Specification for

WisGate Edge Lite 2

WisGate Series RAK7268

Version V1.3 | November 2020

1 Overview

This document helps customers quickly understand the hardware interface, RF, software and electrical specifications of RAK7268.

1.1 Description

RAK7268 is an indoor gateway based on low power LoRaWAN protocol. It supports PoE power supply and can connect the standard LoRaWAN terminals and carry out bidirectional communication. Gateway can connect the NS (network server) via standard Ethernet, and support network and firewall functions. RAK7268 also supports 2.4G WiFi .

RAK7268 built-in OpenWRT operating system, users can flexibly configure network parameters and LoRaWAN protocol parameters through the Web management platform. RAK7268 supports MQTT Bridge function, can use the MQTT integrated to third-party platforms.

RAK7268 can connect the standard NS (network server) and the local NS. And it also supports the built-in NS (By default, a license that supports 128 terminals and 5 external gateways is embedded. If your demand exceeds the above limit, please contact the sales department for a new license). It does not need users to deploy NS in the cloud and locally. It is especially suitable for small and medium-sized scenarios in industry applications, saves the cost for server and R&D investment, and has the advantages of high execution efficiency and shorter delay. According to customer's choice,RAK7268 integrates the RAK2287 or RAK2247 LoRa concentrator module, The RAK2287 LoRa module supports eight uplink channels and one downlink transmission channel. For the heating problem of SX1302 centralized operation,RAK2287 uses the graphene, silicone grease to optimize the heat dissipation performance of chips and modules and ensure the stability of transmission.The RAK2247 is a LoRa concentrator module with the mini PCIe form factor based on SX1301, which enables an easy integration into an existing routers and others network equipment with LoRa Gateway capabilities.

The product model with **RAK2247** module is **RAK7268-112**, The product model with **RAK2287** module is **RAK7268-113**.

1.2 Product Features

- Supports 8RX /1TX channels LoRa
- Supports 2.4G WiFi
- 100Mbase-T Ethernet with POE
- Multi uplink backup with Ethernet, WiFi
- OpenWRT software supports LoRaWAN gateway and network configuration
- Heat sink to dissipate heat
- Can integrate with both private and public(TTN) Network Servers
- Supports TF card for storage
- Indoor operation temperature

2 Specifications

2.1 Hardware Interfaces

The hardware interfaces of RAK7268 gateway include DC 12V, ETH interface, Console interface, Reset key, TF Card slot, Status indicator LEDs, LoRa Antenna connector etc. As shown in the following figure.

Figure 2: RAK7268 Interfaces

The function of the Reset key is as follows:

Short press: Restart the Gateway.

Long press (5s and above): Restore Factory Settings.

The following table shows the LEDs status of RAK7268.

Table 1: LEDs Status Description

LEDs	Status Indication Description
PWR LED	● Power Indicator, Led on when device power on
Breathing LED	● Breathing after system up
ETH LED	● ON - linkup
	● OFF - linkdown
	● Flicker - Data Transmitting and Receiving
LoRa LED	● ON - LoRa is working
	● OFF - LoRa is not working
	● Flicker - Indicate that LoRa Packet receiving and sending
WLAN LED	● AP Mode:
	ON - WLAN is working;
	Flicker - Data Transmitting and Receiving
	● STA Mode:
	Flicker slowly (1Hz) - Connection Disconnected;
	ON - Connection Successful;
	Flicker - Data Receiving and Sending;

2.2 Main Specifications

Table 2: Main Specifications of RAK7268

Feature	Specifications
Computing	● MT7628,DDR2RAM 128MB
WIFI Feature	● Frequency: 2.4GHz(802.11b/g/n)
	● RX Sensitivity: -95dBm (Min),
	● Operation Channels: 2.4GHz,1-13
	● TX Power: 18.1dBm (Max)
Bluetooth Feature	● Frequency: 2.4GHz(LE 1M/2M)
	● RX Sensitivity: -103dBm (Min),
	● Operation Channels: 2.4GHz,0-39
	● TX Power: 3.23dBm (Max)
LoRa Feature	● SX1302 Mini PCIe card(RAK2287),SX1301 Mini PCIe card(RAK2247)
	● 8 Channels
	● RX Sensitivity: -142 dBm (Min)
	● Frequency:902MHz~928MHz
Power Supply	● DC 12V-1A
	● POE (IEEE 802.3af), 36~57VDC
Power Consumption	● 12W (typical)
ETH	● RJ45(10/100M)
Console	● Type-C(USB)
Antenna	● LoRa:RP-SMA Female Connector
	● Wi-Fi: Internal Antenna
LEDs	● POWER LED
	● Breathing LED(Top Side)
	● ETH LED(On ETH Connector)
	● LoRa LED
	● WLAN LED
Ingress Protection	● IP30
Enclosure Material	● Plastics
Weight	● 0.3kg
Dimension	● 166mm x 127mm x 36mm

