RG-02 Specification

High frequency

Version V1.0.0

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# Document resume

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<th>Version</th>
<th>Date</th>
<th>Develop/revise content</th>
<th>Edition</th>
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<tr>
<td>V1.0.0</td>
<td>2022.08.17</td>
<td>First Edition</td>
<td>Shaoxiang Guo</td>
<td>Hong Xu</td>
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Notice
1. Product Overview

RG-02 is an indoor LoRaWAN gateway. Supports Semtech data packet transponders and LoRaWAN base station functions, and is compatible with standard LoRaWAN protocols.

The high-frequency RG-02 gateway adopts the combination design of SX1302 LoRa RF baseband chip + 2x SX1250 RF front-end, supports 10 programmable parallel demodulator paths. The gateway supports Wi-Fi, Ethernet, 3G/4G cellular network access, and can be easily deployed to various application sites.

The RG-02 is preset with a variety of standard LoRaWAN frequency band options, which can adapt to different countries and regions. And it also supports user-defined frequency bands to build a private LoRa network.

RG-02 can communicate with ABP LoRaWAN terminal nodes without LoRaWAN server, and the data parsing and forwarding functions are realized by the gateway itself. This lightweight deployment method is very convenient for system integrators to access existing IoT applications directly without building LoRaWAN servers or using third-party LoRaWAN services.

1.1. Characteristic

- Open-source OpenWrt system
- Web GUI and SSH are managed through LAN or WiFi
- Analog 49x LoRa demodulator
- LoRaWAN Gateway
- 10 programmable parallel demodulator paths
- Pre-configured to support different LoRaWAN regional settings
- Allow custom region parameters
- Support different levels of logon
- Supports Semtech data packet transponders
- Support LoRaWAN base stations
- 3G/4G cellular connection
1.2. Specification parameter

■ Hardware system:
✓ AR9331 400MHz
✓ 64MB memory
✓ 16MB flash memory

■ API:
✓ 10M/100M RJ45 port x 1
✓ WiFi:802.11 b/g/n
✓ LoRaWAN Wireless
✓ PowerWAN：5V DC，2A, Type C
✓ USB 2.0 host connector x 1
✓ Mini PCI E connector X 1
✓ SX1302+2 x SX1250
- WiFi norm:
  - IEEE 802.11 b/g/n
  - Band: 2.4~2.462GHz
  - 11n transmit power: mcs7/15: 11db mcs0: 17db
  - 11b transmit power: 18db
  - 11g 54M transmit power: 12db
  - 11g 6M transmit power: 18db
  - 11g 54M sensitivity: -71dbm
  - 11n 20M sensitivity: -67dbm

- LoRa specifications:
  - Sensitivity up to -140dBm
  - Suppression of 70 dB continuous wave interference at 1 MHz offset
  - Can work under the condition of negative SNR, CCR up to 9dB
  - Analog 49 x LoRa demodulator and 1 x (G)FSK demodulator
  - Dual digital transceiver radio front-end interface
  - 10 programmable parallel demodulator paths
  - Dynamic data rate (ADR) adaptive
  - Real Antenna Diversity or Real Simultaneous Dual Band

- Cellular 4G LTE:
  - Mini SIM card slot
  - Downstream data rate up to 150Mbps, upstream data rate up to 50Mbps
  - Global LTE, UMTS/HSPA + and GSM/GPRS/EDGE coverage
  - MIMO technology meets the requirements of modern wireless communication systems for data rate and link reliability.
2. Main parameters

<table>
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<th>Table 1 main parameters</th>
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<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td><strong>LoRa solution</strong></td>
</tr>
<tr>
<td><strong>Max. output power</strong></td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
</tr>
<tr>
<td><strong>Size</strong></td>
</tr>
<tr>
<td><strong>Antenna</strong></td>
</tr>
<tr>
<td><strong>Working Band</strong></td>
</tr>
<tr>
<td><strong>Frequency setting range</strong></td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
</tr>
<tr>
<td><strong>WiFi</strong></td>
</tr>
<tr>
<td><strong>Ethernet network</strong></td>
</tr>
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</table>
3. Indicator light and button description

Table 5 indicator light status and key function table

<table>
<thead>
<tr>
<th>Indicator light or button</th>
<th>Network Status</th>
<th>LED status or button function</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>wireless indicator light</td>
<td>Not defined</td>
<td>Not defined</td>
<td>/</td>
</tr>
<tr>
<td>System indicator light</td>
<td>LoRaWAN server is not connected</td>
<td>The red light is always on</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Connecting to LoRaWAN server</td>
<td>Blue light flashing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connected to LoRaWAN server</td>
<td>The blue light is always on</td>
<td></td>
</tr>
<tr>
<td>Ethernet indicator light</td>
<td>Not connected</td>
<td>Lights off</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Connected</td>
<td>The red light is always on and flashing (data activity)</td>
<td></td>
</tr>
<tr>
<td>Power Indicator</td>
<td>No power supply</td>
<td>Lights off</td>
<td>/</td>
</tr>
<tr>
<td></td>
<td>Powered</td>
<td>The red light is always on</td>
<td></td>
</tr>
<tr>
<td>Restore factory settings</td>
<td>/</td>
<td>Reset key</td>
<td>Long press to reset</td>
</tr>
</tbody>
</table>
4. Product Notes

RG-02 Gateway has built-in corresponding RF filters according to different frequency bands. When the gateway is configured to operate at frequencies other than the recommended frequency band, there will be high attenuation and the communication distance will be affected.
5. Contact us

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