RAK7240V2/RAK7240CV2 WisGate Edge Prime Datasheet

Overview

Description

The RAK7240V2 WisGate Edge Prime is ideal for large-scale LPWAN deployments where cost is essential, without compromising quality. The gateway is available in 8 or 16-channel versions to help you utilize the maximum number of available LoRaWAN channels in your region. It supports multi-backhaul with Ethernet, Wi-Fi, and cellular connectivity.

In addition, RAK7240V2 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.

Its wide range of customization options allows for flexibility when deploying a solution. It is suited for any use-case scenario, whether it's rapid deployment or customization regarding UI and functionality. The flat surface of the full-metal enclosure allows your logo to be added for brand customization and recognition.

> **NOTE**
>
> The cellular option is only available for the 8-channel LoRaWAN gateway.

Features

Hardware

- IP65 industrial-grade enclosure with cable glands
- PoE (802.3af) + Surge Protection
- Up to two (2) LoRa concentrators for 8 or 16-channel options
- Backhaul: Wi-Fi, Ethernet, and LTE (optional, available with RAK7240CV2)
- GPS
- Supports 9~24 V_{DC} and RAK Solar Battery Kit (available for gateways with DC Input interface)
- External antennas for Wi-Fi, GPS, LTE (optional, available with RAK7240CV2), and LoRa

Software

- WisGateOS 2
- WisGateOS 2 Extensions: OpenVPN, Wireguard VPN, and others
- Remote management with WisDM Fleet Management
- Built-in Network Server (LoRaWAN support v1.0.3)
- LoRaWAN Stack support with Semtech SX1303
- LoRa Frame filtering (node whitelisting in Packet Forwarder mode)
- MQTT v3.1 bridging with TLS encryption

- Fine timestamping (optional)
- Buffering of LoRa frames in Packet Forwarder mode in case of NS outage (no data loss)

Specifications

Overview

Block Diagram

The block diagram of RAK7240V2/RAK7240CV2 shows the internal architecture of the hardware.

