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APPLICATION RANGE

Industrial Wireless Router	
GR500-U1A	
GR500-U1AS	Support GPS

with



Quick Start Guide

REVISION HISTORY

VERSION	DATE	DESCRIPTION
V1.0	2018-06-04	First release

contribution contribution



ABOUT THIS DOCUMENT

Reading Note

The symbols below are the reading notes you should pay attention on:



: Warning or Attention



: Note or Remark

NOTE: Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases



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Note: Consult our website for up-to-date product descriptions, documentation, application notes, firmware upgrades, troubleshooting tips, and press releases

Besides, GOSUNCN provides various technical support ways to the customers, such as support by phone, website, instant messaging, E-mail and on-site.

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1. PRODUCT INTRODUCTION

GR500 3G/4G LTE IoT industrial wireless communication router takes the advantage of public 4G network to provide data transmission through long distance.

The product uses high-performance 32-bit industrial grade communications processor and industrial grade wireless module, Software platform is an embedded real-time operating system, While providing an RS232 interface, 2 Ethernet LAN (one of which can be configured as WAN), At the same time, connect a serial port and Ethernet equipment, implement the data transparent transmission and routing functions.

The product has been widely used in the networking industry chain in the M2M industry,Such as smart grid,smart transportation,smart home,finance,mobile POS terminals,supply chain automation,industrial automation,intelligent building,fire, public safety,environmental protection,meteorology,digital medical,telemetry,space exploration,agriculture,forestry,water,coal, petrochemical and other fields.

2. PACKING LIST

Please kindly check the packing list, if t	here are omissio	ons, please contact the dealer.
Name of Accessory	Quantity	Remark
GR500 LTE Router Main Machine	1	
3G/4G Antenna	2 pieces	
Installation Hardware	1 pair	
Quick Start Guide	1 piece	
12VDC Power Adapter	1 piece	
RJ45 Cable	1 piece	
WLAN Antenna(The cable length is 1m)	1 piece	Optional
GPS Antenna	1 piece	Optional
RJ45-RS323 Cable	1 piece	Optional

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3. BEFORE INSTALLATION

3.1. GR500 PRODUCT EXTERIOR VIEW



Figure 3-1

3.2. INDICATOR LIGHT DESCRIPTION

Table 3-2

Indicator Light	Status	Description		
PWR	ON	Power ON		
	OFF	Power OFF		
	Flash	Temperature anomalies		
SYS	ON	System operating normally		
	OFF	Abnormal system operation		
	Flash	Temperature anomalies		
РРР	ON	Network connection		
	OFF	No dial		
	Fast Flash	Dialing		
	Slow Flash	Allocated on a non-4G network		
VPN	ON	Any VPN turned on		
	OFF	Disconnect		
	Flash	Connecting		



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SIG	ON	21~31
	Slow Flash	11~20
	Fast Flash	1~10
	OFF	No service
ВАК	ON	WAN as the primary link, and Ite work
	Flash	Exception, none of access
	OFF	WAN works, LTE not working
3 3 PC CONNECTION		





Figure 3-2 PC Connection

NOTE (Back of the device):

☑ Router antenna interface is SMA female socket. The matching antenna SMA male antenna screwed to the router interface and ensure tightened so as not to affect the signal quality.

Insert the SIM card holder the right of small yellow dots with spikes, SIM card sets to pop up. When installing the SIM card, the first SIM card into the card holder and ensure that the SIM card metal contacts facing down, and then insert the SIM card holder in the drawer and make sure it clicks into place.

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4. COMPUTER CONFIG (WINDOWS OS)



Select the internet protocol version 4 (TCP / IPv4) and click Properties.



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This connection uses the following items:

File and Printer Sharing for Microsoft Networks Internet Protocol Version 6 (TCP/IPv6) Internet Protocol Version 4 (TCP/IPv4)	Client for Mic	rosoft Networks Scheduler	
	File and Print	er Sharing for Microsoft	Networks
 Internet Protocol Version 4 (TCP/IPv4) Link-Layer Topology Discovery Mapper I/O Driver Link-Layer Topology Discovery Besponder 	Internet Proto	col Version 6 (TCP/IP	v6)
Link-Layer Topology Discovery Mapper I/O Driver	🗹 📥 Internet Proto	col Version 4 (TCP/IP	v4)
	 Link-Layer To Link-Layer To 	pology Discovery Map	per I/O Driver
			1

Figure 4-5

Select the Obtain an IP address automatically and Obtain DNS server address automatically.

