URSALINK

UG85 LoRaWAN Gateway

Quick Start Guide

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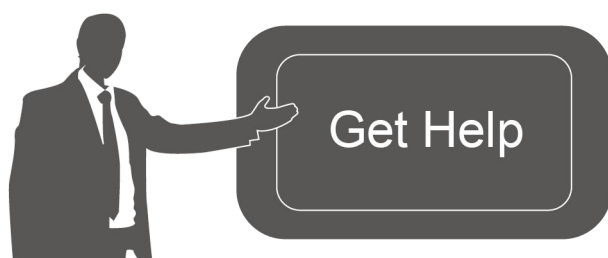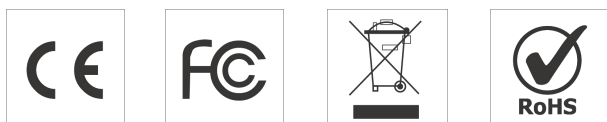
For assistance, please contact
Ursalink technical support:
Email: support@ursalink.com
Tel: 86-592-5023060
Fax: 86-592-5023065

Revision History

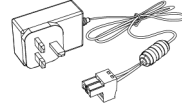| Date	Doc Version	Firmware	Description
Jun. 14,2019	V1.1	-	Initial version
Apr. 4, 2020	V1.2	80.0.0.62	1. Reset button definition change; 2. Default IP change from 192.168.1.1 to 192.168.23.150; 3. Web GUI interface change; 4. Add bulk import LoRaWAN devices.

Contents

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.
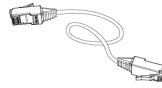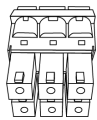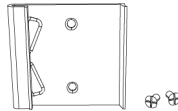
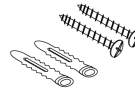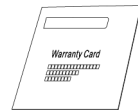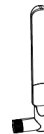|			
1 × UG85	1 × Ethernet Cable	1 × Power Adapter	1 × Stubby LoRa Antenna
1 × 6-Pin Pluggable Terminal	1 × DIN Rail Kit	4 × Setscrews	1 × Warranty Card
1 × GPS Antenna (GPS Version Only)	1 × Magnetic Cellular Antenna (Cellular Version Default)	1 × Stubby Wi-Fi Antenna (Wi-Fi Version Only)	1 × Stubby Cellular Antenna (Cellular Version 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
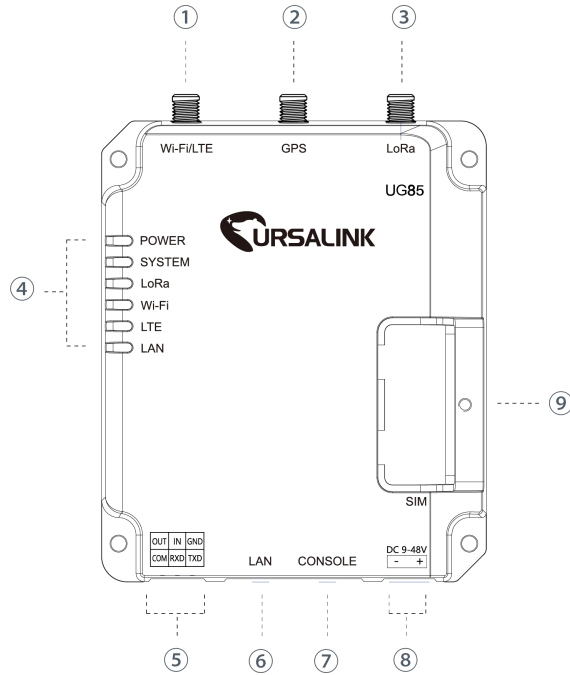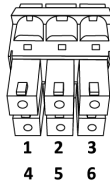

① WIFI/LTE Antenna
② GPS Antenna
③ LoRa Antenna
④ LED Indicator Area
　 POWER: Power Indicator
　 SYSTEM: Status Indicator
　 LORA：LoRa Indicator
　 WIFI: WIFI Indicator
　 LTE: Cellular Status Indicator
　 LAN: Ethernet Port Status Indicator
⑤ Serial Port & I/O
⑥ Ethernet WAN/LAN Port
⑦ Console Port
⑧ Power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

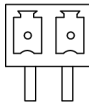### 2.2 Dimensions (mm)
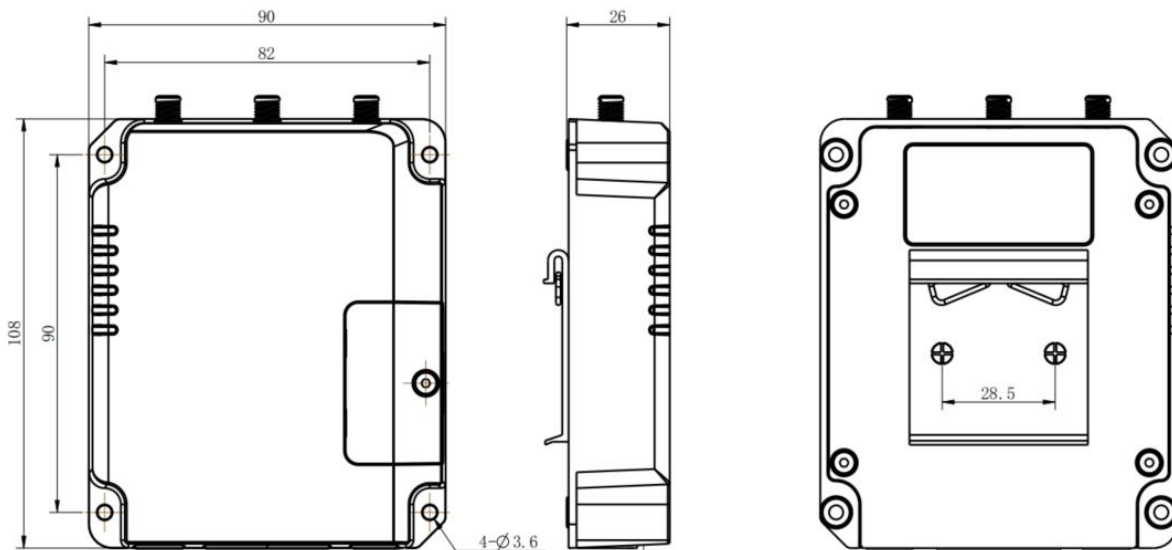
2.3 Pinouts

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

V+ V-

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
		Green Light	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
		Green Light	Blinking rapidly: SIM1 or SIM2 has been registered and is dialing up now
		Green Light	Static: SIM1 or SIM2 has been registered and dialed up successfully
LAN	Ethernet Port Status	Off	Disconnected
		Green Light	Blinking: Transmitting data
		Green Light	Static: Connected

2.5 Reset Button

| Function	Description	
	SYSTEM 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 is now reset to factory default.

