UG85 LoRaWAN Gateway

Quick Start Guide

Ursalink Technology Co., Ltd.

Welcome

Thank you for choosing Ursalink UG85 LoRaWAN Gateway.

This guide teaches you how to install the UG85 and how to log in the web GUI to configure the device. Once you complete the installation, refer to the Ursalink UG85 User Guide for instructions on how to perform configurations on the device.

Related Documents

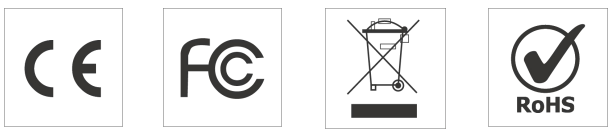
This Quick Start Guide only explains the installation of Ursalink UG85 LoRaWAN Gateway. For more functionality and advanced settings, please refer to the relevant documents as below.

Document	Description
Ursalink UG85 Datasheet	Datasheet for the Ursalink UG85 LoRaWAN Gateway.
Ursalink UG85 User Guide	Users can refer to the guide for instruction on how to log in the web GUI, and how to configure all the settings.

The related documents are available on Ursalink website: http://www.ursalink.com.

Declaration of Conformity

UG85 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



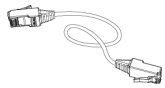
For assistance, please contact
Ursalink technical support:
Email: support@ursalink.com
Tel: 86-592-5023060
Fax: 86-592-5023065

1. Packing List

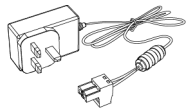
Before you begin to install the UG85 LoRaWAN Gateway, please check the package contents to verify that you have received the items below.

1.1 Package Contents

1 × UG85



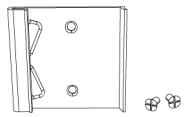
1 × Ethernet Cable



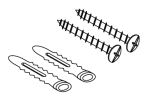
1 × Power Adapter

1 × Stubby LoRa Antenna

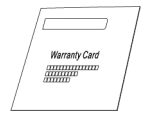
1 × 6-Pin Pluggable Terminal



1 × DIN Rail Kit



4 × Setscrews



1 × Warranty Card

1 × GPS Antenna (Optional)

1 × Magnetic Cellular Antenna (Optional)

1 × Stubby Wi-Fi Antenna (Optional)

1 × Stubby Cellular Antenna(Optional)

Note: If UG85 support cellular function, stubby cellular antenna is default choice.

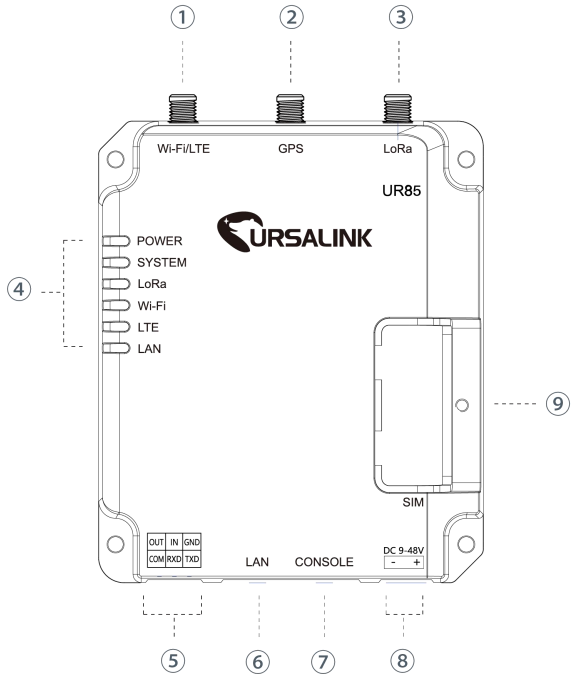
If any of the above items is missing or damaged, please contact your Ursalink sales representative.

2. Hardware Introduction

2.1 Overview

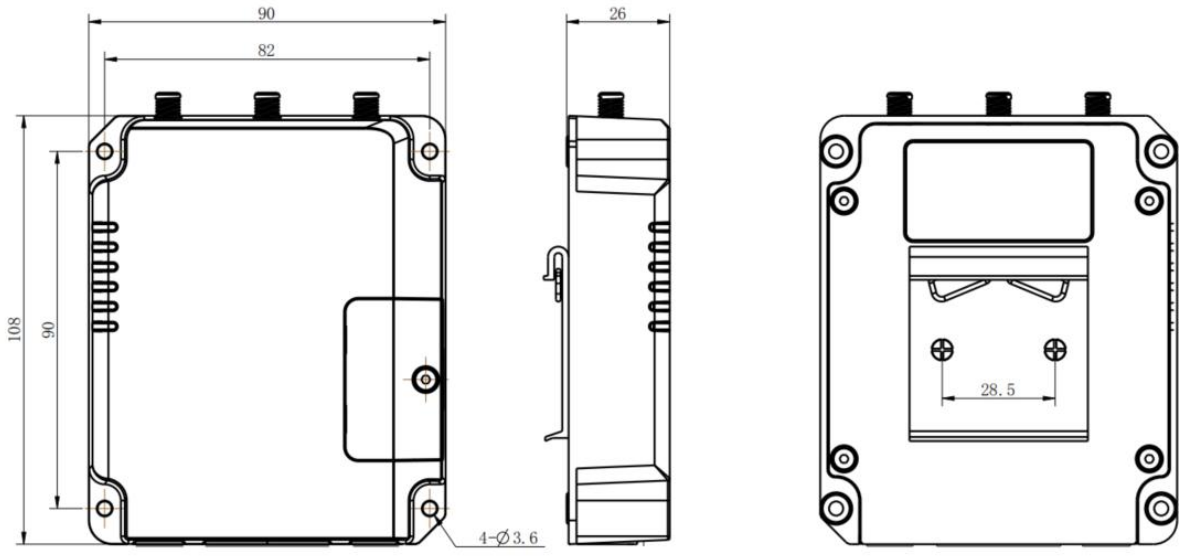
A. Front Panel

UG85 Front Panel

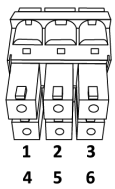


① WIFI/LTE Antenna
② GPS Antenna
③ LoRa Antenna
④ LED Indicator Area
POWER: Power Indicator
SYSTEM: Status Indicator
LORA： LoRa Indicator
WIFI: WIFI Indicator
LTE: Cellular Status Indicator
LAN: Ethernet Port Status Indicator
⑤ Serial Port & I/O
⑥ Ethernet WAN/LAN Port
⑦ Console Port
⑧ Power Connector
⑨ SIM and Reset Button Holder

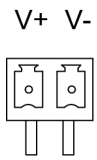
2.2 Dimensions (mm)



2.3 Pinouts



PIN	RS232	DI	DO	Description
1	---	---	OUT	Digital Output
2	---	IN	---	Digital Input
3	GND	---	---	Ground
4	---	COM	COM	Common Ground
5	RXD	---	---	Receive Data
6	TXD	---	---	Transmit Data



PIN	Description
11	Positive
12	Negative

2.4 LED Indicators

LED	Indication	Status	Description
POWER	Power Status	On	The power is switched on
		Off	The power is switched off
SYSTEM	System Status	Green Light	Static: Start-up
			Blinking slowly: the system is running properly
		Red Light	The system goes wrong
LoRa	LoRa Status	Green Light	Packet Forwarder mode is running well.
		Off	Packet Forwarder mode is running off.
WIFI	WIFI Status	Green Light	WIFI is connected
		Off	WIFI is disconnected
LTE	Cellular Status	Off	SIM1 or SIM2 is registering or fails to register (or there are no SIM cards inserted)
		Green Light	Blinking slowly: SIM1 or SIM2 has been registered and is ready for dial-up
			Blinking rapidly: SIM1 or SIM2 has been registered and is dialing up now
			Static: SIM1 or SIM2 has been registered and dialed up successfully
LAN	Ethernet Port Status	Off	Disconnected
		Green Light	Blinking: Transmitting data
			Static: Connected

2.5 Reset Button

Function	Description	
	SYSTEM LED	Action
Reboot	Blinking	Press and hold the reset button for about 5-15 seconds.
	Static Green	Release the button and wait for system to reboot.
Reset	Blinking	Press and hold the reset button for more than 15 seconds.
	Static Green → Rapidly Blinking	Release the button and wait.
	Off → Blinking	The gateway is now reset to factory default.

