RAK7267 WisGate Soho Pro Datasheet

Overview

Description

The RAK7267 WisGate Soho Pro is an innovative 8-channel LoRaWAN® gateway designed for outdoor deployments. It supports Wi-Fi and cellular connectivity.

This gateway uses an IP67-rated Unify Enclosure, a weatherproof and flame-retardant enclosure made of UV stabilized ABS plastic that protects internal components from dust and water. The new enclosure is designed to allow the LoRa, LTE, Wi-Fi, and GPS antennas to be inside the enclosure.

In addition, RAK7267 operates under WisGateOS 2 , which is built on the latest OpenWrt kernel. The OS Web UI features a new design and supports multiple extension installations, enabling remote management using WisDM for personalized gateway customization.

Features

Hardware

- IP67 Unify enclosure
- LoRa Concentrator for up to **8 channels**
- Backhaul: Wi-Fi and LTE
- GPS
- Supports 9 ~ 36 V_{DC} power supply and RAK Solar Battery Kit
- Internal antenna for LoRa, LTE, Wi-Fi, and GPS

Software

- WisGateOS 2
- WisGateOS 2 Extensions : OpenVPN, Wireguard VPN, and others
- Remote management with WisDM Fleet Management
- Built-in Network Server (LoRaWAN support V 1.0.3)
- LoRaWAN Stack support with Semtech SX1303

- LoRa Frame filtering (node whitelisting in Packet Forwarder mode)
- MQTT v3.1 bridging with TLS encryption
- Buffering of LoRa frames in Packet Forwarder mode in case of NS outage (no data loss)
- Listen Before Talk
- Fine timestamping

Specifications

Overview

This section presents the block diagram for the RAK7267 that shows the internal architecture of the hardware.