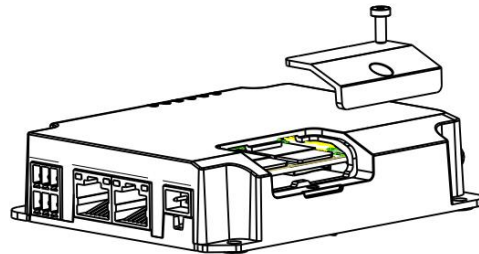## 3. Hardware Introduction

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

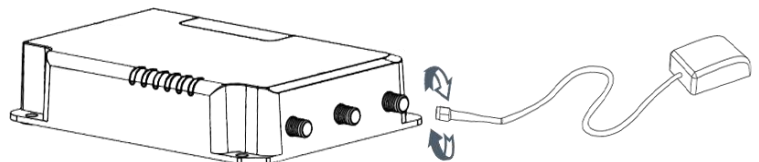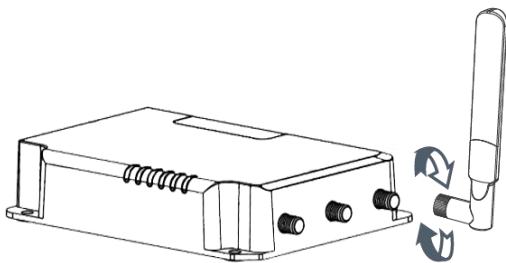A. Unscrew the cover of the SIM card then take it off.
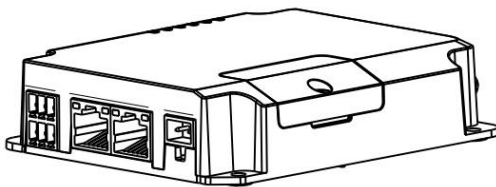
B. Put SIM card into the slot and screw it up.
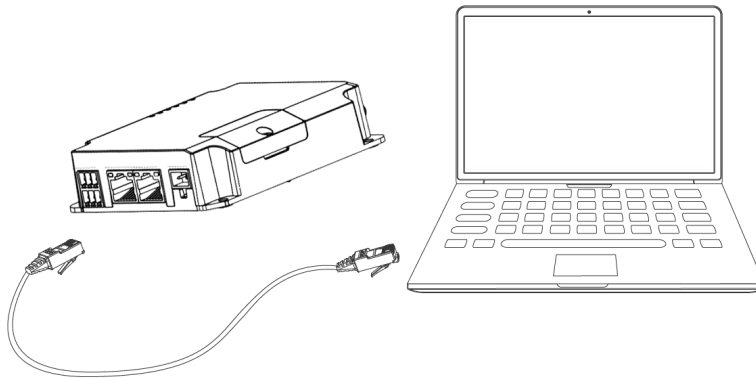
3.2 Antenna Installation

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 Ethernet Port Connection

Connect LAN port of UG85 to computer or network devices. Please note that do not connect to console port.

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.**
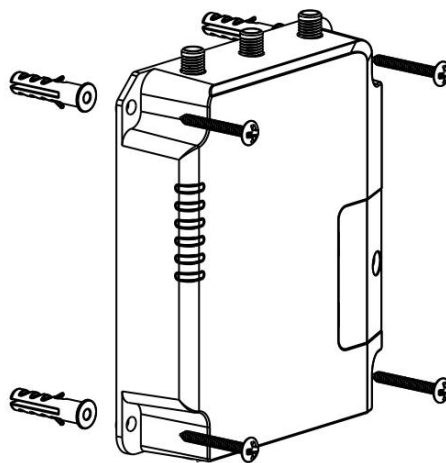

3.4.2 DIN Rail Mounting (Measured in mm)

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.**
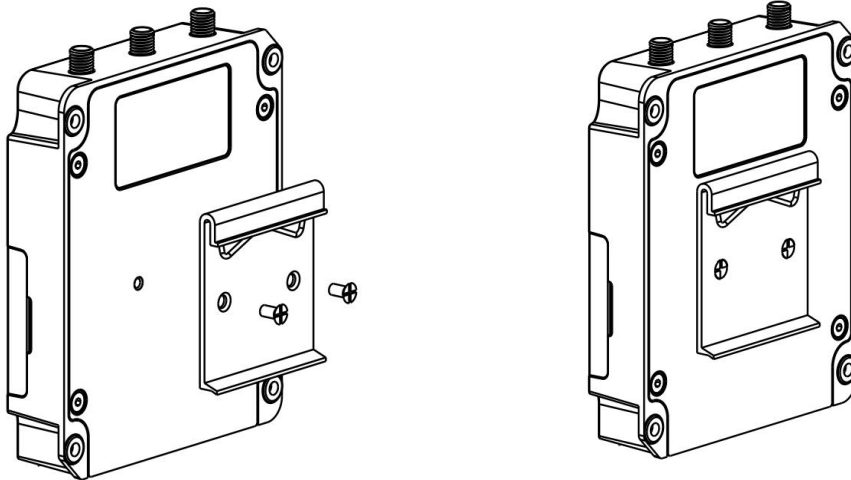
3.5 Power Supply Installation

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.
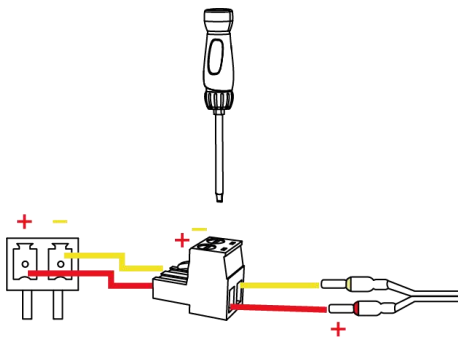
Connecting the Power Cable

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.