Internet 协议	2版本 4 (TCP/IPv4) Prop	perties			×	
General Al	ternate Configuration					
You can ge this capabil for the app	t IP settings assigned aut ity. Otherwise, you need ropriate IP settings.	omatically if to ask your r	your ne	twork support	orts tor	
) Obtain	n an IP address automatic	ally				
O U <u>s</u> e th	ne following IP address:					
<u>I</u> P addre	iss:			3		
S <u>u</u> bnet r	nask:					
Default	gateway:					
() Obtai	n DNS server address aut	omatically				
O Use t	ne following DNS server a	ddresses:			_	
Preferre	d DNS server:			- a (
Alternat	e DNS server:			,		
Valid	ate settings upon exit			Ad <u>v</u> ance	d	
			ОК	C	ancel	



5. ROUTER PARAMETER CONFIG

5.1. BRIEF INTRODUCTION

Open the Chrome browser, enter 192.168.1.1 in the address bar to open the configuration screen and enter your password.

User name: admin

Password: admin

a di la cial di la ciad di la cia	System Status		System	n			
<···>	Network	•		e	Name	pg-204A2348340F	
	Applications	•		Login			
ô	VPN	-		0			
1	Forwarding	-	N		admin		
0	Security	•	.Netwo.				
\$	System	•	DHCP (OK	
			HostName				

Click on "English" to select English language .

		Syst	em Status			中文 English 也 至
	System Status Network Applications	•	System	Name Nodel	pg=20385474083F R800	
€ 	VPN Forwarding Security	•	Network WWAN	Version Protocol	NONE	
¢	System	•	VAN	Protocol MAC Status	Disconnected DBCP 22:32:54:74:08:40 Disconnected	
		5		Figure 5	-2	

Connected to the Internet, there are two ways, one is a mobile network, and the other is connected through the Ethernet WAN. Mobile Network:

Open the Network configuration WWAN, Fill SIM card operator APN and authentication type.



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🝶 🛛 System Status	
	Enabled
Network	A Modem Dial Number
⁺↓ LAN	CID Profile 1
◯ WAN	APN
WWAN	Authentication Type OFF
WLAN	PIN Code
DHCP	Advantage
Link Backup	Protocol auto
📟 Switch Port	Preferred network model 4G/3G/2G auto
Applications	▼ OK Refresh
VPN	•

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Ethernet WAN:

Open the "WAN" in the network configuration menu, in the "Connect Via" You can select the network mode.

WLAN Configuration:

Select "WLAN" option in the network configuration, turn on the wireless status, set SSID number and password.





aaa System Status <…> Network ▲	Enabled
↑↓ LAN	Mode Access Point (AP)
WAN	Hide SSID
S WLAN	Channel 1
Applications •	Network Mode 802.11n
🔒 VPN 👻	Channel Width 20 MHz - Encryption Mode WPA/WPA2 -
Forwarding • Security •	Cipher Auto
🗘 System 🝷	Password RG_762058
	OK Back Figure 5-5

Online Maintenance Configuration: Click "Application Configuration > Online Maintenance" to open the "ICMP Detection" tab, as shown in Figure 5-5

Two default addresses can be tested under public network, if it is used in private network condition, the default address in server 1 and server 2 should be modified to the ones which private network can be connected with, otherwise there may be some abnormal network faults caused by keeping disconnection.

🗐 System Status	Frahlad	
<> Network ▲	Ilse Port	
↑_ LAN	Server 1	www.baidu.com
◯ WAN	Port 1	80
WWAN	Server 2	www.yahoo.com
🔶 WLAN	Port 2	80
📩 DHCP	Timeout(Sec)	30
Link Backup		OK Refresh
🚥 Switch Port		
Applications 🔺		
M Keep Online		





6. ROUTER SYSLOG ILLUSTRATION

Choose "Debug" in system configuration and select target log under "Log Type", then click "Refresh". The table below is the parameter description.

