

# **Hardware Installation Quick Guide**

R2000 Dual

Industrial Dual Module Cellular VPN Router with

**Power over Ethernet** 

### **Package Contents**

Before installing the R2000 Dual Router, verify the kit contents as following:

- •1 x Robustel R2000 Dual Industrial Dual Module Cellular VPN Router with Power over Ethernet
- •1 x Terminal block for power
- •1 x Quick Start Guide with download link of other documents or tools
- **Optional Accessories** (sold separately)
- AC/DC power adapter
- POE power adapter
- •SMA cellular antenna for 3G/4G LTE
- Stubby/magnet RP-SMA Wi-Fi antenna
- Wall mounting kit
- •35 mm DIN rail mounting kit

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

# **Environmental Requirements**

- Power input: 9 to 48V DC
- Power consumption: 100 mA@12 V in idle state;

800 mA (peak)@12 V in communication state

- Operating temperature: -40 to 70°C
- Relative humidity: 5 to 95% RH

# Hardware Introduction

## Overview



# CAUTION!

- Device should be in accordance with the reliable grounding to avoid lighting strike.
- Use the rated power adapter for the device, and note the power polarity when wiring.
- Pay attention to waterproof in storage, transporting and operating environment.
- Place the device on the horizontal surface.
- Damaging the product's warranty labeling cannot enjoy the free maintenance in warranty period.

### **Reset Button**

**<u>Reboot:</u>** Press and hold the Reset button for at least 2~7 seconds under the operating status. <u>Restore to factory default settings</u>: Wait for 5 seconds after powering up the router, press and hold the Reset button by a small non-conductive stick with a blunt end until all twelve LEDs blinking one by one, and release the button within 5 second to return the router to factory defaults.

### **Ethernet Ports**

R2000 Dual Router has five Ethernet ports. Eth0 is a WAN port and Eth1~Eth4 are LAN ports supporting POE feature.

Every Ethernet port has two LED indicators, while each indicator has three states. The yellow one is **Link Indicator** and the green one doesn't mean anything. For details see the table below:

Indicator	State	Description
	On	Connection is working
Link Indicator	On, blinking	Data is being transmitted
	Off	Connection is not working

Name	Color	State	Description		
		On, 1/2 sec blink	Router is ready		
RUN	Green	On, 1 sec blink	Router is booting		
		Off	Router is powered off		
		LED 1 is on	SIM1 PPP connection is working		
РРР	Green	LED 2 is on	SIM2 PPP connection is working		
			OpenVPN: OpenVPN is connected		
		On	IPsec: IPsec is connected		
			Wi-Fi: Wi-Fi is connected		
USR	Green		OpenVPN: OpenVPN is disconnected		
		Off	IPsec: IPsec is disconnected		
			Wi-Fi: Wi-Fi is disconnected		
NET		On, blinking green	Unable to connect to the best network. E.g. When R2000 Dual uses the 4G SIM card but cannot connect to the 4G network, the NET LED will always blink. The condition of 3G and 2G network will, too.		
(LED 1 stands for Gree SIM 1, LED 2 stands for SIM 2)	Green	On, solid green	Connect to the best network. E.g. When R2000 Dual uses the 4G SIM card and connects to the 4G network, the NET LED will turn to solid green. The condition of 3G and 2G network will, too.		
		Off	Unable to access any network.		
	Green	All LEDs are on	Signal level: 21-31 (Optimum signal level)		
	Green	Two LEDs are on	Signal level: 11-20 (Average signal level)		
	Green	Only one LED is on	Signal level: 1-10 (Abnormal signal level)		
Signal Strength (Light 1 stands for SIM 1, light 2 stands for SIM 2)	binary 0 On: 1 001 010 011 100		IN code		

### **Hardware Installation**

**Step 1:** After opening the package, refer to the following figure to insert the SIM into the router. **Note:** Recommended torque for inserting is 0.5 N.m, and the maximum allowed is 0.7N.m.

Step 2: Attach the SMA external antenna to the router's antenna interface and twist tightly.Make sure the antenna is within the correct frequency rangeNote: Recommended torque for mounting is 0.35 N.m.

Step 3: Connect the router to the site ground wire by the ground screw before powering on (Optional).

**Step 4:** Connect the router's Ethernet port (Eth0/Eth1/Eth2/Eth3) to a PC via a standard cross-over cable.

Step 5: The router supports flat surface placement, wall mounting and DIN rail mounting.

### Wall mounting:

Use 4 pcs of M2.5\*4 flat head Phillips screws to fix the wall mounting kits 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:

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.