4. Access the Web GUI of UG85

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:
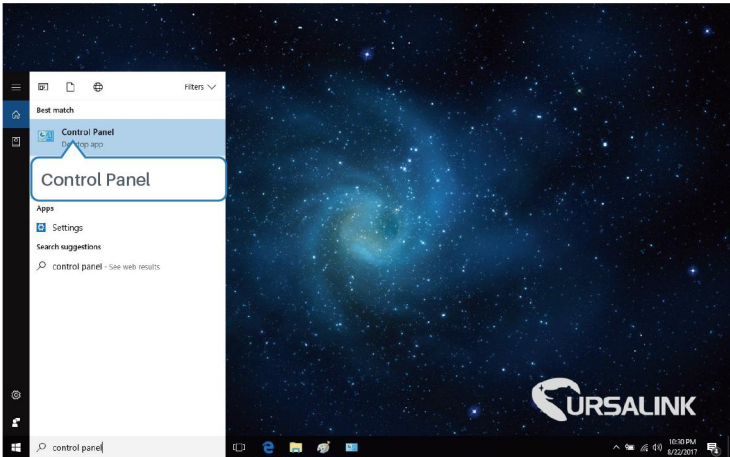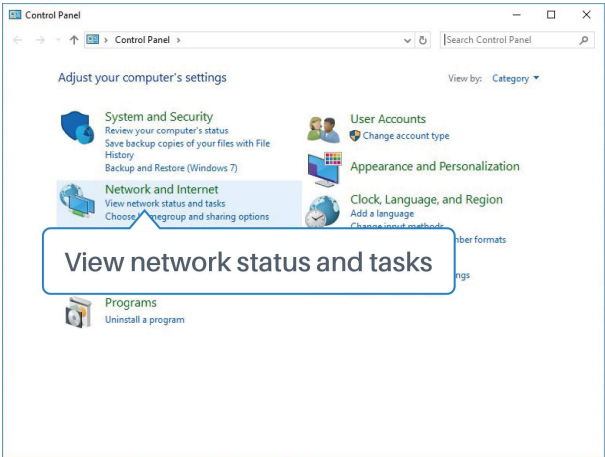
IP Address: **192.168.23.150**
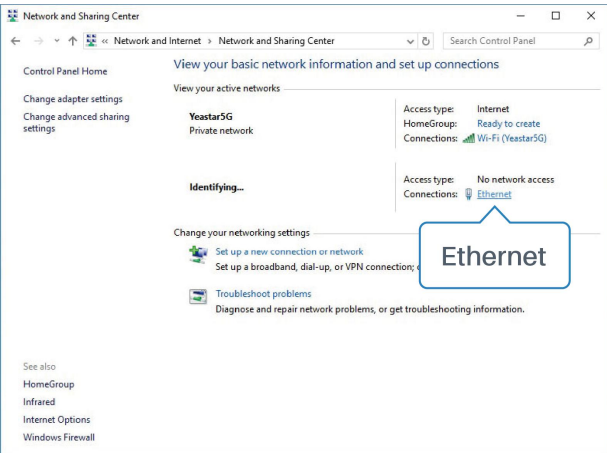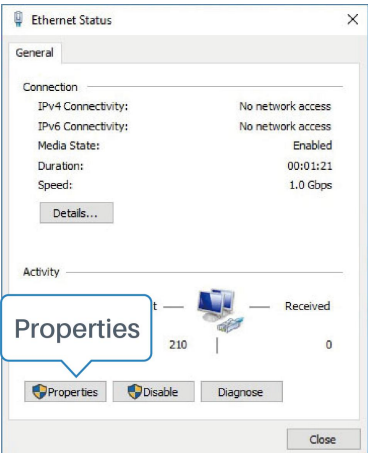Username: **admin**
Password: **password**

4.1 PC Configuration

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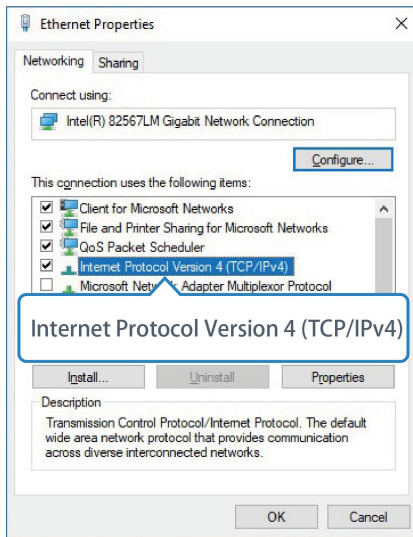

① Click "Search Box" to search "Control Panel" on the Windows 10 taskbar.

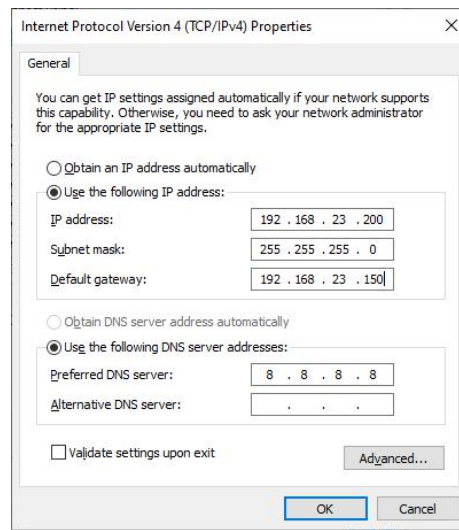② Click "Control Panel" to open it, and then click "View network status and tasks".

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 configuration.)

