

WisGate Edge Ultra RAK7285 Datasheet

Overview

Descriptions

WisGate Edge Ultra RAK7285 is the latest edition of the RAK WisGate Edge Series. It is an ideal product for IoT commercial deployment. With its industrial-grade components, it achieves a high standard of reliability. The new RAK7285 supports up to 8 LoRa channels, backhaul with Ethernet. Optionally, there is a dedicated port for different power options, solar panels, and batteries. Its new enclosure is designed to allow the cavity filter to be inside the enclosure.

The RAK7285 supports WisGateOS 2, which is based on the latest OpenWRT kernel and accommodates the latest security updates like IPv6, OpenSSL 1.1 support, multiple accounts access, and more. The web UI has a fresh new look, with more user-friendly information tooltips.

Simply said, the RAK7285 is suited for any use case scenario, be it rapid deployment or customization with regard to UI and functionality.

Product Features

Hardware

- IP67 industrial-grade enclosure with cable glands
- PoE (802.3at) + Surge Protection
- LoRa Concentrator for up to 8 channels
- Backhaul: Ethernet
- GPS
- Supports DC 9V-36V or solar power supply with electricity monitoring (Solar Kit optional)
- External antenna for GPS and LoRa
- Dying-gasp

Software

- Built-in Network Server (full LoRaWAN support V 1.0.3)
- OpenVPN
- Software and UI sit on top of OpenWRT

- Full LoRaWAN Stack support with Semtech SX1303
- LoRa Frame filtering (node whitelisting)
- MQTT v3.1 bridging with TLS encryption
- Buffering of LoRa frames in Packet Forwarder mode in case of NS outage (no data loss)
- Full-duplex
- Listen Before Talk
- Fine timestamping (optional)

Specifications

The overview presents the block diagram for the RAK7285 that shows the internal architecture of the board.

Main Specifications

Feature	Specifications
Computing	MT7628, DDR2 RAM 128 MB
LoRa feature	SX1303 On Board 8 Channels RX Sensitivity: -139 dBm (Min) TX Power: 34 dBm (Max) Listen Before Talk

Feature	Specifications
Frequency	US915/AU915
Power Supply	PoE (IEEE 802.3at) - 42~57 VDC
ETH	RJ45 (10/100 M)
Antenna	LoRa: One N-Type connector GPS: One N-Type connector
Ingress protection	IP67
Enclosure material	Aluminium
Operating temperature	-30 °C to +55 °C
Installation Method	Pole or wall mounting

Hardware

The hardware specification covers the interfacing of the RAK7285 and its corresponding functionalities. It also presents the parameters and the standard values of the gateway.

RF Specifications

LoRa Radio Specifications

Feature	Specifications
Operating Frequency	US915/AU915
Transmit Power	34 dBm (Max)
Receiver Sensitivity	-139 dBm (Min)

