



# 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



#### 3. Pinouts

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PIN	Polarity
10	Positive
11	Negative
12	GND

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

2.	Dime	nsions



$\overline{\mathbf{a}}$	PIN	Debug	RS-232	RS-485	Termina	Direction
٧/				(2-wire)	l Block	
	1	CR		Data+ (A)	485+	
∿ °°	2	СТ	RXD		RXD	Router $\rightarrow$ Device
	3		TXD		TXD	$Router \leftarrow Device$
	4	DRXD			DT	$Router \leftarrow Device$
	5	GND	GND		GND x 2	
	6			Data- (B)	485-	
	7		RTS		RTS	$Router \leftarrow Device$
	8		CTS		CTS	Router $\rightarrow$ Device
	9	DTXD			DR	Router $\rightarrow$ Device

#### 4. LED Indicators

Name	Color	Status	Description
RUN	Green	On, fast blinking	Router is powered on
		(250 mSec blink time)	(System is initializing)
		On, blinking	Router starts operating
		(500 mSec blink time)	
		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	Green	On, solid	OpenVPN connection is
VPN			established
		Off	OpenVPN connection is not
			established
USR-IPsec	Green	On, solid	IPsec connection is established
		Off	IPsec connection is not
			established
РРР	Green	On, solid	Link connection is established
		Off	Link connection is not
			established
	Green	Three lights are solid	High signal strength (21-31) is
000		green	available
		Two lights are solid	Medium signal strength
		green	(11-20) is available
		One light is solid	Low signal strength (1-10) is
		green	available
		Off	No signal

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

#### 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 5 seconds under
	the operating status.
Restore to factory	Wait for 3 seconds after powering up the router,
default settings	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.
- 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 your 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 cove 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 lost or be 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 torgue 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.





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#### 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 theDIN 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.

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# **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.

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

le Edit	View	Tools	Advanced	Help						
Organize	•	Start this	connection	Ren	name this c	onnection	»	l	1 h	
	网络 1 Athero	4 s AR8162/8	3166/8168 P	CI-E	1 and a state	Disabled VMware Vir	tual Ethernet	Adapter .		

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

General	Alternate Configuration				
You can this can for the	n get IP settings assigned autor pablity. Otherwise, you need to appropriate IP settings.	matically if ask your	your n networ	etwork k admir	supports nistrator
	btain an IP address automatical	ly			
OU	se the following IP address:				
IP a	ddress:				
Subr	net mask:				
Defa	ault gateway:		40		
	btain DNS server address autor	natically			
00	se the following DNS server add	resses:			
Pref	erred DNS server:				
Alter	mate DNS server:	1 - ÷	-	4	
	alidate settings upon exit			Adh	vanced
			OK		Cancel

2. Click **Properties** in the window of

#### Local Area Connection Status.

Local Area Connect	tion Status	
General		
Connection		
IPv4 Connectivity	/:	Internet
IPv6 Connectivity	<b>/:</b>	No Internet access
Media State:		Enabled
Duration:		02:21:13
Speed:		100.0 Mbps
Details		
Activity		
	Sent — 📕	Received
Bytes:	6,736,534	56,885,692
Properties		Diagnose
		Close

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

Constanting	9	
connect using.		
Atheros AR8	162/8166/8168 PCI-E Fas	t Ethernet Controlk
		Configure
his connection us	es the following items:	
Client for !	Acrosoft Networks	
V ALiebao Wi	fi Package Filter	
VMware B	Iridge Protocol	=
VMware E	iridge Protocol et Scheduler	E
VMware E QoS Pack	Iridge Protocol et Scheduler rinter Sharing for Microsoft	E Networks
VMware E QoS Pack File and P L A Internet Pr	Iridge Protocol iet Scheduler inter Sharing for Microsoft rotocol Version 6 (TCP/IPv	E Networks 6)
VMware E VMware E QoS Pack File and P Anternet P	hidge Protocol et Scheduler ninter Sharing for Microsoft rotocol Version 6 (TCP/IPv rotocol Version 4 (TCP/IPv	Networks 6) 4)
VMware E QoS Pack File and P http://www.com/ File and P http://www.com/ V internet P V	hidge Protocol et Scheduler inter Sharing for Microsoft rotocol Version 6 (TCP/IPv rotocol Version 4 (TCP/IPv III	Networks 6) 4) ~
VMware E Gos Pack File and P Internet Pr Install	hidge Protocol Het Scheduler Inter Sharing for Microsoft totocol Version 6 (TCP/IPv totocol Version 4 (TCP/IPv III Uninstall	Networks 6) 4 Properties
Or State	hidge Protocol et Scheduler inter Sharing for Microsoft rotocol Version 6 (TCP/IPv otocol Version 4 (TCP/IPv III Uninstall	Networks 6) 4) Properties
Vitware E     Vitware E     QoS Pack     Pie and P     Antemet P	Indge Protocol et Scheduler inter Sharing for Microsoft tocool Version 6 (TCP/IPv tocool Version 4 (TCP/IPv III Uninstall trol Protocol/Internet Proto	Networks 6) Properties properties
VMware E     QoS Pack     Pile and P     Antemet Pi     Antem	hidge Protocol et Scheduler inter Sharing for Microsoft tococ Version 6 (TCP/IPv otocol Version 4 (TCP/IPv "" Uninstall htrol Protocol/Internet Proti k protocol that provides oc	Properties
VMware E Oos Pack Oos Pack Pile and P Internet Pi Internet Pi Value Install Description Transmission Co wide area netwo across diverse in	Indge Protocol et Scheduler inter Sharing for Microsoft rotocol Version 6 (TCP/IPv otocol Version 6 (TCP/IPv minimum Uninstall Introl Protocol/Internet Proto its protocol that provides co reconnected networks.	Networks 6) 4) Properties occol. The default ommunication

