URSALINK LoRaWAN Gateway Quick Start Guide

UG87 LoRaWAN Gateway
Quick Start Guide

Ursalink Technology Co, Ltd.

Welcome

Thank you for choosing Ursalink UG87 LoRaWAN Gateway.

This guide teaches you how to install the UG87 and how to log in to the web GUI to configure the device. Once you complete the installation, refer to the Ursalink UG87 User Guide for instructions on how to perform configurations on the device.

Related Documents

This Quick Start Guide only explains the installation of Ursalink UG87 LoRaWAN Gateway. For more functionality and advanced settings, please refer to the relevant documents below.

Document	Description
Ursalink UG87 Datasheet	Datasheet for the Ursalink UG87 LoRaWAN Gateway.
Ursalink UG87 User Guide	Users can refer to the guide for instruction on how to log in to the web GUI, and how to configure all the settings.

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

Declaration of Conformity
UG87 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

Contents [hide

Revision History

Date	Doc Version	Description
Sept. 9, 2019	V1.1	Initial version
Oct. 18, 2019	V1.2	1. Add 16 channels description; 2. Change antenna location.
Nov. 29, 2019	V1.3	Delete AC/DC power supply, add PoE injector
Apr. 4, 2020	V1.4	1. Reset button definition change; 2. Add back AC/DC power supply; 3. Default IP change from 192.168.1.1 to 192.168.23.150; 4. Web GUI interface change (based on 80.0.0.62); 5. Add bulk import LoRaWAN devices.

Packing List

Before you begin to install the UG87 LoRaWAN Gateway, please check the package contents to verify that you have received the items below.

1 × UG87

1 × Cellular Antenna

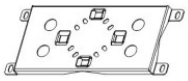
1 × LoRa Antenna

(2 × LoRa Antennas for 16-channel model)

1 × GPS Antenna

1 × WiFi Antenna

(WiFi Version Only)



1 × Wall Mounting Kit

2 × Pole Mounting Kit

Screws

1 × Warranty Card

1 × PoE Injector

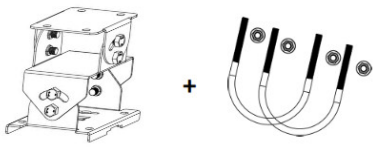
1 × Power cable

(AC/ DC Version Only)

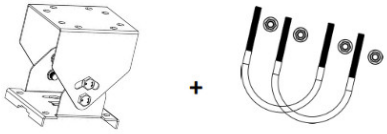
1 × Ethernet Cable

(Optional)

Optional Installation Accessories



1 × Pole Mount A + 2 × U-Bolt



1 × Pole Mount B + 2 × U-Bolt

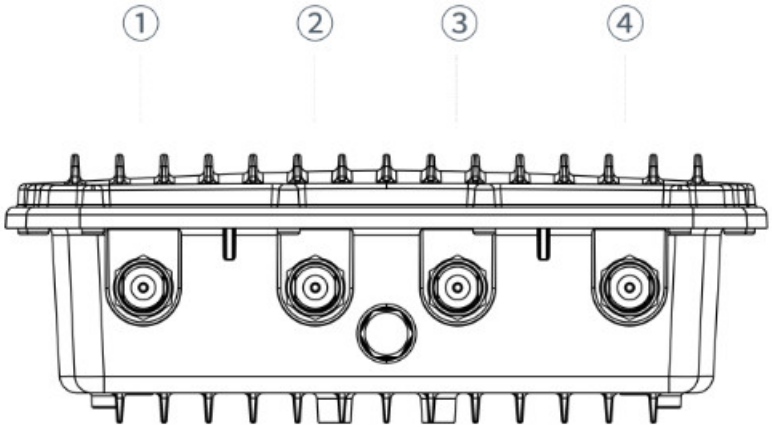
Screws

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

Hardware Introduction

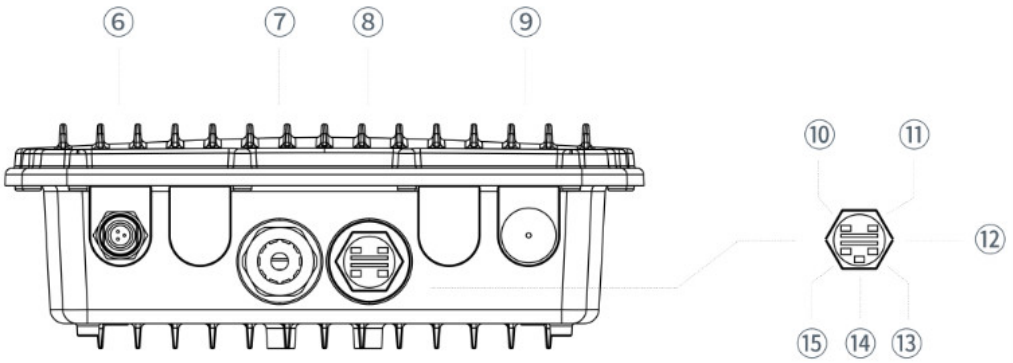
2.1 Overview

A. Front Panel



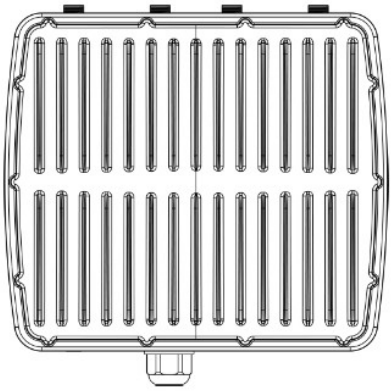
1. LoRa2 Antenna (only for 16-channel model)
2. GPS Antenna
3. LTE Antenna
4. LoRa1 Antenna
5. Vent Plug

B. Rear Panel

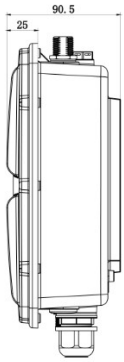


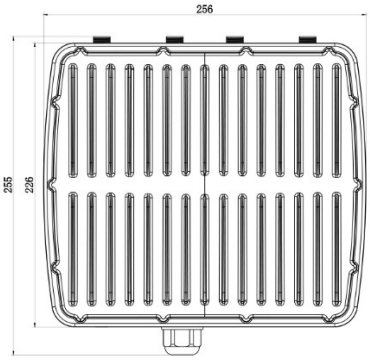
6. Power Connector
7. Ethernet Port (PoE)
8. LED&SIM Area
9. Wi-Fi Antenna LED&SIM Area
10. PWR: Power Indicator
11. SYS: System Indicator
12. SIM Card Slot
13. L2: Cellular Indicator
14. RST: Reset Button
15. L1: LoRa Indicator

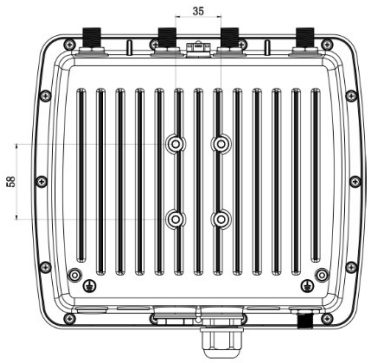
C. Top & Bottom View



2.2 Dimensions (mm)







2.3 LED Indicators

LED	Indication	Status	Description
PWR	Power Status	On	The power is switched on
		Off	The power is switched off
SYS	System Status	Green Light	Static: Start-up
			Blinking slowly: the system is running properly
		Off	The system goes wrong
Li	LoRa Status	Green Light	Package Forwarder mode is running well.
		Off	Package Forwarder mode is running off.
L2	SIM Card Status	Off	SIM1 or 5IM2 is registering or fails to register (or there are no SIM cards inserted)
		Green Light	Blink Slowly: SIM1 has been registered and is ready for dial-up
			Blink Rapidly: SIM1 has been registered and is dialing up now
			Static: SIM1 or SIM2 has been registered and dialed up successfully
		Orange Light	Blink Slowly: SIM2 has been registered and is ready for dial-up
			Blink Rapidly: SIM2 has been registered and is dialing up now
			Static: SIM2 has been registered and dialed up successfully

2.4 Reset Button

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

2.5 Ethernet Port Indicator

Indicator	Status	Description
Link Indicator (Orange)	On	Connected
	Blinking	Transmitting data
	Off	Disconnected
Rate Indicator (Green)	On	1000 Mbps mode
	Off	100 Mbps mode

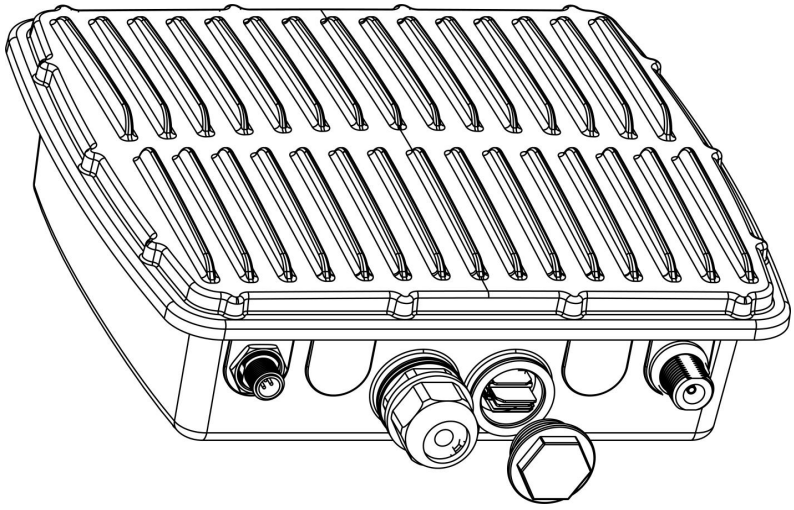
Hardware Installation

Environmental Requirements

– Power Input: PoE (IEEE 802.3af standard) (Option: 100-240 VAC/9-48VDC)
– Power Consumption: Typical 4.9 W, Max 6.5 W (8 channels), Typical 6 W, Max 8.2 W (16 channels)
– Ingress Protection: IP67
– Operating Temperature: -40°C to 70°C (-40°F -158°F)
– Relative Humidity: 0% to 95% (non-condensing) at 25°C/77°F

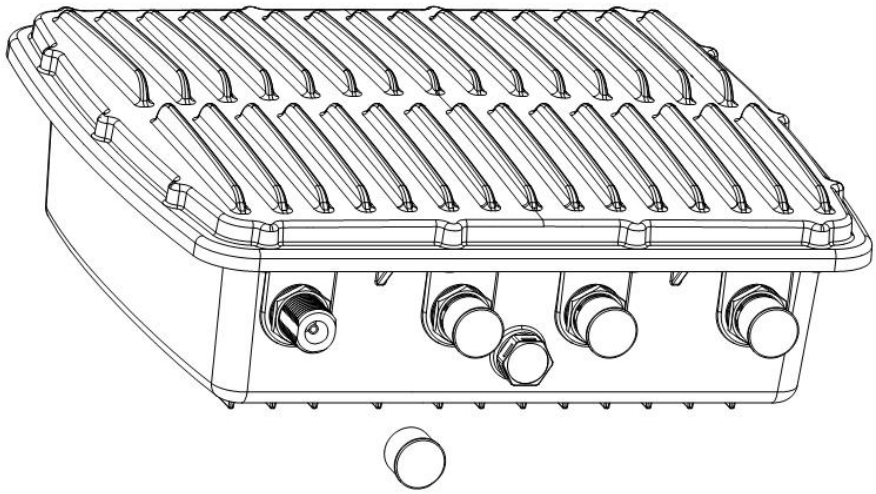
3.1 SIM Card Installation

Remove the cover of the SIM card slot with a wrench and insert the SIM card.
Note: Check the triangle icon of the SIM card slot.

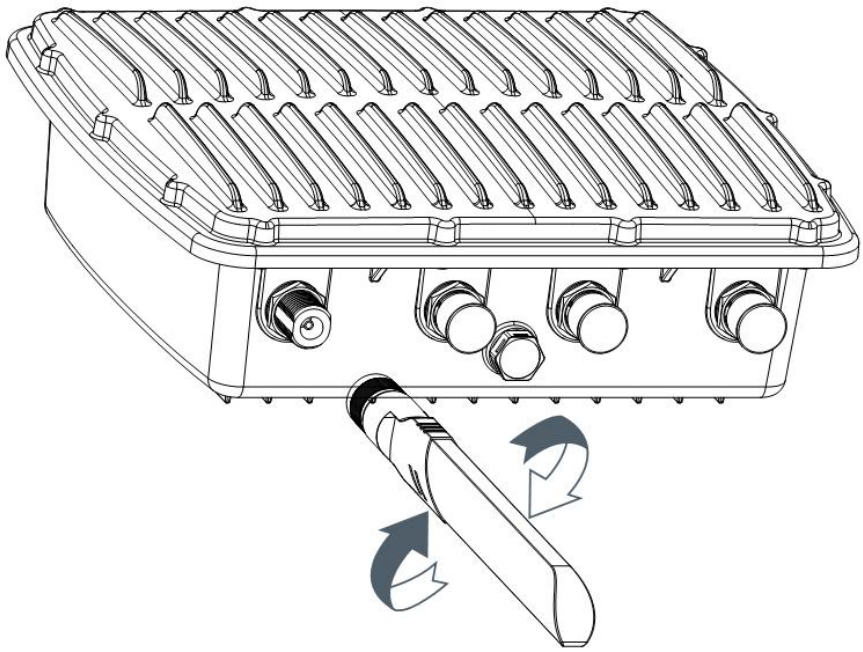


3.2 Antenna Installation

A. Remove the protective caps from the antenna connectors.



B. Connect the antenna to the corresponding antenna connector by holding the metal part of the antenna and rotating it clockwise.
Note: Each antenna is labeled as cellular, GPS, WLAN or LoRa.