Interfaces

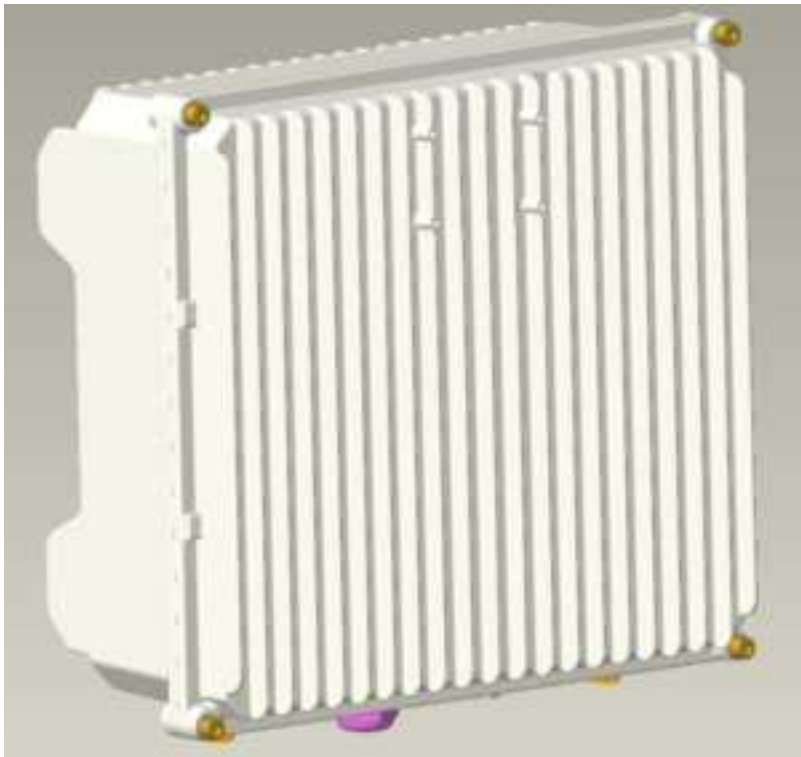
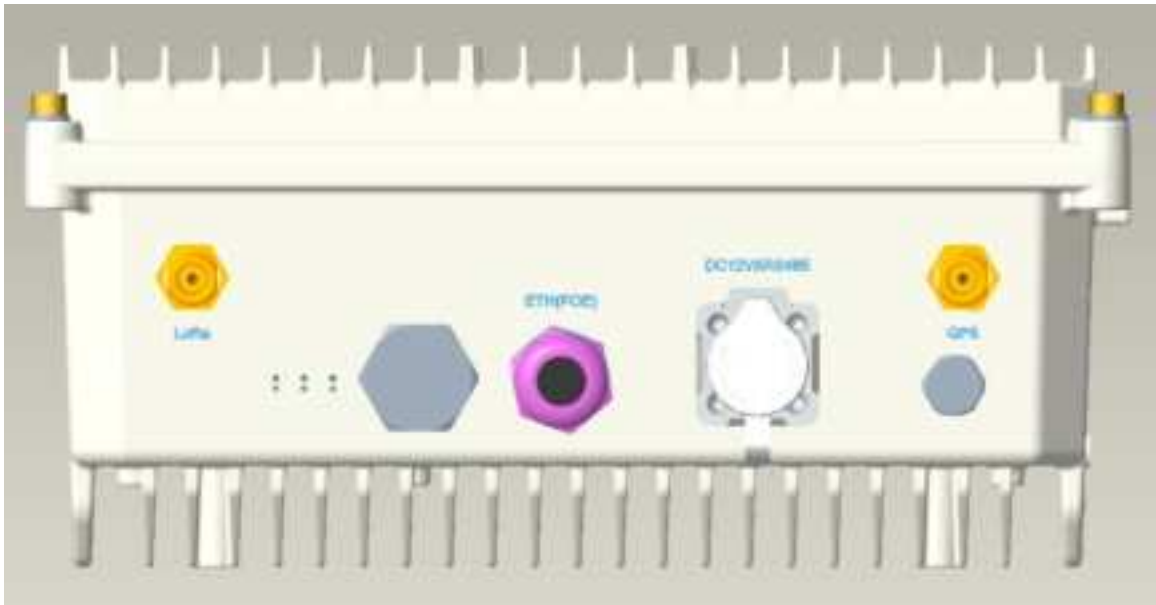




Figure 3: RAK7285 interfaces

- The function of the Reset key is as follows:
 - **Short press:** Restart the gateway.
 - **Long press (5s and above):** Restore factory settings.

LEDs	Status Indication Description
LED 1 (PWR)	Power indicator - The LED is on when device power is on
LED 2 (ETH)	ON - Linkup OFF - Linkdown Flicker - Data transmitting and receiving
LED 3 (LoRa)	ON - LoRa 1 is working OFF - LoRa 1 is not working Flicker - Indicate LoRa 1 Packet receiving and sending

Software

Firmware

The firmware sits on OpenWRT. There is a Web UI for easy configuration and management of the device, as well as the possibility for SSH2 management. The WisGateOS V2 supports the feature to install extensions (WireGuard, Custom Logo, Breathing Light, and more to come). The extensions are available in [RAK download center](#)

Model	Firmware Version	Source
RAK7285	WisGateOS 2	Download

Software Features

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

FCC:

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.

FCC Caution:

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

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant 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 in accordance with 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 RF 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 20cm between the radiator and any part of your body.