URSALINK

UG65 LoRaWAN Gateway

Quick Start Guide

Welcome

Thank you for choosing Ursalink UG65 LoRaWAN Gateway.

This guide teaches you how to install the UG65 and how to log in the web GUI to configure the device. Once you complete the installation, refer to the Ursalink UG65 User Guide for instructions on how to perform configurations on the device.

Related Documents

This Quick Start Guide only explains the installation of Ursalink UG65 LoRaWAN Gateway. For more functionality and advanced settings, please refer to the relevant documents as below.

Document	Description
Ursalink UG65 Datasheet	Datasheet for the Ursalink UG65 LoRaWAN Gateway.
Ursalink UG65 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: https://www.ursalink.com.

Declaration of Conformity

UG65 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.
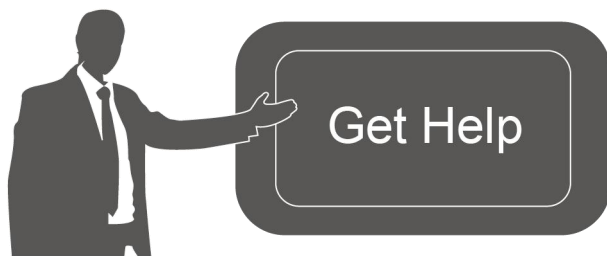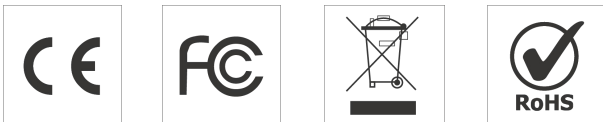
For assistance, please contact
Ursalink technical support:
Email: support@ursalink.com
Tel: 86-592-5023060
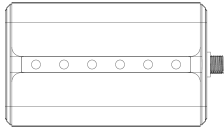Fax: 86-592-5023065

Revision History

Date	Doc Version	Description
August 31, 2020	V1.0	Initial version

Contents

1. Packing List

Before you begin to install the UG65 LoRaWAN Gateway, please check the package contents to verify that you have received the items below.
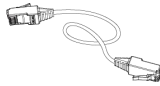
1 × UG65	1 × Ethernet Cable	1 × DC Jack Power Adapter	1 × Mounting Bracket
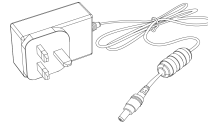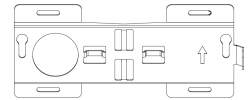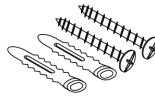
Bracket Fixing Screws & Grounding Screw	Wall Mounting Kits	1 × Warranty Card	1 × LoRa Antenna (Optional)
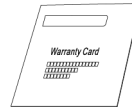
⚠ **If any of the above items is missing or damaged, please contact your Ursalink sales representative.**

2. Hardware Introduction

2.1 Overview

A. Front Panel
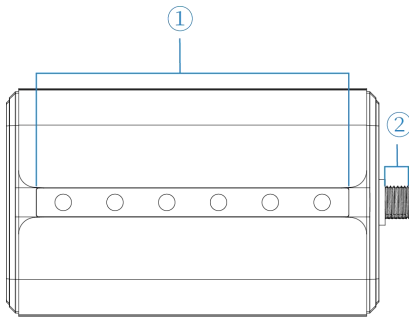
① LED Area
POWER: Power Indicator
STATUS: System Indicator
LoRa: LoRa Indicator
Wi-Fi: Wi-Fi Indicator
LTE: Cellular Indicator
ETH: Ethernet Port Indicator
② LoRa Antenna Connector
(only for external antenna version)

B. Rear Panel
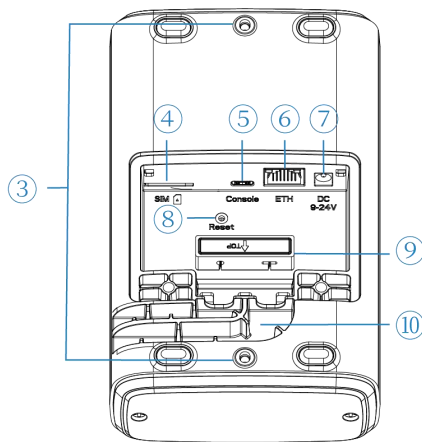
③ Bracket Mounting Screws
④ SIM Slot
⑤ Type-C Port
⑥ Ethernet Port (PoE)
⑦ Power Connector
⑧ Reset Button
⑨ Waterproof Silicone
⑩ Cable Groove

2.2 Dimensions (mm)
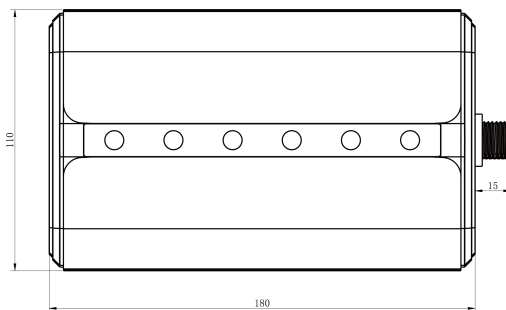
2.3 LED Indicators

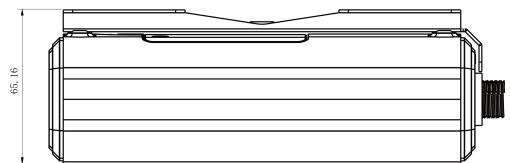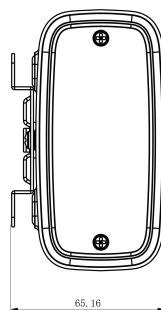| LED	Indication	Status	Description
POWER	Power Status	Off	The power is switched off
		On	The power is switched on
STATUS	System Status	Blue Light	Static: the system is running properly
		Red Light	The system goes wrong
LoRa	LoRa Status	Off	Packet Forwarder mode is running off
		Blue Light	Packet Forwarder mode is running well
Wi-Fi	Wi-Fi Status	Off	Wi-Fi is disabled
		Blue Light	Wi-Fi is enabled
LTE	Cellular Status	Off	SIM card is registering or fails to register (or there are no SIM cards inserted)
		Blue Light	Blinking slowly: SIM card has been registered and is ready for dial-up
			Blinking rapidly: SIM card has been registered and is dialing up now
			Static: SIM card has been registered and dialed up successfully
ETH	Ethernet Port Status	Off	Disconnected
		Blue Light	Static: Connected

2.4 Reset Button

Function	Description	
	STATUS LED	Action
Reset	Static Blue	Press and hold the reset button for more than 5 seconds.
	Static Blue → Rapidly Blinking	Release the button and wait.
	Off → Static Blue	The gateway resets to factory default.

3. Hardware Installation

3.1 SIM Card Installation

⚠️ UG65 does not support hot plugging (also called hot swapping). please turn off the power before you insert or take off cards.

