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.

This gateway operates on WisGateOS 2, a secure and flexible operating system based on the latest OpenWrt kernel. It supports extension modules for enhanced customization, and offers centralized remote management and configuration via WisDM—making it an ideal choice for managing large networks of gateways.

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.

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
- Multi-backhaul options: Ethernet, Wi-Fi, and LTE (*LTE available on 8-channel RAK7240CV2 only*)
- GPS
- Power variants:
  - PoE-only version
  - DC-input version (supports 9~24 V_{DC}, RAK Battery Plus)
- External antennas for Wi-Fi, GPS, LTE (optional, available with RAK7240CV2), and LoRa

Software

- WisGateOS 2: The OS for configuring and managing RAK gateways
- **WisGateOS 2 Extensions**: Adds support for features such as OpenVPN, WireGuard VPN, and more. Use the appropriate installation guide based on your WisGateOS 2 version:
  - For WisGateOS 2 version 2.2.x or later
  - For WisGateOS 2 versions 2.0.x and 2.1.x
- 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.

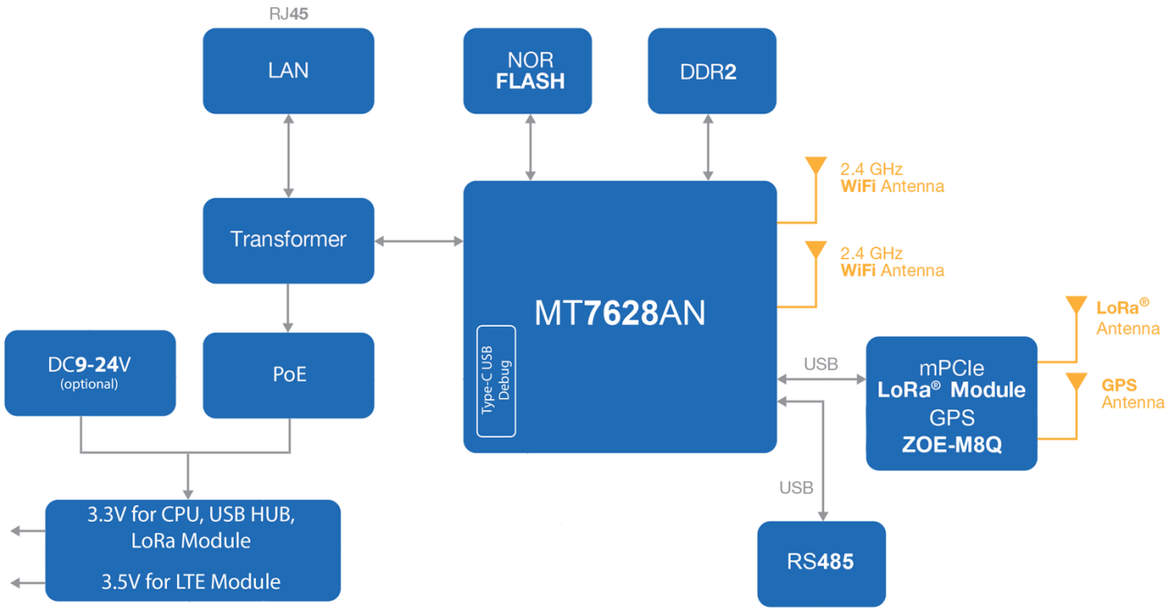