Log Type	Description	Log Check
System Log	All router system log	Click "Refresh", new log will be displayed in log box
Kernel Log	Kernel log	Click "Refresh", new log will be displayed in log box
DNS Log	All IP address information of DNS under router	Click "Refresh", new log will be displayed in log box
DHCP Log	Router distribute IP address to client and get IP log from its WAN interface	 There is huge amount information of DNS log, DNS log should be enabled before log inquiry. Click "Refresh", new log will be displayed in log box
Keepalive Log	Log for online test of overtime connection	Click "Refresh", new log will be displayed in log box
PPP Log	Log of PPP dialing and VPN PPP dialing	Click "Refresh", new log will be displayed in log box
WWan Log	Log of module dialing	Click "Refresh", new log will be displayed in log box
WAN Log	Log of WAN interface	Click "Refresh", new log will be displayed in log box
PPTP Log	Log of PPTP VPN connection	Click "Refresh", new log will be displayed in log box
L2TP Log	Log of L2TP VPN connection	Click "Refresh", new log will be displayed in log box
IPSec Log	Log of IPSec VPN connection	Click "Refresh", new log will be displayed in log box

Choose "System log" as all log information, mark only read kernel log information. WWAN log and WAN log are mainly described here.

Ĵ	Sy	stem Status	
<···>	Ne	etwork	•
	۸n	nlications	-
	~P	plications	
	VP	'N	-
_			
	Fo	rwarding	-
÷		5	
-			
	Se	curity	•
~		-	
-			
•	Sy	stem	•
	1		
	•	Lloor	
	0	User	
		Rackup /	
		Restore	
		Restore	
	÷	Undate	
	÷	Firmware	
		rinnware	
	\bigcirc	System Tin	10
	0	system m	ic.
	Ê	Debug	
	-	Debug	
		Telnet	
		remet	

Figure6-1



WAN log:

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```
Log Type WAN Log
```

Sat Apr 1 14:43:20 2017 daemon.notice netifd: wan (1845): udhcpc (v1.24.2) started Sat Apr 1 14:43:21 2017 daemon.notice netifd: wan (1845): Sending discover. Sat Apr 1 14:43:21 2017 daemon.notice netifd: wan (1845): Sending select for 192.168.10.103... Sat Apr 1 14:43:21 2017 daemon.notice netifd: wan (1845): Lease of 192.168.10.103 obtained, lease time 43200 Sat Apr 1 14:45:45 2017 daemon.notice netifd: wan (1845): Received SIGTERM Sat Apr 1 14:45:45 2017 daemon.notice netifd: wan (2714): udhcpc (v1.24.2) started Sat Apr 1 14:45:46 2017 daemon.notice netifd: wan (2714): Sending discover.. Sat Apr 1 14:45:46 2017 daemon.notice netifd: wan (2714): Sending select for 192.168.10.103... Sat Apr 1 14:45:46 2017 daemon notice netifd: wan (2714): Lease of 192.168.10.103 obtained, lease time 43200 Sat Apr 1 14:47:21 2017 daemon.notice netifd: wan (2714): Received SIGTERM Sat Apr 1 14:47:21 2017 daemon.notice netifd: wan (3775): udhcpc (v1.24.2) started Sat Apr 1 14:47:22 2017 daemon.notice netifd: wan (3775): Sending discover... Sat Apr 1 14:47:22 2017 daemon.notice netifd: wan (3775): Sending select for 192.168.10.103... Sat Apr 1 14:47:22 2017 daemon.notice netifd: wan (3775): Lease of 192.168.10.103 obtained, lease time 43200 Sat Apr 1 14:47:33 2017 daemon.notice netifd: wan (3775): Received SIGTERM Sat Apr 1 14:47:33 2017 daemon.notice netifd: wan (4351): udhcpc (v1.24.2) started Sat Apr 1 14:47:33 2017 daemon.notice netifd: wan (4351): Sending discover... Sat Apr 1 14:47:36 2017 daemon.notice netifd: wan (4351): Sending discover. Sat Apr 1 14:47:36 2017 daemon.notice netifd: wan (4351): Sending select for 192.168.10.103... Sat Apr 1 14:47:37 2017 daemon.notice netifd: wan (4351): Lease of 192.168.10.103 obtained, lease time 43200

Refresh

Figure6-2

WWAN log: log information can be referred in the figure below, the information in red box is the information after online.

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				Log	Туре	WWa	an Log	~	
5.+	ånr	1	14 - 47 - 26	2017	doomon	notico	notifd:	Totorface 'www.d' is now up	
Sat.	Åpr.	1	14:47:33	2017	daamon	notice	netifd:	www.up	
Sat.	Åpr.	1	14:47:33	2017	daamon	notice	netifd:	www.an (4210): Beceived STGTERM	
Sat.	Å DY	1	14:47:33	2017	daaman	notice	netifd:	Interface 'www. 4' is now down	
Sat.	åpr.	1	14:47:33	2017	daamon	notice	netifd:	Interface 'wwan_4' has link connectivity loss	
Sat.	Åpr.	1	14:47:33	2017	daamon	notice	netifd:	Interface 'wwan 6' is now down	
Sat.	Ånr	1	14:47:33	2017	daemon.	notice	netifd:	Interface 'wwan 6' is disabled	
Cat.	Apr	1	14:47:33	2017	doomon	notice	notifd:	Interface 'wwan 6' has link connectivity loss	
Sat	Anr	1	14:47:34	2017	daemon	notice	netifd:	www. (4270) : sending $->$ AT+7ECMCALL=0	
Sat	Anr	1	14:47:34	2017	daemon	notice	netifd:	wwan (4270): Command failed: Permission denied	
Sat.	Anr	î	14:47:34	2017	daemon.	notice	netifd:	wwan (4367): No APN specified	
Sat	Anr	1	14:47:35	2017	daemon.	notice	netifd:	wwan (4367) ; sending \rightarrow AT	
Sat	Anr	1	14:47:36	2017	daemon	notice	netifd:	wwan (4367); sending -> AT+CFIN=1	
Sat	Apr	1	14:47:36	2017	daemon.	notice	netifd:	wwan (4367); sending -> AT+ZECMCALL=1	
Sat	Anr	1	14:47:37	2017	daemon	notice	netifd [.]	wwan (4367); Connected starting DMCP	
at	Anr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 4' is enabled	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 4' has link connectivity	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 4' is setting up now	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwan (4367): Command failed: Unknown error	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 6' is enabled	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 6' has link connectivity	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 6' is setting up now	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwan (4367): Command failed: Unknown error	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwan 4 (4427); udhcpc (v1.24.2) started	1
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwwan 4 (4427): Sending discover	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwwan 4 (4427): Sending select for	
10.1	17.24	9. :	111					_	
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	wwan 4 (4427): Lease of 10.77.249.111 obtained.	
