



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

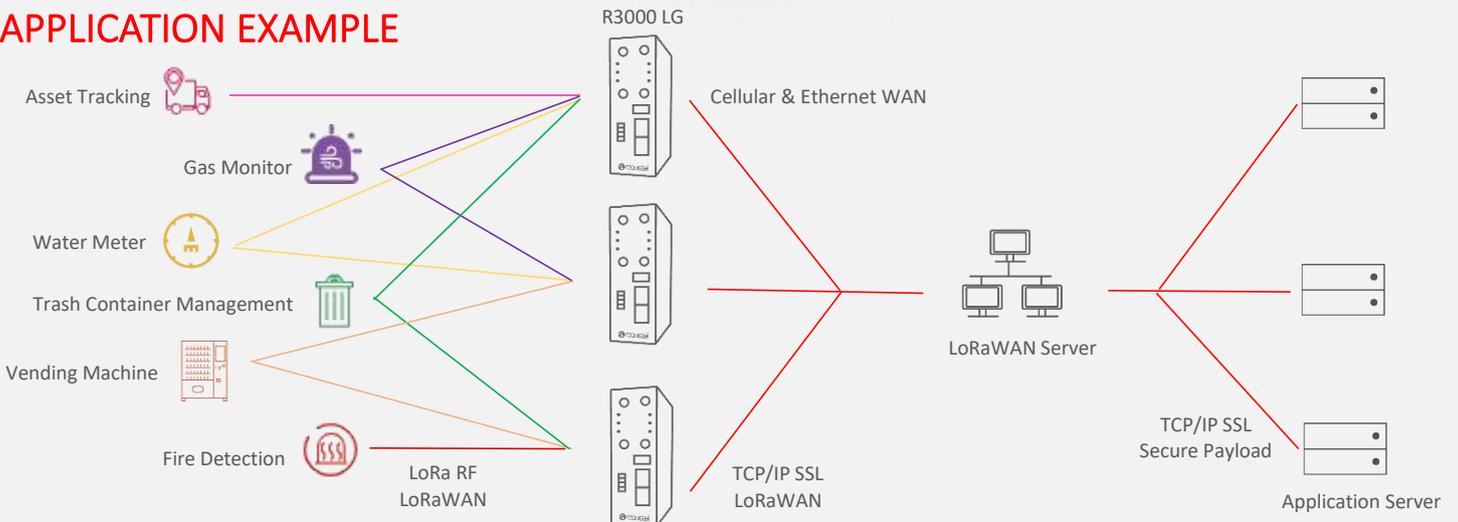
- Supports global LoRaWAN frequency bands
- Compatible with LoRaWAN and private protocols
- Compatible with any LoRaWAN cloud server
- Up to 8 channels supports receive data simultaneously
- Supports Packet Forwarder Version 2.2.1 and Packet Forwarder Protocol Version 1
- RobustOS + SDK
- TPH6700 Housing 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 (wet 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* | Im_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 | RS-232 | RS-485 | LoRa Frequency | Frequency Bands* | Country/Region | Certifications (*In progress) |
|-------------|---------|--------|--------|----------------|---|------------------------|-------------------------------|
| R3000-LG4LA | 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 | EMEA | CE |
| | B028718 | ✓ | - | 902 ~ 928 Mhz | | Oceania, North America | RCM, FCC, IC |
| R3000-LG4LB | B028719 | - | ✓ | 902 ~ 928 Mhz | 3G: WCDMA: B1/B2/B4/B5/B6/B8/B19 2G: GSM: B2/B3/B5/B8 | Oceania, North America | RCM, FCC, IC, PTCRB, AT&T |

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