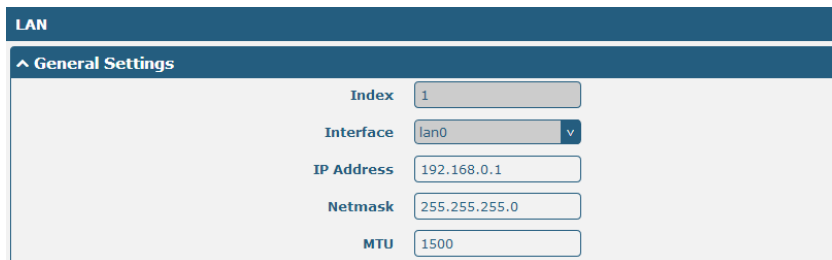
- **Configure lan0**

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



Index	Interface	IP Address	Netmask
1	lan0	192.168.0.1	255.255.255.0

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



LAN

General Settings

Index: 1

Interface: lan0

IP Address: 192.168.0.1

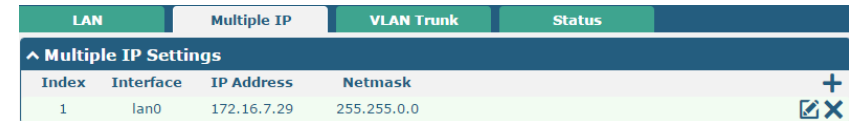
Netmask: 255.255.255.0

MTU: 1500




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

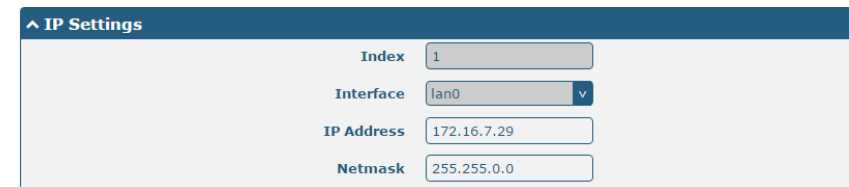
- **Configure multiple IP**

Click **Interface > LAN > Multiple IP** as below.



Index	Interface	IP Address	Netmask
1	lan0	172.16.7.29	255.255.0.0

You may click  to edit the configuration of the LAN port, or click  to delete the current LAN port. Now, click  to add a new LAN port.



Multiple IP Settings

Index: 1

Interface: lan0

IP Address: 172.16.7.29

Netmask: 255.255.0.0

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



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