Leas	se ti	me	7200						Ψ.
Sat	Apr	1	14:47:37	2017	daemon.	notice	netifd:	Interface 'wwan 4' is now up	

Refresh

14/14/2020 1 2 2

Figure6-3

Keepalive log: when network disconnection , will online test connection to www.baidu.com and ping www.yahoo.com as

timeout, and will connect again.

Fri Jul 22 17:53:08 2016 daemon.info dnsmasq[2045]: using nameserver 218.85.157.99#53 Fri Jul 22 17:53:08 2016 daemon.info dnsmasq[2045]: using nameserver 218.85.152.99#53 Fri Jul 22 17:53:08 2016 user.notice firewall: Reloading firewall due to ifup of wwan (wan0) Fri Jul 22 17:53:11 2016 kern info kernel: [42.530000] raw_sendmsg: kpalive forgot to set AF_INET. it! Fri Jul 22 17:53:23 2016 kern.notice kernel: [55.010000] random: nonblocking pool is initialized Fri Jul 22 18:04:50 2016 user.debug : host:www.baidu.com,80 timeout Fri Jul 22 18:05:50 2016 user.debug : host:www.baidu.com,80 timeout F zi Jul 22 18:05:55 2016 user.debug : host:www.yahoo.com,80 timeout F zi Jul 22 18:06:19 2016 user.debug : host:www.baidu.com,80 timeout Fri Jul 22 18:06:26 2016 user.debug : host:www.yahoo.com,80 timeout Fri Jul 22 18:06:50 2016 user.debug : host:www.baidu.com,80 timeout Fri Jul 22 18:U6:55 2016 user.debug : dns error conn Fri Jul 22 18:06:55 2016 daemon.notice netifd: Interface 'lan' is now down Fri Jul 22 18:06:55 2016 kern info kernel: [867.110000] br-lan: port 1(eth0.1) entered disabled stat Fri Jul 22 18:06:55 2016 kern info kernel: [867.110000] device eth0.1 left promiscuous mode Fri Jul 22 18:06:55 2016 kern info kernel: [867.110000] br-lan: port 1(eth0.1) entered disabled stat Fri Jul 22 18:06:55 2016 kern info kernel: [867.110000] IPv6: ADDRCONF(NETDEV_UP): eth0.1: link is n ready Fri Jul 22 18:06:55 2016 daemon.notice netifd: Interface 'lan' is disabled





Fri	Jul	22	18:06:56	2016	daemon.notice netitd: Interface wan b is now down	
Fri	Jul	22	18:06:56	2016	daemon.notice netifd: Interface 'wwn 6' has link connectivity loss	
Fri	Jul	22	18:06:56	2016	daemon.warn dnsmaso[2045]: no servers found in /tmp/resolv.conf.auto. will retry	
Fri	Jul	22	18:06:56	2016	daemon.notice netifd: wwan 4 (2217): Received SIGTERM	
Fri	Jul	22	18:06:56	2016	daemon.notice netifd: Interface 'wwan 4' is now down	
Fri	Jul	22	18:06:56	2016	daemon.notice netifd: Interface 'wwan 4' is disabled	
Fri	Jul	22	18:06:56	2016	daemon.notice netifd: Interface 'wwan 4' has link connectivity loss	
Fri	Jul	22	18:06:57	2016	daemon.notice netifd: radio0 (2660): command failed: Not supported (-122)	
Fri	Jul	22	18:06:57	2016	user.notice firewall: Reloading firewall due to ifup of lan (br-lan)	
Fri	Jul	22	18:06:57	2016	kern info kernel: [869.250000] br-lan: port 1(eth0.1) entered forwarding state	
Fri	Jul	22	18:06:59	2016	daemon.notice netifd: wwan (2657): sending -> AT NETACT=0.0	
Fri	Jul	22	18:06:59	2016	daemon.notice netifd: wwan (2657): Error running AI-command	
Fri	Jul	22	18:06:59	2016	deemon notice netifd. waven (2657). Reiled to disconnect	
Fri	Jul	22	18:06:59	2016	daemon.notice netifd: Interface 'wwan' is now down	
Fri	Jul	22	18:06:59	2016	daemon.notice netifd: Interface 'wwan' is setting up now	
Fri	Jul	22	18:07:01	2016	daemon.notice netifd: wwan (2827): sending \rightarrow AT	
Fri	Jul	22	18:07:02	2016	daemon.notice netifd: wwan (2827): sending -> AT+CFUN=1	
Fri	Jul	22	18:07:02	2016	daemon.notice netifd: wwan (2827): sending -> AT MODECONFIG=2	
Fri	Jul	22	18:07:03	2016	daemon.notice netifd: wwan (2827): sending -> AT+CGDCONT=1, "IP", "ctnet"	
Fri	Jul	22	18:07:04	2016	daemon.notice netifd: wwan (2827): sending \rightarrow AT NETACT=1,0	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: wwan (2827): Connected, starting DHCP	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: Interface 'wwan' is now up	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: Network device 'wan0' link is up	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: Network alias 'wan0' link is up	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: Interface 'wwan_4' is enabled	
Fri	Jul	22	18:07:05	2016	daemon.notice netifd: Interface 'wwan_4' has link connectivity	
					Figure6-4	
					•	
					100 m	



7. FEDERAL COMMUNICATION COMMISSION INTERFERENCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution:

• Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

• This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FCC ID: 2APNR-GR500