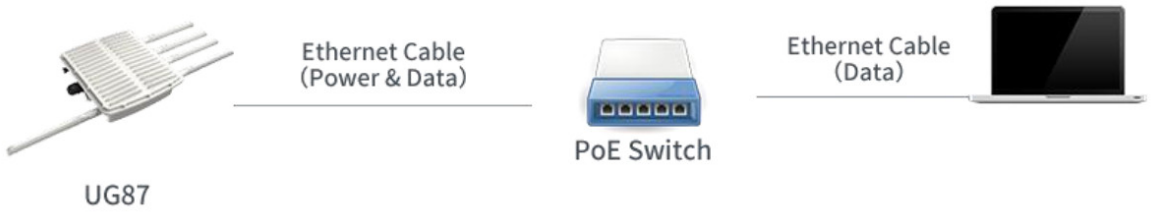
3.3 Power Supply

3.3.1 PoE Power Supply

Ethernet cable of UG87 device side should be installed first, or PoE devices or gateway may be damaged.

3.3.1.1 Connect UG87 to PoE Switch

Connect UG87 Ethernet port to a PoE switch via Ethernet cable. PoE switch must meet IEEE 802.3 af standard.

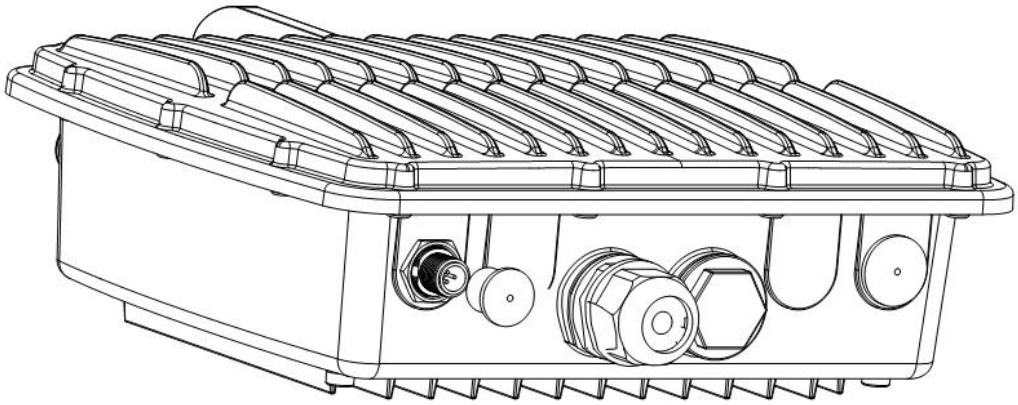


3.3.1.2 Connect UG87 to PoE Injector

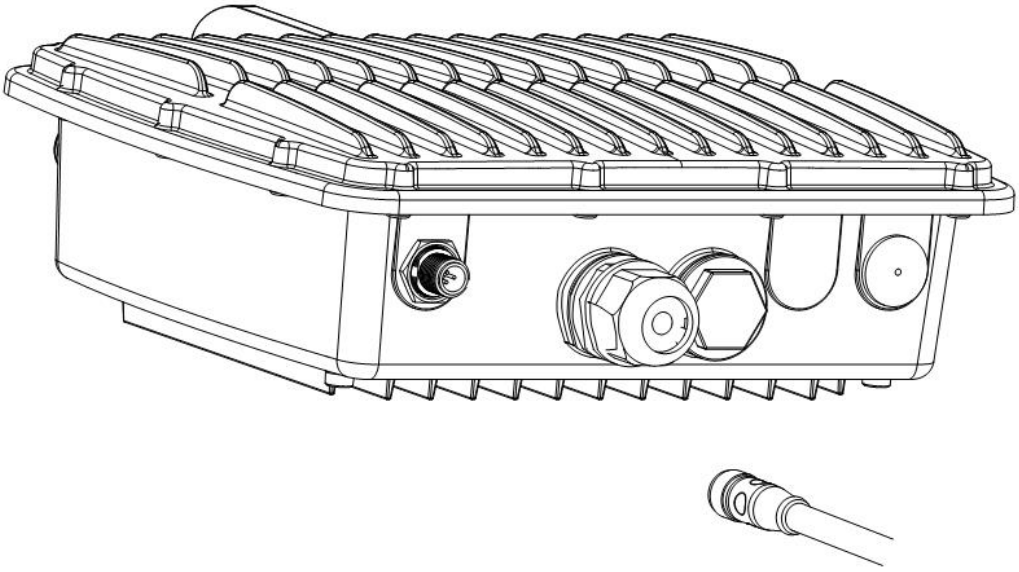
Connect UG87 Ethernet port to a PoE injector via Ethernet cable. PoE injector must meet IEEE 802.3 af standard.

3.3.2 AC/DC Power Supply (Optional)

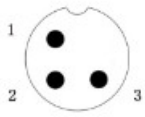
A. Locate the power port marked POWER on the left side of the enclosure and remove the protective cap to find the connection pins.



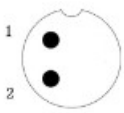
B. Connect a power supply cable to the power port, and rotate it clockwise.



Type	PIN	Color	Description
VAC	1	Brown	L (VIN+)
	2	Black	GND
	3	Blue	N (VIN-)



Type	PIN	Color Brown	Description
VDC	1	Black	V+
	2	Black	GND



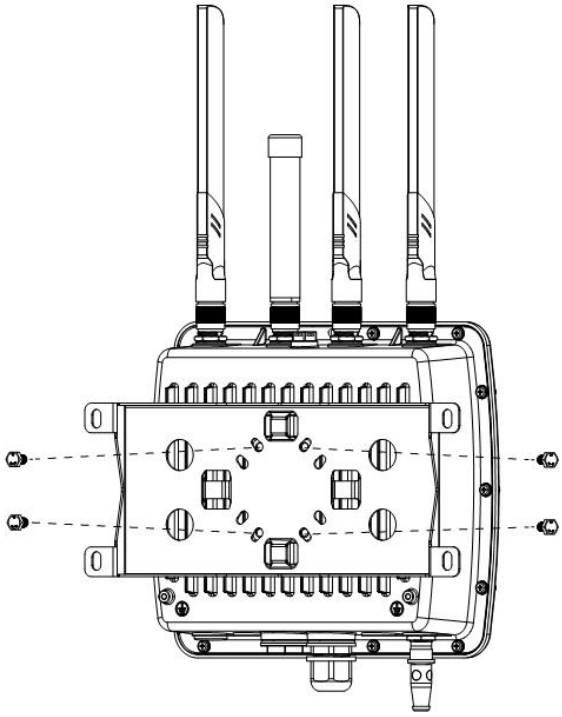
3.4 Mount Gateway

The gateway can be mounted to a wall or a pole.

3.4.1 Wall Mounting

Make sure you have mounting brackets, bracket mounting screws, 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 that all cables have been disconnected from your enclosure.
2. Mount the enclosure to the mounting bracket with the bracket mounting screws.



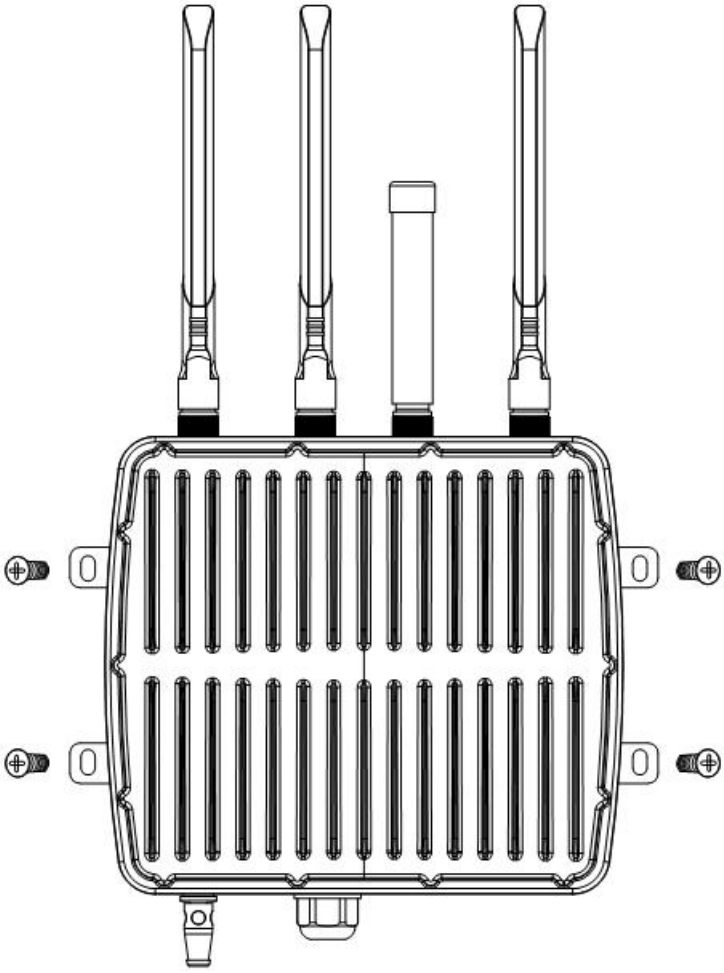
3. Align the mounting bracket horizontally to the desired position on the wall, use a marker pen to mark four mounting holes on the wall, and then remove the mounting bracket from the wall.

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

4. 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.
5. Insert four wall plugs into the holes respectively.
6. Mount the mounting bracket horizontally to the wall by fixing the wall mounting screws into the wall plugs.

Note: Place the power port on the button when installing.

7. Reconnect the cables.

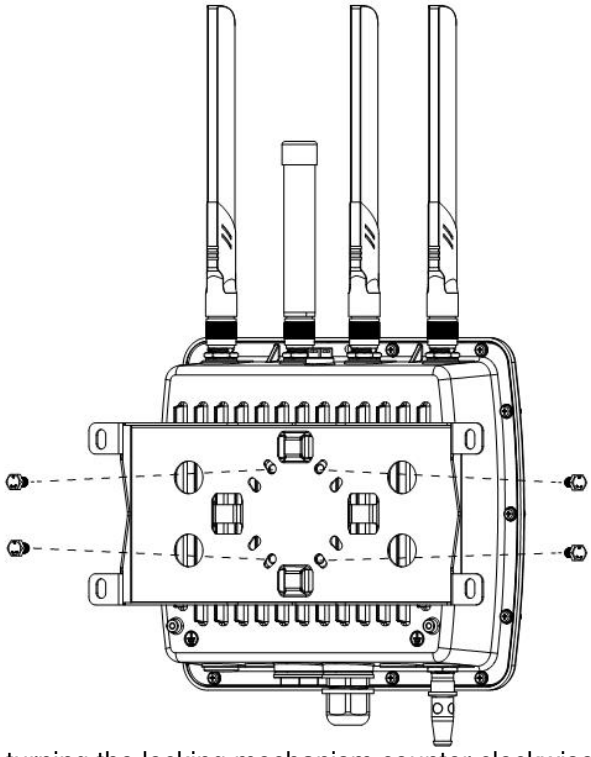


3.4.2 Pole Mounting (Hose clamp)

Make sure you have mounting bracket, bracket mounting screws, hose clamp and other required tools.

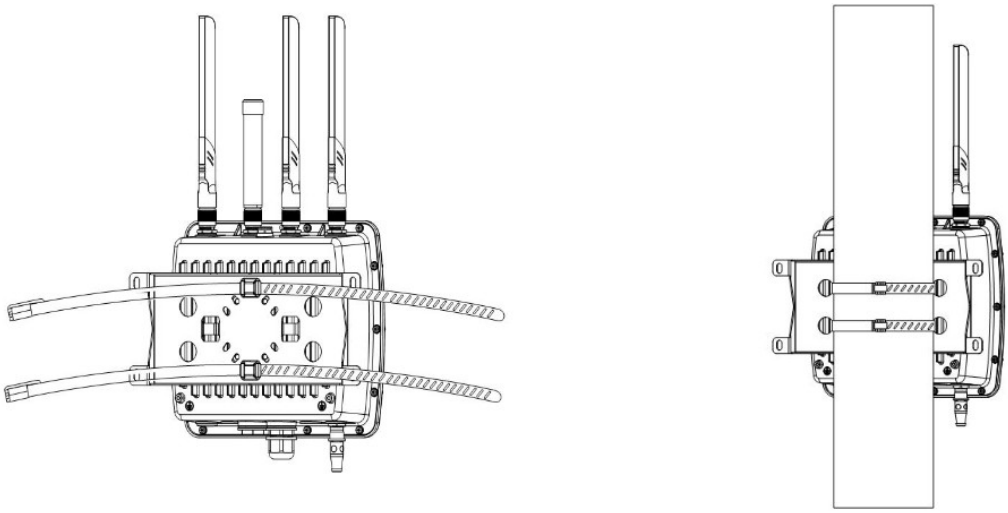
1. Before you start, make sure that your SIM card has been inserted, your antennas have been attached and that all cables have been disconnected from your enclosure.

