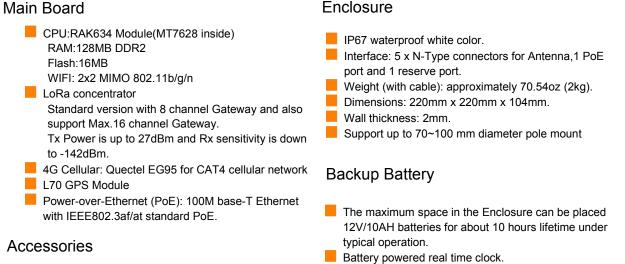## Product Description

The Enterprise Grade DIY outdoor Gateway is an ideal product for IoT commercial deployment. It contains the Main Board, Operator-grade waterproof enclosure, backup battery and mounting accessories. The hardware main board completely integrates the WIFI, 4G, GPS and PoE main supply with an integrated back-up battery. The firmware implements a fully featured LoRaWAN™ complinant network base station. The Gateway has a range of over 15Km line-of-sight and over 2Km in dense urban environments.

The DIY Gateway brings more flexiblity for the developer to create an enterprise grade solution. Our most important difference is our flexible development support structure, allowing for faster development and time to market. We offer both a ready to go firmware image for openWRT based platforms and an open SDK for integration into hardware to support the needs of each customer. It can connect the standard NS (network server) and the local NS. And it also supports the built-in NS(By default, a license that supports 128 terminals and 5 external gateways is embedded). It does not need users to deploy NS in the cloud and locally, it saves the cost for server and R&D investment, and has the advantages of high execution efficiency and shorter delay.

Package Content

Gateway Device   Mounting Kit   PoE Injector GPS WiFi LTE LoRa

Hardware Interfaces

LoRa
Antenna Port

WiFi
Antenna Port

LTE-DIV /
LoRa2
Antenna Port

LTE-Main
Antenna Port

ETH (PoE)   Reserved   GPS
Antenna Port   Ground Pad

Feature Set

- Enterprise grade network gateway with your own configuration.
- LoRaWAN™ Stack Inside and integrate the Web UI for management.
- Complete Hardware specification including LoRa concentrator, Cellular, GPS and WIFI.
- Supports Power of Ethernet (PoE) IEEE 802.3af/at-Compliant Class 4, 48V.
- Battery Backup sustains operation for about 10 hours under typical conditions.
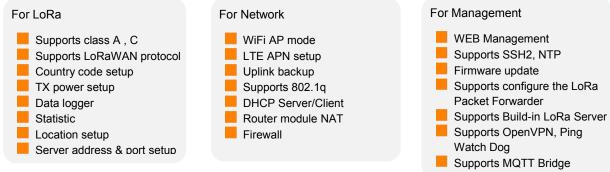- IP67 waterproof enclosure with cable gland.

Main Board

- CPU:RAK634 Module(MT7628 inside)
  RAM:128MB DDR2
  Flash:16MB
  WIFI: 2x2 MIMO 802.11b/g/n
- LoRa concentrator
  Standard version with 8 channel Gateway and also support Max.16 channel Gateway.
  Tx Power is up to 27dBm and Rx sensitivity is down to -142dBm.
- 4G Cellular: Quectel EG95 for CAT4 cellular network
- L70 GPS Module
- Power-over-Ethernet (PoE): 100M base-T Ethernet with IEEE802.3af/at standard PoE.

Accessories

- Mounting Kit
- PoE Injector
- Antennas(WiFI Antenna, GPS Antenna, LoRa Antenna, LTE Antenna)

Enclosure

- IP67 waterproof white color.
- Interface: 5 x N-Type connectors for Antenna,1 PoE port and 1 reserve port.
- Weight (with cable): approximately 70.54oz (2kg).
- Dimensions: 220mm x 220mm x 104mm.
- Wall thickness: 2mm.
- Support up to 70~100 mm diameter pole mount

Backup Battery

- The maximum space in the Enclosure can be placed 12V/10AH batteries for about 10 hours lifetime under typical operation.
- Battery powered real time clock.
- Battery Within 140 x 70 x 30mm.
- DC 5.5 x 2.1 circular joint with two interfaces, one male and one female.