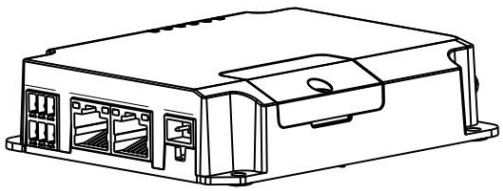
3. Hardware Installation

Environmental Requirements

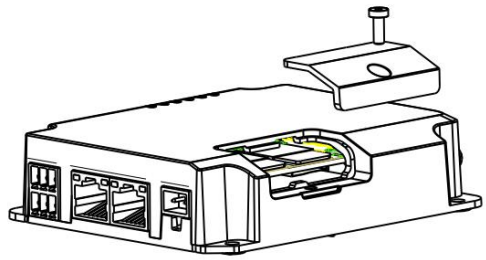
- Power Input: 9-48 VDC
- Power Consumption: Typical 3.3W (Max 6.4 W)
- Operating Temperature: -40°C to 70°C (-40°F -158°F)
- Relative Humidity: 0% to 95% (non-condensing) at 25°C/77°F

3.1 SIM Card Installation

A. Unscrew the cover of the SIM card then take it off.

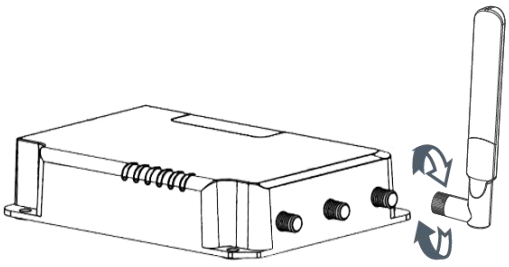


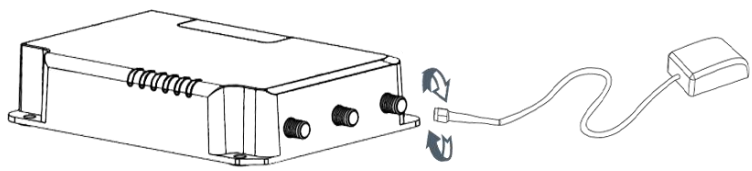
B. Put SIM card into the slot and screw it up.



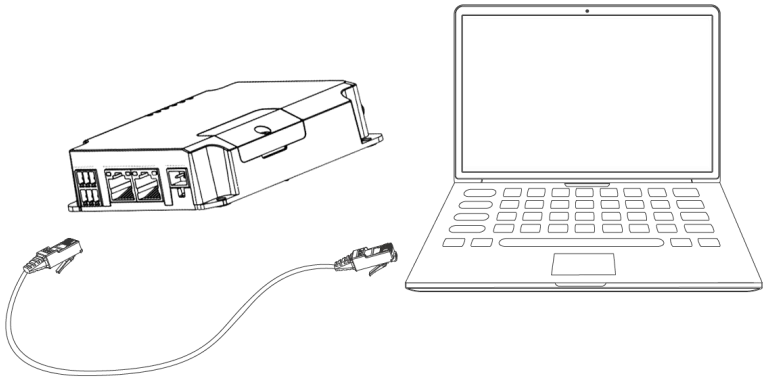
3.2 Antenna Installation

Rotate the antenna into the antenna connector accordingly.
The external antenna should be installed vertically always on a site with a good cellular signal.





3.3 Connect the UG85 to a Computer



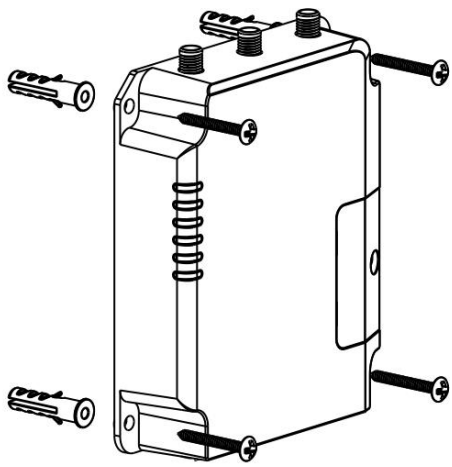
3.4 Mount the gateway

The gateway can be placed on a desktop or mounted to a wall or a DIN rail.

3.4.1 Wall Mounting (Measured in mm)

Use 4 pcs of M3 × 6 flat head Phillips screws to fix the gateway on the wall.

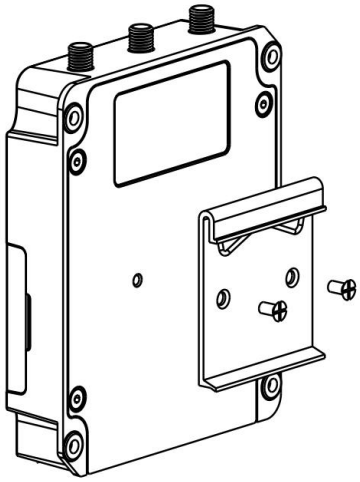
Recommended torque for mounting is 1.0 N·m, and the maximum allowed is 1.2 N·m.

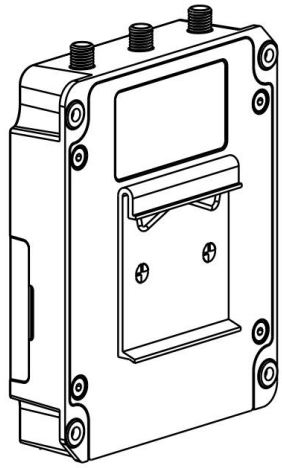


3.4.2 DIN Rail Mounting (Measured in mm)

Use 2 pieces of M3 × 6 flat head Phillips screws to fix the DIN rail to the gateway, and then hang the DIN rail on the mounting bracket. It is necessary to choose a standard bracket.

Recommended torque for mounting is 1.0 N·m, and the maximum allowed is 1.2 N·m.

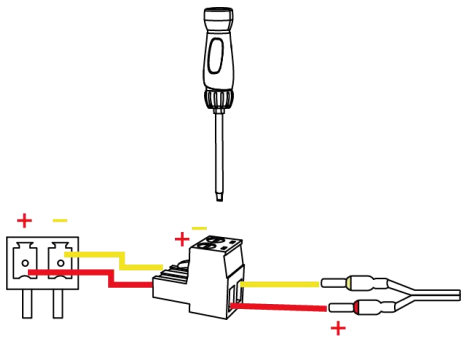




3.5 Power Supply Installation

A. Take out the terminal from the gateway and unscrew the bolt on terminal.

B. Screw down the bolt after inserting power cable into the terminal.



Connecting the Power Cable

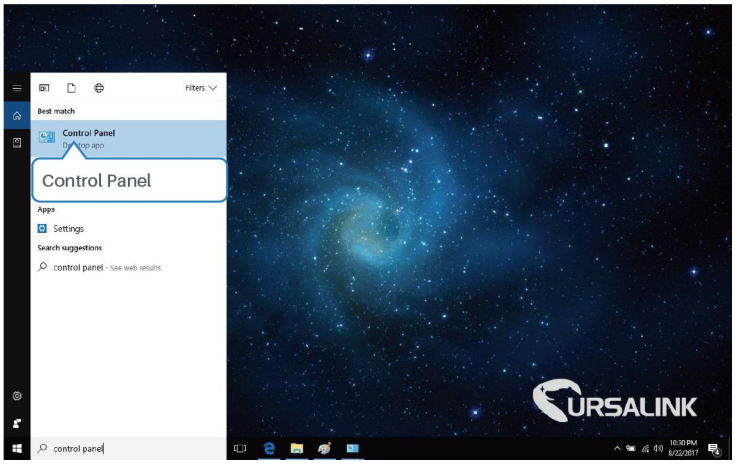
Color	Polarity
Red	+
Yellow	-

If you insert wires into the reverse holes, the gateway will not start and you must switch the wires into the correct holes.

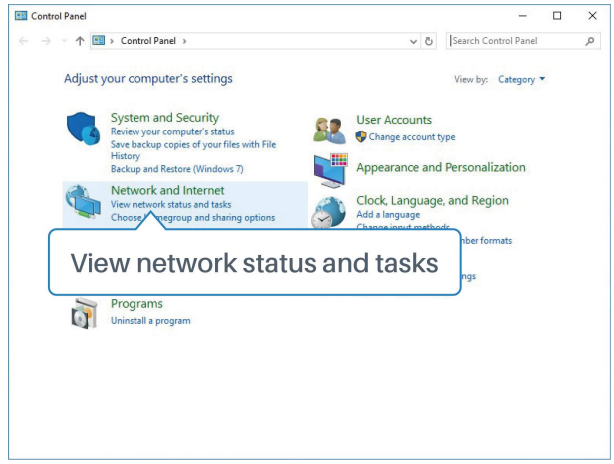
Getting Started

4. PC Configuration for UG85 Web GUI

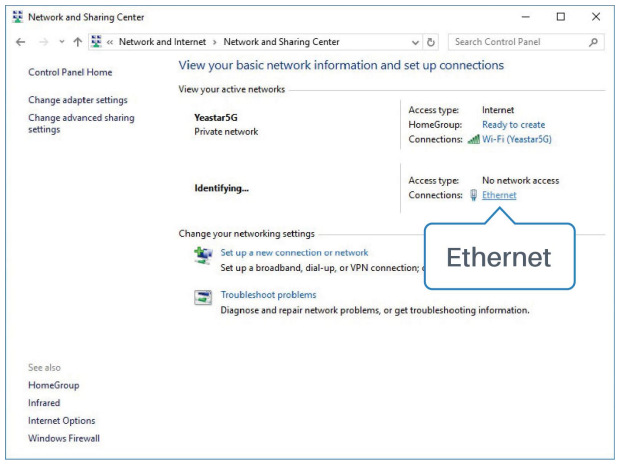
Please connect PC to LAN port of UG85 directly. PC can obtain an IP address, or you can configure a static IP address manually. The following steps are based on Windows 10 operating system for your reference.