2. Mount the enclosure to the mounting bracket with the bracket mounting screws.

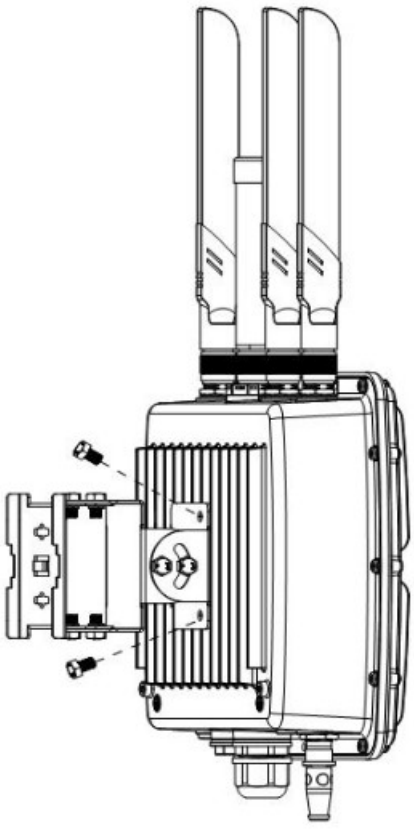


3. Loosen the hose clamp by turning the locking mechanism counter-clockwise.

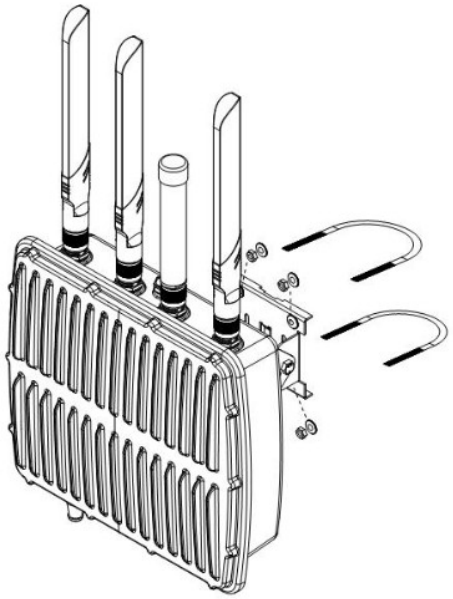
4.Straighten out the hose clamp and slide it through the rectangular holes in the mounting bracket, wrap the hose clamp around the pole.
5.Use a screwdriver to tighten the locking mechanism by turning it clockwise.
6.Reconnect the cables.

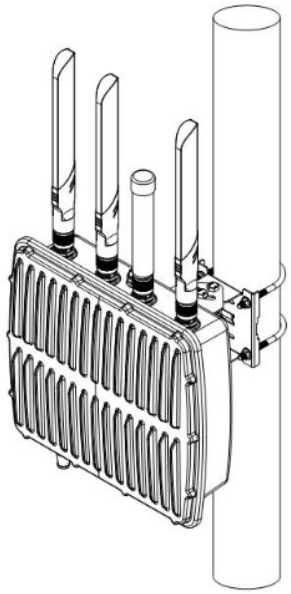


3.4.3 Pole Mounting (U-bolt)
Note: Pole mounting (U-bolt) is optional.
Make sure you have mounting bracket, bracket mounting screws, hose clamp and other required tools.
1. Before you start, make sure your SIM card has been inserted, your antennas have been attached and that all cables have been disconnected from your enclosure.
2. Mount the enclosure to the mounting bracket with the bracket mounting screws.



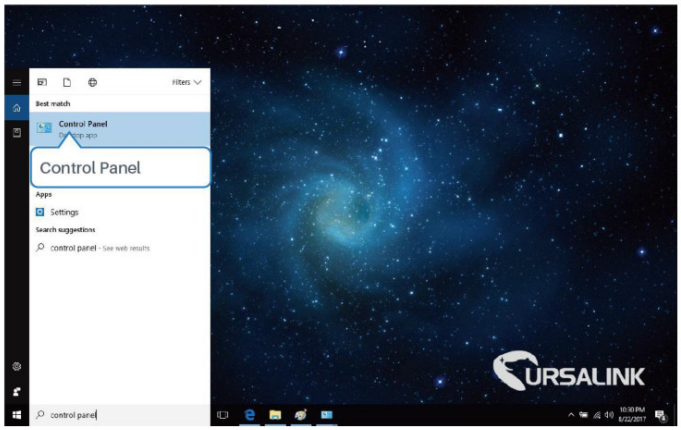
3. Wrap the U-bolt around the pole and mount the bracket with the mounting screws.
4. Reconnect the cables.

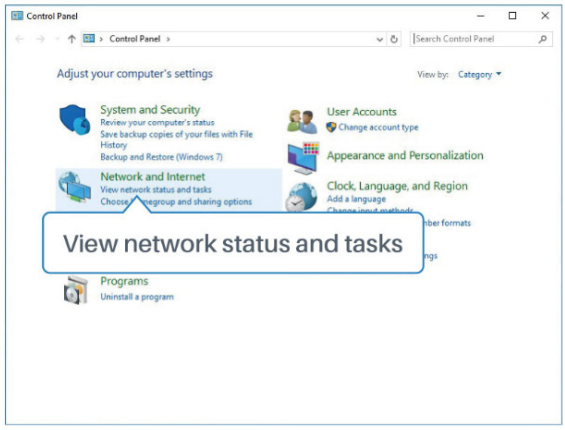




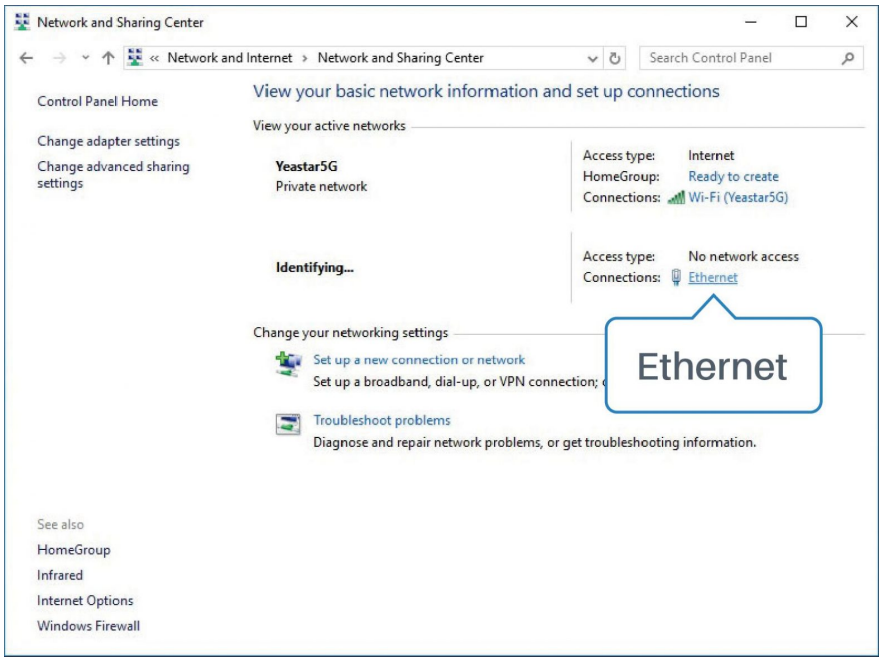
Access the Web GUI of UG87

Ursalink UG87 provides a web-based configuration interface for management. If this is the first time you configure the gateway, please use the default settings below:
IP Address: 192.168.23.150
Username: admin
Password: password
4.1 PC Configuration
Please connect PC to Ethernet port of UG87 directly and configure a static IP address manually. The following steps are based on Windows 10 operating system for your reference.

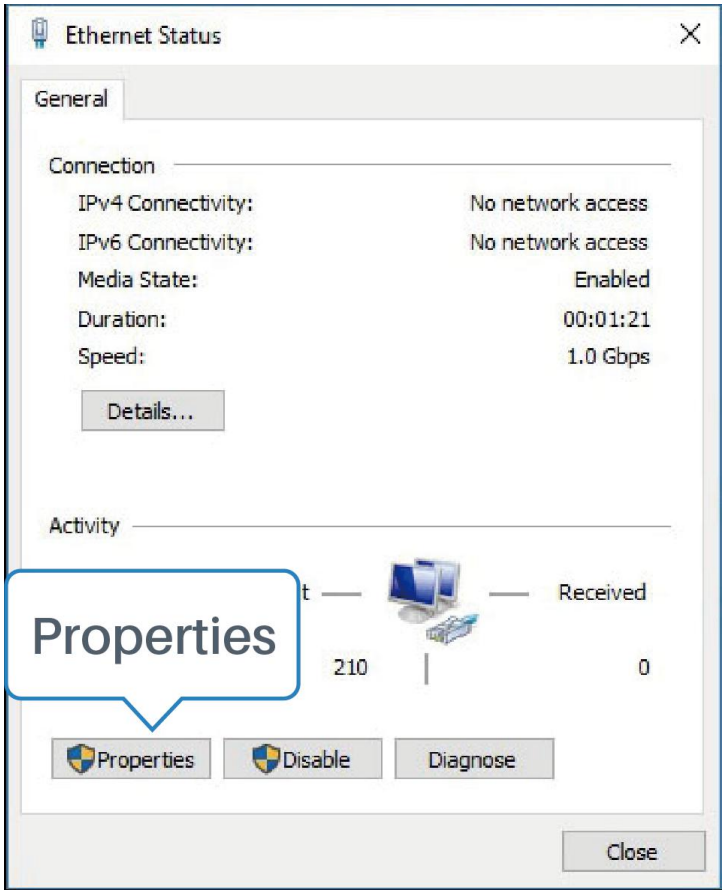




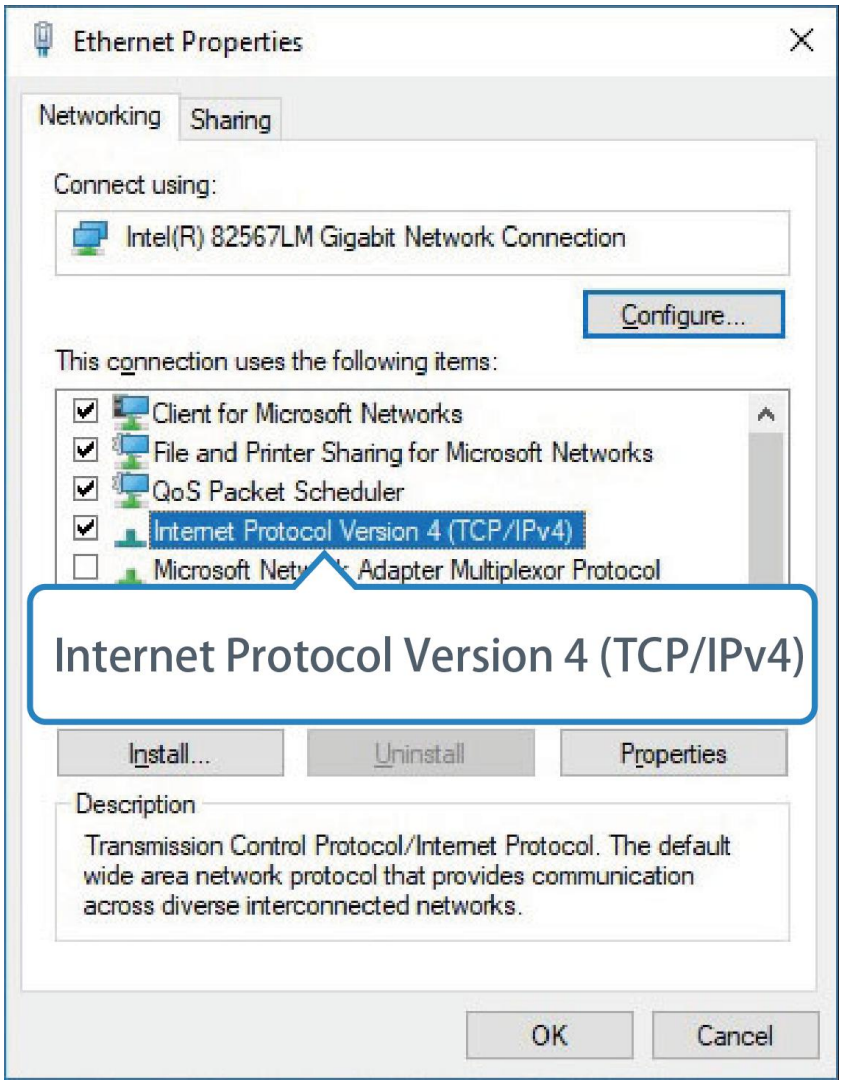
① Click “Search Box” to search “Control Panel” on the Windows 10 taskbar.
② Click “Control Panel” to open it, and then click “View network status and tasks”.