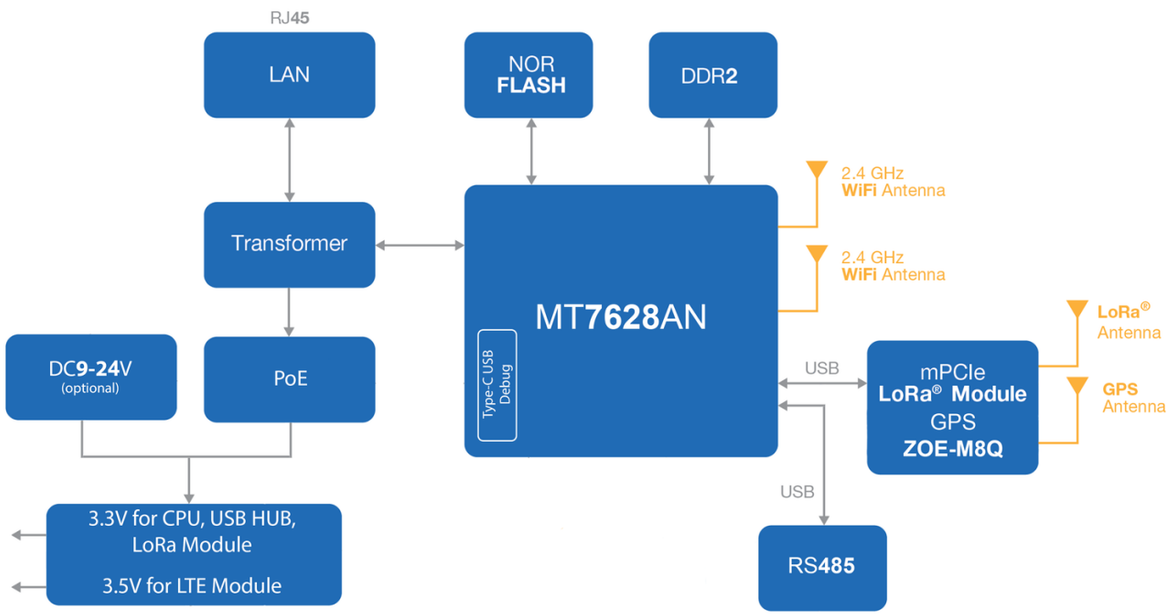

Figure 1: RAK7240V2 Block Diagram

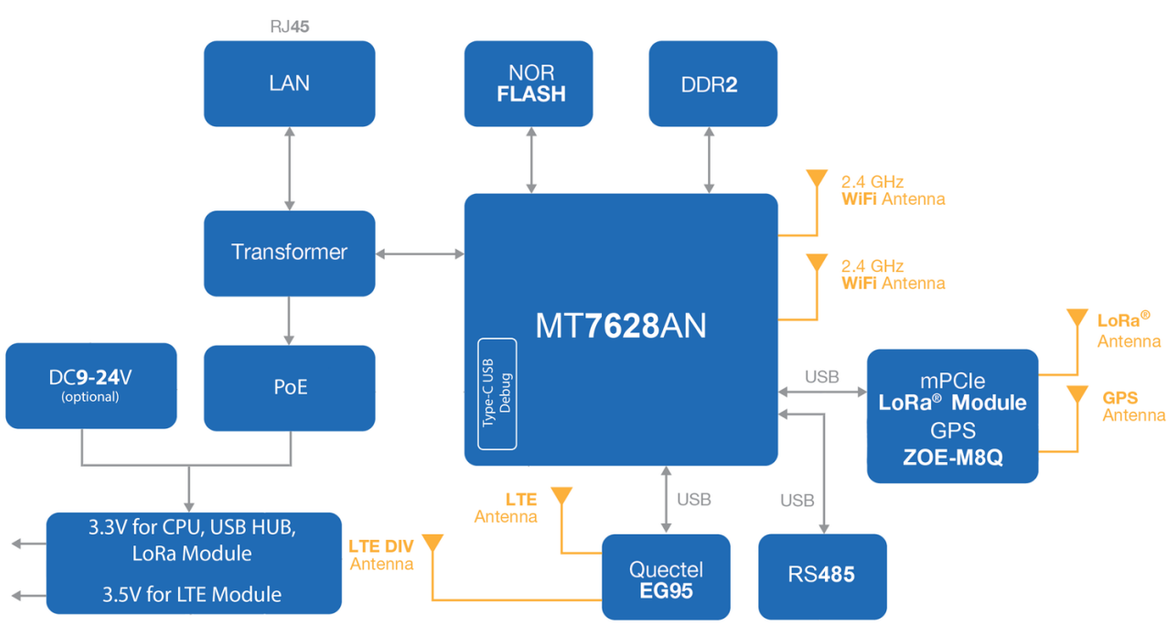

Figure 1: RAK7240CV2 Block Diagram

Main Specifications

Feature	Specifications
Computing	MT7628, DDR2RAM 128 MB
Wi-Fi Feature	Frequency: 2.400-2.4835 GHz (802.11b / g / n) RX Sensitivity: -95 dBm (Min) TX Power: 20 dBm (Max) Operation Channels: 2.4 GHz: 1-13
LoRa Feature	SX1303 mPCIe card (connects a maximum of two) 8 Channels (16 channels optional) RX Sensitivity: -139 dBm (Min) TX Power: 27 dBm (Max) Frequency: • EU868 • IN865 • RU864 • US915 • AU915 • KR920 • AS923-1/2/3/4 • EU433 • CN470
Cellular Feature (available with RAK7240CV2, 8-channel option)	**Nano SIM Card:** 12.30 mm x 8.80 mm x 0.67 mm Supports Quectel EG95-E / EG95-NA (IoT / M2M - optimized LTE Cat 4 Module) **EG95-E for EMEA Region** LTE FDD: B1 / B3 / B7 / B8 / B20 / B28A WCDMA: B1 / B8 GSM: 900 / 1800 MHz **EG95-NA for North America Region** LTE FDD: B2 / B4 / B5 / B12 / B13 WCDMA: B2 / B4 / B5
Power Supply	PoE (IEEE 802.3af) , 42 ~ 57 V_{DC} 9 ~ 24 V_{DC} from dedicated DC port (optional) Compatible with RAK Solar Battery Kit (optional)
Power Consumption	12 W (typical)
Ethernet (ETH)	RJ45 (10/100M)
Console	RJ45 (RS232)

