R3000 LG robustOS

Industrial LoRaWAN Gateway

Low Power Consumption & Long Range Communication

INTRODUCTION

Robustel R3000 LG is an industrial-grade LoRaWAN gateway, integrated with LoRaWAN wireless communication technology and cellular network technology, to provide users with wireless long-distance data transmission services. R3000 LG allows access to various types of LoRa application nodes, and supports wired Ethernet and wireless 4G/3G/2G access to the cloud platform, mainly for LoRaWAN data transmission between LoRa node and cloud platform.

LPWAN technology is a type of RF Technology designed for low cost and mostly battery operated end devices and sensors. **LoRaWAN** is a MAC level protocol that uses LoRa Radio Technology as its physical layer. One can create both public and private networks with LoRaWAN. The LoRa Alliance has created a fully open LoRaWAN standard   allowing the creation of star based LPWAN networks where end devices and sensors communicate with gateways connected to a cloud based (or on premise) LoRaWAN Network server. All communications are fully 128-bit AES encrypted, bidirectional and end devices can register onto the network over the air.

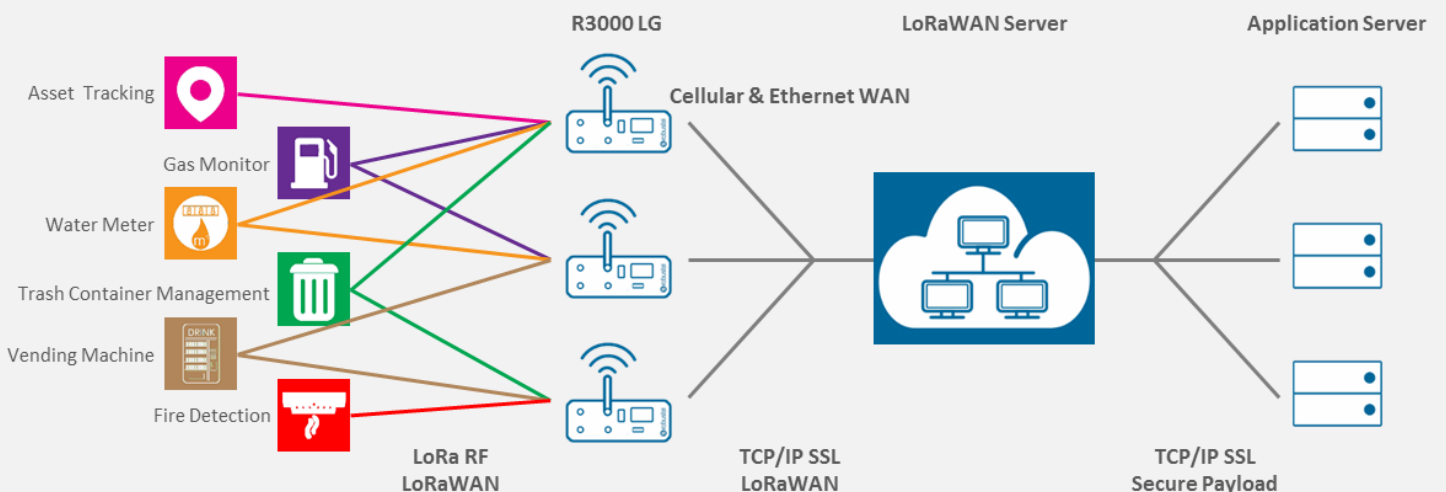### Waterproof TPH6700 IP67 Housing (Optional)

Protecting your LoRaWAN Gateway from extreme outdoor environments and harsh industrial conditions

KEY FEATURES

- Supports global LoRaWAN frequency bands
- Compatible with LoRaWAN and private protocols
- Compatible with any LoRaWAN cloud server
- Up to 8 channels supports receive data simultaneously
- Supports Packet Forwarder Version 2.2.1 and Packet Forwarder Protocol Version 1
- RobustOS + SDK
- TPH6700 Housing optional
- Backhaul option supports 3G, 4G and Ethernet
- Supports dual SIM
- Robust industrial design (9 to 60V DC, -40 to +75 °C)

APPLICATION EXAMPLE

R3000 LG   LoRaWAN Server   Application Server

Asset Tracking
Gas Monitor
Water Meter
Trash Container Management
Vending Machine
Fire Detection

Cellular & Ethernet WAN

LoRa RF
LoRaWAN

TCP/IP SSL
LoRaWAN

TCP/IP SSL
Secure Payload

SPECIFICATIONS

LoRa Interface

Number of antennas	1
Connector	SMA female with 50 ohms impedance
Standards	433-434 MHz (Europe)
	863-870 MHz (Europe)
	470-510 MHz (China)
	915-927 MHz (Australia)
	902-928 MHz (North America)
	920-928 MHz (Japan)
Max transmitted power	+24.5 dBm
Max sensitivity	-142 dBm
Reception capacity	Supports 8 channels, and each channel can receive data simultaneously
	Supports 1 MHz bandwidth demodulation
Communication range	15 km