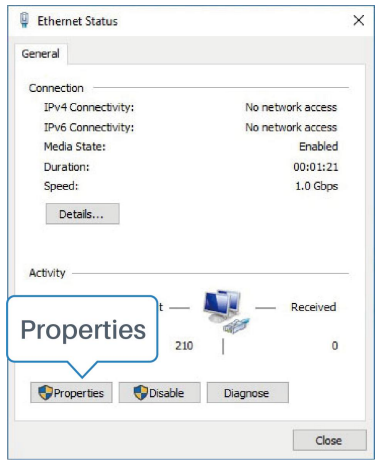
① Click “Search Box” to search “Control Panel” on the Windows 10 taskbar.



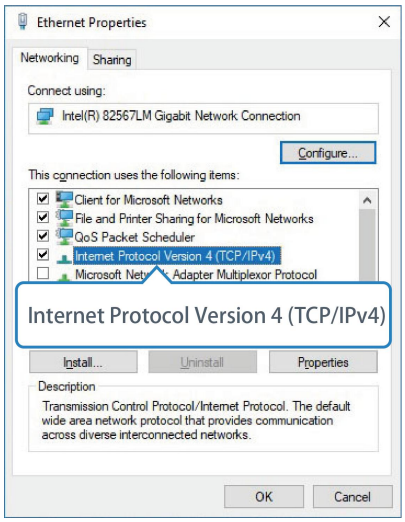
② Click “Control Panel” to open it, and then click “View network status and tasks”.

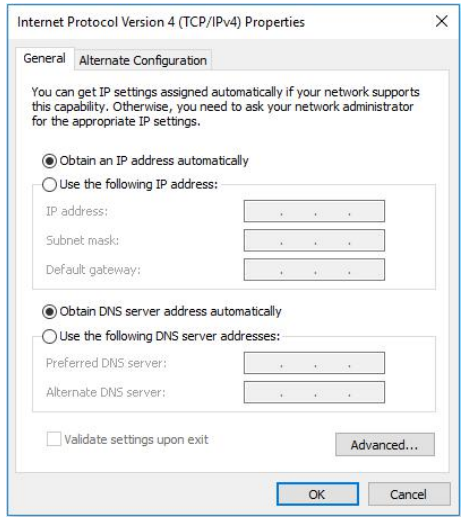


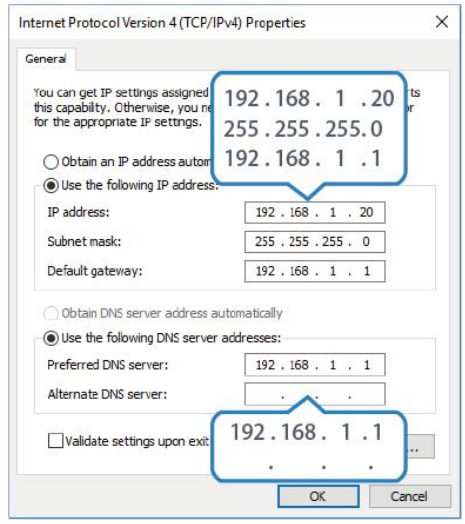
③ Click “Ethernet” (May have different names).



④ Click “Properties”.







⑤ Double Click “Internet Protocol Version 4 (TCP/IPv4)” to configure IP address and DNS server.

⑥ Method 1: click “Obtain an IP address automatically”;

Method 2: click “Use the following IP address” to assign a static IP manually within the same subnet of the gateway.

(Note: Remember to click “OK” to finish configuration.)

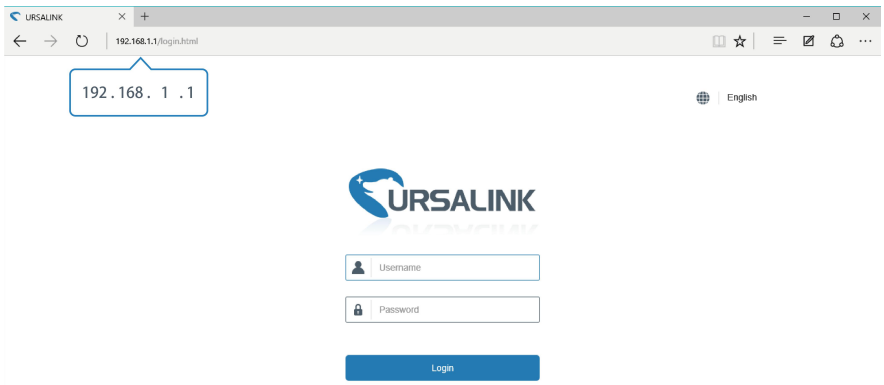
5. Access to UG85 Web GUI for Cellular Connection

This chapter explains how to log in UG85 Web GUI, and connect the gateway to cellular network.
Ursalink UG85 provides web-based configuration interface for management. If this is the first time you configure the gateway, please use the default settings below:
IP Address: **192.168.1.1**
Username: **admin**
Password: **password**

5.1 Log in the Gateway

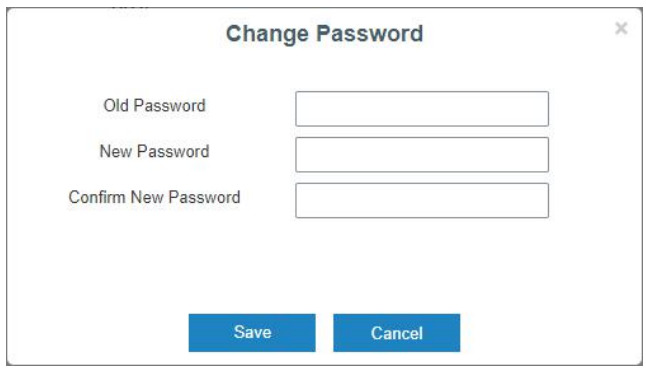
Make sure your PC is connected to the same network as shown in Section 4.

A. Open a Web browser on your PC (Chrome and IE are recommended), type in the IP address, and press Enter on your keyboard.
B. Enter the username and password, click “Login”.

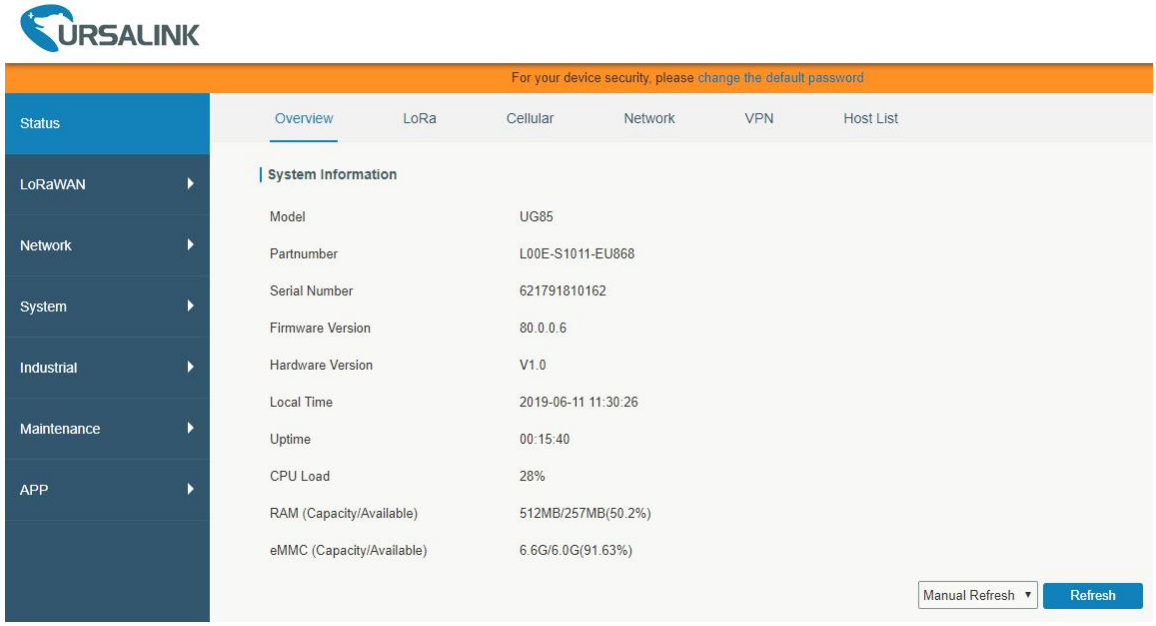


If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

C. When you log in with the default username and password, you will be asked to modify the password. It’s suggested that you change the password for the sake of security. Click “Cancel” button if you want to modify it later.