A. Use screwdriver to open the protective cover on the back panel of UG65.

B. Insert the SIM card into the device according to the direction icon on the device.

Note: If you need to take out the SIM card, press into the SIM card and it will pop up automatically.
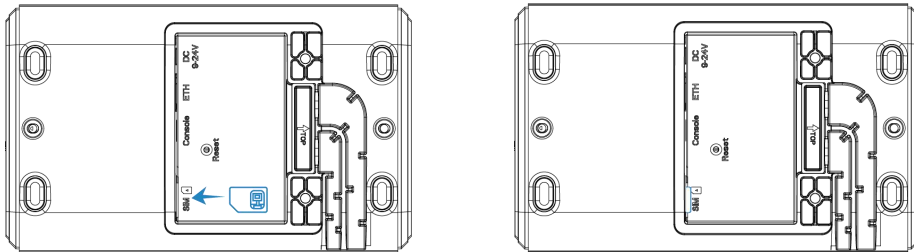
3.2 Ethernet Cable & Power Cable Installation

A. Connect the Ethernet cable and power cable to corresponding interfaces.

B. Pass two cables through the waterproof silicone and slid into the grooves.

C. Screw the protective cover back to the device.
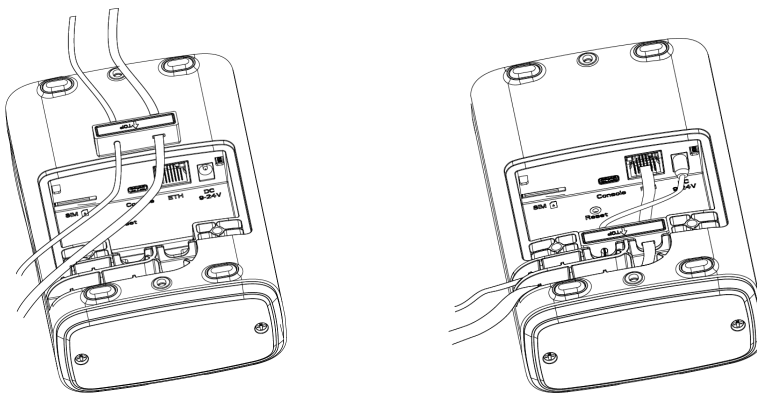
UG65 also supports 802.3af standard PoE and can be powered by PoE switch or PoE adapter. When connecting, Ethernet cable of UG65 device side should be installed first, otherwise, PoE devices or gateway may be damaged.

3.3 Antenna Installation

For external antenna version, rotate the antenna into the antenna connector accordingly.

The external antenna should be installed vertically always on a site with a good signal.
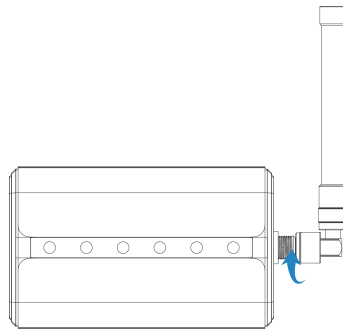
3.4 Gateway Mounting

The gateway can be mounted to a wall or a pole. Please complete all software configurations before installation.

3.4.1 Wall Mounting

Preparation: mounting bracket, bracket fixing screws, grounding screw, wall plugs, wall mounting screws and other required tools.

1. Before you start, make sure that your SIM card has been inserted, your antennas have been attached and all cables have been installed.

Note: Do not connect device to power supply or other devices.

2. Align the mounting bracket horizontally to the desired position on the wall, use a marker pen to mark four mounting holes on the wall, and then remove the mounting bracket from the wall.

Note: The connecting lines of adjacent points are at right angles.

3. Drill four holes with a depth of 32 mm by using your drill with a 6 mm drill bit on the positions you marked previously on the wall.

4. Insert four wall plugs into the holes respectively.

5. Mount the mounting bracket horizontally to the wall by fixing the wall mounting screws into the wall plugs.

6. Screw the bracket fixing screws to the back panel of device, then hang the device to the mounting bracket on the wall.
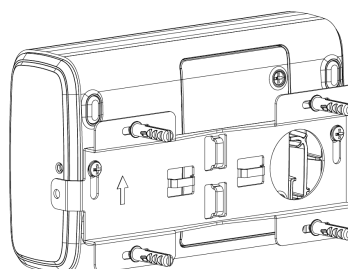
7. Screw the grounding screw to fix UG65 to the mounting bracket.
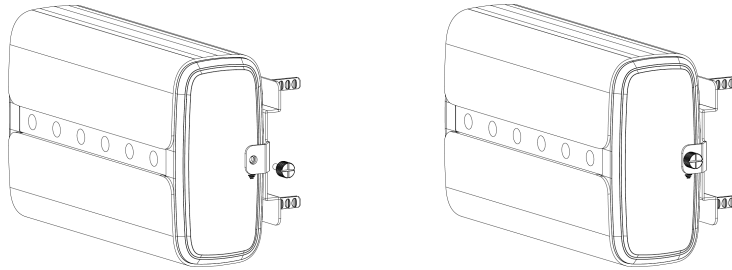
3.4.2 Pole Mounting

Preparation: mounting bracket, bracket fixing screws, hose clamp and other required tools.

1. Before you start, make sure that your SIM card has been inserted, your antennas have been attached and that all cables have been installed.

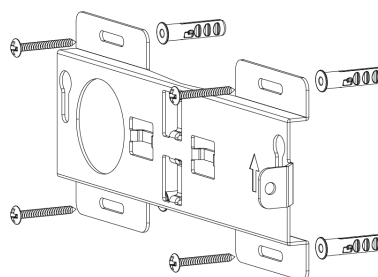**Note:** Do not connect device to power supply or other devices.

2.Loosen the hose clamp by turning the locking mechanism counter-clockwise.

3.Straighten out the hose clamp and slide it through the rectangular rings in the mounting bracket, wrap the hose clamp around the pole.

4.Use a screwdriver to tighten the locking mechanism by turning it clockwise.
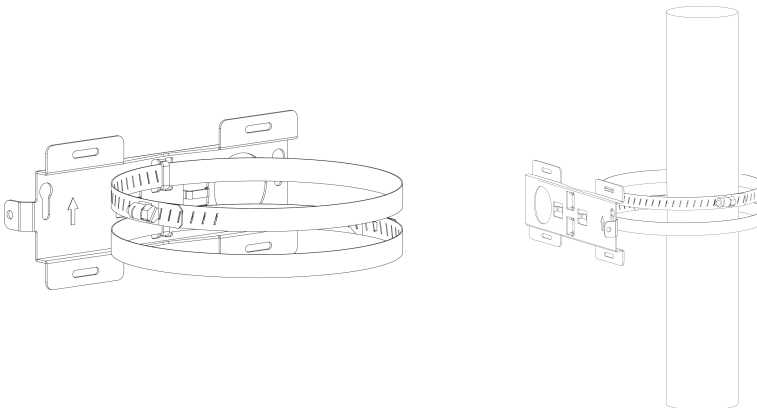
5. Screw the bracket fixing screws to the back panel of device, then hang the device to the mounting bracket on the pole.