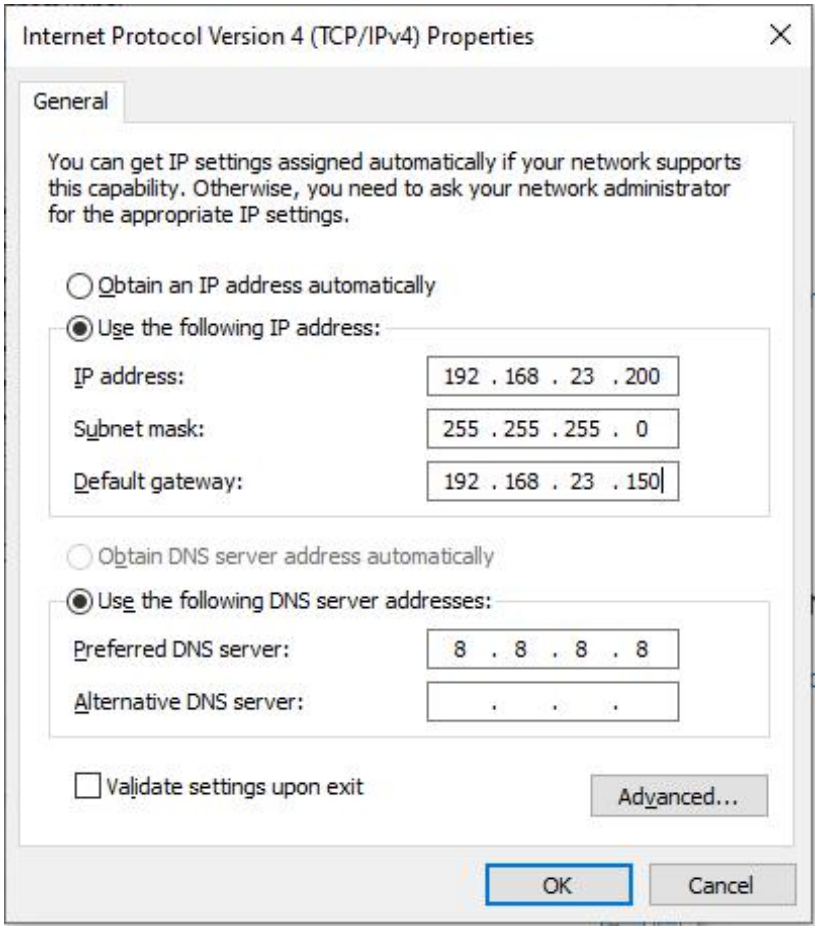
③ Click “Ethernet” (May have different names).



④ Click “Properties”.



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



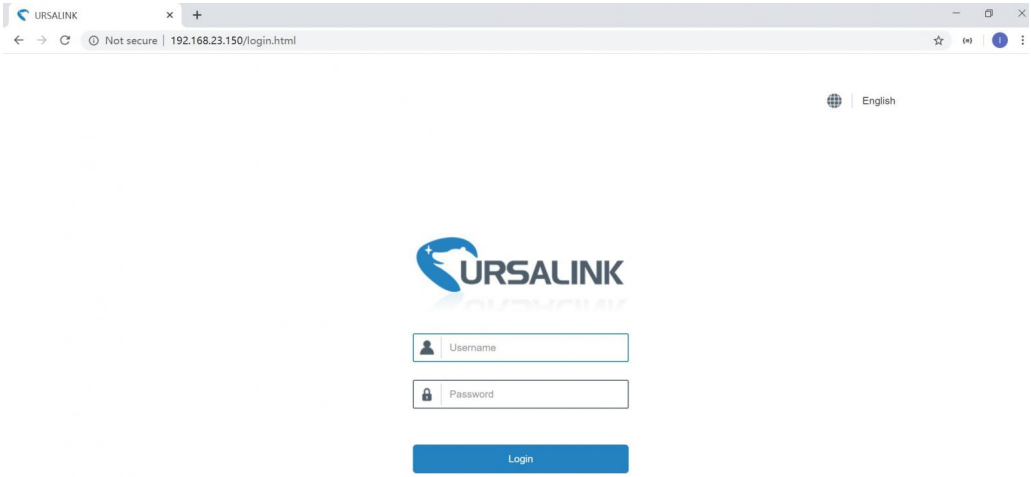
⑥ Click “Use the following IP address” to assign a static IP manually within the same subnet of the gateway.

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

4.2 Log in the Web GUI of UG87

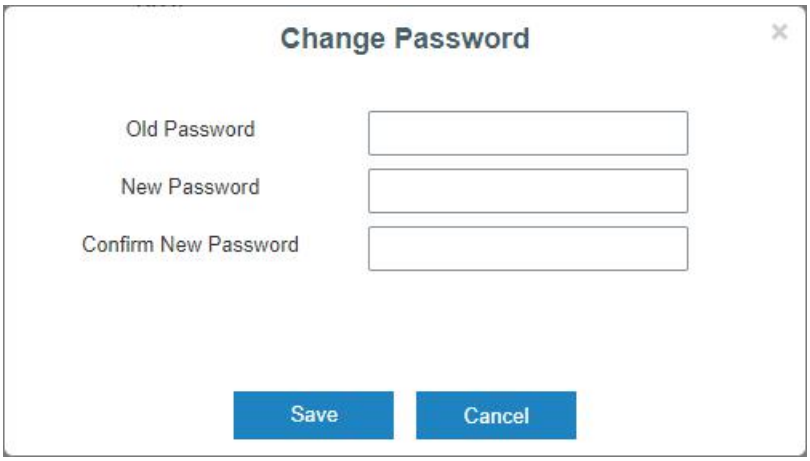
A. Open a Web browser on your PC (Chrome and IE are recommended), type in the IP address, and press Enter on your keyboard.

B. Enter the username and password, click “Login”.

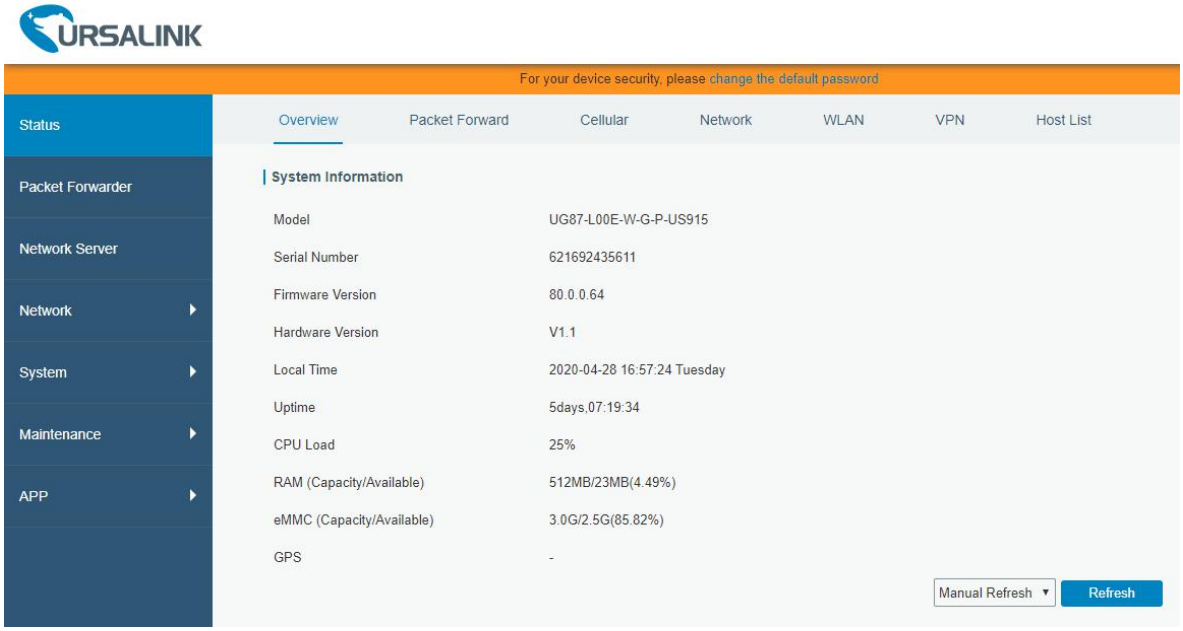


If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.

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

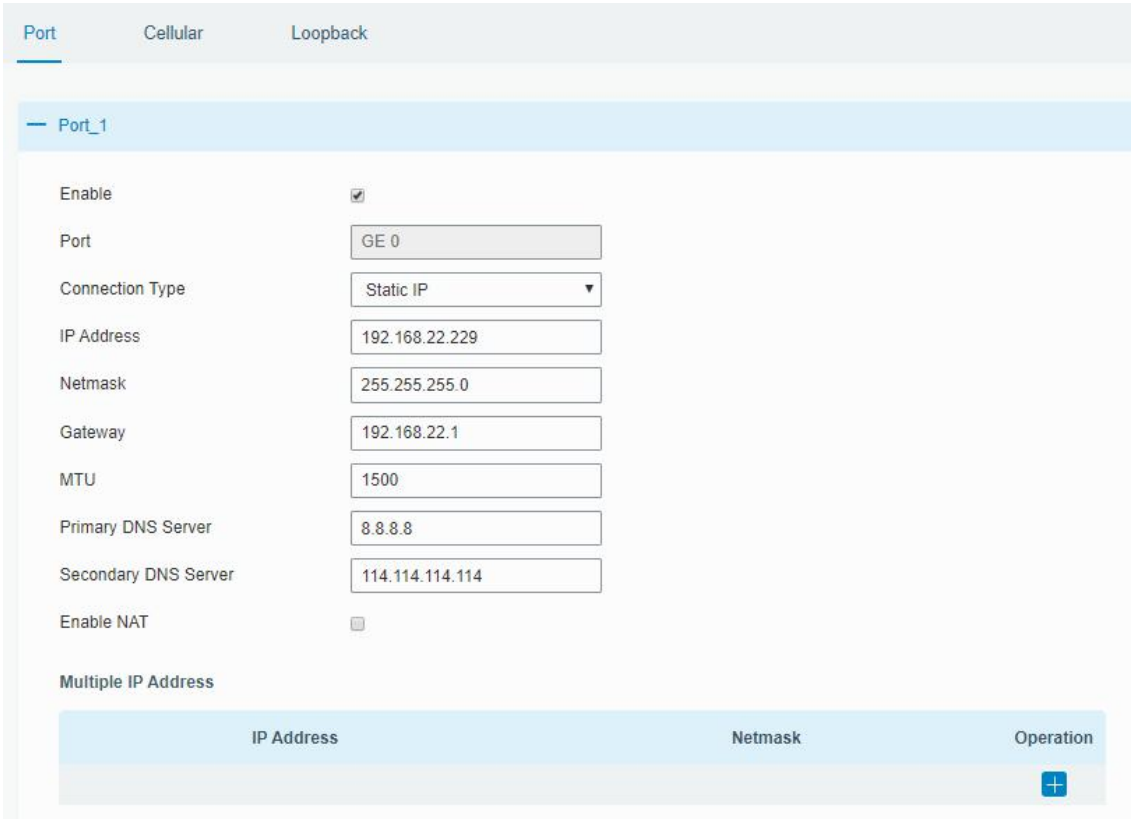


D. After you log in the Web GUI, you can view system information and perform configuration of the gateway.



5.Connect UG87 to the Netowork

This chapter explains how to connect the gateway to network via WAN connection, cellular or Wi-Fi.
5.1 Configure the WAN Connection
A. Go to “Network”→ “Interface” → “Port” page to select the connection type and configure WAN information.
B. Click “Save&Apply” for configuration to take effect.



C. Connect Ethernet port of gateway to network 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.

5.2 Configure the Cellular Connection

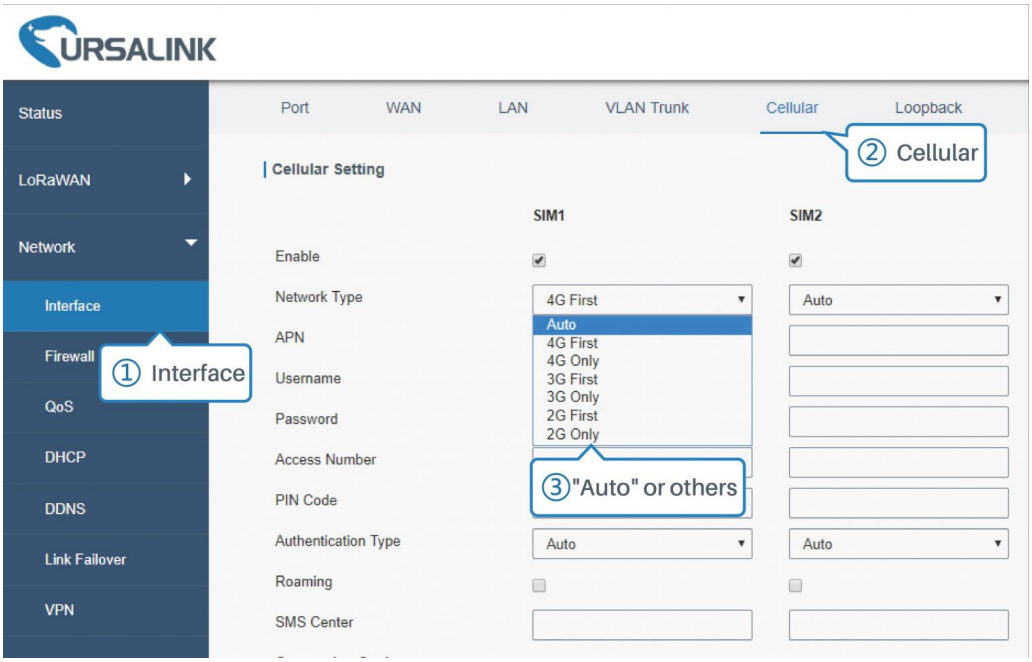
Take inserting SIM card into SIM1 slot as an example; please refer to the following detailed operations.

