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PRODUCT CATEGORIES

WISGATE

RAK7266

DATASHEET

# 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:
  - [Compatible 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.

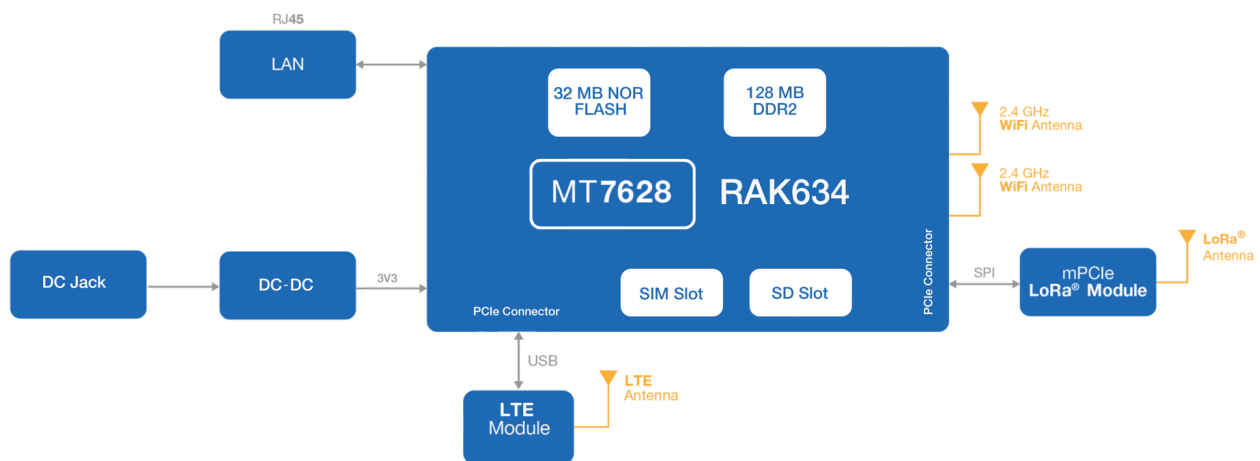


Figure 1: RAK7266 Block Diagram

### Main Specifications

Feature	Specifications
Computing	MT7628, 128 MB DDR2 RAM
LoRa Feature	SX1302 / SX1303 Mini PCIe card ( <i>The default configuration uses the SX1302 Mini PCIe card, with an SX1303 version available upon request.</i> )
	8 Channels
	Frequency: EU868/IN865/RU864/US915/AU915/KR920/AS923-1-2-3-4/EU433/CN470
	LoRa Radio: Refer to the <a href="#">LoRa Radio Specifications</a> section for detailed information.
WiFi Feature	Frequency: 2.4 GHz (802.11b/g/n)
	Channels: 1-13
	WiFi Radio: Refer to the <a href="#">WiFi Radio Specifications</a> section for detailed information.
Cellular	<p><b>Nano SIM Card:</b> 12 mm x 9 mm x 0.67 mm</p> <p>Supports Quectel EG915U-EU / EG915U-LA / EG915Q-NA(IoT / M2M - LTE Cat 1 module)</p> <p>LTE Radio: Refer to the <a href="#">LTE Radio Specifications</a> section for detailed information.</p>
Power Supply	12 V <sub>DC</sub>
Antenna	LoRa: External antenna / RP-SMA connector
	WiFi: Internal antenna
	LTE: Internal antenna or External antenna / RP-SMA connector

Feature	Specifications
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)
Operating Conditions	<ul style="list-style-type: none"> <li>• Operating Temperature: -10° C to + 55° C</li> <li>• Storage Temperature: -40° C to + 85° C</li> <li>• Operating Humidity: 0~95% RH non-condensing</li> <li>• Storage Humidity: 0~95% RH non-condensing</li> </ul>
Installation Method	<ul style="list-style-type: none"> <li>• Desktop mounting</li> <li>• Wall mounting (via included bracket)</li> <li>• Rail mounting (via included bracket)</li> </ul>

## 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	Function
DC 12V	Power Input	Provides power supply for the gateway.
ETH	RJ45 (10/100 Mbps)	10/100 Mbps Ethernet interface for wired network connectivity.
Console	Type-C USB	Used for debugging.
Reset	Reset Key	<b>Short press:</b> Reboot the gateway. <b>Long press (5 sec and above):</b> Restore factory settings.
NanoSIM	NanoSIM Card Slot	Slot for a NanoSIM card, enabling cellular connectivity.
TF Card	SD Card Slot	A 16 GB SD card is pre-installed in the gateway for data logging, system configurations, and other use cases that require local storage.

