RAK7266 WisGate Soho Lite Datasheet

Overview

Description

The **RAK7266 WisGate Soho Lite** is an indoor LoRaWAN gateway from the **RAK Soho Series**, designed for versatile and compact IoT deployments. It comes with an **integrated LTE Cat 1 module** and offers **multiple backhaul options**, including **cellular (LTE)**, **WiFi**, and **Ethernet**, ensuring versatile deployment options in environments with or without wired internet access.

This gateway supports **8 LoRa channels** and onboards **2.4 GHz WiFi** for easy configuration through the default WiFi AP mode. An **Ethernet port** is available for wired network access when needed. The device is powered via a **stable 12V DC input**, making it well-suited for controlled indoor environments such as smart panels, utility cabinets, or fixed installations.

Depending on the variant, LTE antennas may be **internal** or **externally connected via RP-SMA connectors**, allowing users to select the best option for signal conditions and installation constraints.

The RAK7266 runs on **WisGateOS 2**, a secure, modular firmware based on OpenWrt developed by RAK. It provides access to a wide range of features, including extension modules, a built-in LoRaWAN Network Server, and advanced system diagnostics. Additionally, it supports integration with **WisDM** for centralized management and fleet monitoring, making it a powerful and practical solution for LTE-based indoor deployments.

Features

Hardware

- **8 LoRa channels**
- Supports **2.4 GHz WiFi**, with **AP mode enabled by default** for easy configuration
- **100M Base-T Ethernet port** (for network access, no PoE)
- **RP-SMA** LoRa antenna connector
- An integrated **LTE Cat 1 module** for cellular backhaul
- Multi backhaul options with **Ethernet, WiFi, and Cellular**
- **Breathing light** for visual status indication

Software

- **WisGateOS 2** : A secure, OpenWrt-based OS developed by RAK for enhanced stability and flexibility.
- **Extension add-ons** for customized gateway functionality:
  - Compatibile with WisGateOS 2 version 2.2.x or later
  - Compatible with WisGateOS 2 versions 2.0.x and 2.1.x
- **WisDM** for remote management and monitoring
- Built-in **Network Server**
- **Basic Station** and **Packet Forwarder** modes
- **LoRa Frame Filtering** (node whitelisting in Packet Forwarder mode)
- **MQTT v3.1 Bridging** with **TLS encryption**
- LoRa frame buffering in **Packet Forwarder mode** in case of NS outage, ensuring **no data loss**

Specifications

Overview

Block Diagram

The block diagram of RAK7266 shows the internal architecture of the hardware.

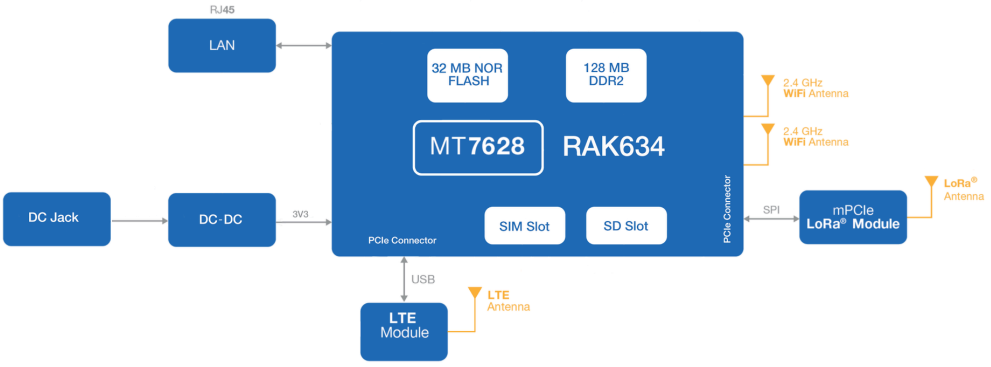

Figure 1: RAK7266 Block Diagram

Main Specifications

Feature	Specifications
Computing	MT7628, 128 MB DDR2 RAM
LoRa Feature	SX1302 / SX1303 Mini PCIe card (*The default configuration uses the SX1302 Mini PCIe card, with an SX1303 version available upon request.*)
	8 Channels
	Frequency: EU868/IN865/RU864/US915/AU915/KR920/AS923-1-2-3-4/EU433/CN470
	LoRa Radio: Refer to the LoRa Radio Specifications section for detailed information.
WiFi Feature	Frequency: 2.4 GHz (802.11b/g/n)
	Channels: 1-13
	WiFi Radio: Refer to the WiFi Radio Specifications section for detailed information.
Cellular	**Nano SIM Card:** 12 mm x 9 mm x 0.67 mm Supports Quectel EG915U-EU / EG915U-LA / EG915Q-NA(IoT / M2M -LTE Cat 1 module) LTE Radio: Refer to the LTE Radio Specifications section for detailed information.
Power Supply	12 V_{DC}
Antenna	LoRa: External antenna / RP-SMA connector
	WiFi: Internal antenna
	LTE: Internal antenna or External antenna / RP-SMA connector
Ingress Protection	IP30
Enclosure Material	Plastic (PC+ABS)
Weight	0.3 kg
Dimensions	166 mm x 127.5 mm x 36 mm Gateway only (no antenna, no bracket)

Feature	Specifications
Operating Conditions	• Operating Temperature: -10° 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
Installation Method	• Desktop mounting • Wall mounting (via included bracket) • Rail mounting (via included bracket)

Hardware

The hardware specification covers the interfacing of the RAK7266 gateway and its corresponding functionalities, along with the parameters and standard values of the board.