Block Diagram

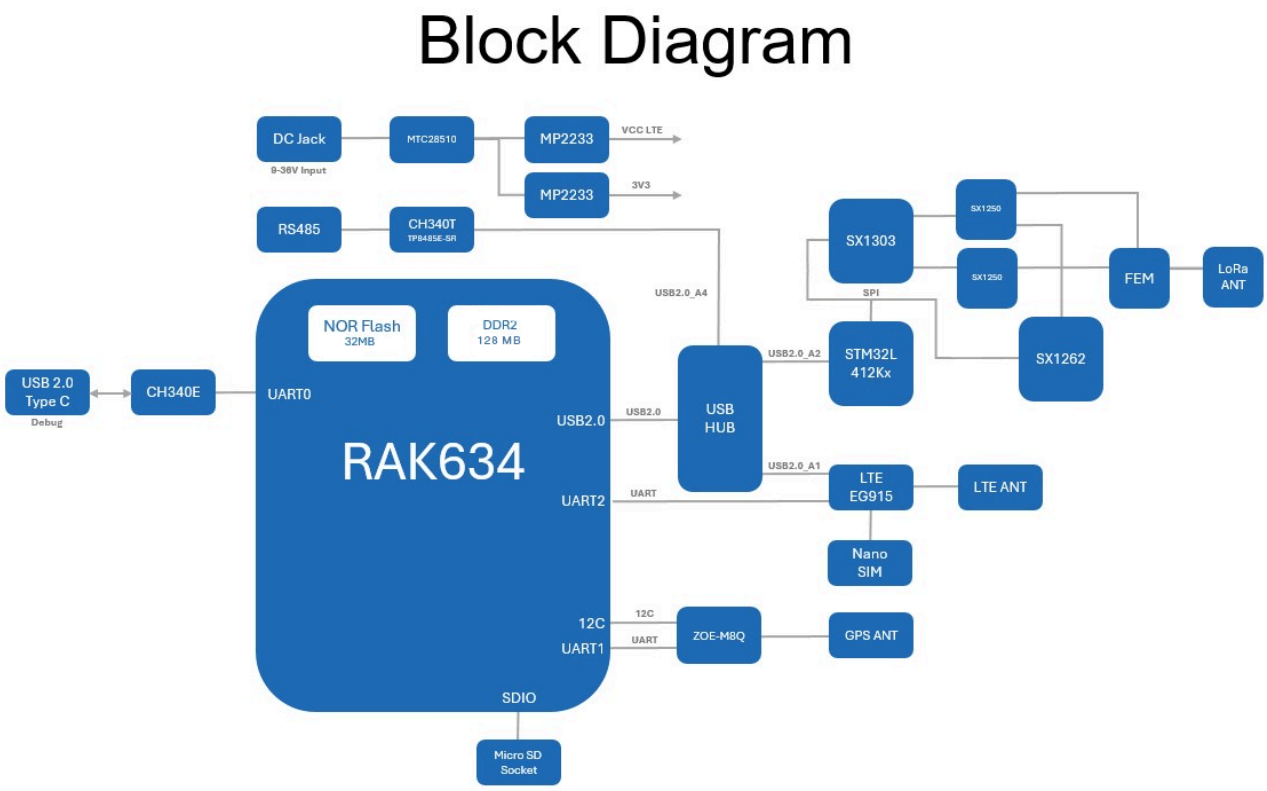

Figure 1: RAK7267 Block Diagram

Main Specifications

Feature	Specifications
Computing	MT7628, DDR2 RAM 128 MB

Feature	Specifications
Frequency	• EU868 • IN865 • RU864 • US915 • AU915 • KR920 • AS923-1/2/3/4
LoRa Feature	SX1303 On Board
	8 Channels
	RX Sensitivity: - 139 dBm (Min)
	TX Power: 27Nano SIM Card:dBm (Max)
	Listen Before Talk
Cellular Feature	**Nano SIM Card:** 12.30 mm x 8.80 mm x 0.67 mm Supports Quectel EG915U-EU / EG915U-LA / EG915Q-NA(IoT / M2M -LTE Cat 1 module)
	EG915U-EU for EMEA/Brazil/Australia/New Zealand Region
	LTE FDD: B1 / B3 / B5 / B7 / B8 / B20 / B28
	GSM: B2 / B3 / B5 / B8
	EG915U-LA for Latin America Region
	LTE FDD: B2 / B3 / B4 / B5 / B7 / B8 / B28 / B66
	GSM: B2 / B3 / B5 / B8
	EG915Q-NA for North America Region

Feature	Specifications
	LTE FDD: B2 / B4 / B5 / B12 / B13 / B66 / B71
Wi-Fi Feature	Frequency: 2.4 GHz (802.11b / g / n)
	2×2 MIMO
	RX Sensitivity: - 95 dBm (Min)
	TX Power: 20 dBm (Max)
	Operation channels: 2.4 GHz: 1-13
Power Supply	9~36 V_{DC} Compatible with RAK Solar Battery Kit
Antenna	LoRa / LTE / Wi-Fi / GPS: Internal antenna
	LoRa
	Frequency Range: 863 MHz~928 MHz Peak Gain: 2.5 dBi VSWR: ≤ 1.5 Efficiency: >85% Polarization: Vertical
	LTE
	Frequency Range: 700 MHz~960 MHz/1710 MHz~21700 MHz Peak Gain: 3 dBi VSWR: ≤ 3 Efficiency: >60% Polarization: Vertical
	WiFi
	Frequency Range: 2400 MHz~2500 MHz Peak Gain: 2 dBi

Feature	Specifications
	VSWR: ≤ 2.5 Efficiency: >75% Polarization: Vertical
	GPS
	Frequency Range: 1575 MHz~1602 MHz Peak Gain: 28 dBi VSWR: <2 Polarization: RHCP
Ingress Protection	IP67
Weight	0.66 kg
Dimension	180 mm x 130 mm x 60 mm
Enclosure Material	UV stabilized ABS
Operating Temperature	- 30° C to + 55° C
Storage Temperature	- 40° C to + 55° C
Operating Humidity	0~95% RH non-condensing
Storage Humidity	0~95% RH non-condensing
Installation Method	Pole mounting (other options available per request)

Hardware

The hardware specification discusses the interfaces and the parameters of the RAK7267. It also covers the LoRa and Wi-Fi specifications of the board.

Interfaces

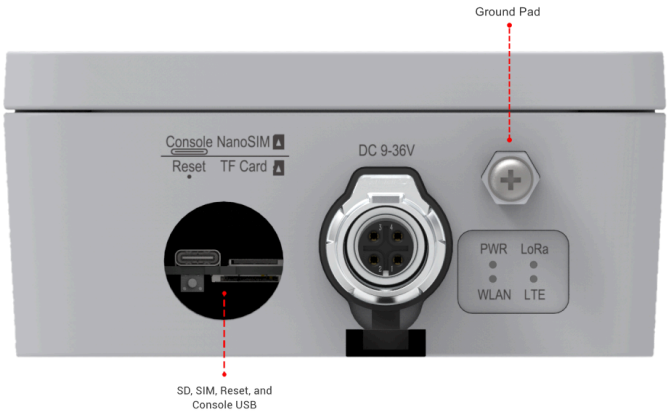

Figure 2: RAK7267 Interfaces

> **NOTE**
>
> The SD card in the SD card slot must not be ejected. Doing so may affect the performance of the device, as various logs and data are stored on it.