Step 6: R2000 Dual Router supports reverse polarity protection, but always refers to the figure below 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 48V DC.

#### CONNECTING THE REGULAR POWER SUPPLY





Step 7: R2000 Dual Router also supports POE feature. Please refer to the figure below to connect the power adapter correctly.
 Note: The range of power voltage is 48 to 57V DC.

#### POE CONNECTION

PIN	NAME
1	DI
2	VIN+
3	VIN-
4	PGND
5	POE+
6	POE-



### **POE Connection** (OPTIONAL)

R2000 Dual's four fast Ethernet LAN ports support POE feature (Voltage range: 48 to 57V DC), which can electrify the network terminal devices such as IP camera and other WLAN AP etc. See figure below for more details.



# Web Configuration

# **Quick Guide**

# Connect the Router to the PC

After installing the R2000 Dual Router, power it on connect it's Ethernet port (eth1/eth2/eth3/eth4) to a PC via a standard cross-over cable.

# **Configure the PC**

There are two methods to obtain 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. Go to 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 4. Two ways for configuring the IP address of PC: Status.

General		
Connection		
IPv4 Connectiv	vity:	Internet
IPv6 Connectiv	vity:	No Internet access
Media State:		Enabled
Duration:		09:30:11
Speed:		100.0 Mbps
Activity ———	Sent —	Received
Bytes:	12,818,574	83,948,334

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

nnect using:		
Qualcomm Ath	eros AR8162/8166/81	68 PCI-E Fast Ether
		Configure
s connection uses	the following items:	and the second s
🛯 🏪 Client for Mic	rosoft Networks	
🛛 📙 VMware Brid	ge Protocol	
QoS Packet	Scheduler	
File and Print	er Sharing for Microsof	t Networks
- Internet Prote	ocol Version 6 (TCP/IP	v6)
	ocol Version 4 (TCP/IP	v4)
- Internet Prote		
Internet Prote	ocol Version 4 (TCP/IP	oper I/O Driver
Internet Prote	ocol Version 4 (TCP/IP opology Discovery Map	oper I/O Driver
<ul> <li>Internet Prote</li> <li>Ink-Layer Te</li> <li>Ink-Layer Te</li> <li>Install</li> </ul>	ocol Version 4 (TCP/IP opology Discovery Mag opology Discovery Res	pper I/O Driver
	ocol Version 4 (TCP/IP opology Discovery Mag opology Discovery Res	oper I/O Driver ponder Properties
	ocol Version 4 (TCP/IP opology Discovery Map opology Discovery Res Uninstall	oper I/O Driver iponder Properties

Obtain an IP address automatically:

eneral	Alternate Configuration				
this cap	n get IP settings assigned a ability. Otherwise, you nee appropriate IP settings.				
0	otain an IP address automa	tically			
O Us	e the following IP address:				
IP ad	ddress:	1.00	5		
Subr	net mask:				
Defa	ult gateway:		1		
0 0	otain DNS server address a	utomatically			
Us	e the following DNS server	addresses:			
Prefe	erred DNS server:		*	4	
Alter	nate DNS server:	1.1	1	12	
⊡v	alidate settings upon exit			Adv	anced

Use the following IP address (configured a static IP address manually within the same subnet of R2000 Dual Router):

Seneral	
	ed automatically if your network supports u need to ask your network administrator S.
💮 Qbtain an IP address au	tomatically
Uge the following IP add	ress:
IP address:	192 . 168 . 0 . 2
Subnet mask:	255.255.255.0
Default gateway:	192.168.0.1
Obtain DNS server addre	ess automatically
O Use the following DNS se	erver addresses:
Preferred DNS server:	192.168.0.1
Alternate DNS server:	
Validate settings upon e	Adyanced

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

# Login the Router

- 1. On your PC, open a web browser such as Internet Explorer, Google and Firefox etc.
- From your web browser, enter the IP address of the router. The default IP address of R2000 Dual Router is 192.168.0.1, though the actual address may vary.



In the login page, enter the username and password, choose language and then click LOGIN.
 Note: If enter the wrong username or password over six

times, the login web will be locked for 5 minutes.