6. Screw the grounding screw to fix UG65 to the mounting bracket.

Ursalink UG65 Quick Start Guide
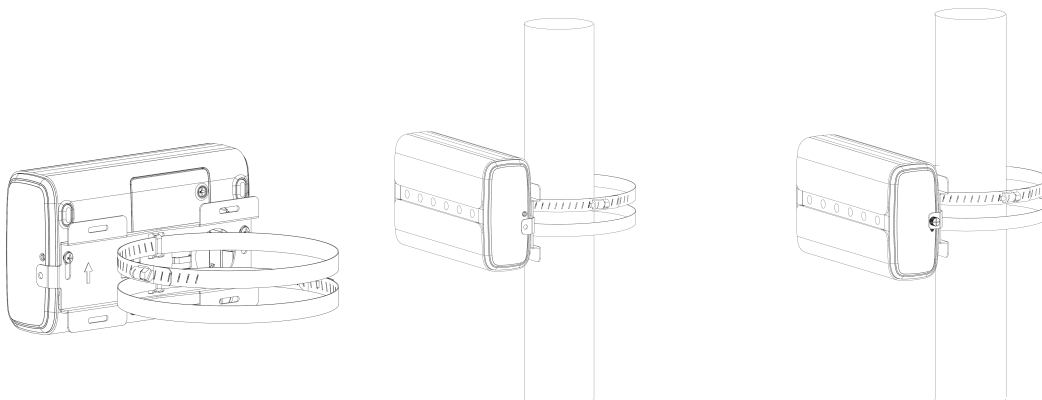
4.Access the Web GUI of UG65

Ursalink UG65 provides web-based configuration interface for management. If this is the first time you configure the gateway, please use the default settings below:
ETH IP Address: **192.168.23.150**
Wi-Fi IP Address**: 192.168.1.1**
Wi-Fi AP: **Ursalink_********
Username: **admin**
Password: **password**

4.1 Web GUI Access via Wi-Fi

A. Choose the wireless network Ursalink_****** from the list and click Connect.
B. Open a Web browser on your PC (Chrome is recommended) and type in the IP address 192.168.1.1 to access the web GUI.
C. Enter the username and password, click "Login".
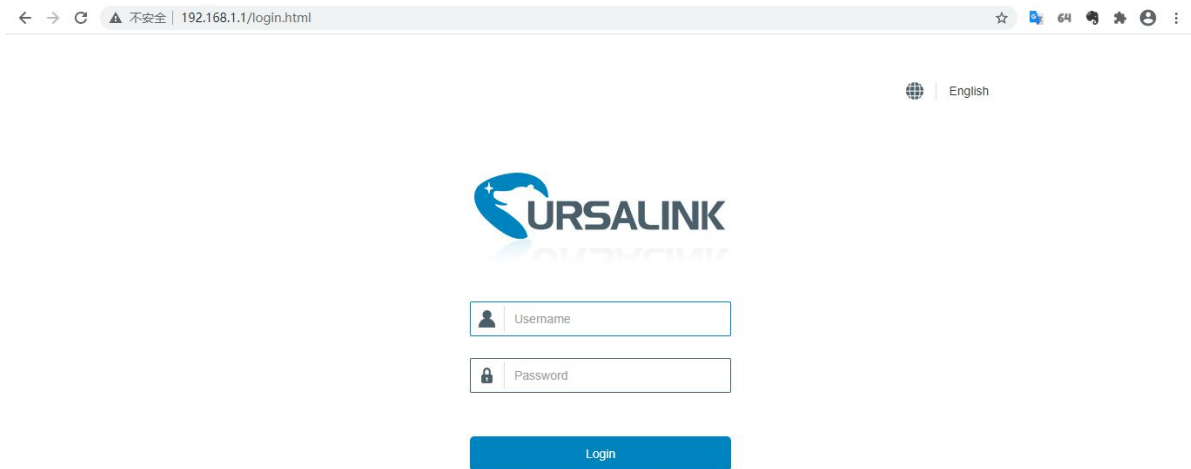
⚠️ **If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.**

D. When you log in with the default username and password, you will be asked to change password. It's suggested that you change the password for the sake of security. Click "Cancel" button if you want to modify it later.
E. After you log in the Web GUI, you can view system information and perform configuration of the gateway.

www.ursalink.com   10
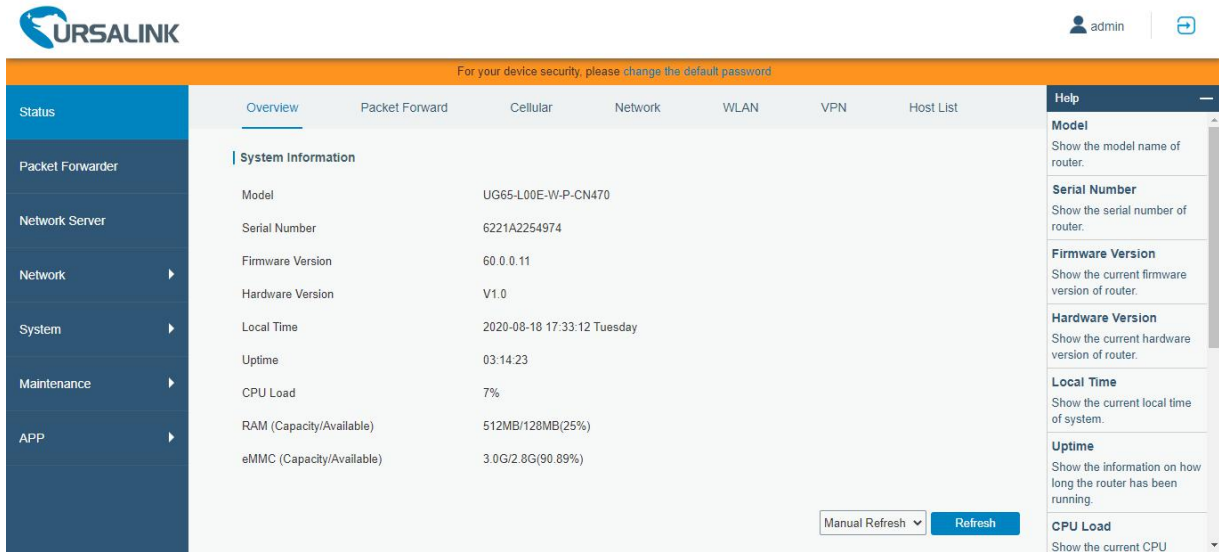
4.2 Web Access via Ethernet Port

Connect PC to UG65 ETH port directly or through PoE adapter. The following steps are based on Windows 10 operating system for your reference.

A. Go to "Control Panel" → "Network and Internet" → "Network and Sharing Center", then click "Ethernet" (May have different names).
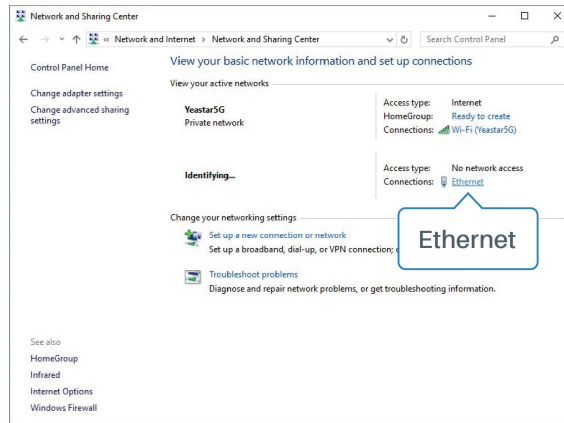
B. Go to "Properties" → "Internet Protocol Version 4(TCP/IPv4) "and select "Use the following IP address", then assign a static IP manually within the same subnet of the gateway.
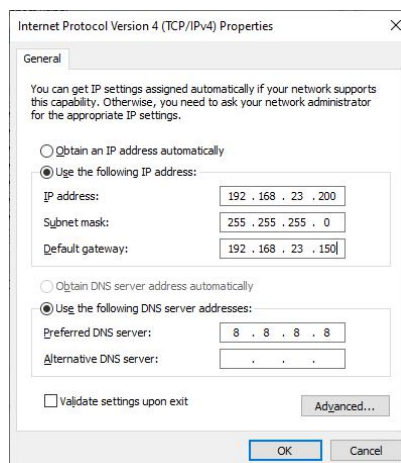
C. Open a Web browser on your PC (Chrome is recommended) and type in the IP address 192.168.1.1 to access the web GUI.