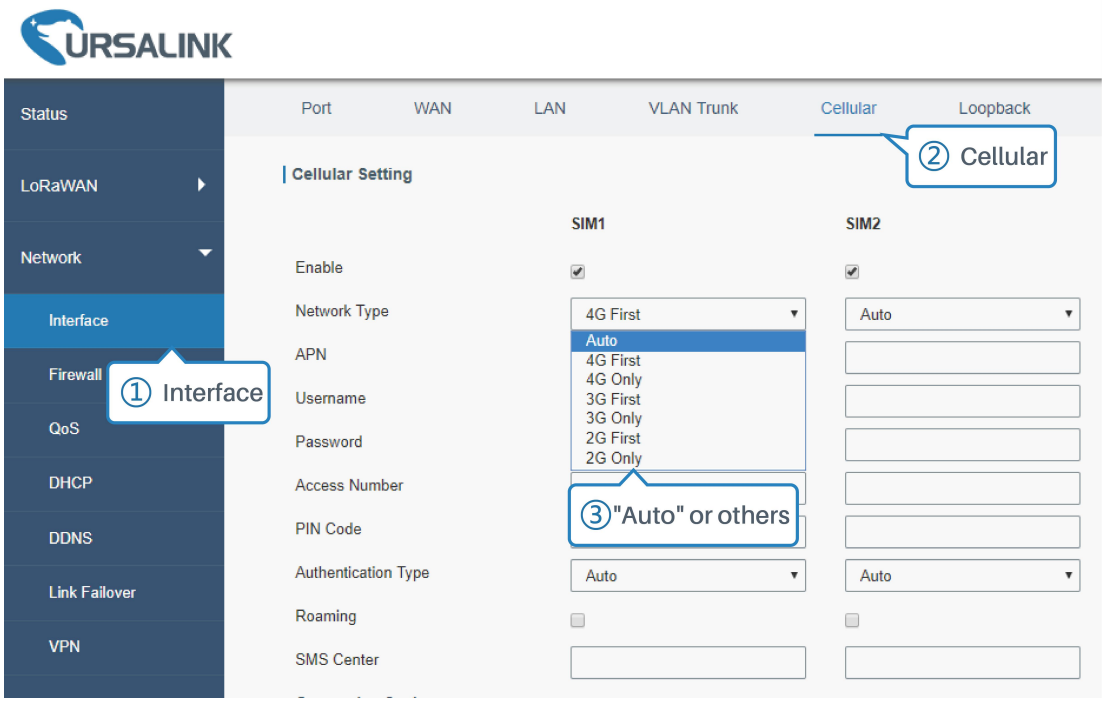
D. After you log in the Web GUI, you can view system information and perform configuration of the gateway.

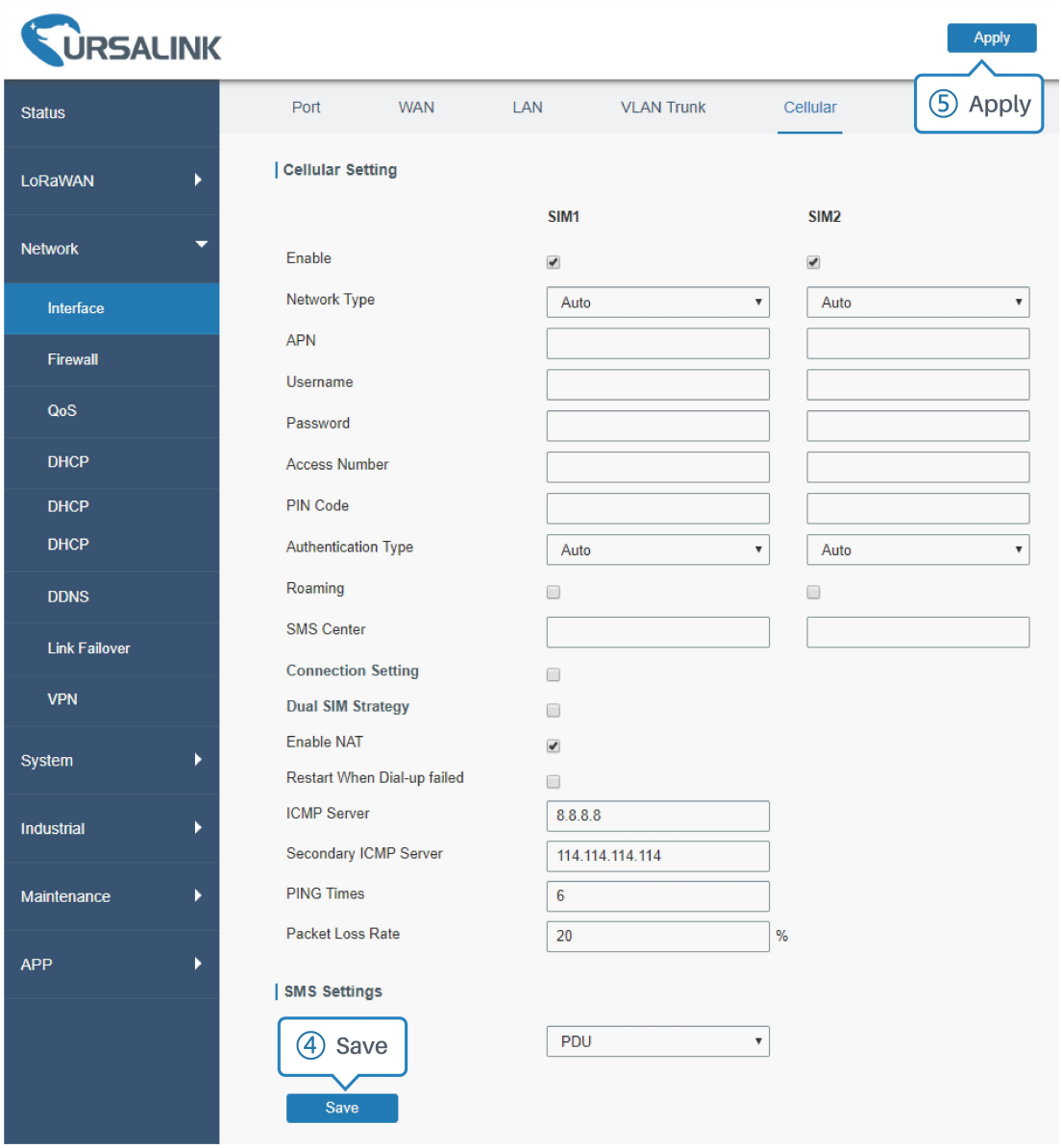


5.2 Configure the Cellular Connection

Take inserting SIM card into SIM1 slot as an example; please refer to the following detailed operations.

A. Click “Network” → “Interface” → “Cellular” → “Cellular Setting” to configure the cellular info.
B. Enable SIM1.
C. Choose relevant network type. “Auto”, “4G First”, “4G Only”, “3G First”, “3G Only”, “2G First” and “2G Only” are optional.
D. Click “Save” and “Apply” for configuration to take effect.





If you select “Auto”, the gateway will obtain ISP information from SIM card to set APN, Username, and Password automatically. This option will take effect when the SIM card is issued from a well-known ISP.
If you select “4G First” or “4G Only”, you can click “Save” to complete the configuration directly.
If you select “3G First”, “3G Only”, “2G First” or “2G Only”, you should manually configure APN, Username, Password, and Access Number.