4. The home page of the R2000 Lite router's web interface is displayed, for example.

	and the second		
default password.	strongly recommended to change the	∆ It is s	
	mation	∧ System Inform	Status
R2000 Dual	Device Model		Interface
0 days, 00:05:34	System Uptime		Network
Wed Dec 16 10:12:28 2015	System Time		
1.2.0 (Rev 399)	Firmware Version		VPN
1.0	Hardware Version		Services
3.10.49	Kernel Version		System
15090140040008	Serial Number		
	nation	∧ Cellular Inform	
Ready	Modem Status		
ME909s-821	Model		
11.617.00.00.00	Firmware Version		
867223020050860	IMEI		
SIM2 using, total 1 SIMs	SIM Status		
Registered to home network	Network Registration		
CHN-UNICOM	Network Operator		

# **Configure the Cellular**

• Configure the Cellular

Click Interface > Link Manager > Link Manager > General Settings, choose "WWAN1" as the primary link and "WAN" as the backup link and "Cold Backup" as the backup mode, then click Submit > Save & Apply to make the configuration take effect.

Link Manager	Status		
General Setting	s		
	Primary Link	WWAN1 🤍 🖓	
	Backup Link	WAN	
	Backup Mode	Cold Backup	
	Emergency Reboot	OFF ?	

Link Settings section allows user to configure the parameter of link connection, include the WWAN1/WWAN2, WAN and WLAN. It is recommended to enable Ping detection to keep router always online. The Ping detection increases the reliability and also cost data traffic.

Click the edit button of WWAN1, refer to the figure below to set it parameters according to the current ISP, and then click Submit > Save & Apple to make it take effect.

Index	Description	Туре	Connection Type	
1		WWAN1	DHCP	
2		WWAN2	DHCP	
3		WAN	DHCP	
4		WLAN	DHCP	

Link Manager	
∧ General Settings	
Index	1
Туре	WWAN1 V
Description	

Enable Automatic APN Selection, the window is displayed

as below:



### Enable **Ping**, the window is displayed as below:

Enable	ON		
Primary Server	8.8.8.8		
Secondary Server			
Interval	300	0	
Retry Interval	5	0	
Timeout	3	0	
Max Ping Tries	3	0	

Upload Bandwidth	10000	
Download Bandwidth	10000	
Overrided Primary DNS		
Overrided Secondary DNS		

The modifications will take effect after clicking **Submit** and **Save & Apply** button.

• Check the Cellular Connection Status

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

Cellular	Status				
Status					
Index	IMSI	Registrat	ion	Signal Strength	Modem Model
1	460010432615366	Registered to hon	ne network	22 (-69dBm)	ME909s-120
2	460029143987644	Registered to hon	ne network	7 (-99dBm)	HE910-D
Status					
Index	IMSI	Registra	tion	Signal Stre	Modem Mod
1 4	60010432615366	Registered to h	ome net.	13 (-87dBm)	ME909s-120
		Index	1		
	M	odem Status	Ready		
		Current SIM	SIM1		
	Ph	one Number			
		IMSI	460010	432615366	
		ICCID	898601	14851074 <mark>4</mark> 912	267
		Registration	Register	ed to home net	work
	Netw	ork Provider	CHN-UN	ICOM	
	N	etwork Type	LTE		
	Sig	nal Strength	13 (-87	lBm)	
		Cell ID	2507,06	074702	
	м	odem Model	ME909s	-120	
		IMEI	867377	020134114	
	Firmy	are Version	11.617.	01.00.00	
2 4	60029143987644	Not registered.	search s.		HE910-D

# **Configure the IP Address**

• Configure Lan0

For R2000 Dual, the maximum number of LAN port is four which include lan0, lan1, lan2 and lan3.

Lan0~lan3 is available when they were selected randomly by eth1~eth4.

All of eth1~eth4 were default to lan0, and the default IP is 192.168.0.1/255.255.255.0.

Go to Interface > LAN > LAN > Network Settings, for example:



Click the edit button of the current LAN port, modify the **IP Address** and **Netmask** of Ian0. And then click **Submit > Save & Apply** to make the modification take effect.

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

• Configure Lan1

Go to the **Interface > Ethernet**, click the edit button of eth1, and choose lan1 as the **Port Assignment**.

Ports		Status	
A Port Se	Port Settings		0
Index	Port	Port Assignment	
1	eth0	wan	
2	eth1	lan0	
3	eth2	lan0	2
4	eth3	lan0	Ø
5	eth4	lan0	Z

Ports	
∧ Port Settings	
Index	2
Port	eth1 v
Port Assignment	lan1 v 🦻
POE Enable	ON OTE
	Submit Close

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

Go to Interface > LAN, and click the add button:

LAN	4	Multiple IP	VLAN Trunk	Status	
Netwo	ork Settings				0
Index	Interface	IP Address	Netmask		+
1	lan0	192.168.0.1	255.255.255.0		ZX

Select the interface as lan1, and configure the **IP Address** and **Netmask** of lan1.