D. Enter the username and password, click "Login".
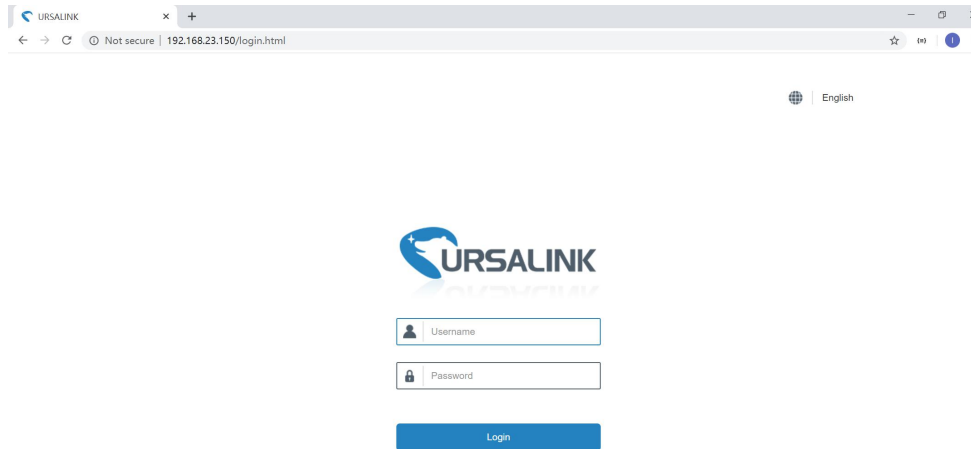
⚠️ **If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.**

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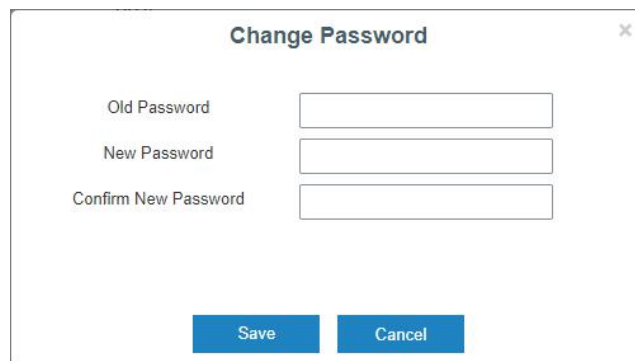

F. After you log in the Web GUI, you can view system information and perform configuration of the gateway.
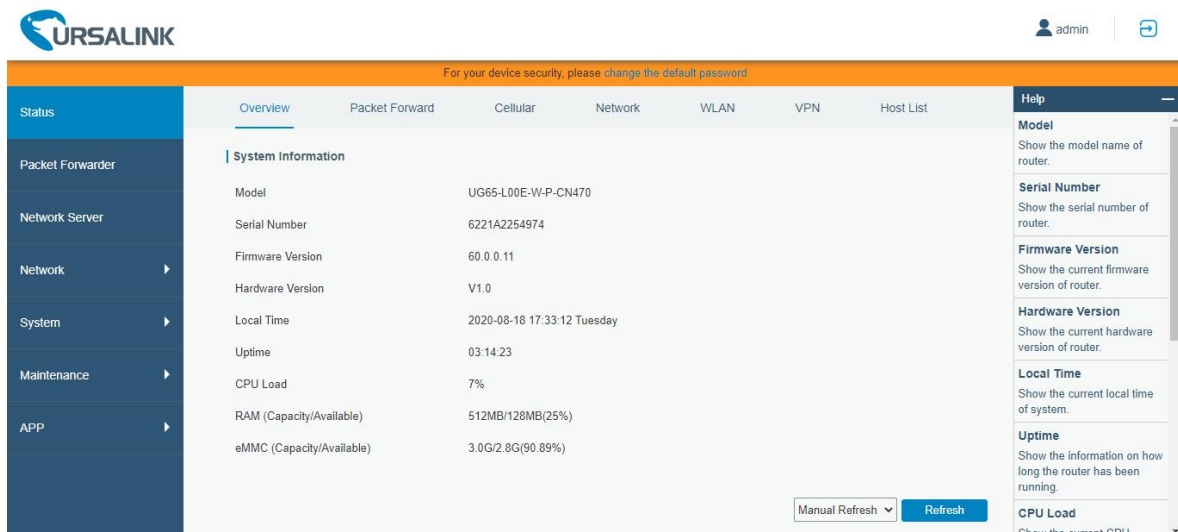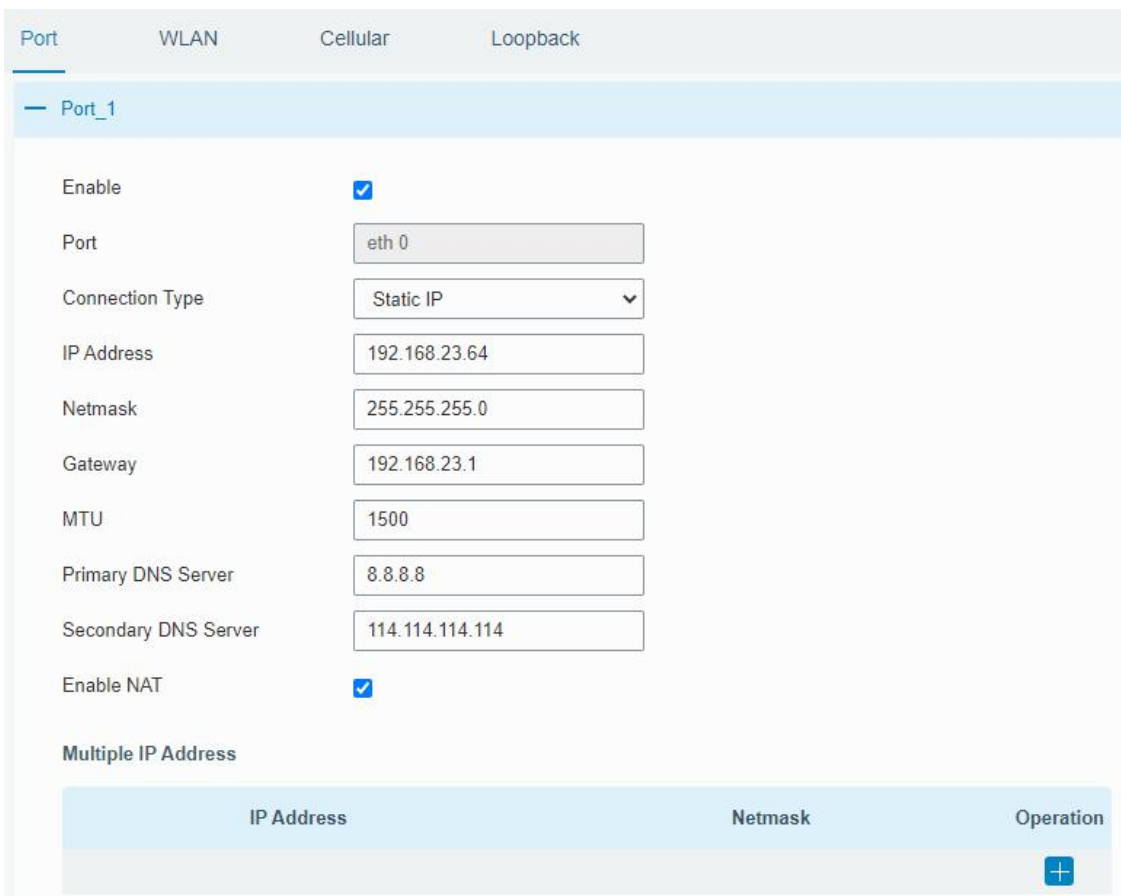
5.Connect UG65 to the Netowork

This section explains how to connect the gateway to network via WAN connection, Wi-Fi or cellular.