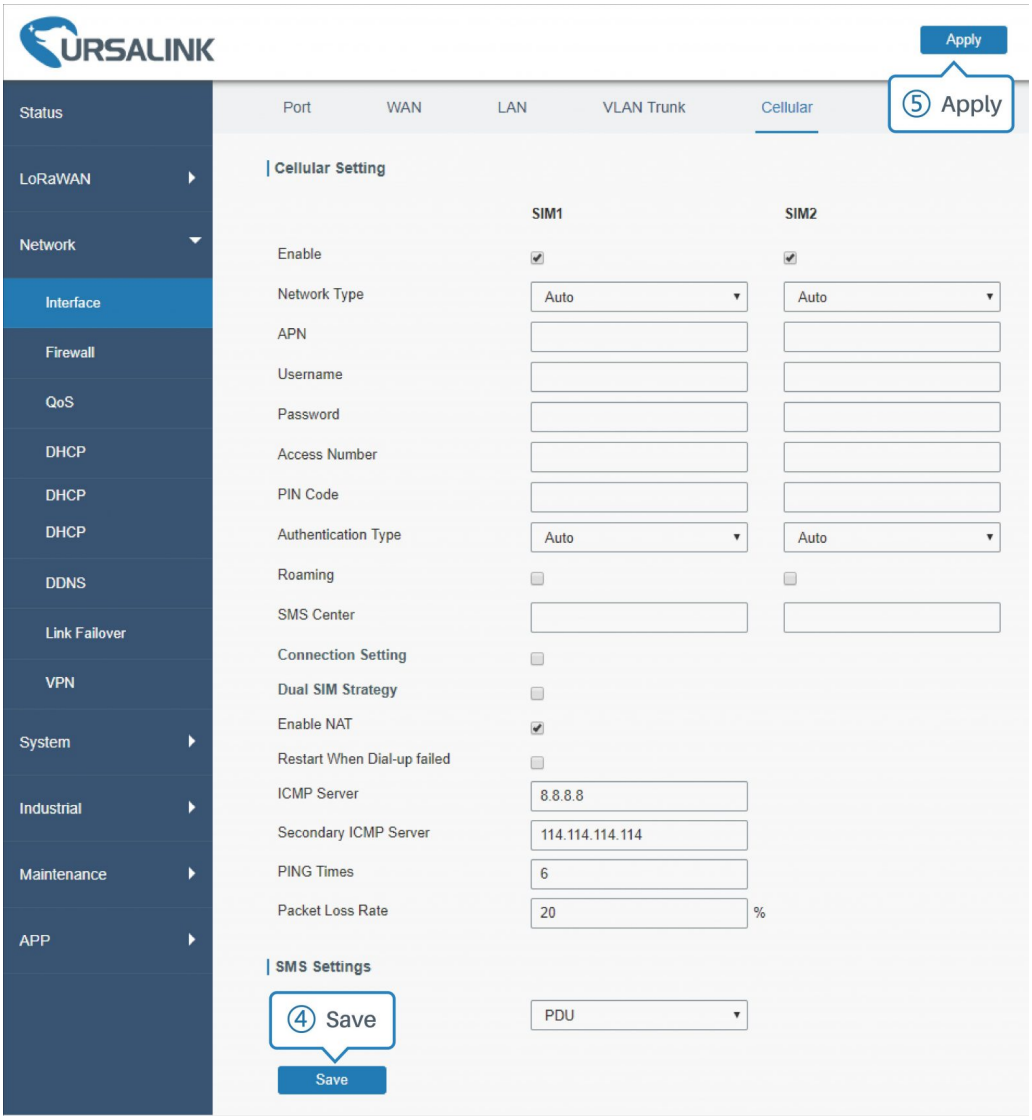
A. Go to “Network” → “Interface” → “Cellular” → “Cellular Setting” page to configure the cellular info.

B. Enable SIM1.

C. Choose relevant network type. “Auto”, “4G Only”, “3G Only” and “2G Only” are optional.

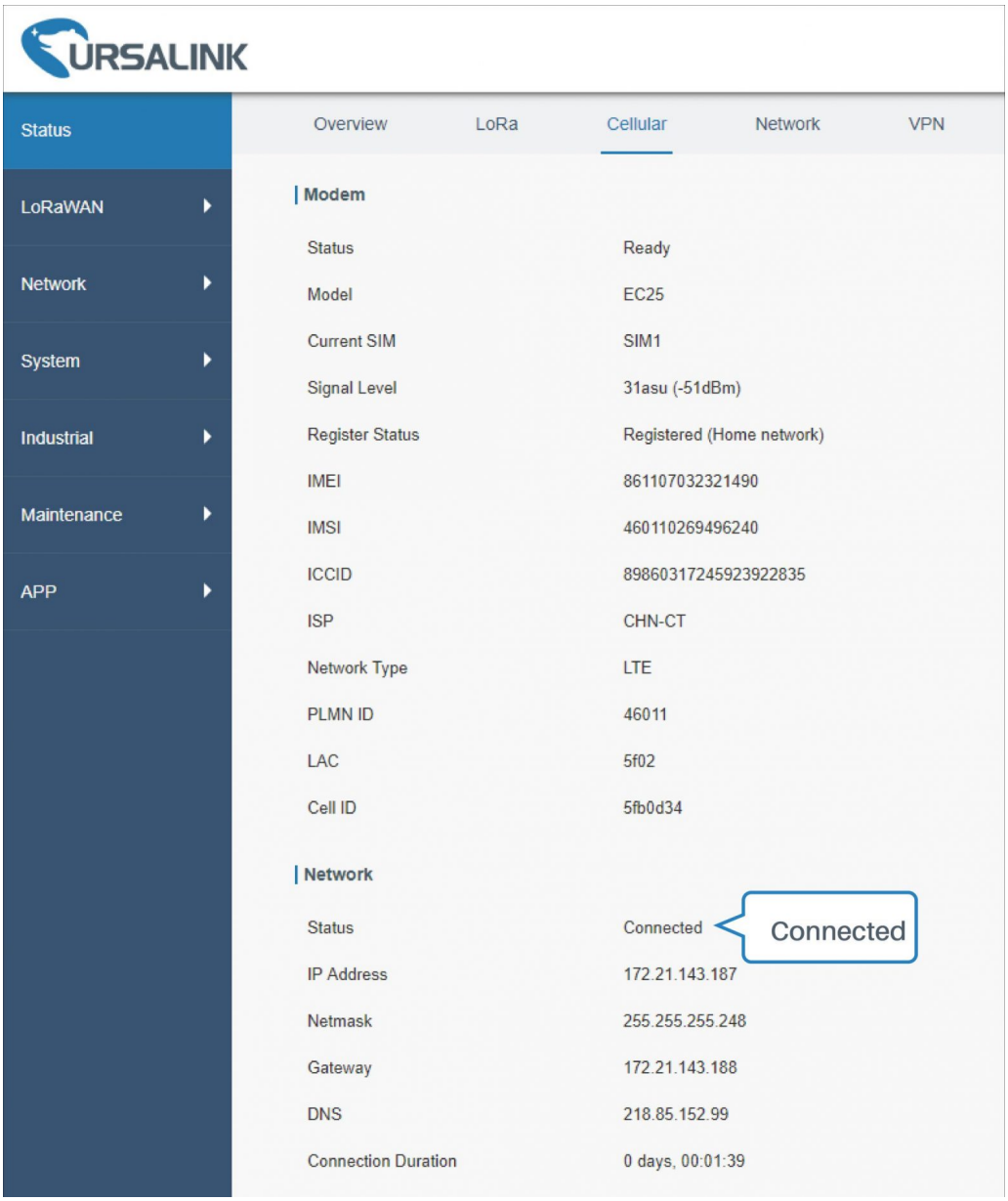
D. Click “Save” and “Apply” for configuration to take effect.





UG87 has 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.

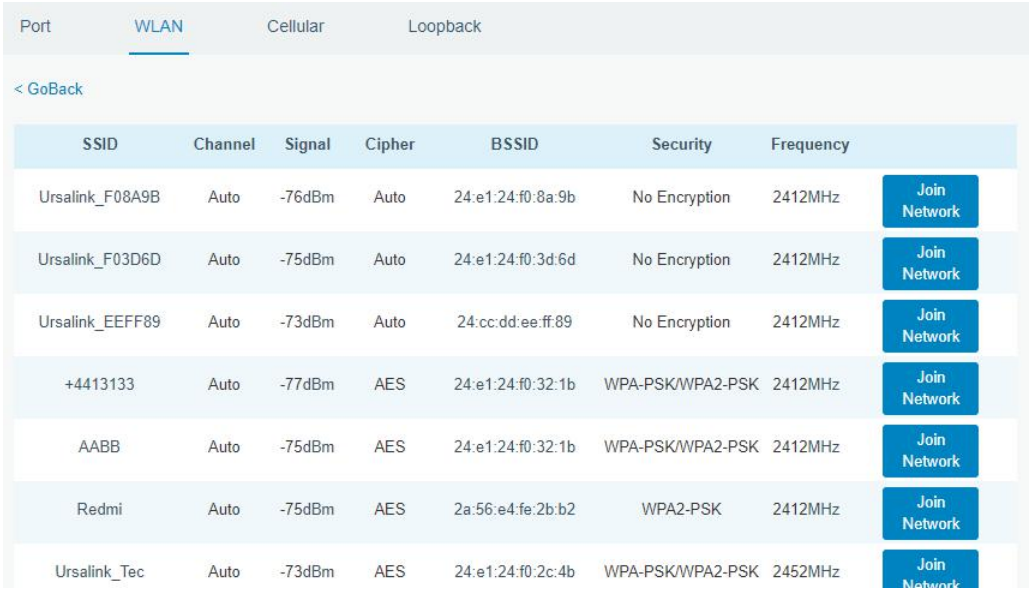
E. Go to “Status” → “Cellular” page to view the status of the cellular connection. If it shows “Connected”, it means SIM1 has dialed up successfully. On the other hand, you can check the status of L2 indicator. If it keeps on green light statically, it means SIM has dialed up successfully.



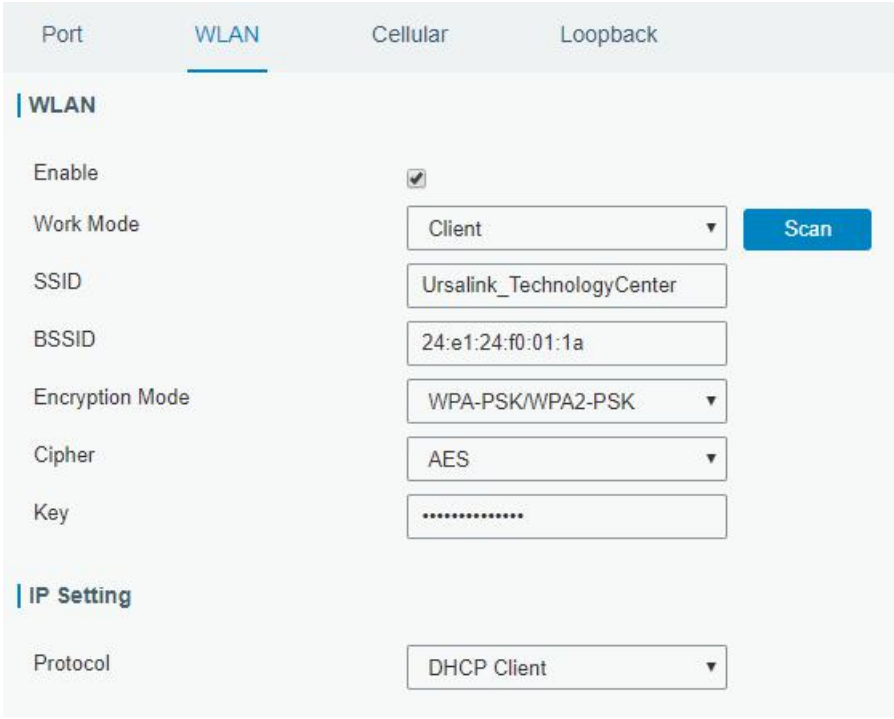
5.3 Configure the Wi-Fi Connection

A. Go to “Network” → “Interface” → “WLAN” and select “Client” mode.

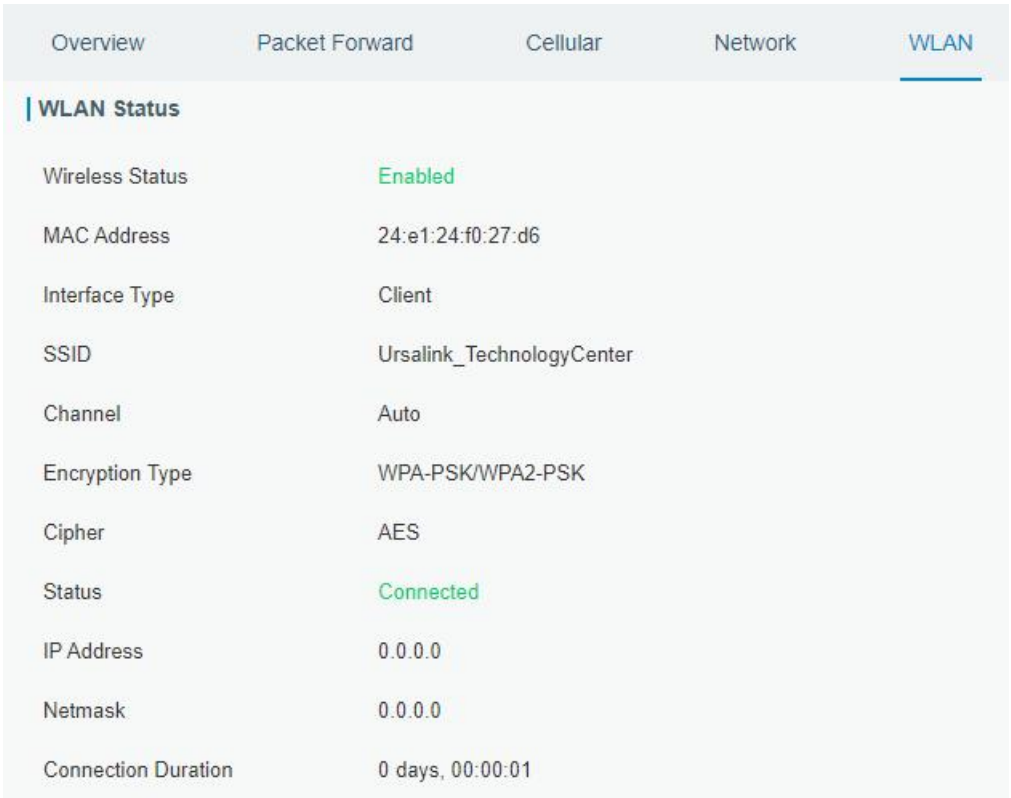
B. Click “Scan” to search for Wi-Fi access point. Select the available one and click “Join Network”.