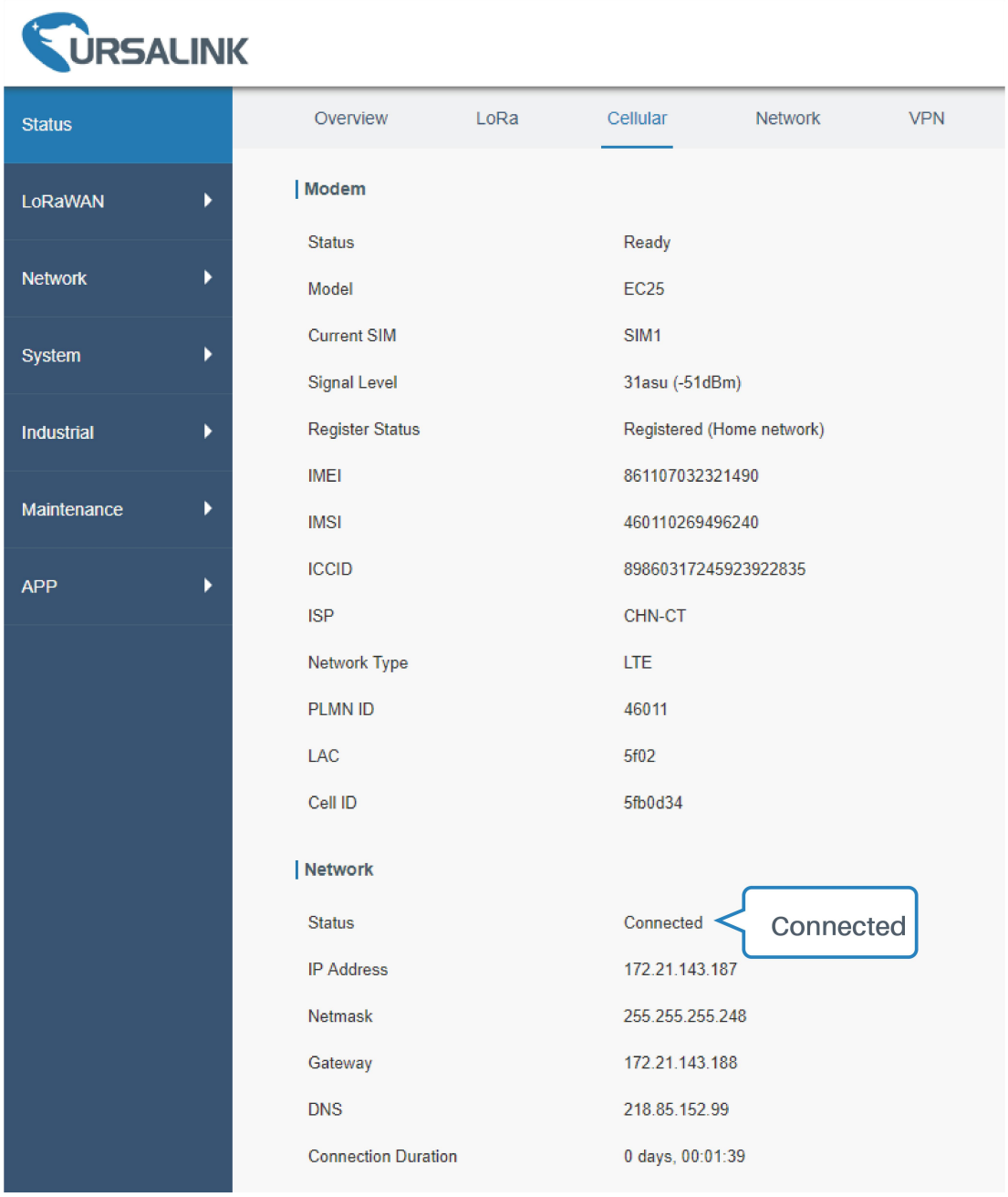
UG85 have two cellular interfaces, named SIM1 & SIM2. Only one cellular interface is active at one time. If both cellular interfaces are enabled, SIM1 interface takes precedence by default.

5.3 Check the Cellular Connection Status

5.3.1 Check the Cellular Connection Status by Web GUI of Router

Click “Status” → “Cellular” to view the status of the cellular connection. If it shows “Connected”, it means

SIM1 has dialed up successfully.



5.3.2 Check the Cellular Connection Status by Hardware

On the other hand, you can check the status of LTE indicator. If it keeps on green light statically, it means SIM has dialed up successfully.

5.4 Check if Network Works Properly by Browser on PC

Open your preferred browser on PC, then type any available web address into address bar and see if it is able to visit Internet via UG85.

6. Packet Forwarder Testing

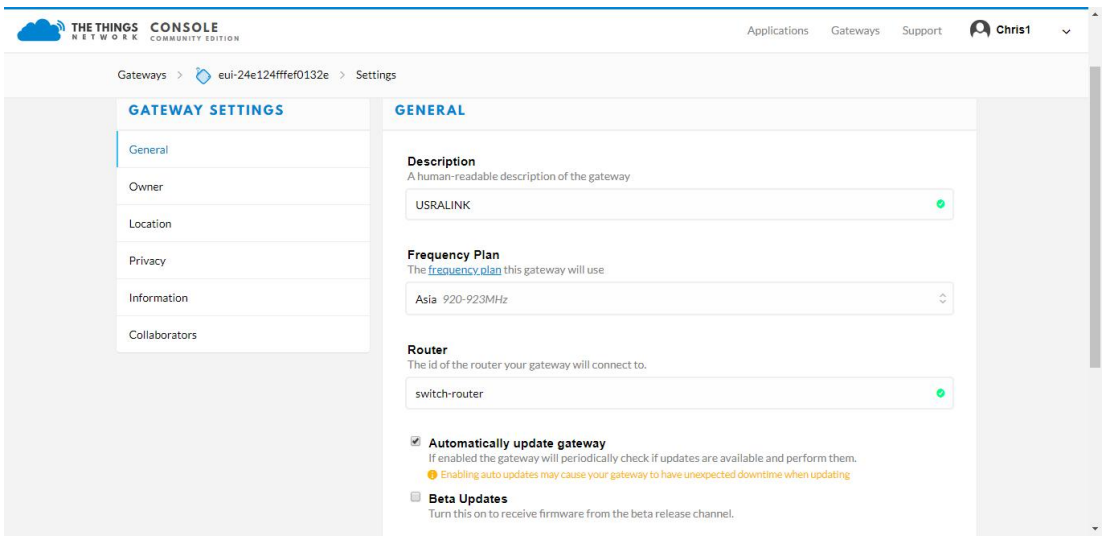
6.1 Node Parameters

Channel Plan	**AS923**
Frequency	**923.4MHZ, 923.2MHZ**
Join Type	**OTAA**
Device EUI	**60C5A8FFFE0003F9**
Application EUI	**70B3D57ED0007AC2**
App Key	**328F2A3F5BA8D0B236459CF06D0512B5**

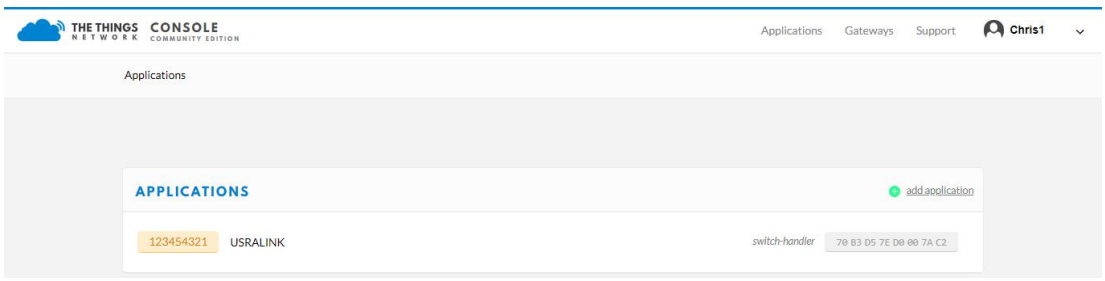
6.2 Configure The Things Network

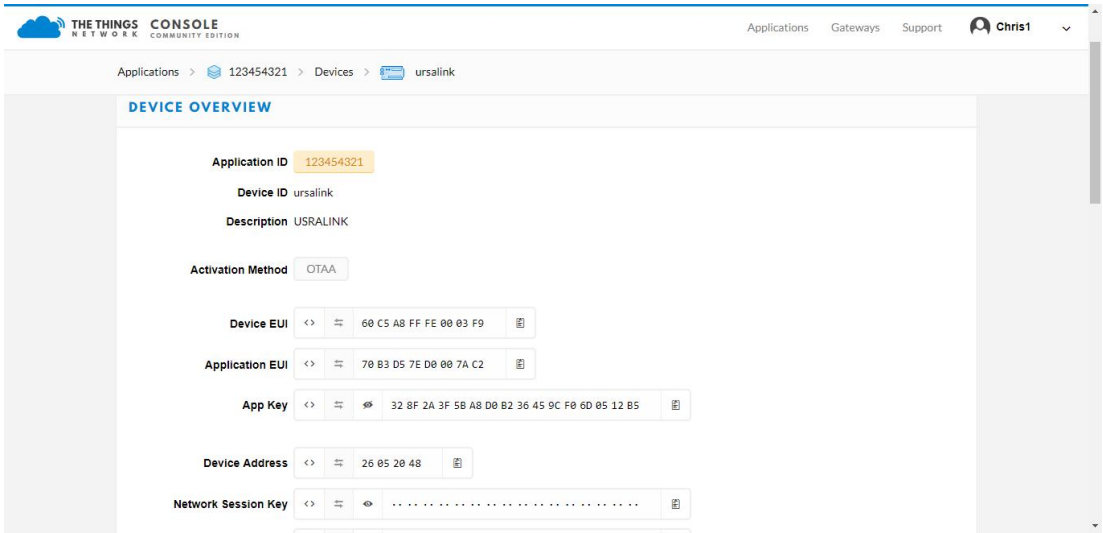
A. Gateway Configuration

Gateway EUI	**24E124FFFEF0132E**
Frequency Plan	**Asia 920-923MHZ**
Server ID	**Switch-router (ttn.opennetworkinfrastructure.org)**