5.1 Configure the WAN Connection

A. Go to "Network"→ "Interface" → "Port" page to select the connection type and configure Ethernet port information.
B. Click "Save & Apply" for changes to take effect.

| Port | WLAN | Cellular | Loopback |

— Port_1

Enable	☑
Port	eth 0
Connection Type	Static IP
IP Address	192.168.23.64
Netmask	255.255.255.0
Gateway	192.168.23.1
MTU	1500
Primary DNS Server	8.8.8.8
Secondary DNS Server	114.114.114.114
Enable NAT	☑

Multiple IP Address

IP Address	Netmask	Operation
		➕

C. Connect Ethernet port of gateway to devices like router or modem.
D. Log in the web GUI via the newly assigned IP address and go to "Status"→ "Network" to check Ethernet port status.

| Overview | Packet Forward | Cellular | Network | WLAN | VPN | Host List |

| WAN

Port	Status	Type	IP Address	Netmask	Gateway	DNS	Duration
eth 0	up	Static	192.168.23.64	255.255.255.0	192.168.23.1	8.8.8.8	03h 12s

5.2 Configure the Wi-Fi Connection

A. Go to "Network" → "Interface" → "WLAN" and select "Client" mode.
B. Click "Scan" to search for Wi-Fi access point. Select the available one and click "Join Network".

	Port	WLAN	Cellular	Loopback			
< GoBack							
SSID	Channel	Signal	Cipher	BSSID	Security	Frequency	
Ursalink_F0DCAF	Auto	-68dBm	Auto	24:e1:24:f0:dc:af	No Encryption	2437MHz	Join Network
Ursalink_F0C422	Auto	-64dBm	Auto	24:e1:24:f0:c4:22	No Encryption	2437MHz	Join Network
Ursalink_F0DE8C	Auto	-66dBm	Auto	24:e1:24:f0:de:8c	No Encryption	2462MHz	Join Network

C. Type the key of Wi-Fi.

Port	WLAN	Cellular	Loopback

| WLAN

Enable	☑
Work Mode	Client ⌄ Scan
SSID	Ursalink_Tec
BSSID	24:e1:24:f0:2c:4b
Encryption Mode	WPA-PSK/WPA2-PSK ⌄
Cipher	AES ⌄
Key	••••••••

| IP Setting

Protocol	DHCP Client ⌄

D. Go to "Status"→"WLAN" to check Wi-Fi status. If it shows "Connected", it means gateway connects to Wi-Fi successfully.

Overview	Packet Forward	Cellular	Network	WLAN

| WLAN Status

Wireless Status	Enabled
MAC Address	24:e1:24:f0:c4:34
Interface Type	Client
SSID	Ursalink_Tec
Channel	Auto
Encryption Type	WPA-PSK/WPA2-PSK
Cipher	AES
Status	Connected
IP Address	192.168.250.146
Netmask	255.255.255.0
Connection Duration	0 days, 00:00:05

5.3 Configure the Cellular Connection

A. Go to "Network" → "Interface" → "Cellular" → "Cellular Setting" page to enable cellular settings.

B. Choose relevant network type and fill in SIM card information like APN or PIN code.

C. Click "Save" and "Apply" for changes to take effect.

Port	WLAN	Cellular	Loopback

| Cellular Setting

Enable	☑
Network Type	Auto
APN	
Username	
Password	
Access Number	
PIN Code	
Authentication Type	Auto
Roaming	☑
SMS Center	
Connection Setting	☐
Enable NAT	☑

D. Go to "Status" → "Cellular" page to view the status of the cellular connection. If it shows "Connected", it means the SIM has dialed up successfully. 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.

Overview	Packet Forward	Cellular	Network	WLAN

| Modem

Status	Ready
Model	EC25
Version	EC25ECGAR06A07M1G
Signal Level	23asu (-67dBm)
Register Status	Registered (Home network)
IMEI	860425047368939
IMSI	460019425301842
ICCID	89860117838009934120
ISP	CHN-UNICOM
Network Type	LTE
PLMN ID	
LAC	5922
Cell ID	340db83

| Network

Status	Connected
IP Address	10.132.132.59
Netmask	255.255.255.240
Gateway	10.132.132.60

6.Packet Forwarder Configuration

UG65 has embedded multiple packet forwarders like TTN and Chirpstack. This section explains how to connect the gateway to third-party network servers.

⚠️ **Make sure the gateway connects to the network as shown in Section 5.**

A. Go to "Packet Forwarder" → "General" page and click 🔲 to add a network server.

Status	General	Radios	Advanced	Custom	Traffic	
Packet Forwarder	**General Setting**					
	Gateway EUI	24E124FFFE				
Network Server	Gateway ID	24E124FFFE				
Network ▶	Frequency-Sync	Disabled ▾				
System ▶	**Multi-Destination**					
Maintenance ▶	ID	Enable	Type	Server Address	Operation	
APP ▶	0	Enabled	Ursalink	localhost	✎ ✕	
	1	Disabled	TTN	-	✎ ✕	
	2	Disabled	Semtech	router.cn.thethings.network	✎ ✕	
					🔲	

B. Fill in the server information and enable this server.
Note：When you select any of TTN or Chirpstack, other servers are not allow to enable.

|		
Enable	☑	✕
Type	Semtech ▾	
Server Address	router.eu.thethings.network ▾	
Port Up	1700	
Port Down	1700	
	Save	

C. Go to "Packet Forwarder" → "Radio" page to configure antenna transmission type, center frequency and channels. The channels of the gateway and network server need to be the same.
Note: for built-in antenna models, please select "2 × Built-in ANT"; for external antenna models, please select "Ext ANT(TX+RX)+ Built-in ANT(RX)".

General	Radios	Advanced	Custom	Traffic

Antenna Type	2 x Built-in ANT

| Radio Channel Setting

Supported Frequency	CN470

Name	Center Frequency/MHz
Radio 0	472.3
Radio 1	472.9

| Multi Channels Setting

Enable	Index	Radio	Frequency/MHz
☑	0	Radio 0	471.9
☑	1	Radio 0	472.1
☑	2	Radio 0	472.3
☑	3	Radio 0	472.5
☑	4	Radio 1	472.7
☑	5	Radio 1	472.9
☑	6	Radio 1	473.1
☑	7	Radio 1	473.3

D. Add the gateway on network server page. Take TTN for example, type and save the gateway EUI and other information when you connect it via Semtech packet forwarder. After you add the gateway, TTN will show connection status.

Gateways > Register

REGISTER GATEWAY

Gateway EUI
The EUI of the gateway as read from the LoRa module

24 E1 24 FF FE ▒▒ 9   ● 8 bytes

☑ I'm using the legacy packet forwarder
　 Select this if you are using the legacy Semtech packet forwarder.

Description
A human-readable description of the gateway

[●]

Frequency Plan
The frequency plan this gateway will use

Australia 915MHz

E. Go to "Traffic" page to view the data communication of UG65.

General	Radios	Advanced	Custom	Traffic

| Traffic Setting

[Stop] [Clear]

Rfch	Direction	Time	Ticks	Frequency	Datarate	Coderate	RSSI	SNR
1	up	11:52:38	3178821571	865.985	SF7BW125	4/5	-91	5.0
1	up	11:52:22	3162262692	866.585	SF7BW125	4/7	-108	-11.8
0	down	-	3118888131	865.0625	SF7BW125	4/5	-	-
0	up	11:51:37	3117888131	865.0625	SF7BW125	4/5	-95	-0.8

7. Network Server Configuration

UG65 can work as network server and transmit data to Ursalink Cloud or other platform via MQTT/HTTP/HTTPS.