Reset Key Functions

The functions of the Reset key are as follows:

- **Short press**: Restart the gateway.
- **Long press** (5s and above): Restore factory settings.

LED Indicators

The status of the LEDs is described below. Refer to the LED printing on the main board.

LEDs	Status	Description
PWR	On	Device power on
	Off	Device power off
LoRa	On	LoRa is working
	Off	LoRa is not working
	Flash	Indicate that LoRa Packet receiving and sending

LEDs	Status	Description
WLAN	**AP Mode:**	
	On	WLAN is working
	Off	Wi-Fi disable
	Flash	Data receiving and sending
	STA Mode:	
	Slow Flash	(1 Hz) – Connection Disconnected
	On	Connection Successful
	Flash	Data receiving and sending
LTE	Slow Flash 1 (1800 ms Dark / 200 ms Bright)	Unregistered network (Network searching)
	Slow Flash 2 (200 ms Dark / 1800 ms Bright)	Idle status (Online)
	Quick Flash (125 ms Bright / 125 ms Dark)	Data receiving and sending

RF Specifications

Wi-Fi Radio Specifications

Feature	Specifications
Wireless Standard	IEEE 802.11b / g / n
Operating Frequency	ISM band: 2.412~2.472 GHz

Feature	Specifications
Operation Channels	2.4 GHz: 1-13
Transmit Power (The max power maybe different depending on local regulations) - per chain	802.11b
	19 dBm @1 Mbps
	19 dBm @11 Mbps
	802.11g
	18 dBm @6 Mbps
	16 dBm @54 Mbps
	802.11n (2.4 GHz)
	18 dBm @MCS0 (HT20)
	16 dBm @MCS7 (HT20)
	17 dBm @MCS0 (HT40)
	15 dBm @MCS7 (HT40)
Receiver Sensitivity (Typical)	802.11b
	- 95 dBm @1 Mbps
	- 88 dBm @11 Mbps
	802.11g
	- 90 dBm @6 Mbps

Feature	Specifications
	- 75 dBm @54 Mbps
	802.11n (2.4 GHz)
	- 89 dBm @MCS0 (HT20)
	- 72 dBm @MCS7 (HT20)
	- 86 dBm @MCS0 (HT40)
	- 68 dBm @MCS7 (HT40)

LoRa Radio Specifications

Feature	Specifications
Operating Frequency	• EU868 • IN865 • RU864 • US915 • AU915 • KR920 • AS923-1/2/3/4
Transmit Power	27 dBm (Max)
Receiver Sensitivity	-139 dBm (Min)

Electrical Characteristics

The RAK7267 WisGate Soho Pro supports the RAK Battery Plus Solar system, DC adapter, and custom DC power. Choose the option that is most suitable for your needs.

Cable and Power Adapter: When the gateway is deployed indoors, it is recommended to use the cable and power adapter to power the gateway.

DC Cable: Customized DC power supply to power the gateway, Use the DC cable to connect the external power supply. The external power supply voltage range is 9~36 V_{DC}.

Cable for RAK9155 Battery Plus: For outdoor deployment scenarios, it is recommended to use the RAK9155 Battery Plus as its power supply. This cable is dedicated to the RAK9155 Battery Plus.

Mechanical Characteristics

Parameter	Value
Dimensions	180 mm x 130 mm x 60 mm
Enclosure Material	UV stabilized ABS
Ingress protection	IP65

Environmental Requirements

Parameter	Value
Operating Conditions	Operating Temperature: - 30° C to + 55° C Storage Temperature: - 40° C to + 85° C Operating Humidity: 0~95% RH non-condensing Storage Humidity: 0~95% RH non-condensing

Software

LoRa	Network	Management
Gateway OTA management	Wi-Fi Client mode	WisDM

LoRa	Network	Management
LoRa package forward (packet forwarder, Basics Station)	LTE APN Setup	SSH2, NTP
Frequency Band Setup	Support 802.1q	Firmware update
Country Code setup	Uplink backup	LoRa Packet Forwarder
Server Address and Port Setup	Firewall	Built-in Network Server
TX Power Setup	DHCP Server/Client	MQTT Bridge
Data logger	Wi-Fi AP mode	OpenVPN, Ping Watch Dog
Location setup		WEB UI
Statistic		
Supports class A, B, C		
Server address and Port setup		

Firmware

Model	Firmware Version	Source
RAK7267 WisGate Soho Pro	v2.2.13	Download

Models/Bundles

Part Number	8 Channel SX1303	Cat1 Cellular	GPS	Wi-Fi
RAK7267-XYZ	√	√	√	√

Certification

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