4.2 Log in the Web GUI of UG85

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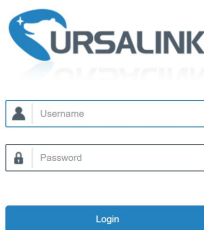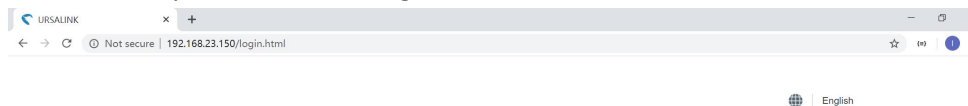
⚠ **If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.**

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

Change Password   ✕

Old Password   [_____]

New Password   [_____]

Confirm New Password   [_____]

[Save]   [Cancel]

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

For your device security, please change the default password

| Status | Overview | LoRa | Cellular | Network | VPN | Host List |

System Information

Model	UG85
Partnumber	L00E-S1011-EU868
Serial Number	621791810162
Firmware Version	80.0.0.6
Hardware Version	V1.0
Local Time	2019-06-11 11:30:26
Uptime	00:15:40
CPU Load	28%
RAM (Capacity/Available)	512MB/257MB(50.2%)
eMMC (Capacity/Available)	6.6G/6.0G(91.63%)

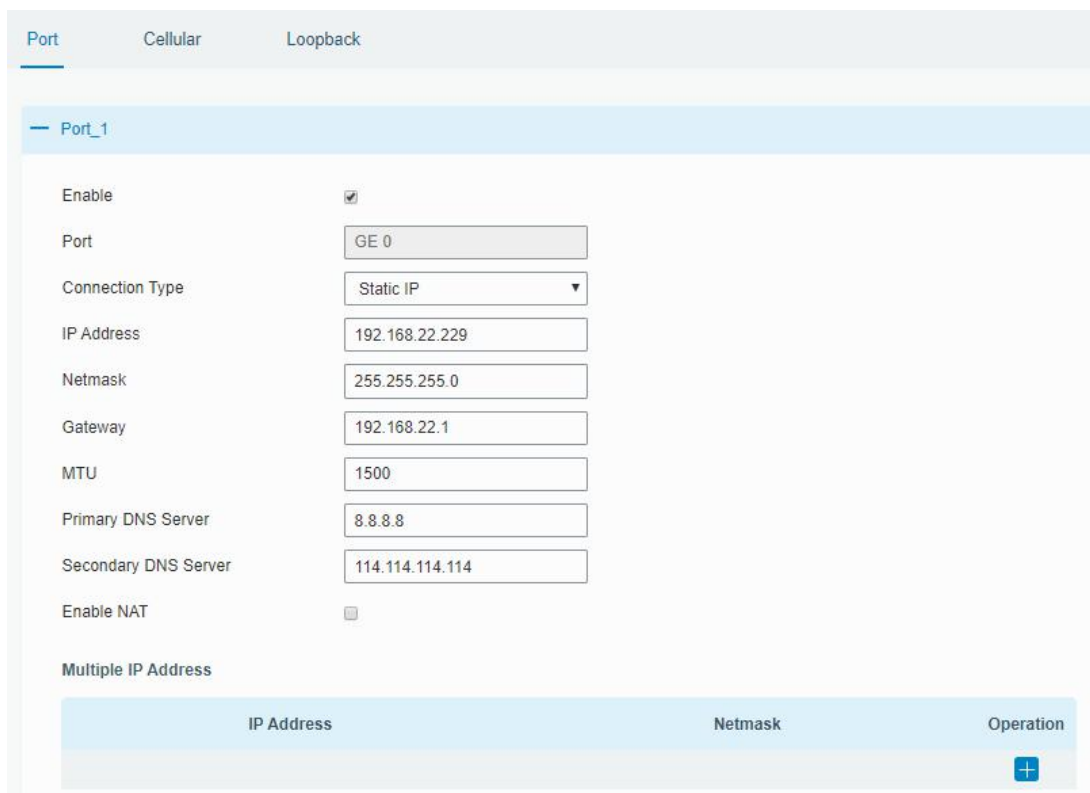Left menu: Status, LoRaWAN, Network, System, Industrial, Maintenance, APP

Manual Refresh ▼   [Refresh]

5. Connect UG85 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.
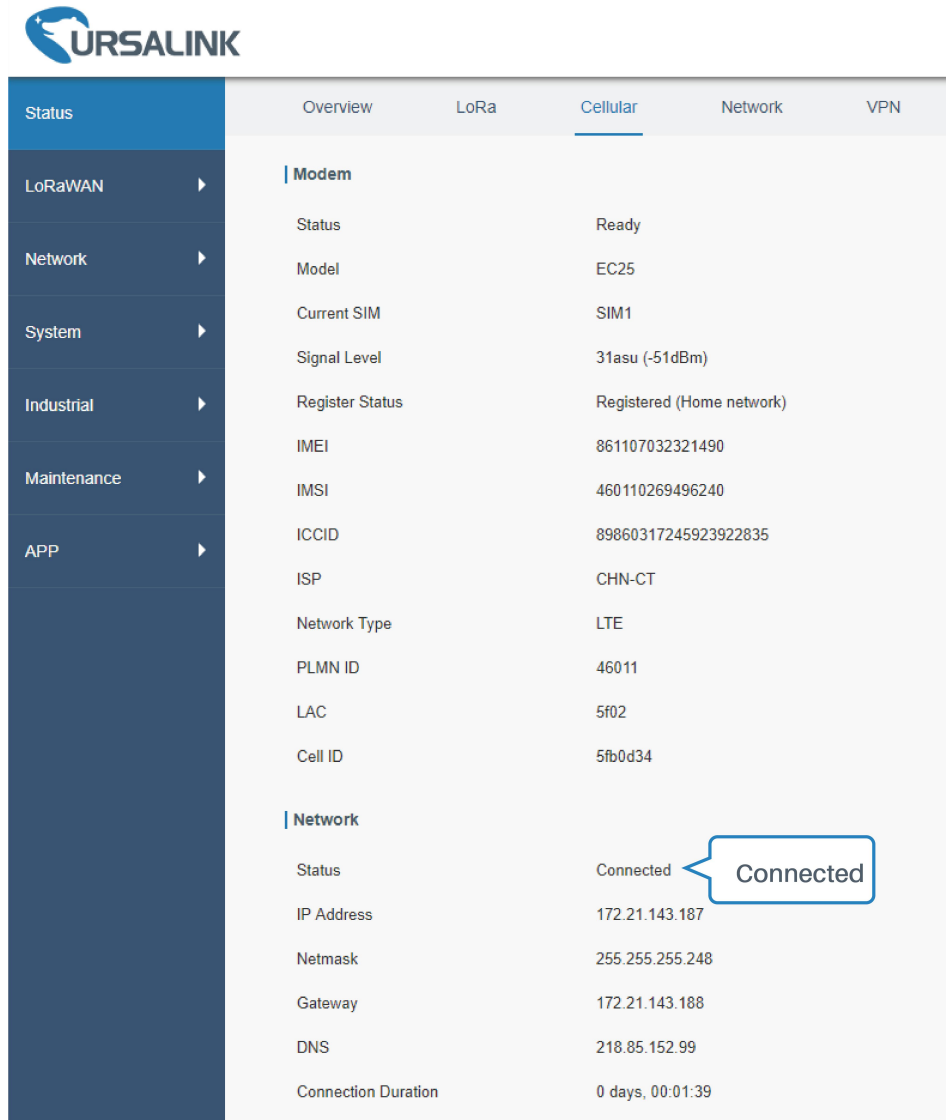
A. Go to "Network" → "Interface" → "Cellular" → "Cellular Setting" page to configure the cellular info.