⚠️ **Make sure the gateway connects to the network as shown in <u>Section 5</u>.**

7.1 Connect UG65 to Ursalink Cloud

A. Go to "Packet Forwarder" → "General" page to enable the "Ursalink" type server.

Status	General	Radios	Advanced	Custom	Traffic
Packet Forwarder	**General Setting**				
	Gateway EUI	24E124FFF........5			
Network Server	Gateway ID	24E124FF..........			
Network ▶	Frequency-Sync	Disabled ▼			
	Multi-Destination				
System ▶	ID	Enable	Type	Server Address	Operation
Maintenance ▶	0	Enabled	Ursalink	localhost	✏️ ✕
APP ▶					➕
	Save & Apply				

B. Go to "Packet Forwarder" → "Radio" page to select the antenna transmission type, center frequency and channels. The channels of the gateway and LoRaWAN nodes need to be the same.
Note: for built-in antenna models, please select "2 × Built-in ANT"; for external antenna models, please select "Ext ANT(TX+RX)+ Built-in ANT(RX)".

General	Radios	Advanced	Custom	Traffic

Antenna Type	2 x Built-in ANT ▼

Radio Channel Setting

Supported Frequency	CN470 ▼

Name	Center Frequency/MHz
Radio 0	472.3
Radio 1	472.9

Multi Channels Setting

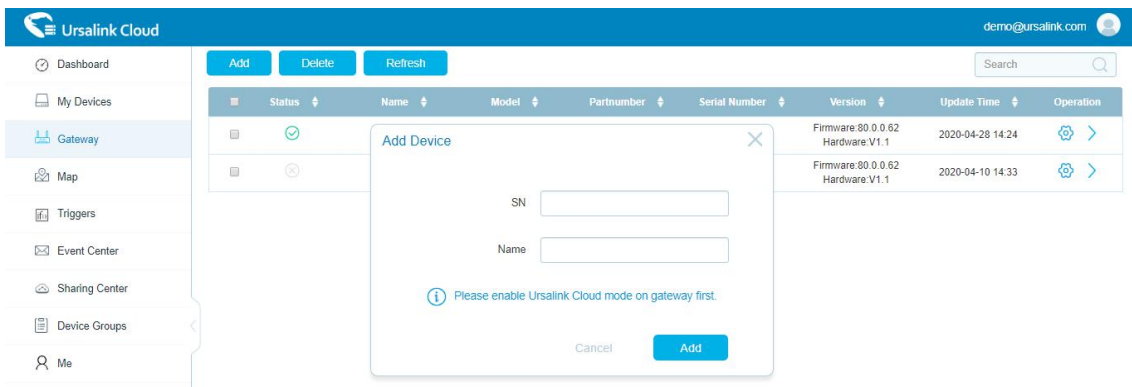| Enable	Index	Radio	Frequency/MHz
☑	0	Radio 0 ▼	471.9
☑	1	Radio 0 ▼	472.1
☑	2	Radio 0 ▼	472.3
☑	3	Radio 0 ▼	472.5
☑	4	Radio 1 ▼	472.7
☑	5	Radio 1 ▼	472.9
☑	6	Radio 1 ▼	473.1
☑	7	Radio 1 ▼	473.3

C. Go to "Network Server" → "General" page to enable the network server and Ursalink Cloud mode.
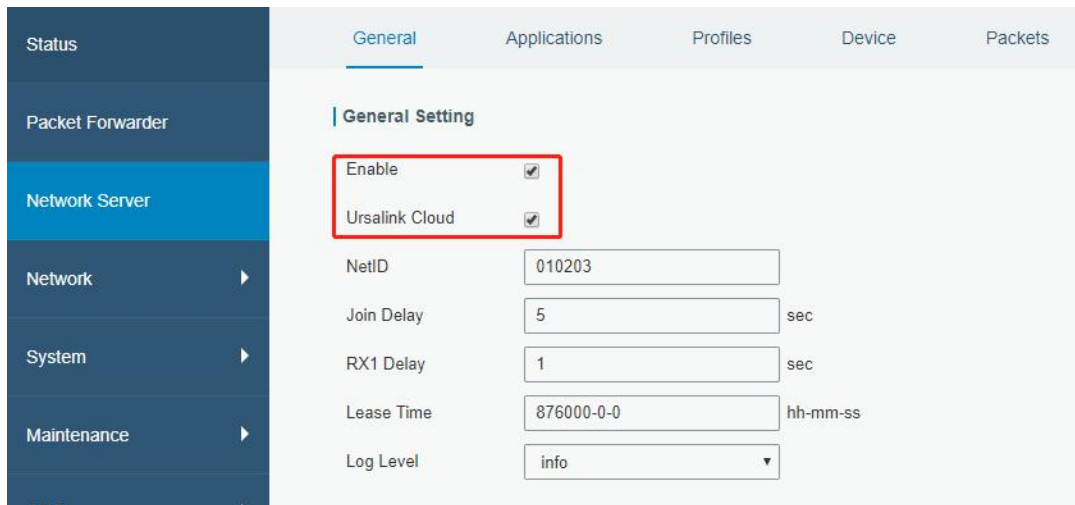
D. Register and log in the Ursalink Cloud (cloud.ursalink.com).
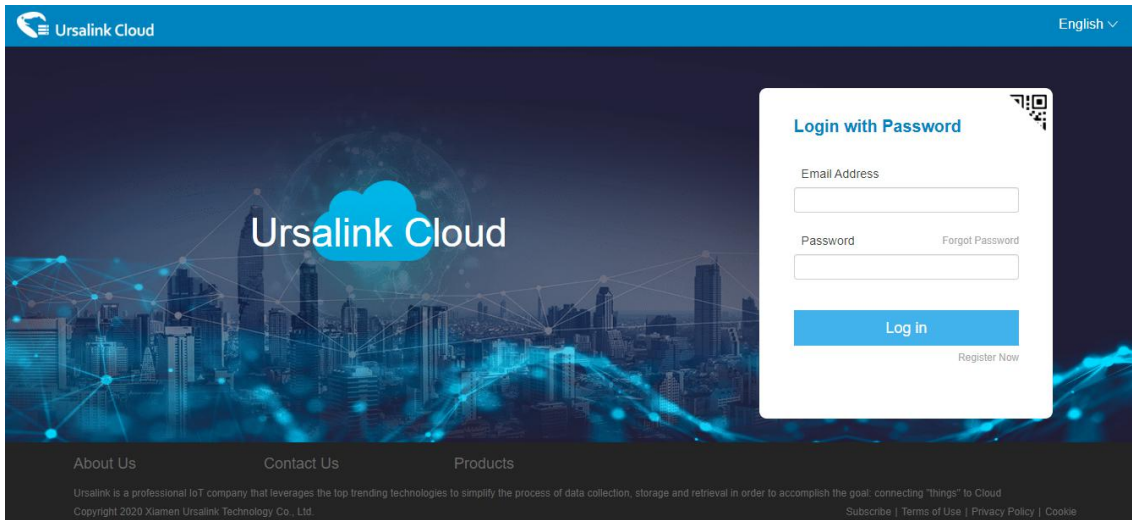
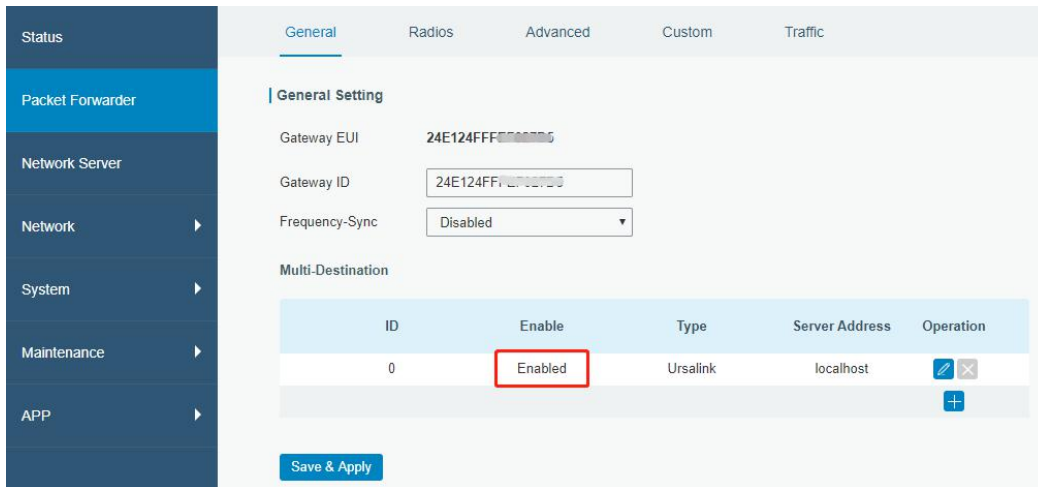E. Go to "Gateway" page and click "Add" to add a gateway.