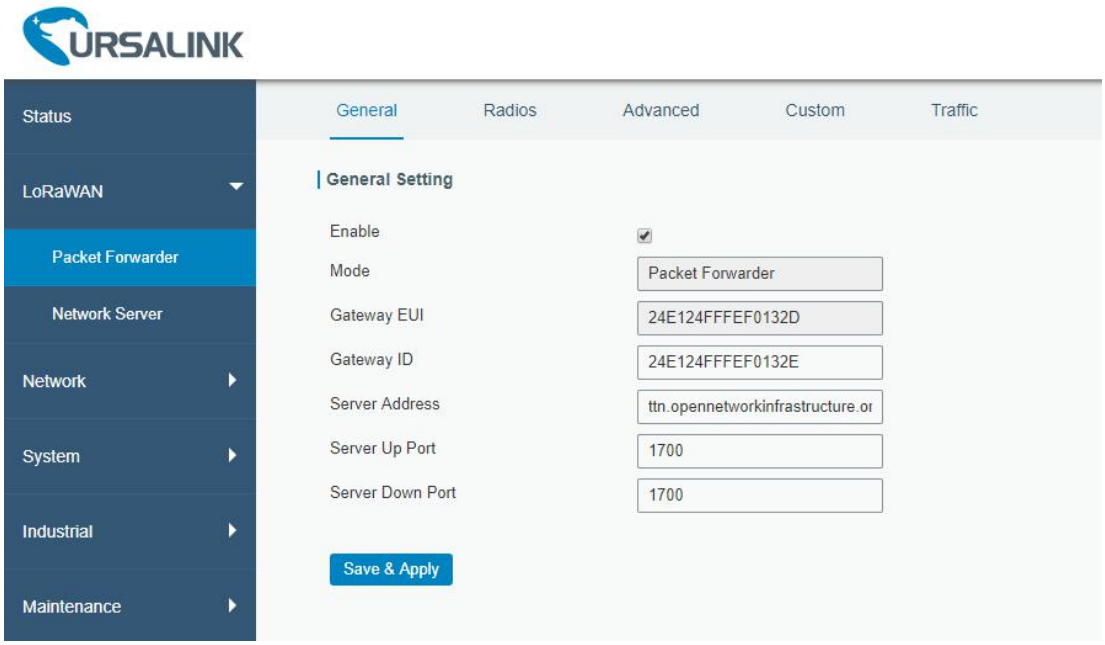
B. Applications Configuration



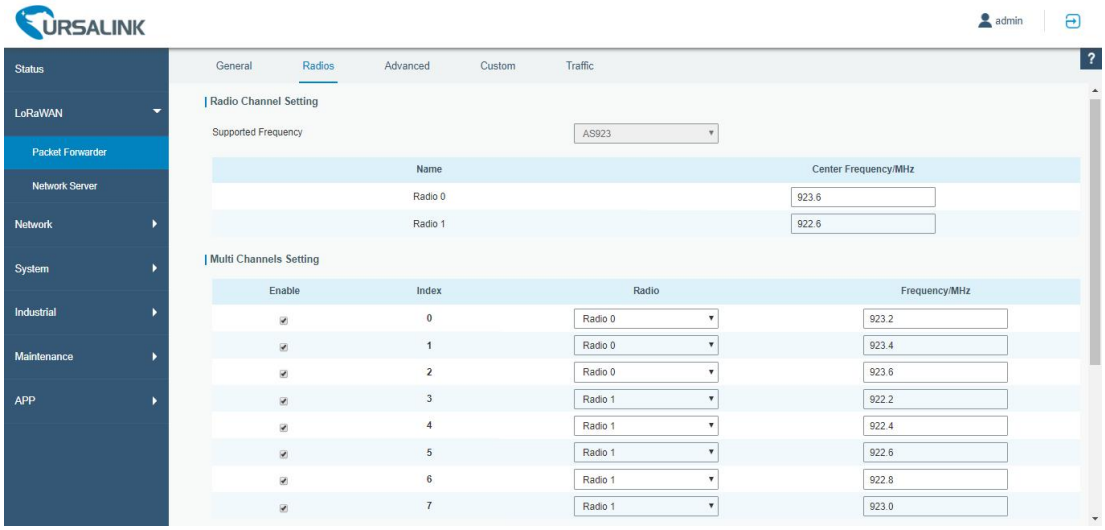


6.3 Packet Forwarder Configuration

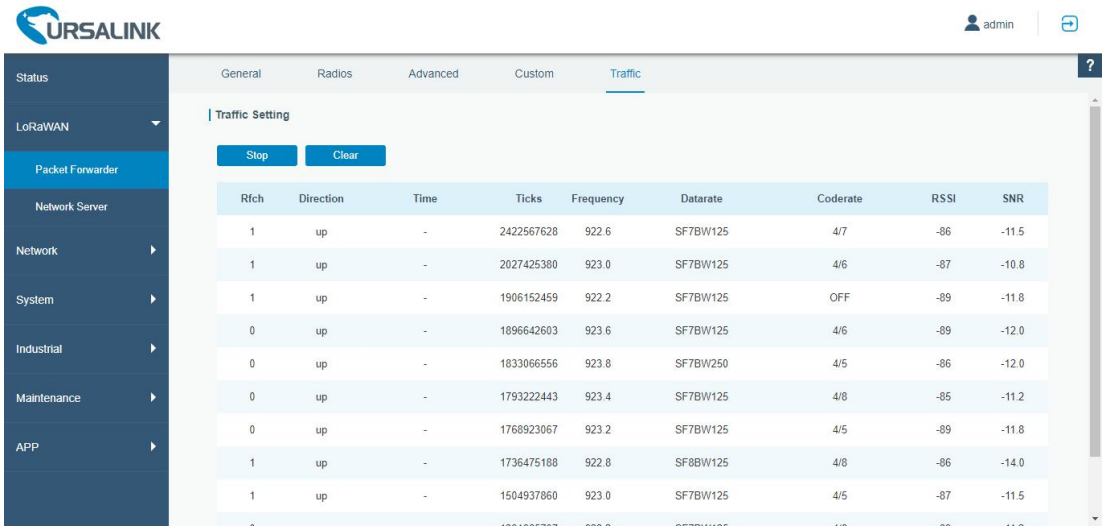
A. Click “LoRaWAN” → “Packet Forwarder” → “General” to configure the general setting.



B. Click “Radios” to configure the center frequency and channels.



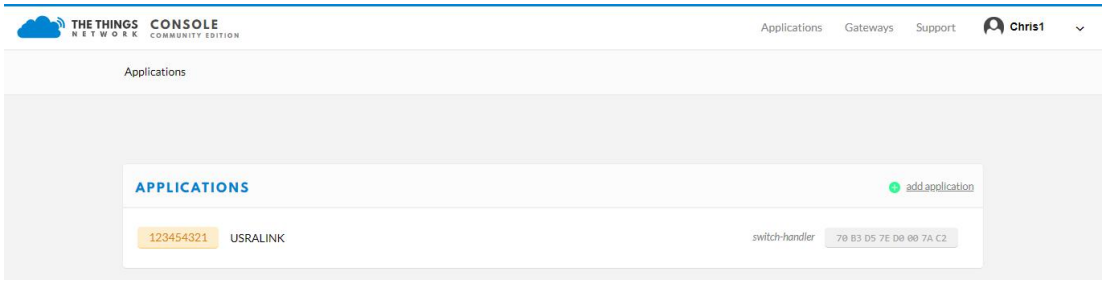
C. Click “Traffic” to view the data communication of UG85.

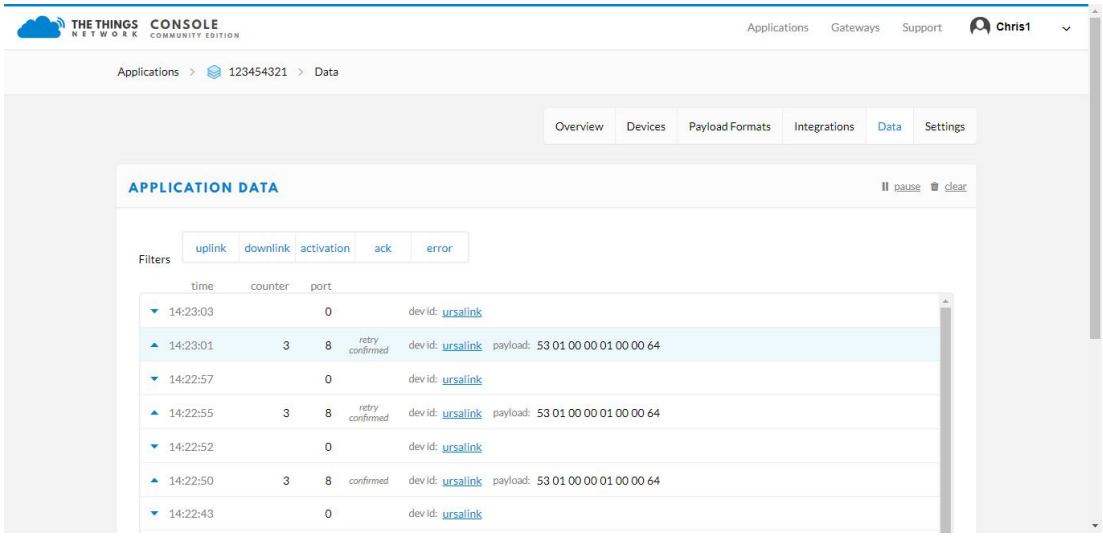


6.4 Check Data Transmission on The Things Network

A. Click “Gateways”, you can check the Gateways status.

B. Click “Applications”and select the Applications, then go to “Data”, you can find the data from the Node.


THE THINGS NETWORK CONSOLE COMMUNITY EDITION
Applications
Gateways
Support
Chris1
Applications
APPLICATIONS
add application
123454321
USRALINK
switch-handler
70 B3 D5 7E D0 00 7A C2


THE THINGS NETWORK CONSOLE COMMUNITY EDITION
Applications
Gateways
Support
Chris1
Applications > 123454321 > Data
Overview
Devices
Payload Formats
Integrations
Data
Settings
APPLICATION DATA
pause
clear
Filters
uplink
downlink
activation
ack
error
time
counter
port
14:23:03 0 dev id: ursalink
14:23:01 3 8 retry confirmed dev id: ursalink payload: 53 01 00 00 01 00 00 64
14:22:57 0 dev id: ursalink
14:22:55 3 8 retry confirmed dev id: ursalink payload: 53 01 00 00 01 00 00 64
14:22:52 0 dev id: ursalink
14:22:50 3 8 confirmed dev id: ursalink payload: 53 01 00 00 01 00 00 64
14:22:43 0 dev id: ursalink

7. Network Server Testing

Note that only gateway with activated built-in Network Server version supports this function.