**⚠ WARNING**

Interfaces	Description	Function
		<b>Do not</b> 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	Status Indicator LEDs	<ul style="list-style-type: none"> <li>• PWR LED</li> <li>• LoRa LED</li> <li>• WLAN LED</li> <li>• LTE LED</li> <li>• Breathing LED</li> <li>• ETH LED</li> </ul>
LoRa	LoRa Antenna Connector	RP-SMA connector for external LoRa antenna, enabling LoRaWAN communication.
MAIN	LTE Antenna Connector	RP-SMA connector for external LTE antenna.
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

LEDs	Status Indication Description	
WLAN	<b>AP Mode</b>	
	On	AP is up
	Off	AP is down
	Flashing	Data transmitting or receiving
	<b>STA Mode</b>	
	Slow Flash (1Hz)	Disconnected from WiFi network
	On	Connected to WiFi network
	Flashing	Data transmitting or receiving
LTE (functional only in RAK7268CV2)	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)
	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 <a href="#">RAK Breathing Light Extension</a> .	

LEDs	Status Indication	Description
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.)	<b>802.11b</b> <ul style="list-style-type: none"> <li>• 19 dBm @ 1 Mbps</li> <li>• 19 dBm @ 11 Mbps</li> </ul>
	<b>802.11g</b>


Parameter	Specifications
	<ul style="list-style-type: none"> <li>• 18 dBm @ 6 Mbps</li> <li>• 16 dBm @ 54 Mbps</li> </ul>
Receiver Sensitivity (Typical)	<b>802.11n (2.4 GHz)</b> <ul style="list-style-type: none"> <li>• 18 dBm @ MCS0 (HT20)</li> <li>• 16 dBm @ MCS7 (HT20)</li> <li>• 17 dBm @ MCS0 (HT40)</li> <li>• 15 dBm @ MCS7 (HT40)</li> </ul>
	<b>802.11b</b> <ul style="list-style-type: none"> <li>• -95 dBm @ 1 Mbps</li> <li>• -88 dBm @ 11 Mbps</li> </ul>
	<b>802.11g</b> <ul style="list-style-type: none"> <li>• -90 dBm @ 6 Mbps</li> <li>• -75 dBm @ 54 Mbps</li> </ul>
	<b>802.11n (2.4 GHz)</b> <ul style="list-style-type: none"> <li>• -89 dBm @ MCS0 (HT20)</li> <li>• -72 dBm @ MCS7 (HT20)</li> <li>• -86 dBm @ MCS0 (HT40)</li> <li>• -68 dBm @ MCS7 (HT40)</li> </ul>

## 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](#) .


Category	Feature	Description
<b>LoRaWAN and Network Management</b>	LoRaWAN Packet Forwarding	Supports Packet Forwarder and Basic Station configurations
	Built-in Server	Local LoRaWAN Network Server (LNS) integrated into the gateway for network management
	Frequency Band Setup	Configurable with different LoRaWAN frequency bands based on deployment region
	TX Power Setup	Adjustable transmit power for optimal network performance

Category	Feature	Description
	Automatic Data Recovery	Ensures reliable data transmission even during network disruptions
	Server Address and Port Setup	Custom configuration for LoRaWAN Network Server communication
	Supports LoRaWAN Class A and C	Fully compatible with LoRaWAN devices operating in Class A and C
	Uplink Backup	Enables automatic switchover to a backup uplink (e.g., LTE or WiFi) when the primary uplink fails. Requires Multi-WAN configuration.
	Location Setup	Manual or automatic setup of gateway location (e.g., GPS coordinates)
<b>Connectivity and Network Services</b>	WiFi Client/AP Mode	Connect to existing network or act as an access point
	DHCP Server/Client	Dynamic IP address allocation for both server and client roles
	NAT and Router Module	Enables router functionality with Network Address Translation
	WireGuard / OpenVPN	Secure communication tunnel for remote access and management
	LTE APN Setup	Configures Access Point Name for LTE connectivity
<b>Monitoring and Security</b>	Statistics and Data Logger	Tracks performance metrics and logs operational data

Category	Feature	Description
	Firewall	Provides basic firewall functions for traffic control and security
	SSH2	Secure Shell access for remote troubleshooting and management
	Ping Watchdog	Monitors connectivity and triggers recovery if the connection fails
User Interface and Management	Web UI	Web-based interface for configuration and monitoring
	WisDM	Cloud platform for remote management and monitoring
	Gateway OTA management	Over-the-air firmware management for seamless updates
	MQTT Bridge	Integration with IoT platforms using MQTT protocol
	Firmware Updates	Over-the-air updates for easy firmware upgrades
	NTP	Synchronizes the gateway system time for accurate timestamp recording

## Firmware

The firmware is built on **OpenWrt**, providing a flexible and secure foundation for the gateway. It features an intuitive **web UI** for straightforward configuration and management, as well as **SSH2** support for remote management. **WisGateOS 2** also supports the installation of various extensions, including **OpenVPN**, **WireGuard**, and custom logo configurations. For more details on available extensions, refer to the [WisGateOS 2 Extensions Guide](#) .

Model	Source
RAK7266 WisGate Soho Lite	<a href="#">Download</a> 

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