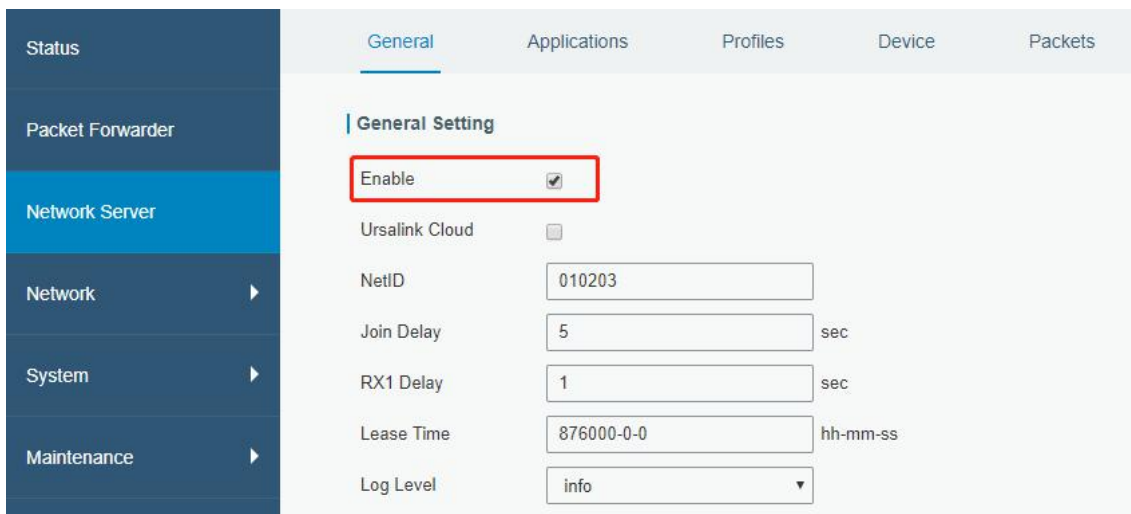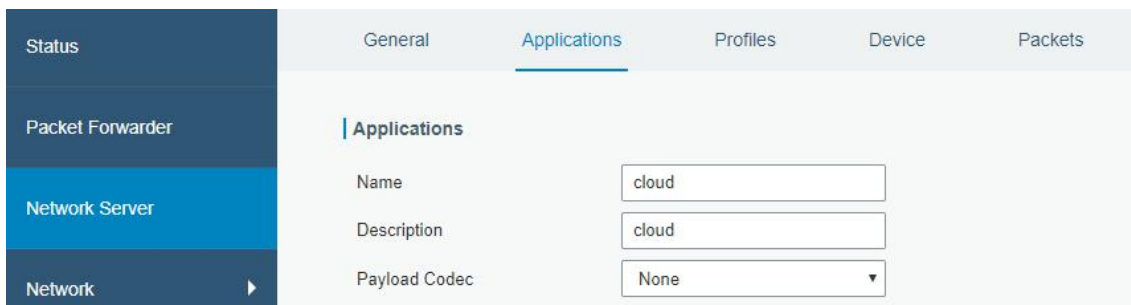F. The gateway is online on Ursalink Cloud.

7.2 Connect UG65 to Other Platform

A. Go to "Packet Forwarder" → "General" page to enable the "Ursalink" type server.

B. Go to "Packet Forwarder" → "Radio" page to select the antenna transmission type, center frequency and channels. The channels of the gateway and LoRaWAN nodes need to be the same.

Note: for built-in antenna models, please select "2 × Built-in ANT"; for external antenna models, please select "Ext ANT(TX+RX)+ Built-in ANT(RX)".
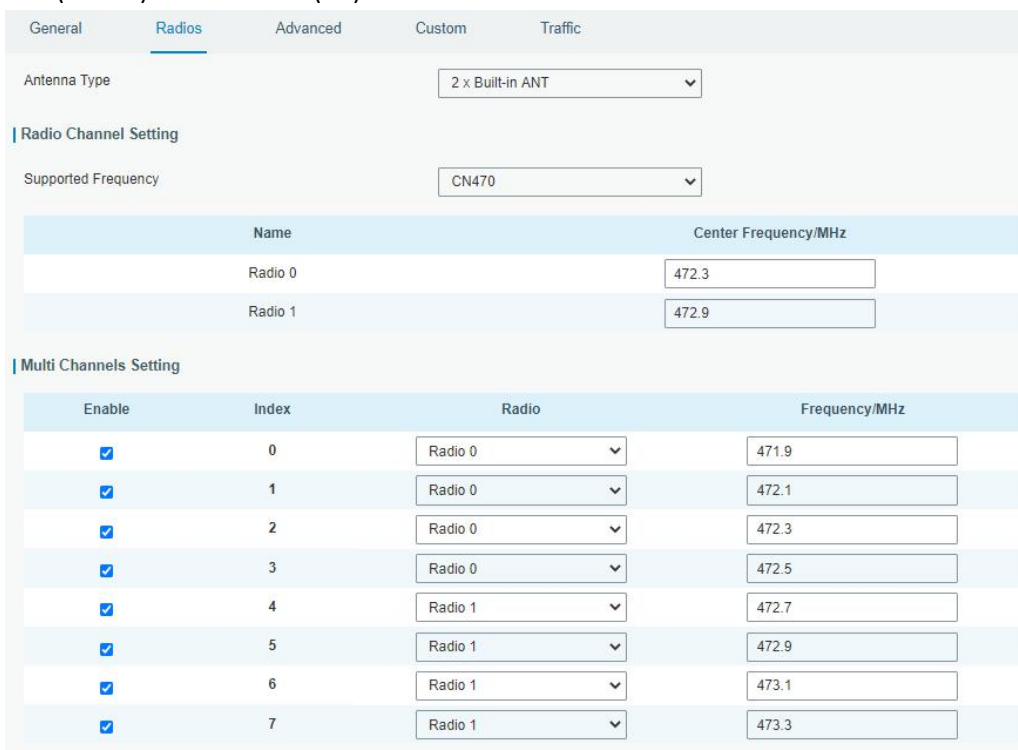
C. Go to "Network Server" → "General" page to enable the network server mode.
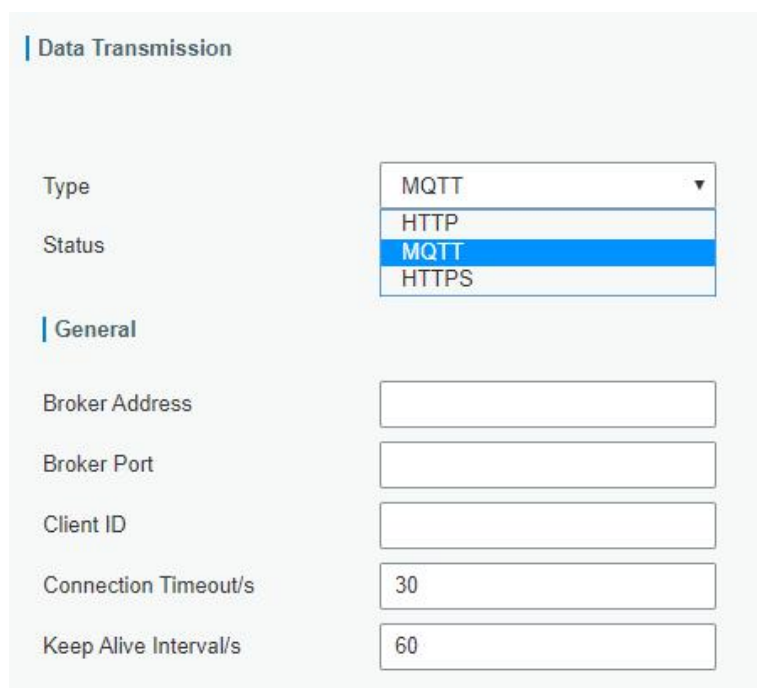
D. Go to "Network Server"→"Application" to add a new application.