LAN	
∧ General Settings	
Index	2
Interface	lani v
IP Address	192.168.0.1
Netmask	255.255.255.0
MTU	1500

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

#### • Configure Multiple IP

Go to Interface > LAN > LAN > Multiply IP, for example:

LAI	Ni interneti internet	Multiple IP	VLAN Trunk	Status	
Multip	le IP Settin	gs	laren de la composición de la composicinde la composición de la composición de la composición de la co		
Index	Interface	IP Address	Netmask		+
Index	meenace	In Producess			

Click i to edit the multiple IP of the LAN interface. Click to delete the multiple IP of the LAN interface. Click to add a multiple IP to the LAN interface.

Multiple IP	
∧ IP Settings	
Index	1
Interface	lan0 v
IP Address	172.16.99.67
Netmask	255.255.0.0

### Configure WAN

Go to Interface > Link Manager > General Settings, and click the edit button of WAN to enter the link configuration window.

<ul> <li>A General Settings</li> <li>Primary Link WWAN1 ♥ ⑦</li> <li>Backup Link WAN ♥</li> <li>Backup Mode Cold Backup ♥ ⑦</li> <li>Emergency Reboot ● ● ● ●</li> <li>A Link Settings</li> <li>Type Connection Type</li> <li>1 WWAN1 ● PHCP</li> <li>3 WAN ● DHCP</li> <li>4 WLAN ● DHCP</li> </ul>	Link Ma	nager	Status				
Index     Type     Connection Type       1     WWAN1     DHCP       3     WAN     DHCP	^ Gener	al Settings					
Index     Type     Connection Type       1     WWAN1     DHCP       3     WAN     DHCP				Primary Link	WWAN1	⊻ ?	
Ink Settings       Index     Description       Type     Connection Type       1     WWAN1       DHCP       3     WAN				Backup Link	WAN	~	
Ink Settings       Index     Description     Type     Connection Type       1     WWAN1     DHCP       2     WWAN2     DHCP       3     WAN     DHCP				Backup Mode	Cold Backup	v 7	
Ink Settings       Index     Description     Type     Connection Type       1     WWAN1     DHCP       2     WWAN2     DHCP       3     WAN     DHCP			Eme	rgency Reboot	OFF 2		
Index         Description         Type         Connection Type           1         WWAN1         DHCP           2         WWAN2         DHCP           3         WAN         DHCP							
1         WWAN1         DHCP           2         WWAN2         DHCP           3         WAN         DHCP	^ Link S	ettings					
1 WWANI DHCP 2 WWANZ DHCP 3 WAN DHCP 4 WLAN DHCP	Index	Description	Туре	Connection Ty	pe		
2 WWANZ DHCP 3 WAN DHCP 4 WLAN DHCP	1		WWAN1	DHCP			
3 WAN DHCP 4 WLAN DHCP	2		WWAN2	DHCP			
4 WLAN DHCP	3		WAN	DHCP			
	4		WLAN	DHCP			
			1				
	ALC: NOT THE OWNER OF THE OWNER OWNER OF THE OWNER						

Configure the WAN interface parameters such as the **Connection Type** as below:

Link Manager	
^ General Settings	
Index	3
Description	
Туре	WAN
Connection Type	DHCP

### Enable **Ping**, the window is displayed as below:

Enable	ON OFF		
Primary Server	8.8.8.8		
Secondary Server			
Interval	300	0	
Retry Interval	5	0	
Timeout	3		
Max Ping Tries	3	0	

MTU	1500		
Upload Bandwidth	10000	0	
Download Bandwidth	10000		
Overrided Primary DNS			
Overrided Secondary DNS			

FAQ

Connected to the router successfully and obtained the IP

### address automatically, but failed to login the webpage.

- 1. Check the cable connection.
- 2. Check whether the green LED of the current connected port is solid or blinking.
- Check whether another DHCP server or host occupies the IP address within the same LAN and causes IP conflict. If yes, connect the router to the PC directly to modify the IP address pool of DHCP.
- 4. Confirm whether the DHCP function has been closed factitiously if this is not the first use of this router. If yes, configure the IP address of the PC's LAN interface manually to make the router and the PC can access each other in the same LAN; or restore to the factory default settings of the router via the Reset button.
- 5. Check the firewall of the router to confirm whether the access is restricted or the HTTP protocol is closed. Please restart the firewall.

### What to do if I forgot the IP address of the router?

Press and hold the Rest button to return the router to factory defaults, and then enter "192.168.0.1" in your browser to log in the router again. See Chapter 1.4 for more details about Reset button.

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