Figure 1: RAK7240V2 Block Diagram

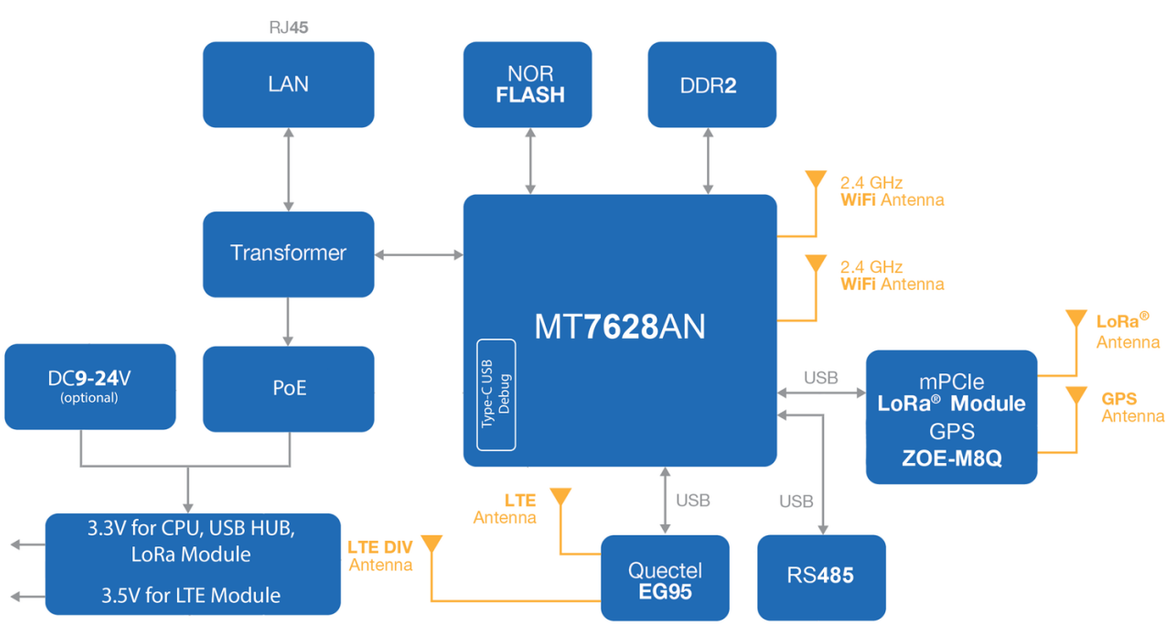

Figure 1: RAK7240CV2 Block Diagram

Main Specifications

Feature	Specifications
Computing	MT7628, DDR2RAM 128 MB
LoRa Feature	SX1303 mPCIe card (connects a maximum of two) 8 Channels (16 channels optional) 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
Wi-Fi Feature	Frequency: 2.400-2.4835 GHz (802.11b/g/n) Operation Channels: 1-13 Wi-Fi Radio: Refer to the Wi-Fi Radio Specifications section for detailed information
Cellular Feature (optional)	**Nano SIM Card:** 12 mm x 9 mm x 0.67 mm Supports Quectel EG95-E / EG95-NA (IoT / M2M -optimized LTE Cat 4 Module) LTE Radio: Refer to the LTE Radio Specifications section for detailed information Available only on RAK7240CV2 8-channel variant
Power Supply	PoE (IEEE 802.3af) , 42~57 V_{DC} 9~24 V_{DC} from dedicated DC port (available on DC-input models only) Compatible with RAK Solar Battery Kit (available on DC-input models only)
Power Consumption	12 W (typical)
Antenna	External antennas for LoRa®, Wi-Fi, GPS, and LTE
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)

Feature	Specifications
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.