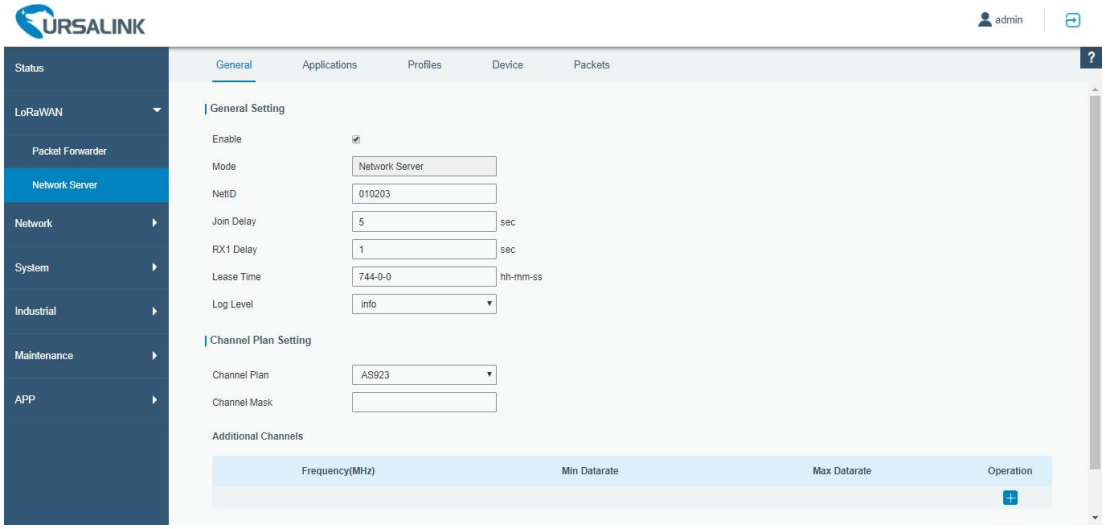
7.1 Node Parameters

Channel Plan	**AS923**
Frequency	**923.4MHZ, 923.2MHZ**
Join Type	**OTAA**
Device EUI	**60C5A8FFFE0003F9**
Application EUI	**70B3D57ED0007AC2**
App Key	**1A98A25536993A882154B81551F18A76**

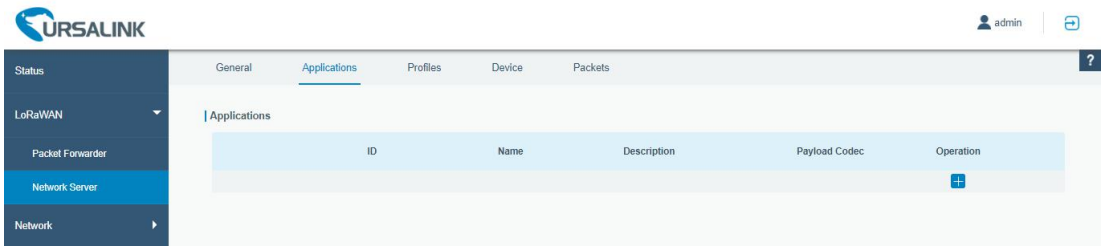
7.2 Network Server Configuration

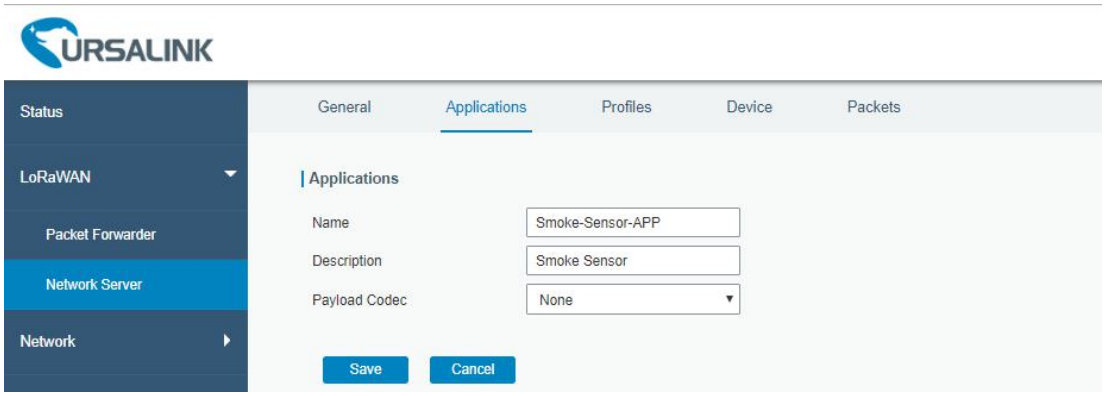
A. Click “LoRaWAN” → “Network Server” → “General” to configure the general setting.

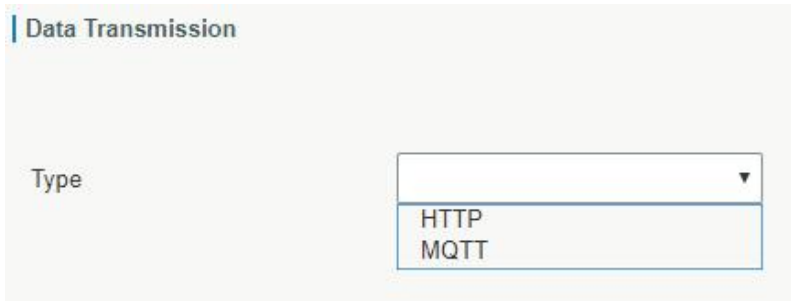
Note that the channel plan of the nodes and network server need to be the same.