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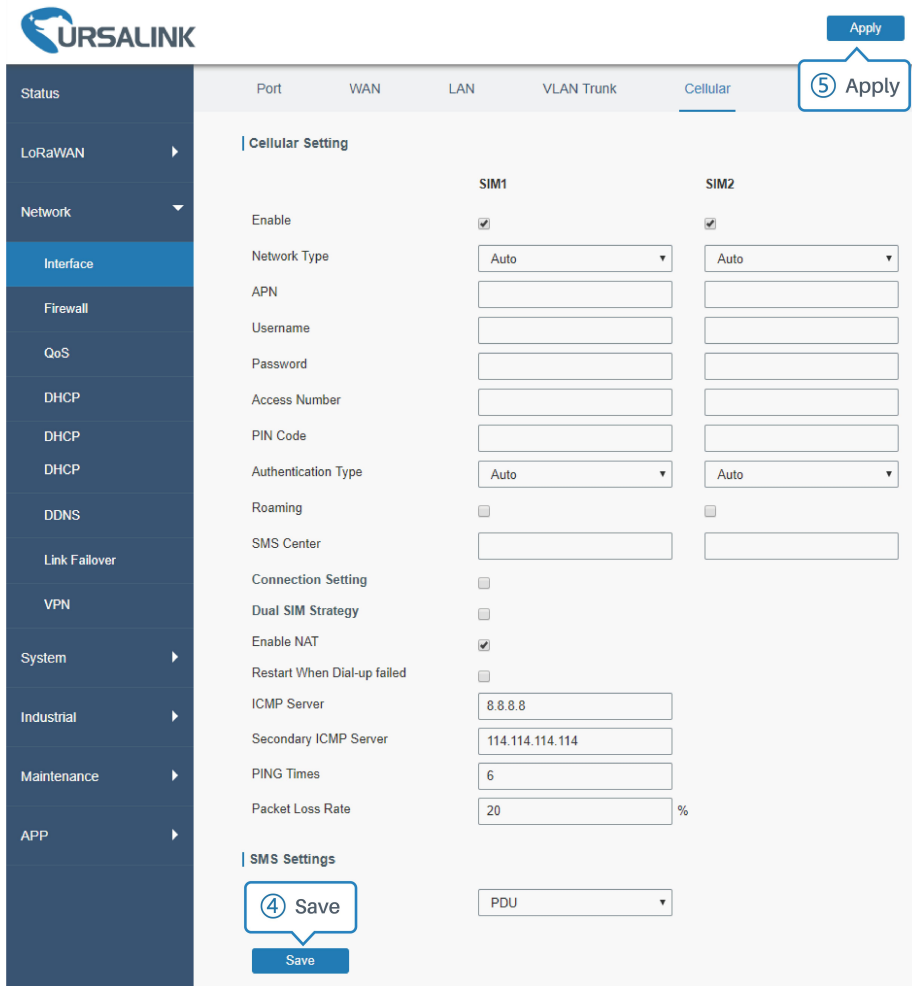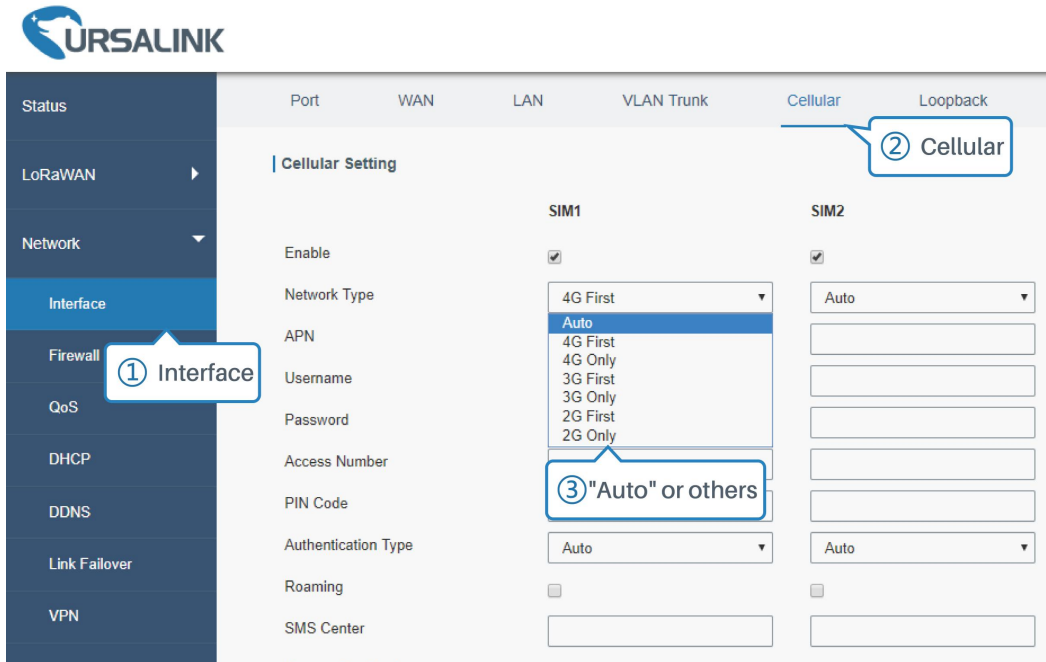
UG85 has two cellular interfaces named SIM1 & SIM2. Only one cellular interface is active at one time. If both cellular interfaces are enabled, SIM1 interface takes precedence by default.