Feature	Specifications
Operating Temp.	● -10 to 55˚C
Installation method	● Wall mounting

2.3 RF Specifications

2.3.1 WiFi Radio Specifications

Table 3: WiFi Radio Specifications

Feature	Specifications
Wireless Standard	● IEEE 802.11b/g/n
Operating Frequency	● ISM band: 2.412~2.472(GHz)
Operation Channels	● 2.4GHz: 1-13
Transmit Power (The max. power maybe different depending on local regulations) -per chain	● 802.11b 　18.1dBm@ 1Mbps 　18.1dBm@ 11Mbps ● 802.11g 　16.14dBm@ 6Mbps 　16.14dBm@ 54Mbps ● 802.11n(2.4G) 　16.26dBm@MCS0 (HT20) 　16.26dBm@MCS7 (HT20) 　15.78dBm@MCS0 (HT40) 　15.78dBm@MCS7 (HT40)
Receiver Sensitivity (Typical)	● 802.11b 　-95dBm@ 1Mbps 　88dBm @11Mbps ● 802.11g 　-90dBm @6 Mbps 　-75dBm@54Mbps ● 802.11n(2.4G) 　-89dBm@MCS0 (HT20) 　-72dBm @MCS7(HT20) 　-86dBm @MCS0(HT40) 　-68dBm @MCS7(HT40)

2.3.2 LoRa Radio Specifications

Table 4: LoRa Radio Specifications

Feature	Specifications
Operating Frequency	US915
Transmit Power	RAK7268-112 (RAK2247 Module): 12.70 dBm (Max)
	RAK7268-113 (RAK2287 Module): 13.39 dBm (Max)
Receiver Sensitivity	-142 dBm (Min)

2.4 Software Specifications

The following chapters introduce software specifications of RAK7268 indoor gateway. It includes LoRa, network and management.

2.4.1 LoRa

- Supports class A, C
- Supports LoRa package forward
- Supports country code setup
- Supports TX power setup
- Supports data logger
- Supports statistic
- Supports location setup
- Supports server address & port setup

2.4.2 Network

- Supports WiFi AP mode
- Supports uplink backup
- Supports 802.1q
- Supports DHCP Server/Client
- Supports router module NAT
- Supports firewall

2.4.3 Management

- Supports WEB management
- Supports SSH2
- Supports firmware update
- Supports NTP
- Supports configure the LoRa Packet Forwarder
- Supports Build-in LoRa Server
- Supports OpenVPN, Ping Watch Dog
- Supports MQTT Bridge

5 Configure the Gateway

You can login to the WEB management page to overview the status of your gateway and configure your gateway.

For more information about the WEB management platform and the configuration guide of the gateway, please refer to this document:

https://doc.rakwireless.com/rak7258-micro-gateway/web-management-platform

6 Contact Information

Please contact us if you need technical support or want to know more information.

Support center: https://forum.rakwireless.com/

Document center：https://doc.rakwireless.com/

Email us: info@rakwireless.com

7 Certification Information

FCC Caution:

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

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.

IMPORTANT NOTE:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, according 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 following 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 or more 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 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 a minimum distance of 20 cm between the radiator& your body.

ISEDC Warning:

This device complies with Innovation, Science, and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d' Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil nedoit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device complies with RF exposure guidelines, users can obtain Canadian information on RF exposure and compliance. The minimum distance from the body to use the device is 20 cm.

Le présent appareil est conforme Après examen de ce matériel aux conformité ou aux limites d'intensité de champ RF, les utilisateurs peuvent sur l'exposition aux radiofréquences et la conformité and compliance d'acquérir les informations correspondantes. La distance minimale du corps à utiliser le dispositif est de 20cm.

8 Revision History

Revision	Description	Date
1.0	Initial Release	2020-08-29
1.1	Update pictures and add certification information,Remove GPS function.	2020-09-18
1.2	Add Bluetooth ,Update FCC/IC certification test data	2020-11-02
1.3	Distinguish between RAK7268-112 and RAK7268-113	2020-11-27

9 Document Summary

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