Cellular Interface

Number of antennas	2 (MAIN + AUX)
Connector	SMA female
SIM	2 (3 V & 1.8 V)
Standards	2G/3G/4G

Ethernet Interface

Number of ports	2 x 10/100 Mbps, 2 x LAN or 1 x LAN + 1 x WAN
Magnet isolation	1.5 KV

GPS/GLONASS Interface (Optional)

Number of antennas	1
Connector	SMA female with 50 ohms impedance
Acquisition sensitivity	GPS: greater than -148 dBm
	GLONASS: greater than -145 dBm
Horizontal position accuracy	GPS: 2.5 m
	GLONASS: 2.6 m
Protocol	NMEA-0183 v4.10

Serial Interface

Number of ports	1 x RS-232 or 1 x RS-485
Connector	7-pin 3.5 mm female socket with lock
Baud rate	300 bps to 230400 bps
Parametric form	8E1, 8O1, 8N1, 8N2, 7E2, 7O2, 7N2, 7E1
RS-232	TxD, RxD, RTS, CTS, GND
RS-485	Data+ (A), Data- (B)

Digital Input

Number of ports	2 x DI (dry contact)
Connector	4-pin 3.5 mm female socket
Isolation	3KVDC or 2KVrms
Absolute maximum VDC	"V+" +5V DC (DI)
Absolute maximum ADC	300 mA

Others

Reset button	1 x RST
SD	1 x Micro SD interface
Expansion	1 x USB 2.0 host up to 480 Mbps
CLI	1 x CLI interface
LED indicators	1 x RUN, 1 x MODEM, 1 x USR, 1 x RSSI, 1 x NET, 1 x SIM
Built-in	RTC, Watchdog, Timer

Software (Basic features of RobustOS)

LoRaWAN protocols	V1.0 Class A/Class C and V1.0.2 Class A/Class C
Network protocols	PPP, PPPoE, TCP, UDP, DHCP, ICMP, NAT, HTTP, HTTPs, DNS, ARP, BGP, RIP, OSPF, NTP, SMTP, Telnet, VLAN, SSH2, DDNS, etc.
VPN tunnel	IPsec, OpenVPN, GRE
Firewall	DMZ, anti-DoS, Filtering (IP/Domain name/ MAC address), Port Mapping, Access Control
Management	Web, CLI, SMS
Serial port	Transparent, TCP Client/Server, UDP, Modbus RTU Gateway

App Center (Available Apps for RobustOS)

Apps*	L2TP, PPTP, DMVPN, RobustVPN, VRRP, QoS,

Request on demand. For more Apps please visit www.robustel.com.

Power Supply and Consumption

Connector	3-pin 5 mm female socket with lock
Input voltage	9 to 60V DC
Power consumption	Idle: 100 mA@12 V
	Data link: 400 mA (peak) @12 V

Physical Characteristics

Ingress protection	IP30
Housing & Weight	Metal, 570 g
Dimensions	125 x 104 x 43.5 mm
Installations	Desktop, wall mounting and 35 mm DIN rail

Approvals

Regulatory	CE (433MHz), CE (868MHz), RCM (915MHz)
Environmental	RoHS, WEEE
EMI	EN 55032: 2012/AC: 2013 (CE&RE) Class B
EMS	IEC 61000-4-2 (ESD) Contact Level 2; Air Level 3
	IEC 61000-4-3 (RS) Level 2
	IEC 61000-4-4 (EFT) Level 2
	IEC 61000-4-5 (Surge) Level 3
	IEC 61000-4-6 (CS) Level 2

ORDERING INFORMATION

Model	R3000-LG4LA	R3000-LG4LB	R3000-LGNUA	R3000-LGNUB
Gateway Type	LTE Gateway	LTE Gateway	--	--
Serial Port Type	RS-232	RS-485	RS-232	RS-485
Air Interface	GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/HSPA+/DC-HSPA+/ TD-SCDMA/CDMA (CDMA 1X/EVDO)/FDD LTE/TDD LTE		--	
Frequency Bands 4G*	AU: B1/B3/B5/B7/B8/B28, B40 EU: B1/B3/B7/B8/B20/B28/B31, B38/B40 US: B2/B4/B5/B13/B17/B25, B41 JP: B1/B3/B8/B9/B18/B19/B21/B28, B41 CN: B1/B3, B38/B39/B40/B41		--	
3G	WCDMA/HSDPA/HSUPA/HSPA+/DC-HSPA+: B1/B2/B5/B6/B8/B9/B19 TD-SCDMA: B34/B39 CDMA (CDMA 1X/EVDO): R0/A BC0/BC1/BC10		--	
2G	850/900/1800/1900 MHz		--	
Operating Environment	-40 to +75 °C/5 to 95% RH		-40 to +75 °C/5 to 95% RH	

For more information about 4G frequency bands in different countries, please contact your Robustel sales representative.