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 LTE 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".

SSID	Channel	Signal	Cipher	BSSID	Security	Frequency	
Ursalink_F08A9B	Auto	-76dBm	Auto	24:e1:24:f0:8a:9b	No Encryption	2412MHz	Join Network
Ursalink_F03D6D	Auto	-75dBm	Auto	24:e1:24:f0:3d:6d	No Encryption	2412MHz	Join Network
Ursalink_EEFF89	Auto	-73dBm	Auto	24:cc:dd:ee:ff:89	No Encryption	2412MHz	Join Network
+4413133	Auto	-77dBm	AES	24:e1:24:f0:32:1b	WPA-PSK/WPA2-PSK	2412MHz	Join Network
AABB	Auto	-75dBm	AES	24:e1:24:f0:32:1b	WPA-PSK/WPA2-PSK	2412MHz	Join Network
Redmi	Auto	-75dBm	AES	2a:56:e4:fe:2b:b2	WPA2-PSK	2412MHz	Join Network
Ursalink_Tec	Auto	-73dBm	AES	24:e1:24:f0:2c:4b	WPA-PSK/WPA2-PSK	2452MHz	Join Network

C. Type the correct key of Wi-Fi.

WLAN

Enable	☑	
Work Mode	Client ▼	Scan
SSID	Ursalink_TechnologyCenter	
BSSID	24:e1:24:f0:01:1a	
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.
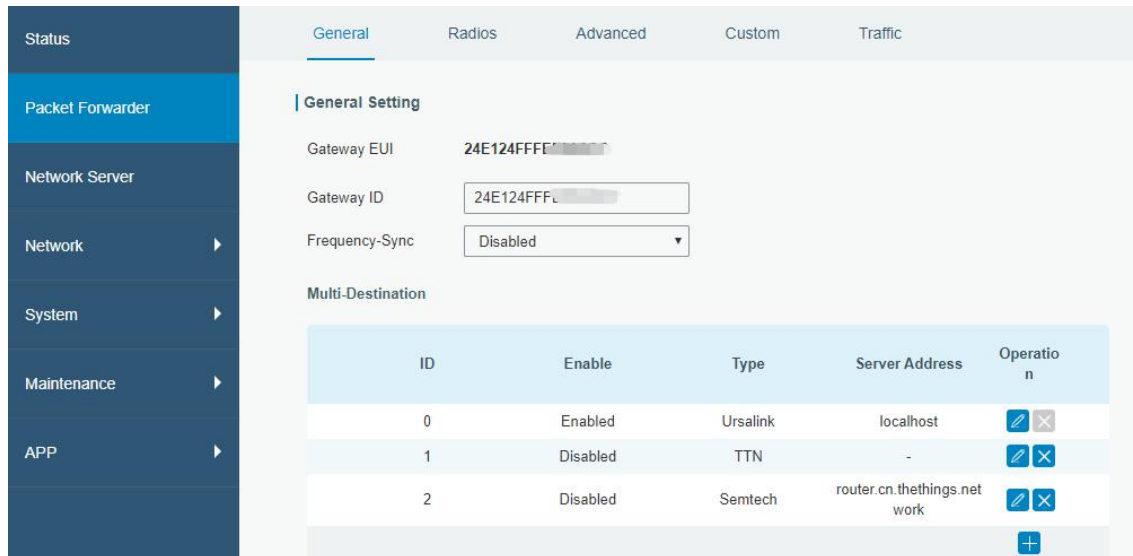
Overview	Packet Forward	Cellular	Network	WLAN

| WLAN Status

Wireless Status	Enabled
MAC Address	24:e1:24:f0:27:d6
Interface Type	Client
SSID	Ursalink_TechnologyCenter
Channel	Auto
Encryption Type	WPA-PSK/WPA2-PSK
Cipher	AES
Status	Connected
IP Address	0.0.0.0
Netmask	0.0.0.0
Connection Duration	0 days, 00:00:01

6. Packet Forwarder Configuration

UG85 has embedded multiple packet forwarders like TTN, Loriot and chirpstack. 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.**
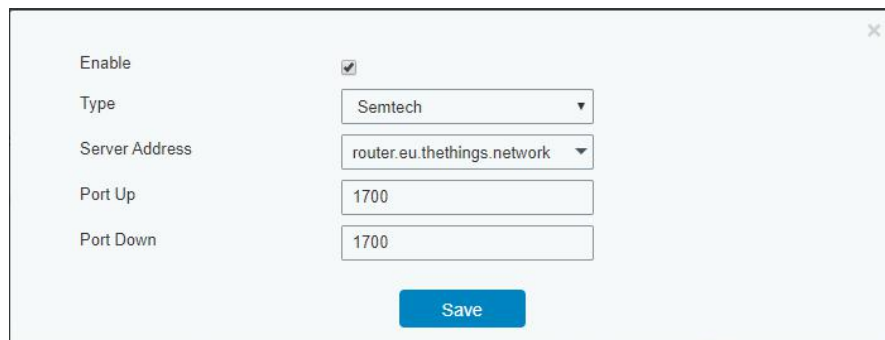
A. Go to "Packet Forwarder" → "General" page and click ➕ to add a network server.