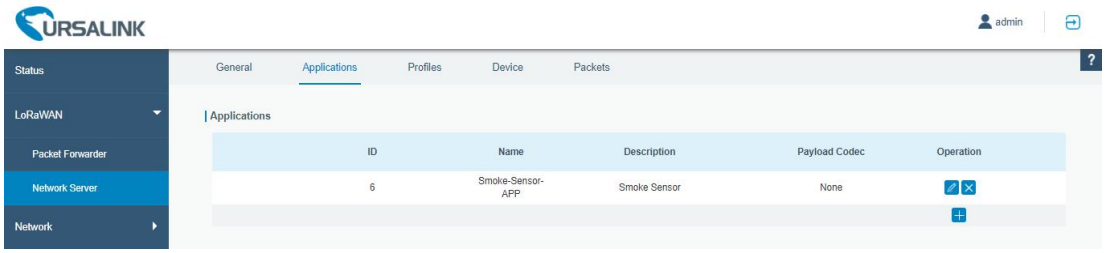


B. Add a new Application and choose HTTP or MQTT protocol to send data to another server.

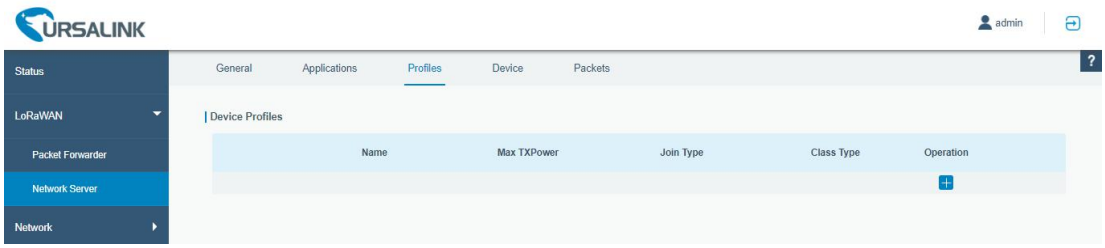


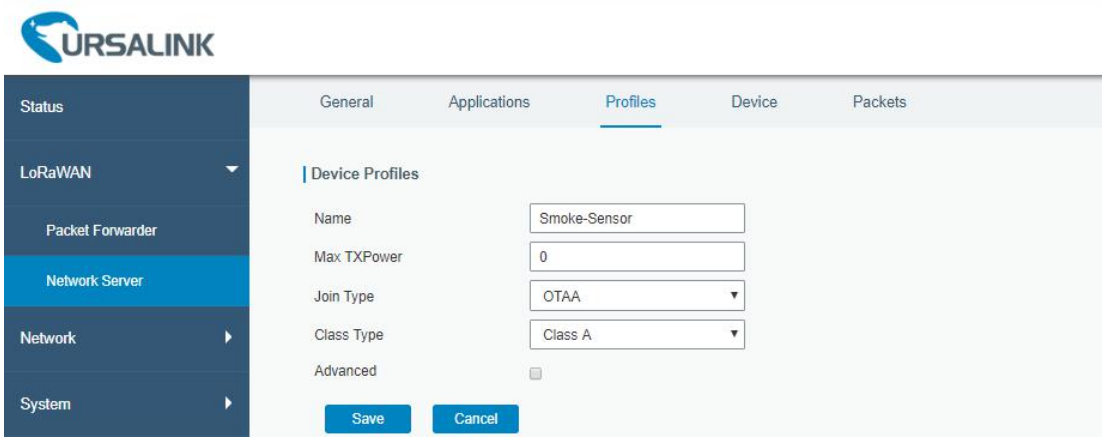


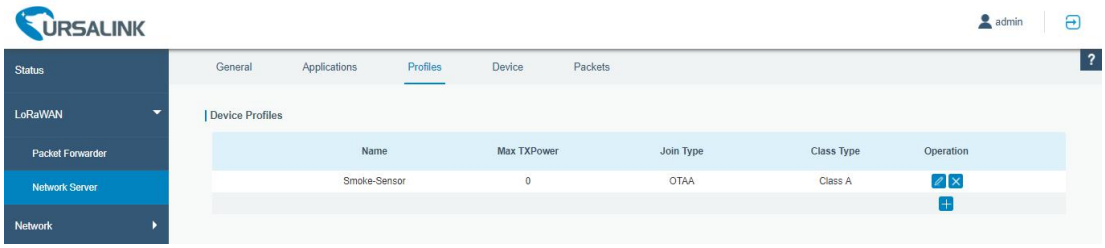




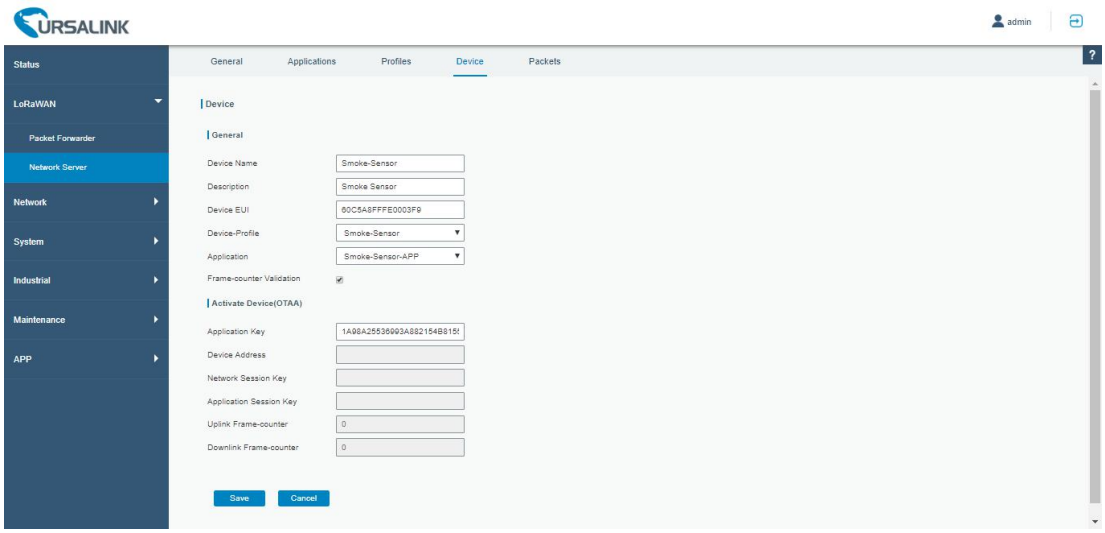
C. Add a new Profiles for the device.

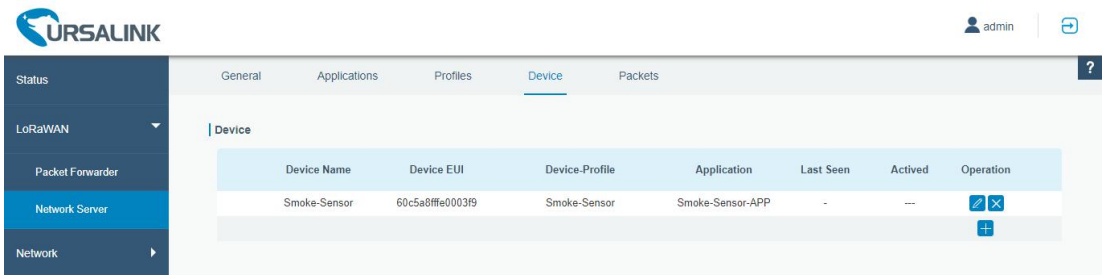






D. Add device

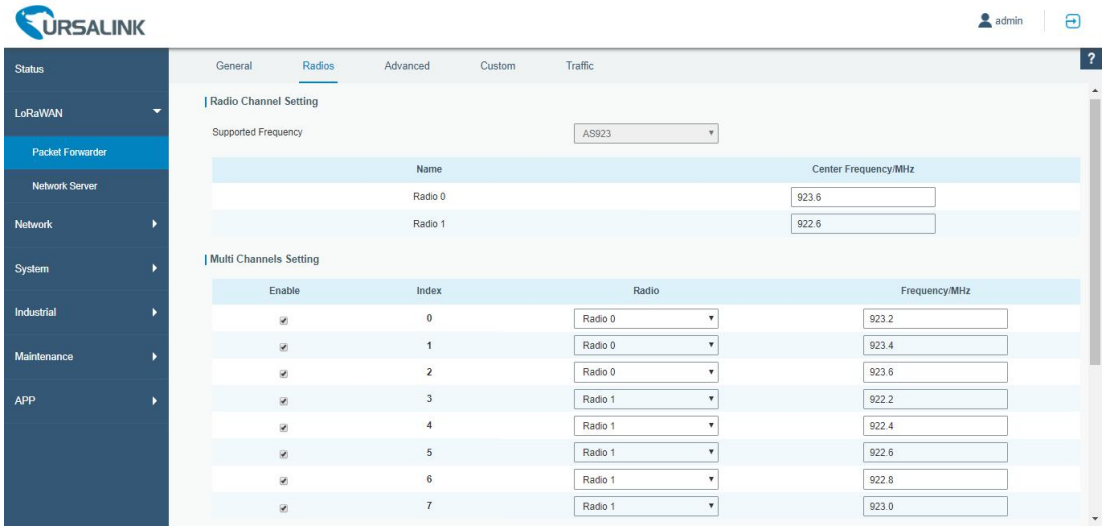




7.3 Package Forwarder Configuration

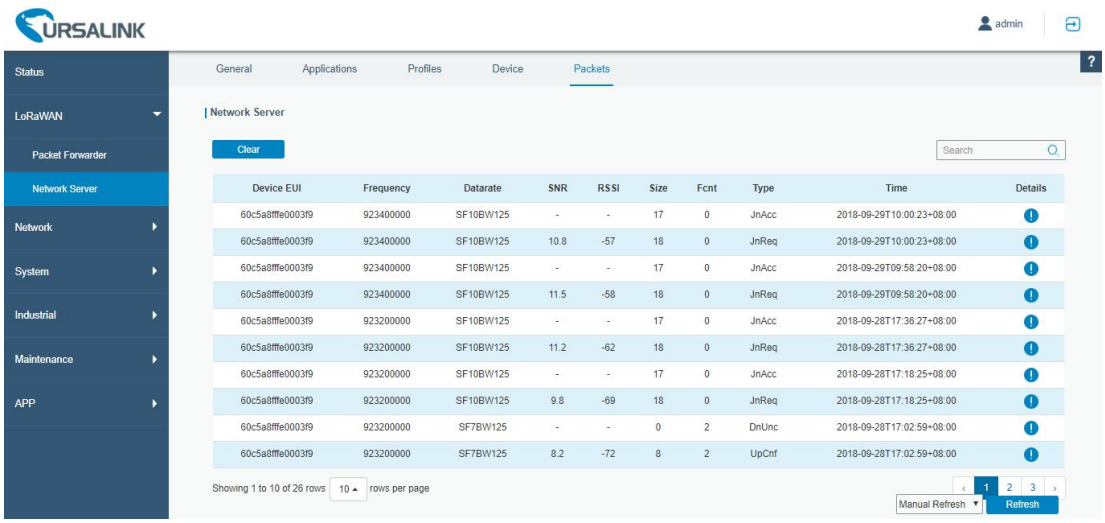
Click “LoRaWAN” → “Packet Forwarder” → “Radios” to configure the center frequency and channels

Note that node frequency needs to be included in the channels frequency.



7.4 Check the Packets

Click “LoRaWAN” → “Network Server” → “Packets” to check the packets from the node on network server.



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