After saving the application, you can select HTTP, HTTPS or MQTT protocol and fill in correspond server information to send data to another server.
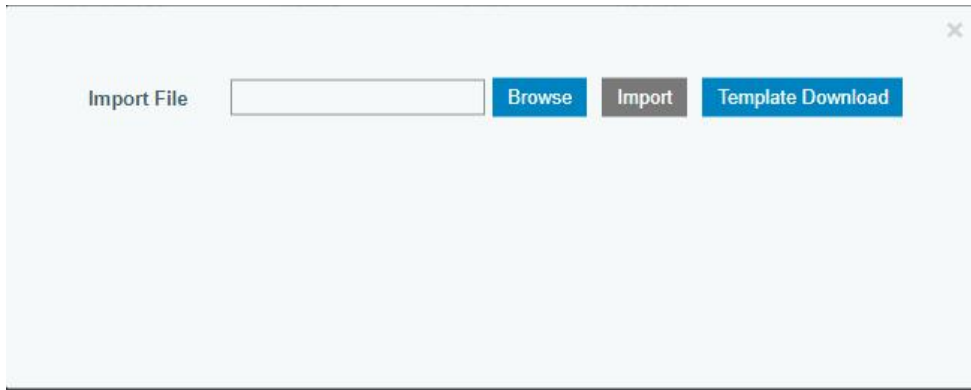
You can also click "Bulk Import" if you want to add many LoRaWAN nodes all at once.
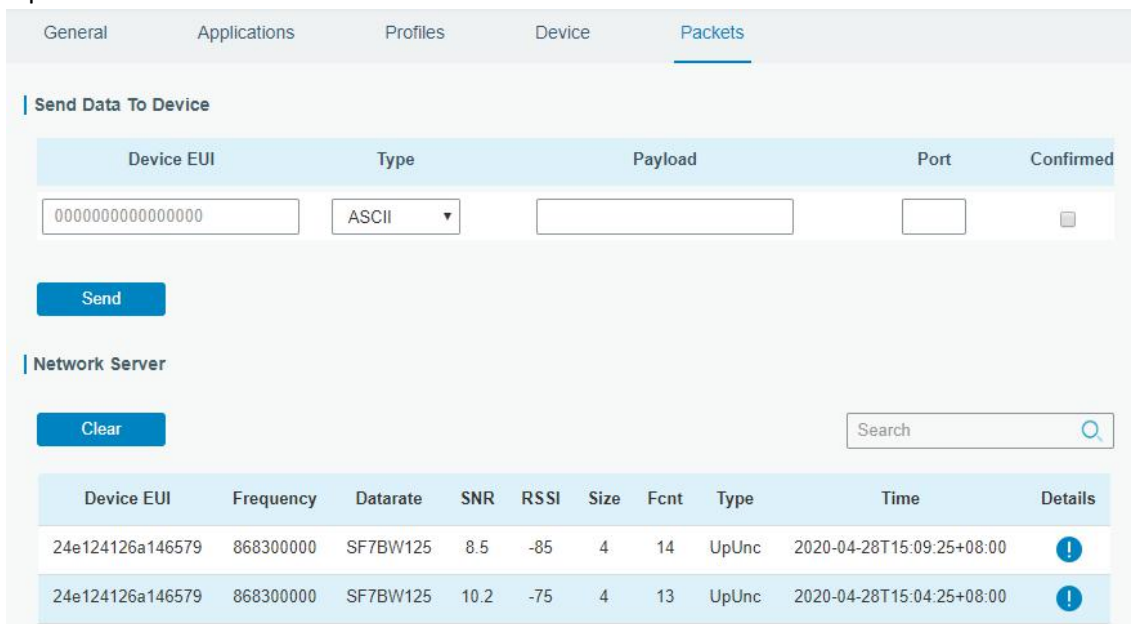

Click "Template Download" to download template file and add LoRaWAN device information to this file. Application and device profile should be the same as you created on web page.
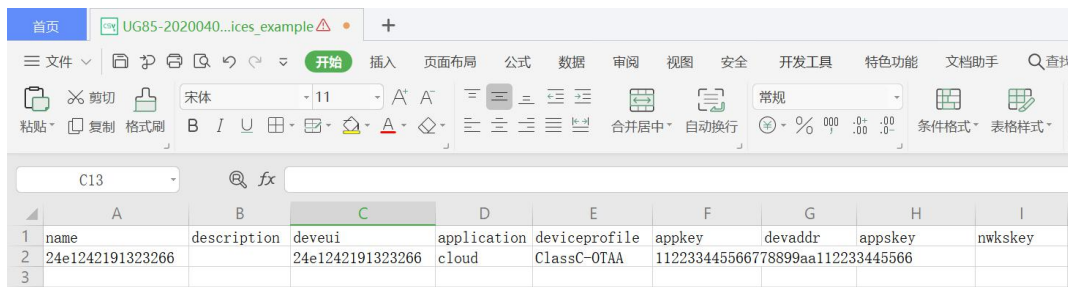
Import this file to add bulks of devices.

G. Go to "Packets" page to check the packets from LoRaWAN node devices. The type starts from "Up" means uplinks and "Dn" means downlinks.

Click "Details" to check the properties and payload contents of packets.

Packets Details ✕

Fcnt	14
Port	85
Modulation	LORA
Bandwidth	125
SpreadFactor	7
Bitrate	0
CodeRate	4/5
SNR	8.5
RSSI	-85
Power	-
Payload(b64)	A3cYAA==
Payload(hex)	03771800
MIC	f5acdeb2

[END]