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

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

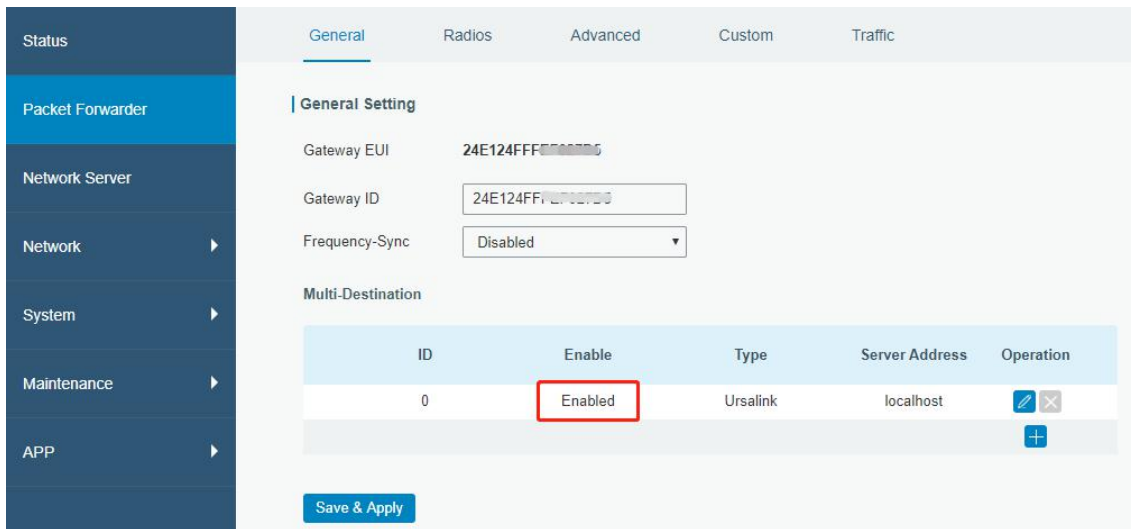E. Go to "Traffic" page to view the data communication of UG85.

7. Network Server Configuration

UG85 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 UG85 to Ursalink Cloud

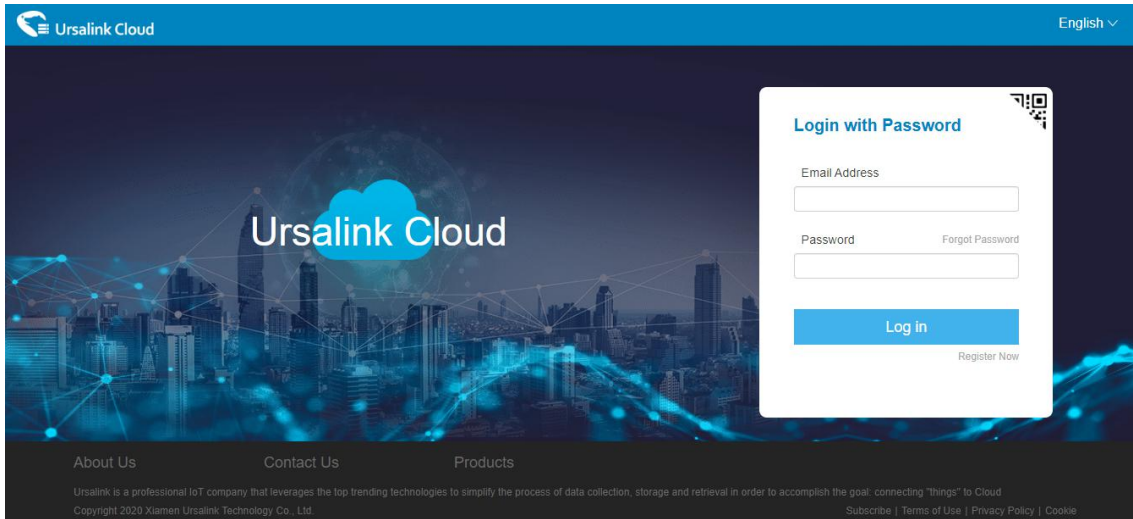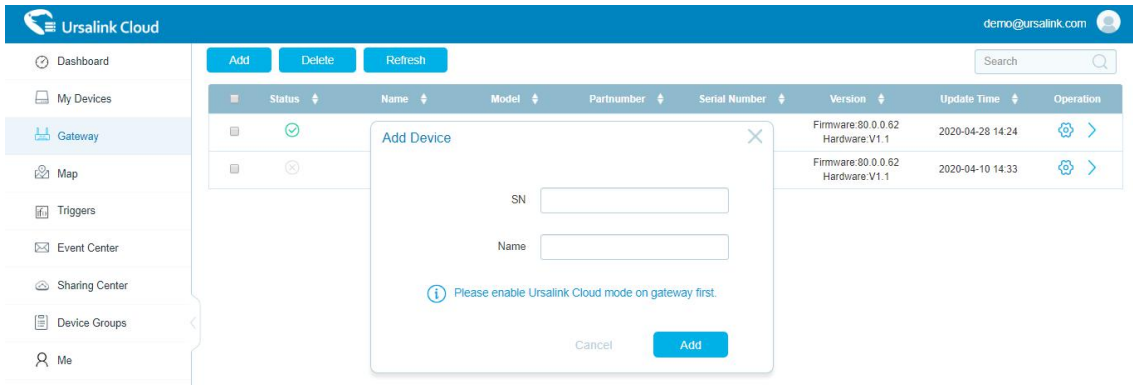A.　Go to "Packet Forwarder" → "General" page to enable the "Ursalink" type server.

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 UG85 to Other Platform

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

B. 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.

C. Go to "Network Server" → "General" page to enable the network server mode.

D. Go to "Network Server"→"Application" to add a new application.
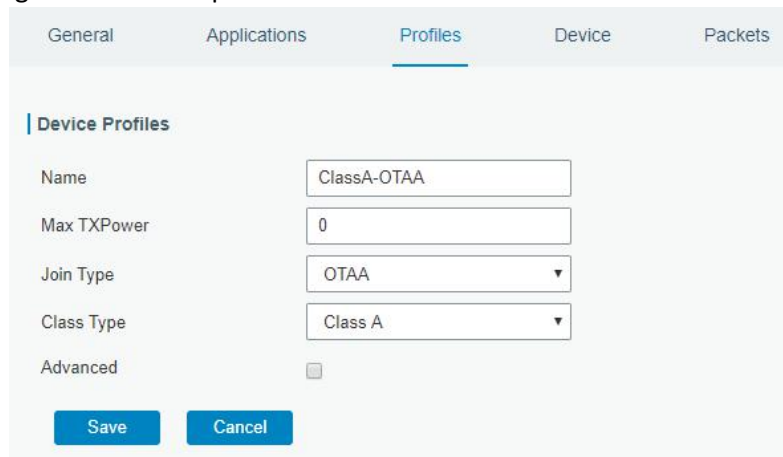
Status	General	Applications	Profiles	Device	Packets