Interfaces

The RAK7266 gateway provides several hardware interfaces, enabling various connectivity options and functionalities.

Figure 2: RAK7266 interfaces

Interface Description

Interfaces	Description
DC 12V	Power Input
ETH	10/100 Mbps Ethernet interface for wired network connectivity.
Console	**USB Type-C** port for debugging and maintenance
Reset	- **Short press**: Reboot the device. - **Long press (⩾5 sec)**: Factory reset.
NanoSIM	Slot for a NanoSIM card, enabling cellular connectivity.

Interfaces	Description
TF Card	Pre-installed 16 GB microSD card for log storage and uplink frame buffering ⚠ **WARNING** **Do not** eject the SD card located in the SD card slot during installation, as it stores logs and data essential for the device's performance.
LEDs	• PWR • LoRa • WLAN • LTE • Breathing LED • ETH
LoRa	LoRa® antenna connector
MAIN	LTE antenna Connector
AUX	Reserve

LED Indicators Details

LEDs	Status Indication Description	
PWR	On	Gateway is powered on
	Off	Gateway is powered off
LoRa	On	LoRa module active
	Off	LoRa module inactive
	Flashing	Indicates LoRa packet transmission/reception
WLAN	**AP Mode**	
	On	AP is up
	Off	AP is down
	Flashing	Data transmitting or receiving
	STA Mode	
	Slow Flash (1 Hz)	Disconnected from WiFi network
	On	Connected to WiFi network
	Flashing	Data transmitting or receiving
LTE	Slow Flash 1 (1800 ms bright / 200 ms dark)	Searching for network (unregistered)
	Slow Flash 2 (200 ms bright / 1800 ms dark)	Idle (registered to network)

LEDs	Status Indication Description	
	Quick Flash (125 ms bright / 125 ms dark)	Data transmitting or receiving
Breathing LED	Red (fast blinking)	Abnormal (e.g., no internet)
	Blue (slow blinking)	Normal operation
	The breathing light can be programmed for different statuses. For detailed instructions on how to program the breathing light, refer to the appropriate installation guide based on your firmware version: • Compatible with WisGateOS 2 version 2.2.x or later • Compatible with WisGateOS 2 versions 2.0.x and 2.1.x	
ETH	On	Linkup
	Off	Linkdown
	Flashing	Data transmitting and receiving

RF Specifications

LoRa Radio Specifications

Parameter	Specifications
Operating Frequency	EU868/IN865/RU864/US915/AU915/KR920/AS923-1/2/3/4/EU433/CN470
Transmit Power	27 dBm (Max)
Receiver Sensitivity	-139 dBm (Min)

WiFi Radio Specifications

Parameter	Specifications
Wireless Standard	IEEE 802.11b/g/n
Operating Frequency	ISM band: 2.412-2.472 GHz
Operation Channels	2.4 GHz: 1-13
Transmit Power: per chain (The max power differs depending on local regulations.)	**802.11b** • 19 dBm @ 1 Mbps • 19 dBm @ 11 Mbps
	802.11g • 18 dBm @ 6 Mbps • 16 dBm @ 54 Mbps

Parameter	Specifications
	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 • -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)

LTE Radio Specifications

Module / Region	Supported Bands
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	LTE FDD: B2 / B4 / B5 / B12 / B13 / B66 / B71

Software

The RAK7266 gateway runs on WisGateOS 2, a robust software platform designed for efficient network management and integration. Below are the key software features and capabilities:

For more detailed information on software configurations and usage, refer to the WisGateOS 2 User Guide .

LoRa	Network	Management
Gateway OTA management	Wi-Fi AP mode	WisDM
LoRaWAN Packet Forwarding (Packet Forwarder, Basics Station)	Wi-Fi Client mode	SSH2
Frequency Band Setup	LTE APN Setup	Firmware update
Country Code Setup	VLAN (802.1Q) Support	Built-in Network Server
TX Power Setup	Uplink backup	MQTT Bridge

LoRa	Network	Management
Data logger	Firewall	OpenVPN, Ping Watch Dog
Location Setup	DHCP Server/Client	Web UI
LoRa Statistics		NTP
Supports Class A and C		
Server Address and Port Setup		

Firmware

Model	Source
RAK7266 WisGate Soho Lite	Download

Certification

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