Feature	Specifications
Antenna	**LoRa**: N-Type connector (one for the 8-channel gateway and two for the 16-channel gateway) **GPS**: One N-Type connector **Wi-Fi**: wo N-Type connectors **LTE**: Two N-Type connectors (only for RAK7240CV2, 8-channel option)
Ingress Protection	IP65
Enclosure Material	Aluminum
Weight	1.3 kg
Dimension	224 mm x 121 mm x 42 mm Gateway only (no antenna, no bracket)
Operating Temperature	-30° C to + 55° C
Storage Temperature	-40° C to + 85° C
Operating Humidity	0% to 95% (non-condensing)
Storage Humidity	0% to 95% (non-condensing)
Installation Method	Pole or wall mounting

Hardware

The hardware specification is categorized into four sections. It discusses the interfaces and parameters of the RAK7240V2/RAK7240CV2. It also covers the LoRa and Wi-Fi specifications of the board.

Interfaces

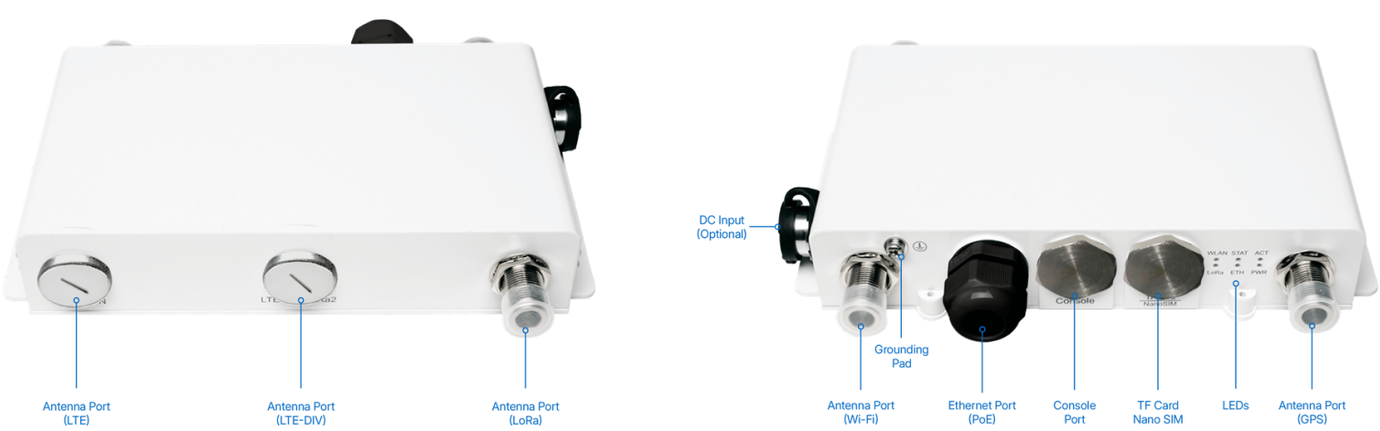

Figure 1: RAK7240V2/RAK7240CV2 Interfaces

The SD card in the SD card slot must not be ejected, as it may affect the device's performance, as various logs and data are stored on it.

The antenna ports are not all open; it depends on the bundle you purchased. For example, if you purchased an 8-channel gateway without cellular connectivity, the LTE antenna ports will be sealed.

The DC Input port is available only for the RAK7240V2/RAK7240V2CV2 version with DC and Battery Plus support. This power port supports a range of 9~24 V_{DC}. It is designed to be compatible with the RAK Battery Plus, providing the device with an additional power source.

> **NOTE**
> The DC Input port is only available if selected during your purchase.