C. Type the correct key of Wi-Fi.



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



Packet Forwarder Configuration

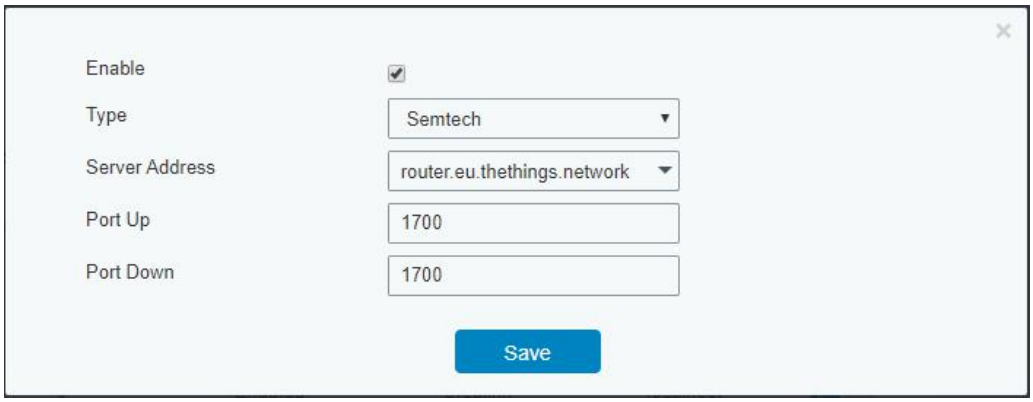
UG87 has embedded multiple packet forwarders like TTN, Loriot and chip stack. This chapter explains how to connect the gateway to third-party network servers.

Make sure the gateway connects to the network as shown in Chapter 5.

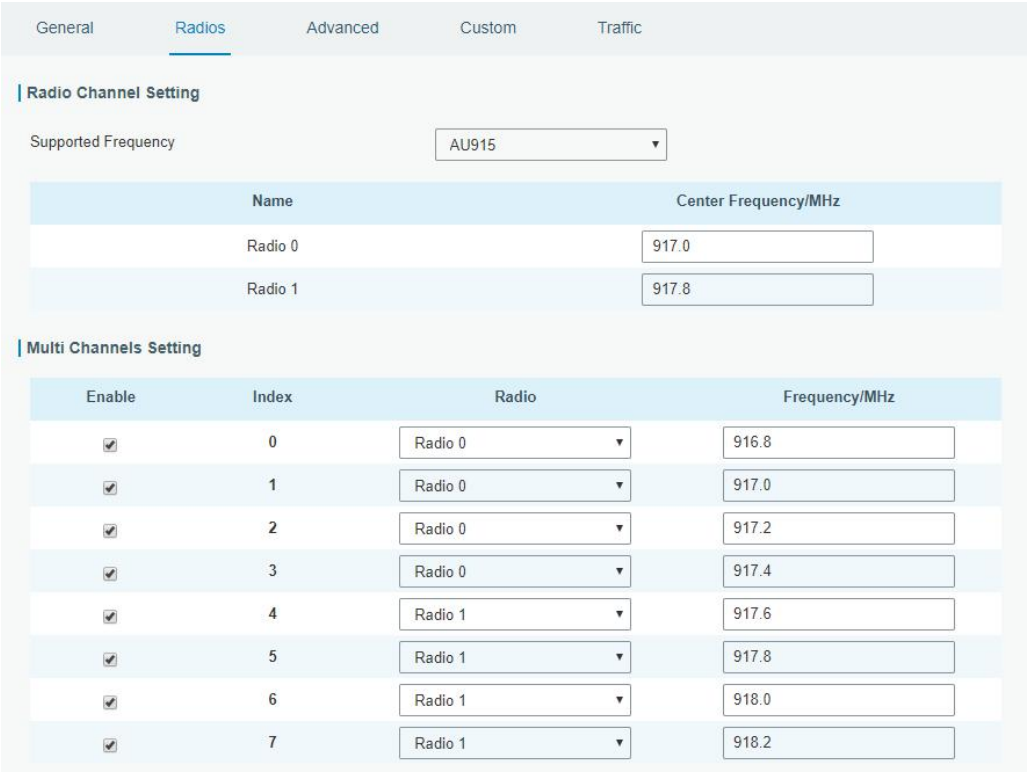
A. Go to “Packet Forwarder” → “General” page and click to add a network server.

B. Fill in the server information and enable this server.

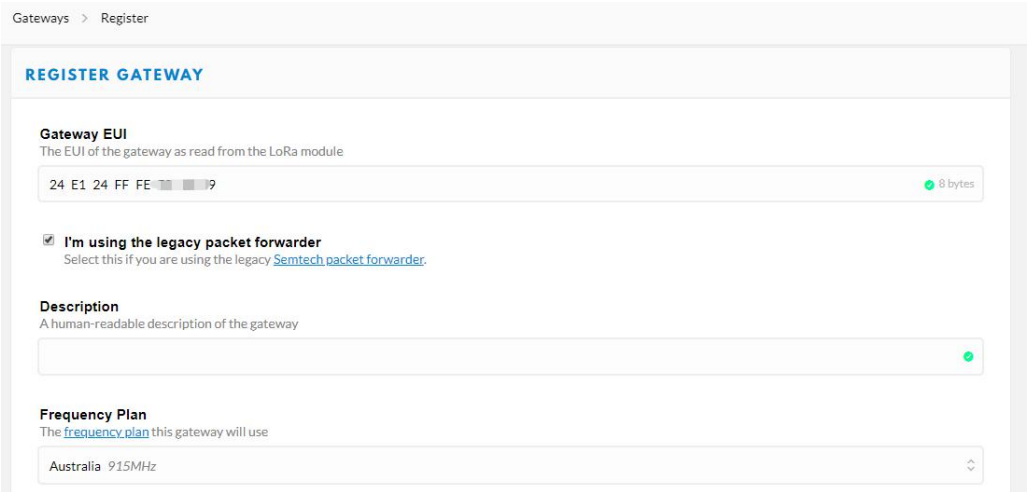
Note: When you select one of TTN, Loriot or chirpstack, other servers are not allowed to enable.



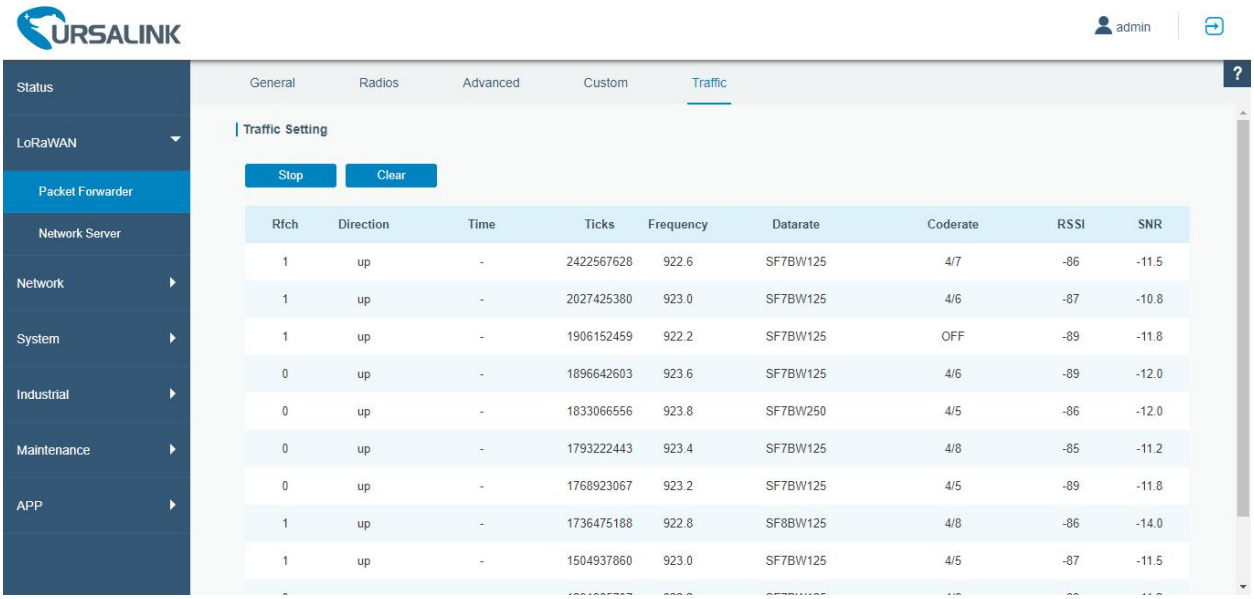
C. Go to “Radios” page to configure the center frequency and channels.
Note: the channel plan of the gateway and network server need to be the same.



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



E. Go to “Traffic” page to view the data communication of UG87.



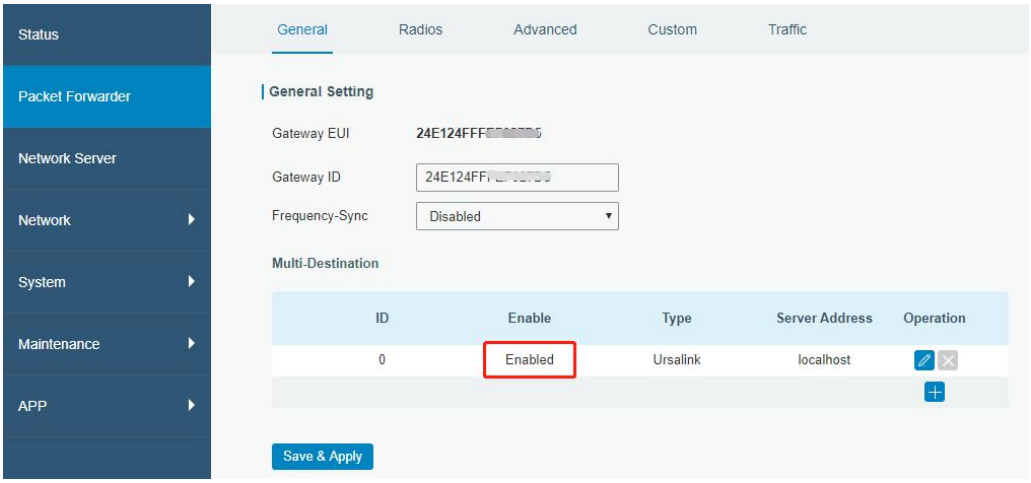
Network Server Configuration

UG87 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 Chapter 5.

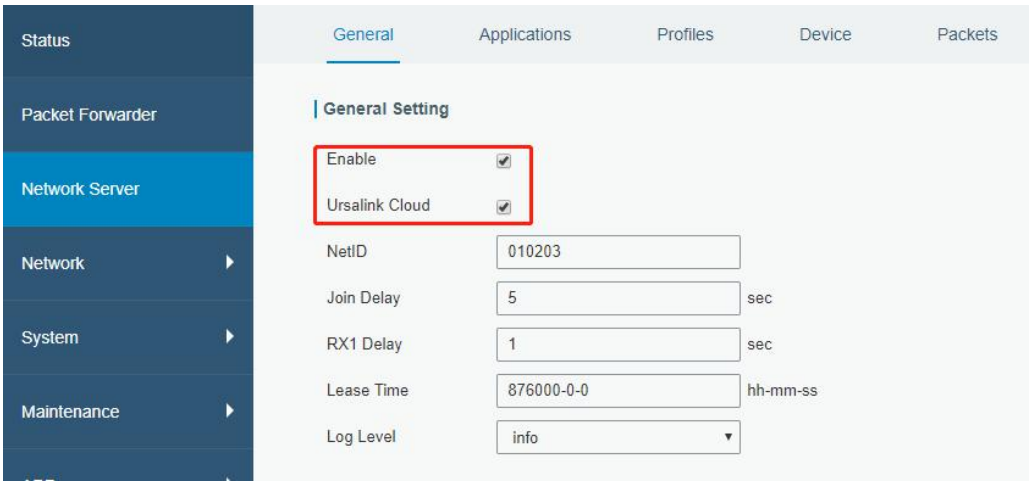
7.1 Connect UG87 to Ursalink Cloud

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

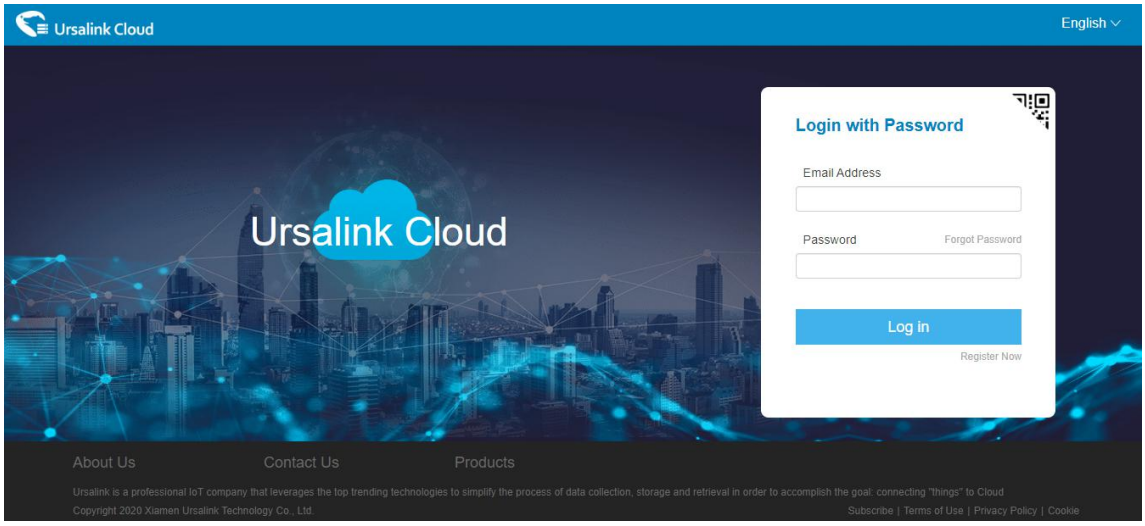


Note: the channel plan of the gateway and network server need to be the same.

