PRODUCT DATASHEET

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.

RCMS is Robustel's free router monitoring service that is fully compatible with the R3000 LG. You can try Robustel's free router management platform by signing up here: https://rcms-cloud.robustel.net

robustel RCMS CLOUD

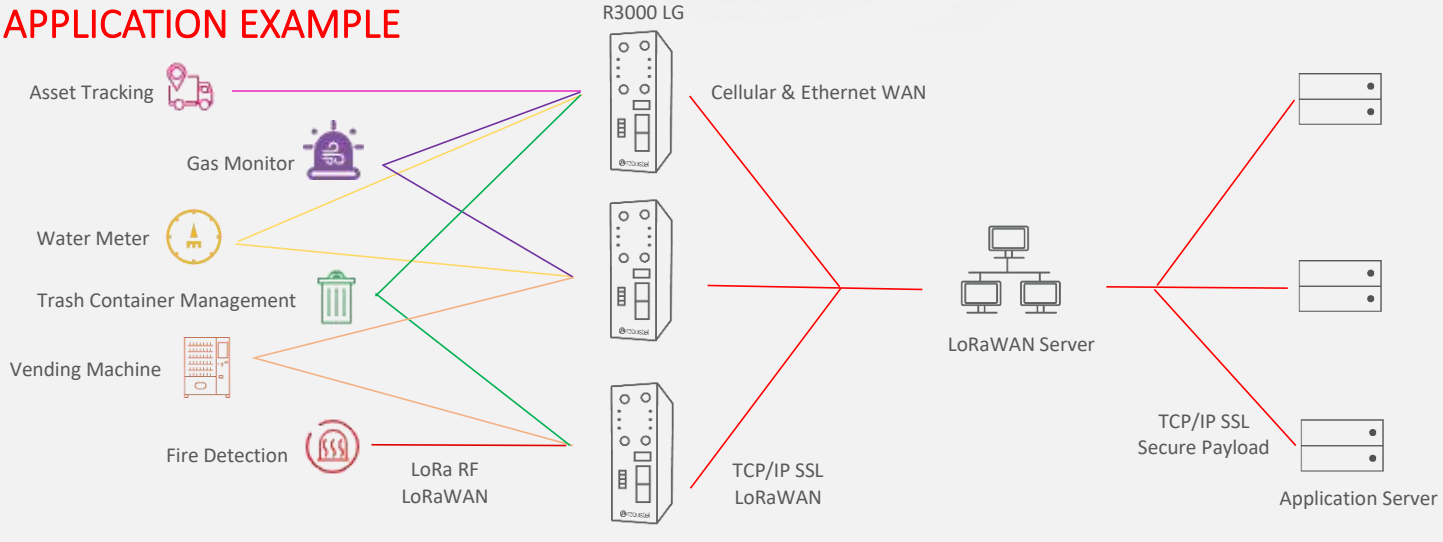
KEY FEATURES

- 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 ~ 60 VDC, -40 ~ +75 °C)

Waterproof TPH6700 IP67 Housing (Optional)

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

APPLICATION EXAMPLE



SPECIFICATIONS

LoRa Interface

Number of antennas	1
Connector	SMA-K with 50 ohms impedance
Standards	863-870 MHz (Europe) 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-K
SIM	2 Mini SIM (2FF)
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 protection	1.5 KV

GNSS Interface (Optional)

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

Serial Interface

Number of ports	1 x RS232 or 1 x RS485
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
Signal definition	RS232: TxD, RxD, RTS, CTS, GND RS485: Data+ (A), Data- (B)
Flow control	RTS/CTS (for RS232)

Digital Input

Number of ports	2 x DI (dry contact)
Connector	4-pin 3.5 mm female socket
Isolation	3 KV DC or 2 KV rms
Absolute maximum VDC	"V+" +5 VDC (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
Remote management	Web, CLI, SMS
Serial port	Transparent, TCP Client/Server, UDP, Modbus RTU Gateway

App Center (Available Apps for RobustOS)

Apps*	lm_csq, Preferred PLMN, RCMS, LoRiot, L2TP, PPTP, DMVPN, VRRP, QoS, SNMP, Language

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

SDK

Supported programming language	C, C++
Flash available for SDK	64 MB
RAM available for SDK	64 MB

Power Supply and Consumption

Connector	3-pin 5 mm female socket with lock
Input voltage	9 ~ 60 VDC
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 mounting
Operating temperature	-40 ~ +75 °C
Storage temperature	-40 ~ +85 °C
Relative humidity	5 ~ 95% RH

Regulatory and Type Approvals

Environmental	RoHS2.0, 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	PN	LoRa Frequency	Frequency Bands*	Country/ Region	Certifications (*In progress)
R3000-LGNUA	B028001	863 ~ 870 Mhz	-	EMEA, Oceania	CE, RCM
	B028002	902 ~ 928 Mhz		EMEA, Oceania, USA	CE, RCM, FCC
R3000-LG4LA	B028716	863 ~ 870 Mhz	**4G**: LTE FDD: B1/B2/B3/B4/B5/B7/B8/B12/ B13/B18/ B19/B20/B25/B26/B28 LTE TDD: B38/B39/B40/B41 **3G**: WCDMA: B1/B2/B4/B5/B6/B8/B19 **2G**: GSM: B2/B3/B5/B8	EMEA	CE
	B028718	902 ~ 928 Mhz		Oceania, North America	RCM, FCC, IC
R3000-LG4LB	B028719	902 ~ 928 Mhz		Oceania, North America	RCM, FCC, IC, PTCRB, AT&T

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

Email: info@robustel.com
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