Applications

Packet Forwarder		
	Name	cloud
Network Server	Description	cloud
Network ▶	Payload Codec	None ▼

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

Data Transmission

Type	MQTT ▼
	HTTP
Status	MQTT
	HTTPS

General

Broker Address	
Broker Port	
Client ID	
Connection Timeout/s	30
Keep Alive Interval/s	60

E. Go to "Profiles" page to add a new profile for the device.

General	Applications	Profiles	Device	Packets

Device Profiles

Name	ClassA-OTAA
Max TXPower	0
Join Type	OTAA ▼
Class Type	Class A ▼
Advanced	☐

Save   Cancel

F. Go to "Device" page and click "Add" to add LoRaWAN node devices.
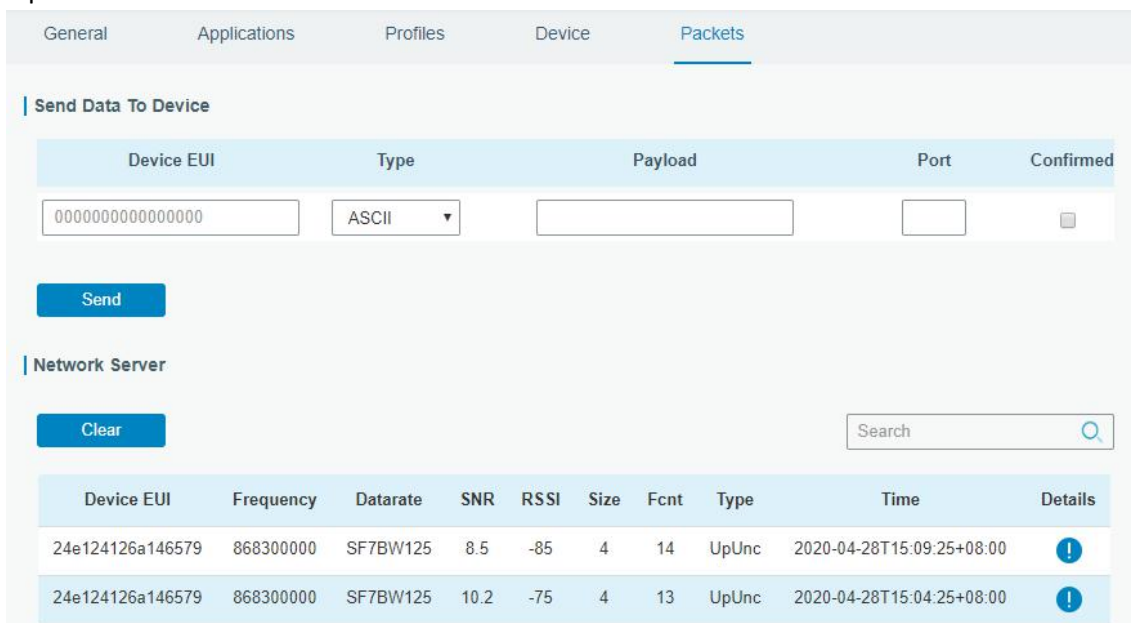

You can also click "Bulk Import" if many LoRaWAN nodes need to add.

Click "Template Download" to download template file and add LoRaWAN device information to this file. Application and deviceprofile should be the same as you created in web page.
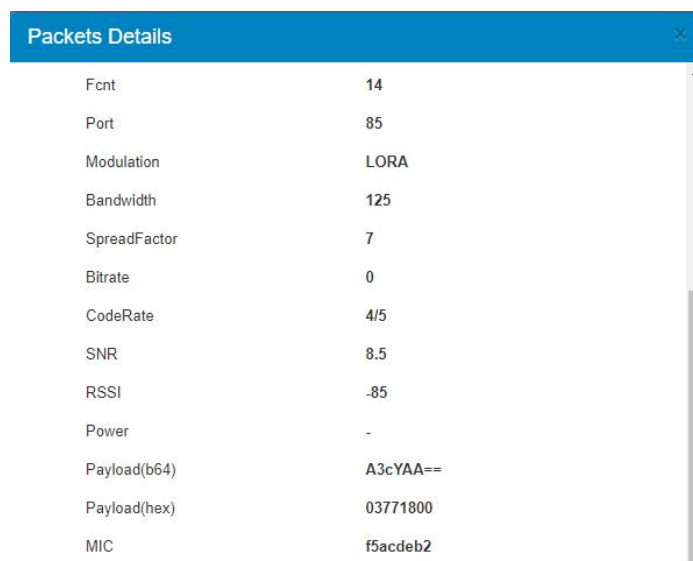
	A	B	C	D	E	F	G	H	I
1	name	description	deveui	application	deviceprofile	appkey	devaddr	appskey	nwkskey
2	24e1242191323266		24e1242191323266	cloud	ClassC-OTAA	112233445566778899aa112233445566			
3									
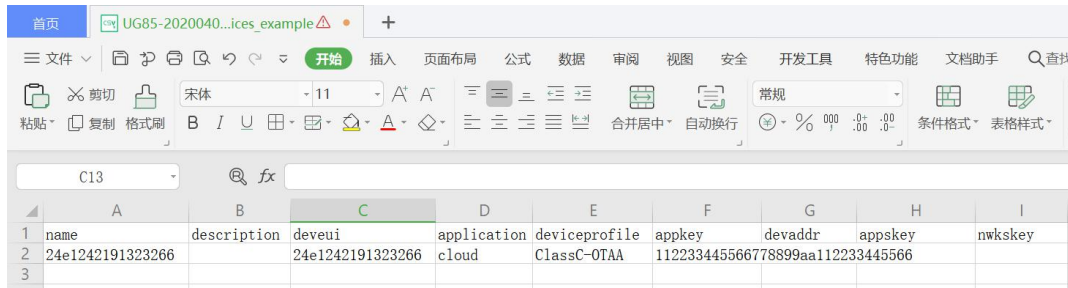
Import this file to add bulks of devices.

G. 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.

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]