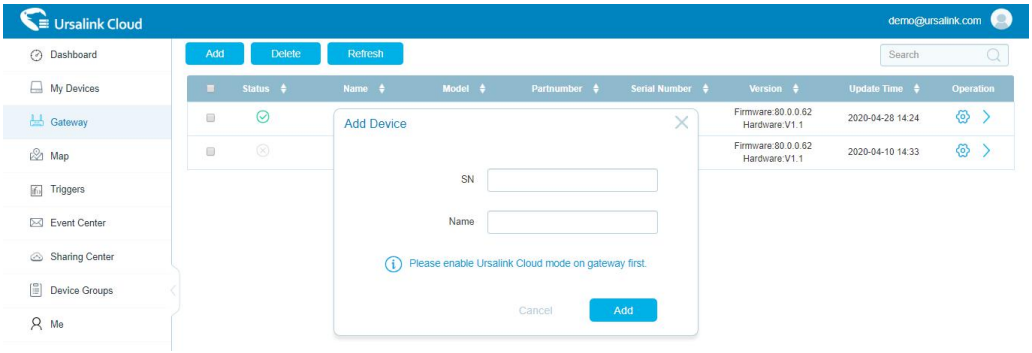
B. Go to “Network Server” → “General” page to enable the network server and Ursalink Cloud mode.



C. Register and log in the Ursalink Cloud (cloud.ursalink.com).



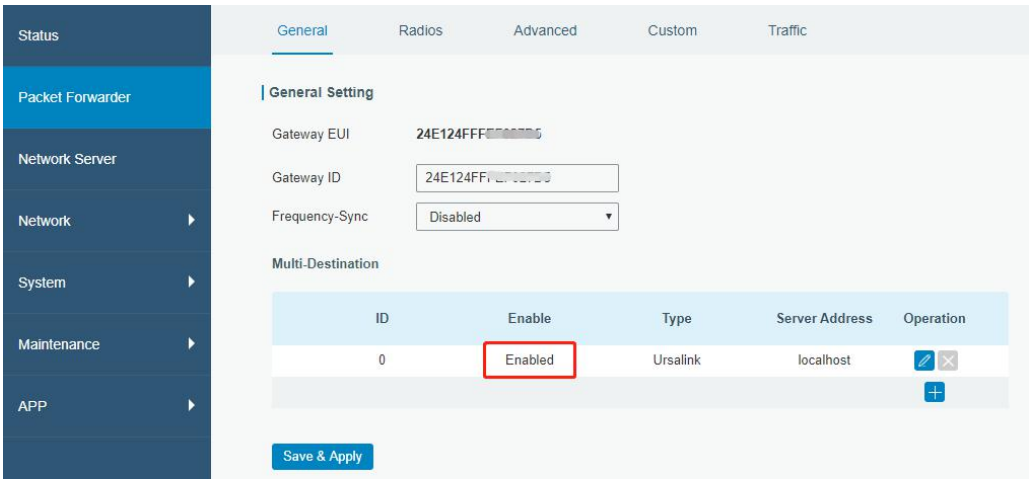
D. Go to “Gateway” page and click “Add” to add a gateway.



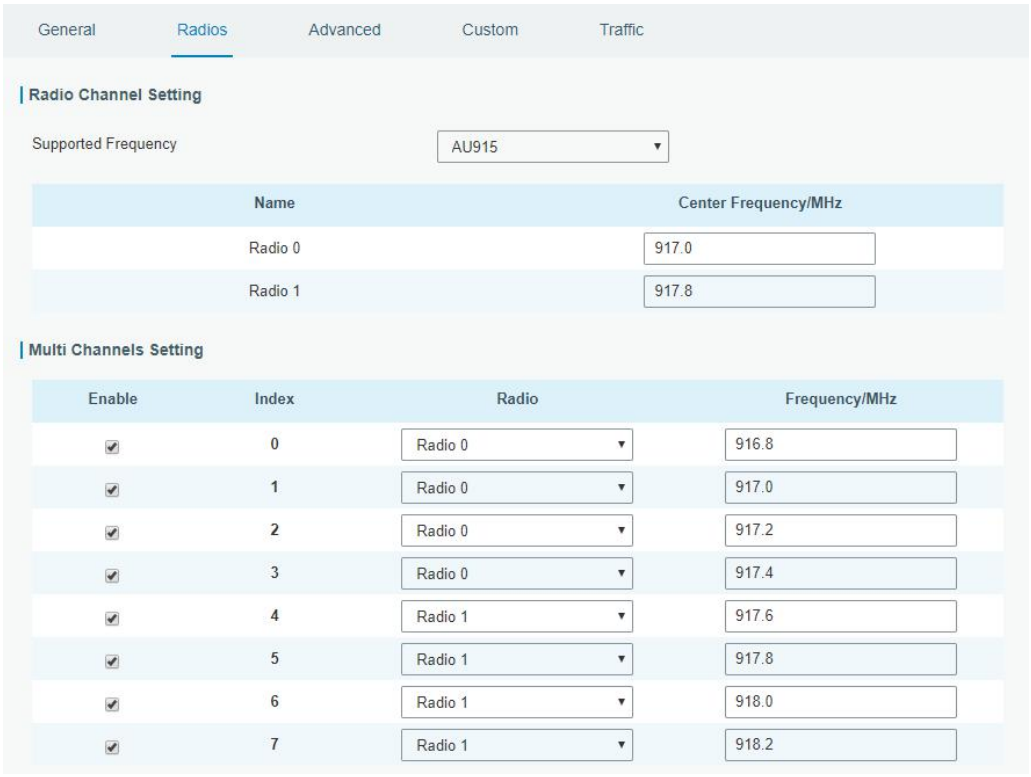
E. The gateway is online on Ursalink Cloud.

7.2 Connect UG87 to Other Platform

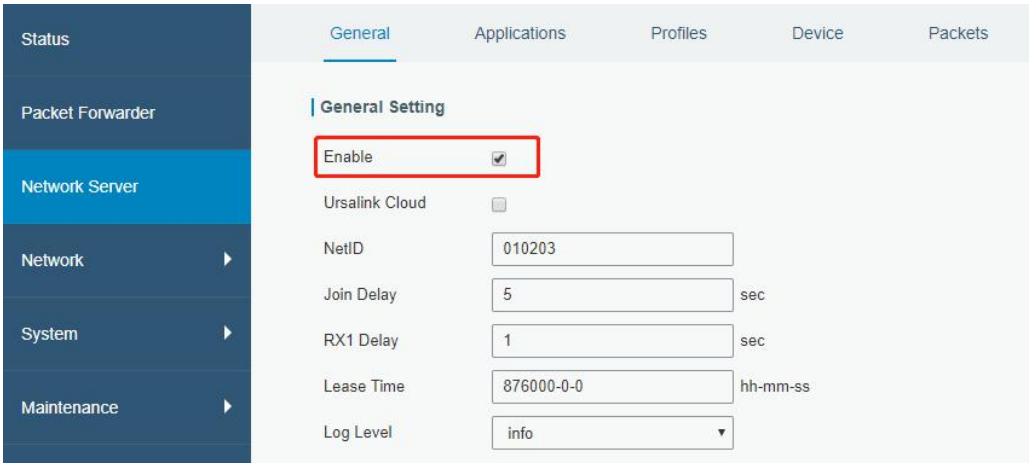
A. Go to “Packet Forwarder” → “General” page to enable the “Ursalink” type server.



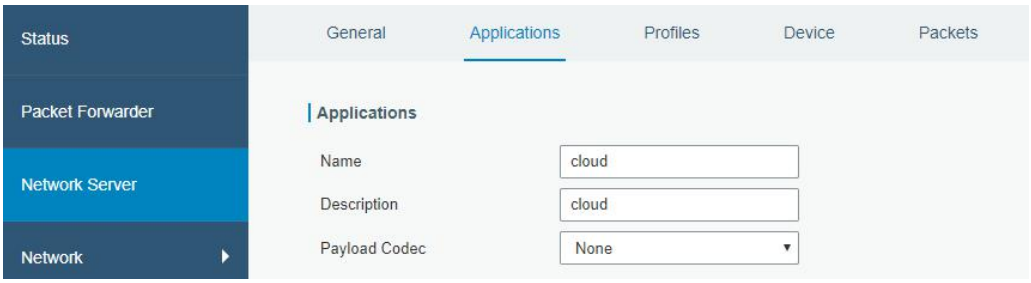
A. Go to “Radios” page to configure the center frequency and channels.
Note: the channel plan of the nodes and gateway need to be the same.



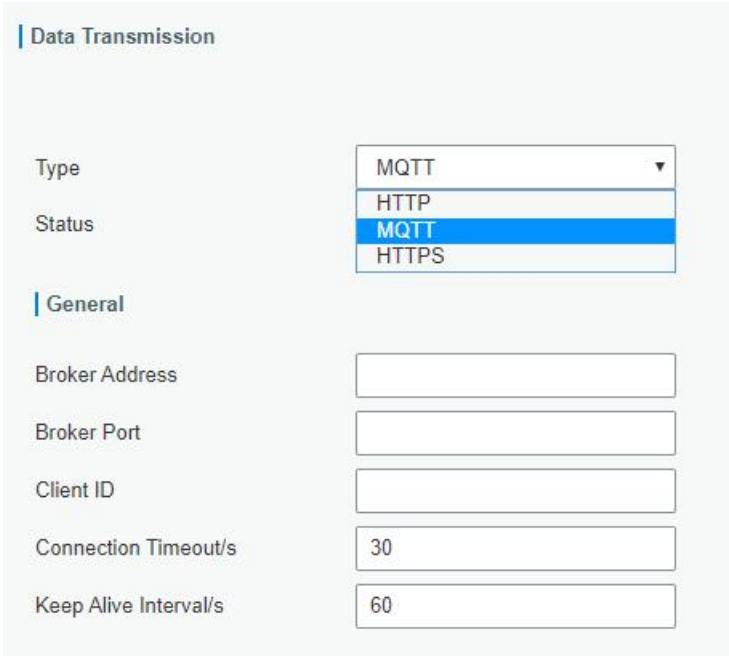
B. Go to “Network Server” → “General” page to enable the network server mode.



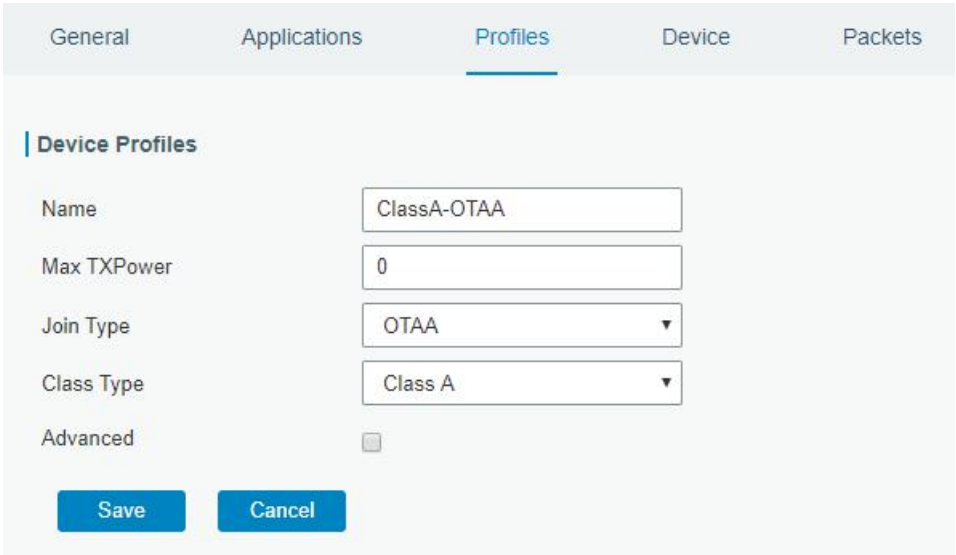
C. Go to “Network Server”→”Application” to add a new application.

