Quick Start Guide for

RAK7258 Industrial LoRa Micro Gateway

WisDevice RAK**72xx** Series

Version V1.0| April 2019

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1. Overview

1.1 Introduction to the Gateway

The RAK7258 Indoor Micro Gateway is a full 8 –channel LoRaWAN Gateway. Its Ethernet port and PoE support make it perfect or easy and quick deployment.

Initial setup can be done ether via the Ethernet port or via WiFi (AP mode). The included wall mounting kit and the presence of PoE make it especially suitable for rapid deployment scenarios where there are no power lines present.

The Gateway utilizes open source software based on OpenWRT. It has a built-in LoRa packet forwarder and a graphical UI to enable easy and quick configuration. It is a part of the WsDM suite, making it even easier to monitor and manage.

Last, but not least, it offers the same grate range we have come to expect from LoRa devices. It is capable of more than 15km of LoS range and up to 2km in Dense Urban environments.

Gateway Features Summary

- Support for 8 RX and 1 TX LoRa Channels
- Full LoRaWAN Stack support (version 1.0.2)
- 100M Ethernet (PoE) + WiFi
- Can integrate with both private (LoRa Server) and public (TTN) Networks Servers
- OpenWRT Software UI for management and configuration (WSDM suite)
- TF card slot

1.2 Ports, interfaces, etc.

Looking at Figure 1 we can identify the following (casing back panel on Figure 2):

- Pluggable RAK833 SPI module for LoRa connectivity
- RAK634 – integrates the MTK MCU and Wi-Fi module
- DC12V barrel jack
- 100M Ethernet port
- RJ45 Console port (RS232 for management and configuration)
- USB port
- Nano SIM slot
- TF card Slot

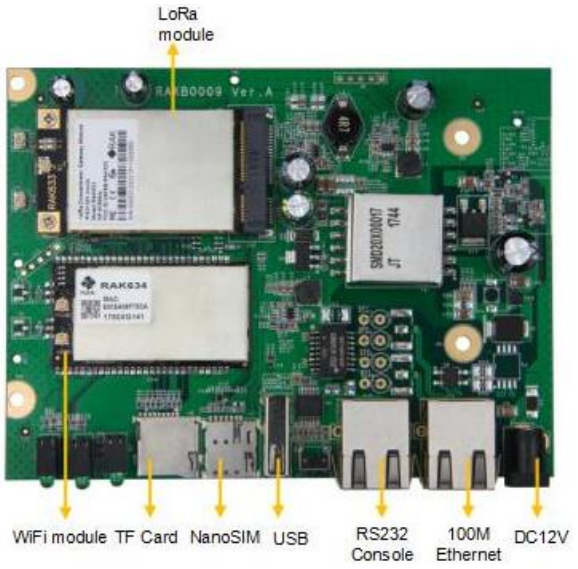

***Figure** 1 | Board ports and interfaces*

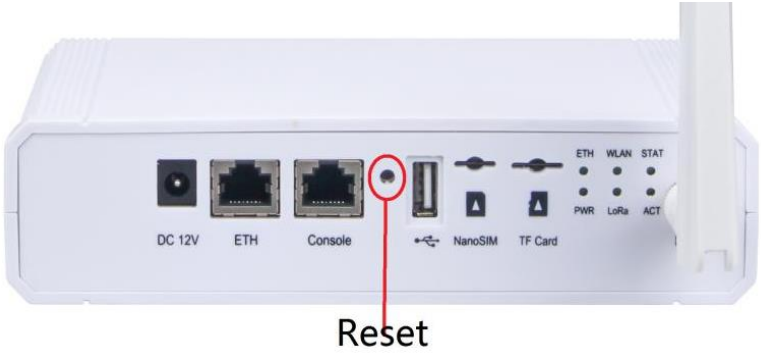

***Figure** 2 |Back side ports*

2. First time setup

2.1 Powering the device for the first time

Note: Only power the Gateway with the LoRa antenna connected!!!

- Use the provided Power adapter and connect it to the port labeled DC 12V
- Alternately use an Ethernet cable connected to an injector case you want to utilize PoE (EEE 802.3af, 42~57VDC supported)

2.2 Connecting to the Gateway for the first time

- **WiFi AP mode**

By default the Gateway is configure to work in Access Point (AP) mode. It has the following parameters:

SSID: *RAKxxxx_xxxx*

UI user: *root*

UI password: *root*

The “xxxx_xxxx” part of the SSID should be something like “RAK7258_D3BD”, where “D3BD” is the last 2 bytes of the MAC address of the Gateway. Once Logged in you can change the WiFi to operate as a client in order for the Gateway to connect to your WLAN. This can be done by going to the “Network” menu and selecting the Wi-Fi tab as in the picture below and changing the Radio settings:

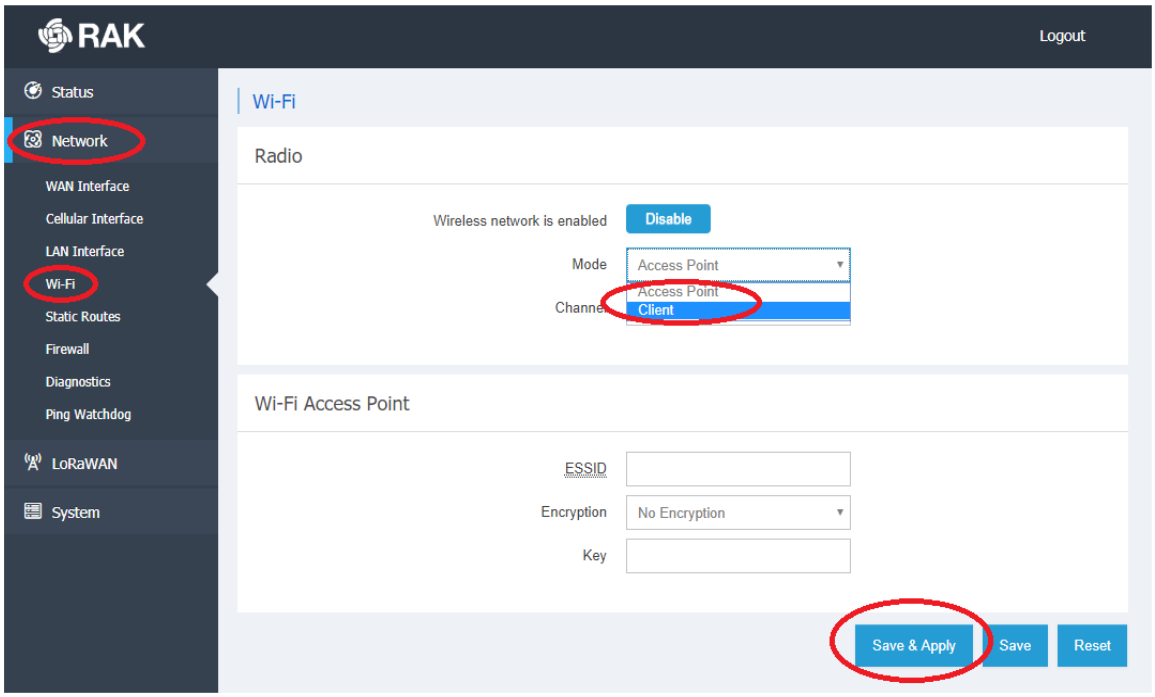

***Figure** 3 | Network – Wi-Fi Settings*

After saving the settings you should be able to log into the Gateway via your LAN, by using the IP address the DHCP server has assigned to it.

- **WAN port (DHCP IP) mode**

  Connect the Ethernet cable to the port market “ETH” and the other end to your Router. The DHCP Server should assign an IP address to the Gateway. As with the AP mode you need to enquire the Router for the IP address and connect to the Gateway via your preferred browser, using the aforementioned IP address. The UI has the same credentials:

  UI user: *root*

  UI password: *root*

2.3 Connecting the Gateway to TTN

First Enter your gateway Web UI and go to the LoRaWAN tab (Figure 4). The area circled in red in the figure is where the parameters you require are. By default those should point to TTN and you only need to note the Gateway EUI.

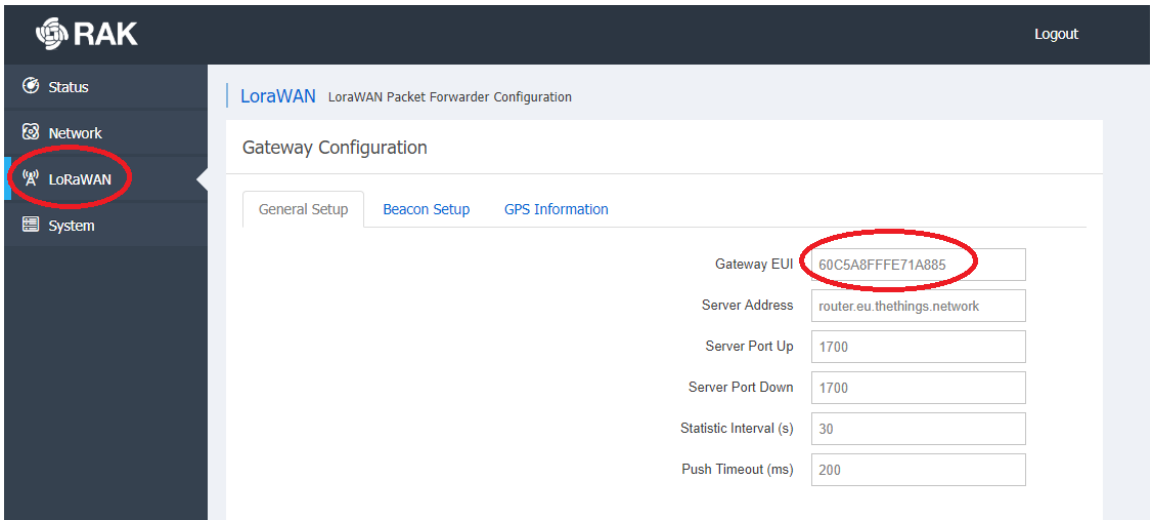

***Figure** 4 | LoRaWAN Settings*

Next go to your TTN console (you need to register an account first) and register your new gateway using the link below:

TTN Gateway Registration

You will see the screen in Figure 5:

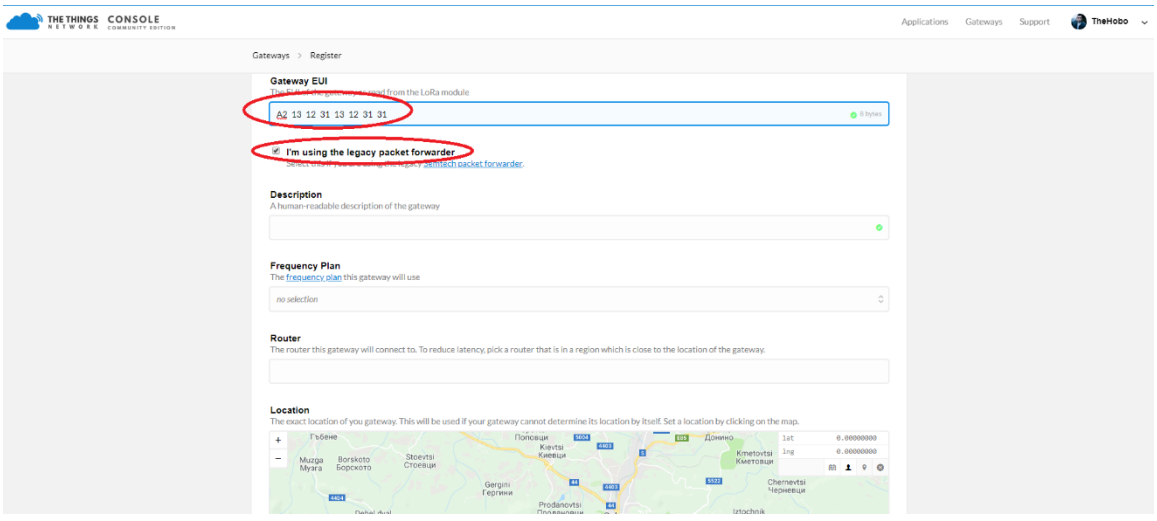

***Figure** 5 | TTN Gateway registration*

Fill in the *Gateway EUI* you copied form the LoRaWAN tab in the Gateway Web UI. Make sure to select the “I’m using the legacy packet forwarder” option.

You can enter a description (optional)

Select your *Frequency Plan* depending on your location. This should populate the *Router* field. Optionally you can choose to enter the Gateway coordinates in the map’s upper right corner and select if the gateway is indoor or outdoor via the *Antenna placement* field below the map.

The screen you will be transferred upon successful registration should look similar to the one in Figure 6.

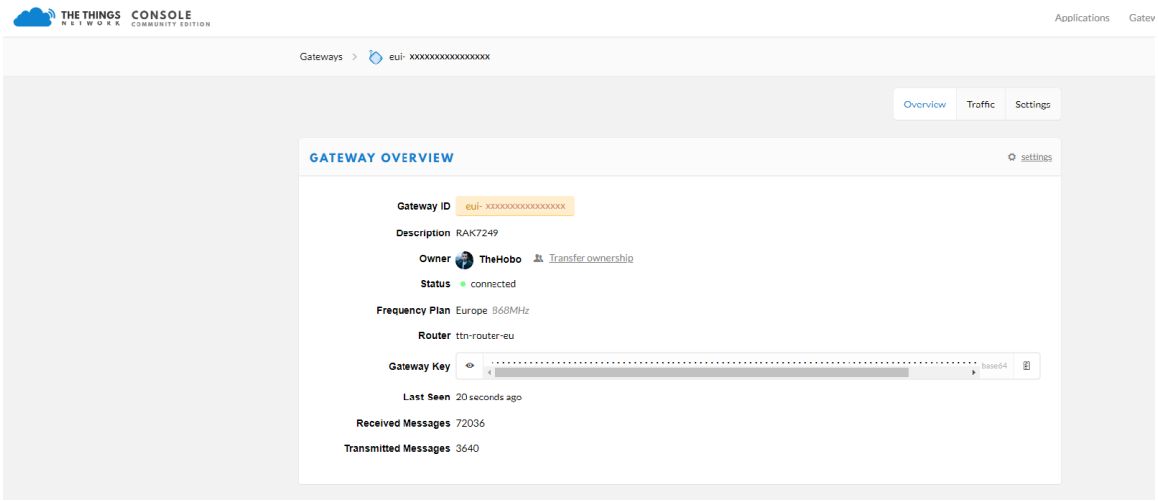

***Figure** 5 | TTN Gateway overview*

Your Gateway should now be registered with TTN and you should be able to forward LoRa packets.

3. Contact Information

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4. Revision History

Revision	Description	Date
1.0	Initial version	2019-04-14

5. Document Summary

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About RAKwireless:

RAKwireless is the pioneer in providing innovative and diverse cellular and LoRa connectivity 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.