Supported Software

For LoRa

- Supports class A , C
- Supports LoRaWAN protocol
- Country code setup
- TX power setup
- Data logger
- Statistic
- Location setup
- Server address & port setup

For Network

- WiFi AP mode
- LTE APN setup
- Uplink backup
- Supports 802.1q
- DHCP Server/Client
- Router module NAT
- Firewall

For Management

- WEB Management
- Supports SSH2, NTP
- Firmware update
- Supports configure the LoRa Packet Forwarder
- Supports Build-in LoRa Server
- Supports OpenVPN, Ping Watch Dog
- Supports MQTT Bridge

DIY Configuration

Part Number	8 Channel SX1301	16 channel SX1301	Cat4 Cellular	GPS	WIFI	Battery Backup
RAK7249-0x-14x	√		√	√	√	
RAK7249-1x-14x		√	√	√	√	
RAK7249-2x-14x	√		√	√	√	√
RAK7249-3x-14x		√	√	√	√	√
RAK7249-0x	√			√	√	
RAK7249-1x		√		√	√	
RAK7249-2x	√			√	√	√
RAK7249-3x		√		√	√	√

Key Features

Computing	• MT7628, DDR2RAM 128MB
WIFI Feature	• Frequency: 2.400 - 2.4835GHz • (802.11b/g/n) • RX Sensitivity: -95dBm (Min) • TX Power: 20dBm (Max)
LoRa Feature	• SX1301 Mini PCIe card • 8 Channels (Optional: 16 channels) • TX Power: 27dBm (Max) • RX Sensitivity: -142dBm (Min)
Cellular	• 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/EDGE: B3/B8 • EG95-NA for North America Region LTE FDD: B2/B4/B5/B12/B13 WCDMA: B2/B4/B5
Power Supply	• POE (IEEE 802.3af), 42~57VDC
Power Consumption	• 12W (typical)
ETH	• RJ45 (10/100M)
Antenna	• 5 N-Type connectors
Ingress Protection	• IP67
Enclosure Material	• Aluminum
Weight	• Approximately 111.11oz (3.15kg with mounting kit)
Dimension	• 220mm x 220mm x 104mm
Operating Temp.	• -30°C ~ +55°C
Installation Method	• Pole or Wall mounting

RF Specifications

Wireless Standard	• IEEE 802.11b/g/n
Wi-Fi Operating Frequency	• ISM band: 2.412~2.472(GHz)
Wi-Fi Operation Channels	• 2.4GHz: 1-13

Wi-Fi Transmit Power
 	
(The maximum power may be different depending on local regulations)
	• 802.11b
	  19dBm@ 1Mbps
	• 802.11g
	  18dBm@ 6Mbps
	  16dBm@ 54Mbps
	• 802.11n(2.4G)
	  18dBm@MCS0 (HT20)
	  16dBm@MCS7 (HT20)
	  17dBm@MCS0 (HT40)
	  15dBm@MCS7 (HT40)

Wi-Fi Receiver Sensitivity
(Typical)
	• 802.11b
	  -95dBm@ 1Mbps
	• 802.11g
	  -90dBm @6 Mbps
	  -75dBm@54Mbps
	• 802.11n(2.4G)
	  -89dBm@MCS0 (HT20)
	  -72dBm @MCS7(HT20)
	  -86dBm @MCS0(HT40)
	  -68dBm @MCS7(HT40)

LoRa Operating Frequency	• EU433 / CN470 / EU868 / US915 / AU915 / AS923 / AS920 / KR920 / IN865
LoRa TX Power	• 27 dBm (Max)
LoRa RX Sensitivity	• -142 dBm (Min)
Compliance	• CE, FCC, RCM

Order Information

Part Number	Description
RAK7249-03-142	8 channel DIY Gateway with Cat 4 Cellular + GPS for EU868 region
RAK7249-04-141	8 channel DIY Gateway with Cat 4 Cellular + GPS for US915 region
RAK7249-13-142	Advanced version, 16 channel DIY Gateway with Cat 4 Cellular + GPS for EU868 region
RAK7249-14-141	Advanced version, 16 channel DIY Gateway with Cat 4 Cellular + GPS for US915 region

About RAKwireless:

RAKwireless is the pioneer in providing innovative and diverse cellular and LoRaconnectivity solutions for IoT edge devices. It's easy and modular design can be used in different IoT applications and accelerate time-to-market. For more information, please visit Rakwireless website at www.rakwireless.com.