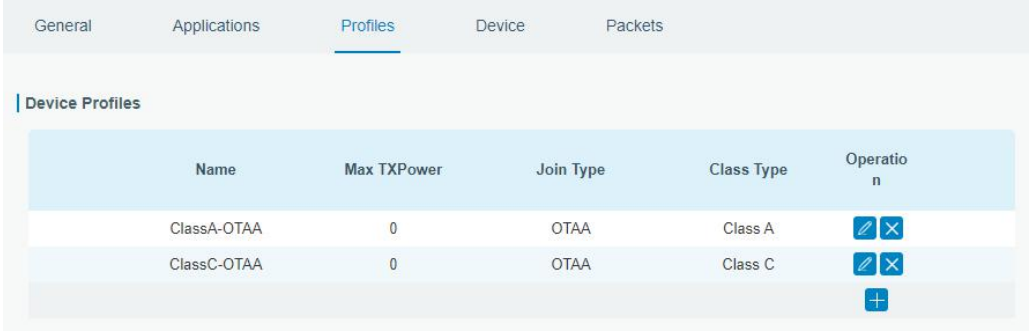


After saving the application, select HTTP, HTTPS or MQTT protocol and fill in correspond server information to send data to another server.

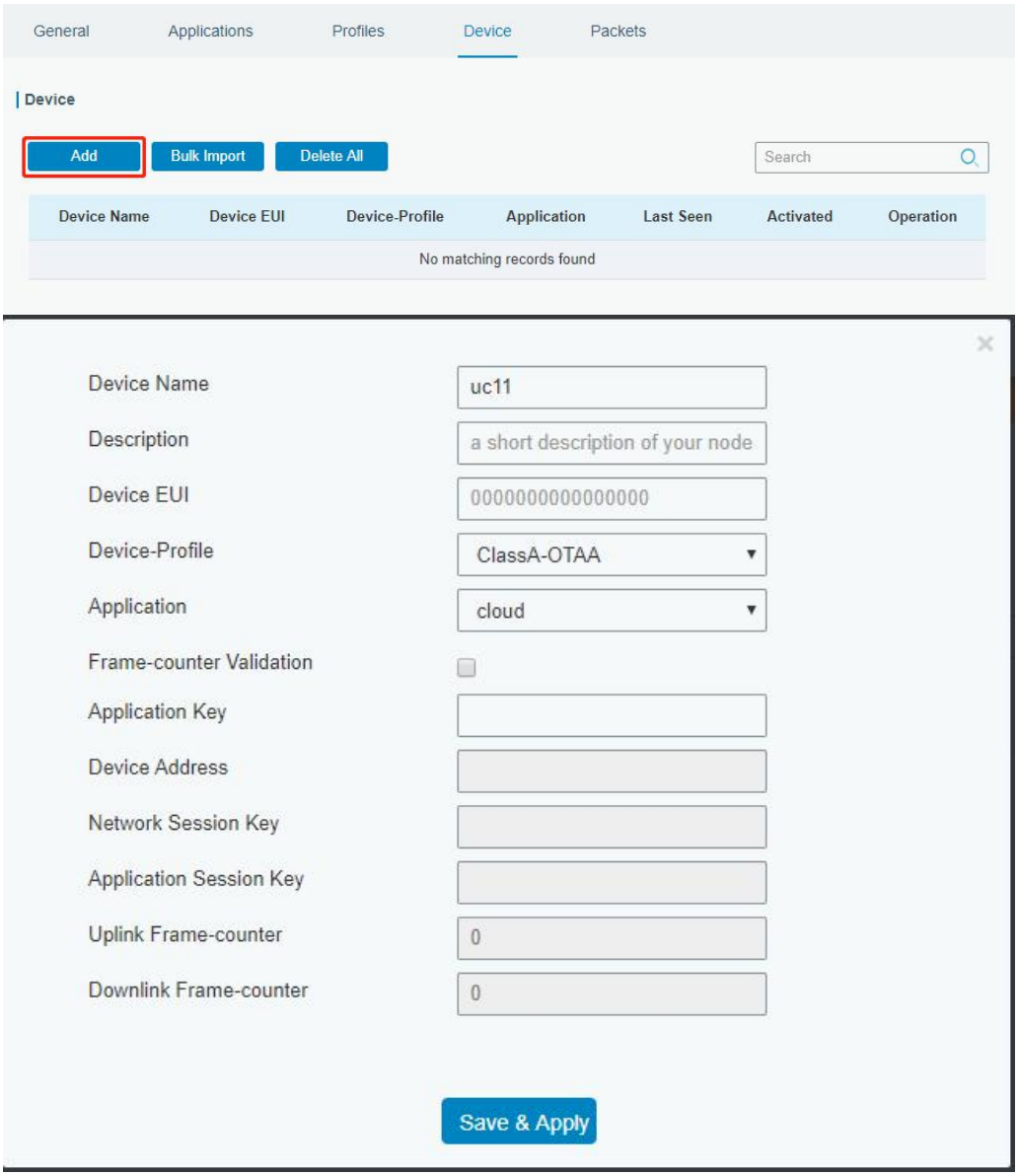


D. Go to “Profiles” page to add a new profile for the device.



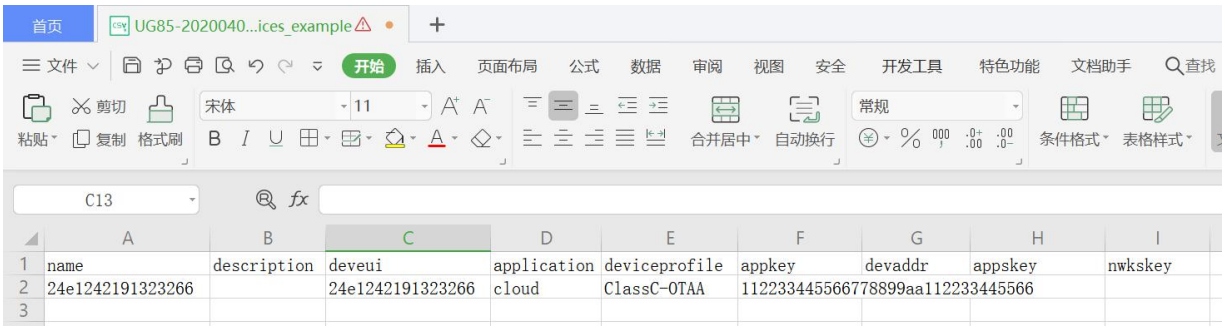


E. Go to “Device” page and click “Add” to add LoRaWAN node devices.



You can also click “Bulk Import” if many LoRaWAN nodes need to add.

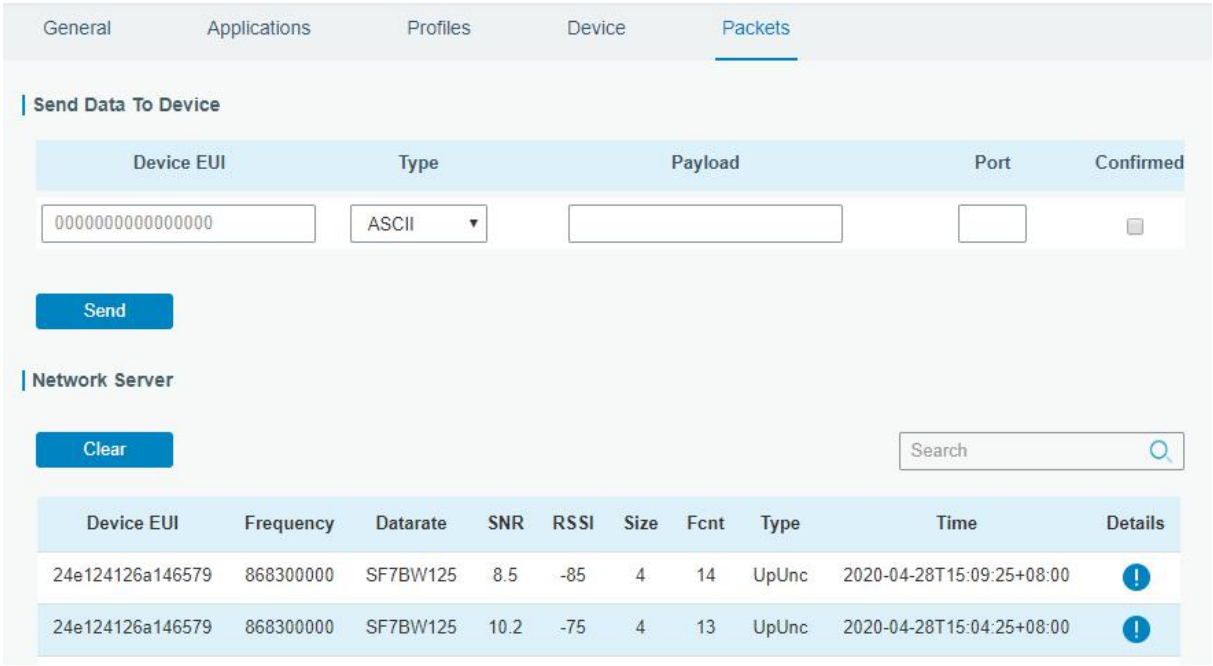
Click “Template Download” to download template file and add LoRaWAN device information to this file. Application and device profile should be the same as you created in web page.



	A	B	C	D	E	F	G	H	I
1	name	description	deveui	application	deviceprofile	appkey	devaddr	appskey	nwkskey
2	24e1242191323266		24e1242191323266	cloud	ClassC-OTAA	112233445566778899aa112233445566			
3									

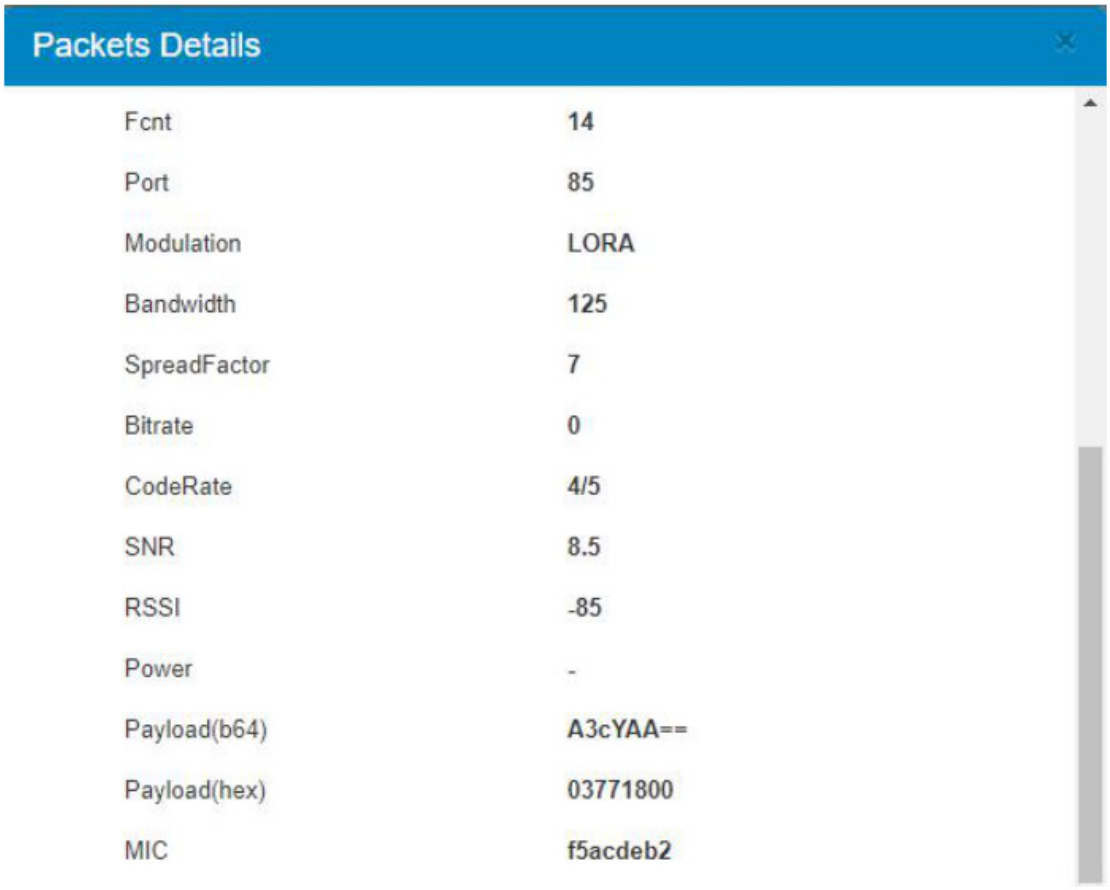
Import this file to add bulks of devices.

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



Device EUI	Frequency	Datarate	SNR	RSSI	Size	Fcnt	Type	Time	Details
24e124126a146579	868300000	SF7BW125	8.5	-85	4	14	UpUnc	2020-04-28T15:09:25+08:00	
24e124126a146579	868300000	SF7BW125	10.2	-75	4	13	UpUnc	2020-04-28T15:04:25+08:00	

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



www.ursalink.com

Documents / Resources

	URSALINK LoRaWAN Gateway Quick Start Guide [pdf] URSALINK, LoRaWAN Gateway, UG87

References

- Milesight IoT Cloud
- Ursalink Technology - We Connect Things to Cloud