Reset Key Functions

The functions of the Reset key are as follows:

- **Short press**: Restart the gateway.
- **Long press** (5 seconds 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 Indication Description
PWR	Power indicator: The LED is on when device power is on
ETH	ON: Link is up OFF: Link is down Flicker: Data is being transferred
LoRa	ON: LoRa module 1 status is up OFF: LoRa module 1 status is down Flicker: LoRa module 1 data is being transferred
ACT (LTE)	Slow flicker (200 ms bright / 1800 ms dark): Searching for network Slow flicker (200 ms dark / 1800 ms bright): Idle status (online) Fast flicker: Data is being transferred
STAT *(16 channels only)*	ON: LoRa module 2 status is up OFF: LoRa module 2 status is down Flashing: LoRa module 2 data is being transferred
WLAN	**AP Mode** • ON: WLAN status is up • Flicker: Data is being transferred **STA Mode** • Slow flicker (1 Hz): Disconnected • ON: Connected • Flicker: Data is being transferred

RF Specifications

LoRa Radio Specifications

Feature	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)

Wi-Fi Radio Specifications

Feature	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 may be different depending on local regulations)	**802.11b** 1 Mbps: 19 dBm 11 Mbps: 19 dBm **802.11g** 6 Mbps: 18 dBm 54 Mbps: 16 dBm **802.11n (2.4 GHz)** MCS0 (HT20): 18 dBm MCS7 (HT20): 16 dBm MCS0 (HT40): 17 dBm MCS7 (HT40): 15dBm

Feature	Specifications
Receiver sensitivity (Typical)	**802.11b** 1 Mbps: 95 dBm 11 Mbps: 88 dBm **802.11g** 6 Mbps: 90 dBm 54 Mbps: 75 dBm **802.11n (2.4 GHz)** MCS0 (HT20): 89 dBm MCS7 (HT20): 72 dBm MCS0 (HT40): 86 dBm MCS7 (HT40): 68 dBm

Electrical Characteristics

The gateway supports multiple power supply options.

- **Power Cord + PoE Adapter:** The gateway is powered via PoE. PoE (IEEE 802.3af), 42~57 V_{DC}.
- **Cable for RAK Battery Plus:** Only available for gateways with DC Input interface. For outdoor deployment scenarios, it is recommended to use RAK9155 Battery Plus as its power supply. This cable is dedicated to RAK9155 Battery Plus.

> **NOTE**
> RAK9155 Battery Plus is not included in the bundle, it needs to be purchased separately.

Mechanical Characteristics

Parameter	Value
Dimensions	224 mm x 121 mm x 42 mm Gateway only (no antenna, no bracket)
Weight	1.3 kg
Enclosure Material	Aluminum
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 AP mode	WisDM
LoRa package forward (packet forwarder, Basics Station)	Wi-Fi Client mode	SSH2, NTP
Frequency Band Setup	LTE APN Setup	Firmware update
Country code setup	802.1q	LoRa Packet Forwarder
TX Power Setup	Uplink backup	Built-in Network Server
Data logger	Firewall	MQTT Bridge
Location setup	DHCP Server/Client	OpenVPN, Ping Watch Dog
Statistic		WEB UI
Supports class A, B, and C		
Server address and Port setup		

Firmware

Model	Firmware Version	Source
RAK7240V2/RAK7240CV2 WisGate Edge Prime	v2.2.13	Download

Models/Bundles

Models	Variants	Packing list
RAK7240V2	8 Channels without 4G	1 × 8-channel device 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Manual
	8 Channels without 4G DC and Battery Plus support	1 × 8-channel device with DC Input interface 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Cable for RAK Battery Plus 1 x Manual

Models	Variants	Packing list
RAK7240V2	16 Channels without 4G	1 × 16-channel device 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Manual
	16 Channels without 4G DC and Battery Plus support	1 × 16-channel device with DC Input interface 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Cable for RAK Battery Plus 1 x Manual
RAK7240CV2	8 Channels with 4G	1 × 8-channel device with LTE module 2 x LTE Antenna 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Manual
	8 Channels with 4G DC and Battery Plus support	1 × 8-channel device with LTE module and DC Input interface 2 x LTE Antenna 1 x GPS Antenna 1 × 2.4G WiFi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Cable for RAK Battery Plus 1 x Manual

Certification

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