Use the following IP address

(Configured a static IP address manually within the

same subnet of the router)

ou can get IP settings assigned is capability. Otherwise, you n r the appropriate IP settings.	automatically if your network supports eed to ask your network administrator			
Obtain an IP address autor	natically			
Use the following IP addres	is:			
IP address:	192 . 168 . 0 . 2			
Subnet mask:	255 . 255 . 255 . 0			
Default gateway:	192.168.0.1			
Obtain DNS server address	automatically			
Use the following DNS serv	er addresses:			
Preferred DNS server:	192.168.0.1			
Alternate DNS server:	<u> </u>			
Validate settings upon exit	Advanced			

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.
- 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 <u>192.168.0.1</u>, 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 Se	ettings			
Index	Туре	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
Туре	WWAN1 V
Description	

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

∧ WWAN Settings	
Automatic APN Selection	ON OFF
Dialup Number	*99***1#
Authentication Type	Auto
Switch SIM By Data Allowance	ON OFF 7
Data Allowance	0 7
Billing Day	

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

Enab	e on off
Primary Serve	er 8.8.8.8
Secondary Serve	er 114.114.114
Interv	al 300
Retry Interv	al 5
Timeou	ut 3
Max Ping Trie	3

Advanced Settings	
NAT Enable	ON OFF
Upload Bandwidth	10000 🦳
Download Bandwidth	10000
Overrided Primary DNS	
Overrided Secondary DNS	
Debug Enable	ON OFF
Verbose Debug Enable	OM 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	
∧ Statu	s				
Index	Mode	n Status	Modem Model	IMSI	Registration
1	R	eady	ME909s-120	4600158666188	91 Registered to home network
A Status					
Index 1	∧ Status Index Modem Status Modem Model 1 Ready ME9099-120 Index Modem Status Modem Model		IMSI 460015866618891 F	Registration Legistered to home network	
			Ready ME909s-120 SIM1		
		Phone Number			
		ICCID	460015866618891 89860116851118801636		
		Registration Network Provider	Registered to home netw CHN-UNICOM	rork	
		Network Type Signal Strength	LTE 15 (-83dBm)		
		Bit Error Rate	99		
		PLMN ID	46001 2507		
		Cell ID IMEI	06074702 867377020977280		
	1	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.

	LAN	1 T	Multiple IF	VLAN Tr	unk	Status	
ĺ	Netwo	ork Setting	s				?
ſ	Index	Interface	IP Address	Netmask			+
l	1	lan0	192.168.0.1	255.255.255.0			<b>X X</b>

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

General Settings	
Index	1
Interface	lan0 v
IP Address	192.168.0.1
Netmask	255.255.255.0
мти	1500

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

Configure multiple IP

Click Interface > LAN > Multiple IP as below.

LAN	l I	Multiple IP	VLAN Trunk	Status	
∧ Multip	le IP Settir	igs			
Index	Interface	IP Address	Netmask		+
1	lan0	172.16.7.29	255.255.0.0		<b>X X</b>

You may click  $\bowtie$  to edit the configuration of the LAN port, or click  $\times$  to delete the current LAN port. Now, click + to add a new LAN port.

∧ IP Settings	
Index	1
Interface	lan0 v
IP Address	172.16.7.29
Netmask	255.255.0.0

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

# Probustel

#### **Guangzhou Robustel LTD**

- Add: 3rd Floor, Building F, Kehui Park, No.95 Daguan Road, Guangzhou, China 510660
- Tel: 086-20-29019902
- Email: info@robustel.com
- Web: <u>www.robustel.com</u>