Interfaces

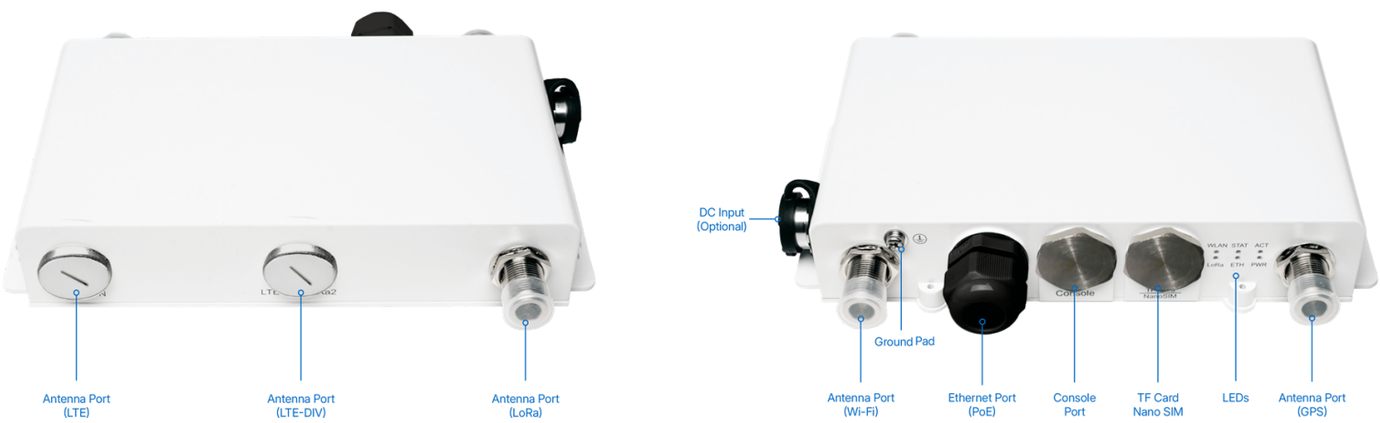

Figure 1: RAK7240V2/RAK7240CV2 Interfaces

Interface Description

Interface	Description
Wi-Fi	External Wi-Fi antenna connector
ETH (PoE)	10/100 Mbps Ethernet port with IEEE 802.3af PoE input support
Console	USB Type-C port for debugging and maintenance Reset: • **Short press**: Reboot the gateway • **Long press (5 sec and above)**: Restores factory settings
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.
NanoSIM	Available only on LTE-enabled models (RAK7240CV2); slot is present on all models for hardware compatibility

Interface	Description
LED Indicators	WLAN, STAT, ACT, LoRa, ETH, PWR indicators for device and module status
GPS	GPS antenna connector
Ground Pad	Grounding point for ESD and lightning protection
DC Input *(Optional)*	9~24 V_{DC} power input (only on DC-input models)
LoRa	LoRa® antenna connector
LTE-DIV / LoRa2	LTE diversity antenna or LoRa2 antenna connector *(used as LoRa2 on 16-channel)*
LTE-MAIN	LTE main antenna connector *(available only on RAK7240CV2 LTE models)*

LED Indicators

The status of the LEDs is described below.

LEDs	Status Indication Description
PWR	ON: Gateway is powered on OFF: Gateway is powered on
ETH	ON: Link is up OFF: Link is down Flicker: Data transmitting or receiving
LoRa	ON: LoRa1 module active OFF: LoRa1 module inactive Flicker: Indicate that LoRa1 packet transmitting or receiving
ACT (LTE)	Slow flicker (1800 ms bright / 200 ms dark): Searching for network Slow flicker (200 ms bright / 1800 ms dark): Idle status (online) Fast flicker: Data transmitting or receiving
STAT *(16 channels only)*	ON: LoRa2 module active OFF: LoRa2 module inactive Flashing: Data transmitting or receiving

LEDs	Status Indication Description
WLAN	**AP Mode** • ON: AP is active • Flicker: Data transmitting or receiving **STA Mode** • Slow flicker (1 Hz): Disconnected from Wi-Fi network • ON: Connected to Wi-Fi network • Flicker: Data transmitting or receiving

RF Specifications

LoRa Radio Specifications

Feature	Specifications
Operating frequency	• EU868 • IN865 • RU864 • US915 • AU915 • KR920 • AS923-1/2/3/4 • EU433 • CN470 *(Supported frequency depends on the model selected)*
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

Feature	Specifications
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
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

LTE Radio Specifications

Feature	Specifications
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

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

LoRa	Network	Management
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	Source
RAK7240V2/RAK7240CV2 WisGate Edge Prime	Download

Models/Bundles

Models	Variants	Packing list
RAK7240V2	8 Channels without 4G	1 × 8-channel device 1 x GPS Antenna 1 × 2.4G Wi-Fi 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 Wi-Fi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Cable for RAK Battery Plus 1 x Manual
RAK7240V2	16 Channels without 4G	1 × 16-channel device 1 x GPS Antenna 1 × 2.4G Wi-Fi Antenna 1 x PoE Injector 1 x Mounting Kit 1 x Manual

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

Certification

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