Industrial LoRaWAN® Gateway

UG56

Quick Guide

Safety Precautions

Milesight will not shoulder responsibility for any loss or damage resulting from not following the instructions of this operating guide.

● The device must not be modeled in any way.

● Do not place the device close to objects with naked flames.

● Do not place the device where the temperature is below/above the operating range.

● Do not power on the device or connect it to another electrical device when installing.

● Check lightning and water protection when used outdoors.

● Do not connect or power the equipment using cables that have been damaged.

Related Documents

This Quick Start Guide only explains the installation of Milesight UG56 LoRaWAN® Gateway. For more functionality and advanced settings, please refer to the relevant documents as below.

Document	Description
UG56 Datasheet	Datasheet for UG56 LoRaWAN® Gateway.
UG56 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 Milesight website: https://www.milesight-iot.com

Declaration of Conformity

UG56 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.

Get Help
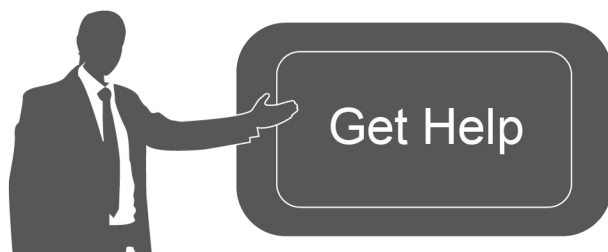
For assistance, please contact Milesight technical support:
Email: iot.support@milesight.com
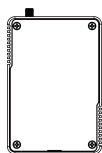Tel: 86-592-5085280
Fax: 86-592-5023065

Revision History

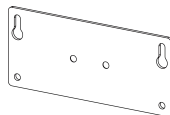| Date	Doc Version	Description
Aug.8, 2022	V1.0	Initial version

Contents

1. Packing List

Before you begin to install the UG56 LoRaWAN® Gateway, please check the package contents to verify that you have received the items below.
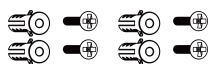
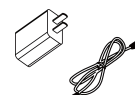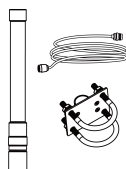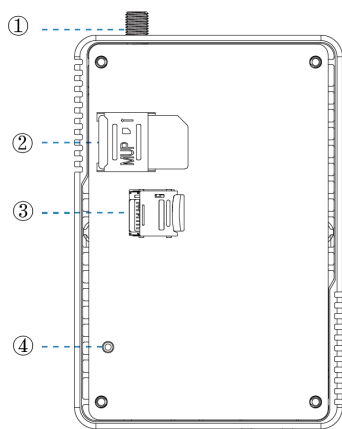|			
1 × UG56 Device	1 × LoRaWAN® Magnetic Antenna	1 × Wall Mounting Bracket	2 × M3 Bracket Fixing Screws
4 x Wall Mounting Kits	1 x Quick Start Guide	1 × Warranty Card	1 × Type-C Cable & Power Adapter (Optional)
1 × LoRaWAN® Fiber-Glass Antenna Kit(Optional)			

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

2. Hardware Introduction

2.1 Overview
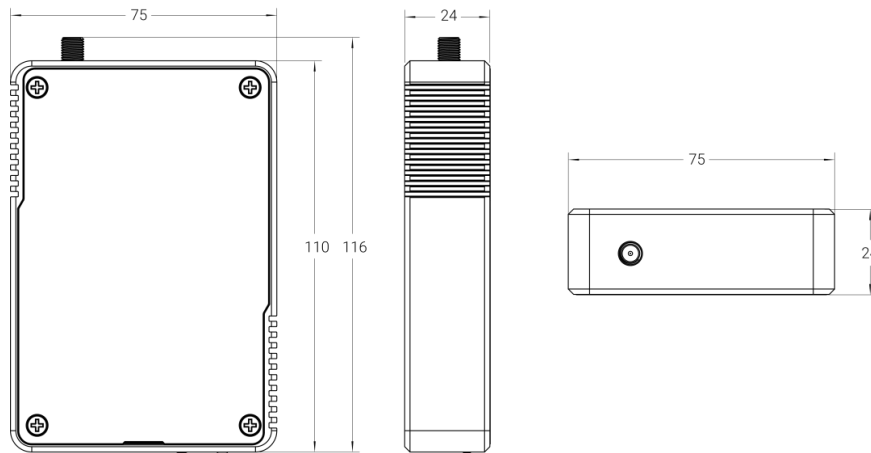
① LoRaWAN® Antenna Connector
② SIM Slot
③ Micro SD Slot
④ Reset Button
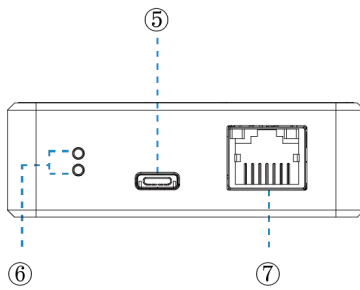
⑤   Type-C Power & Console Port
⑥   LED Indicators
⑦   Ethernet Port (PoE)

2.2 Dimensions (mm)

2.3 LED Indicators

LED	Indication	Status	Description
SYS	System Status	Off	The system is starting up
		Red Light	The system goes wrong
		Green Light	The system is running properly
LoRa	LoRa Status	Off	Packet Forwarder mode is running off
		On	Packet Forwarder mode is running well
Ethernet Port	Link Indicator (Yellow)	Off	Disconnected or connect failure
		On	Connected
		Blinking	Transmitting data
	Rate Indicator (Green)	Off	Other modes
		On	100 Mbps mode

2.4 Reset Button

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

# 3. Hardware Installation

3.1 SIM & Micro SD Installation

Remove the front panel of the device, insert the SIM card or micro SD card into the corresponding slot.
Note: UG56 does not support hot plugging (also called hot swapping). please turn off the power before you insert or take off cards.
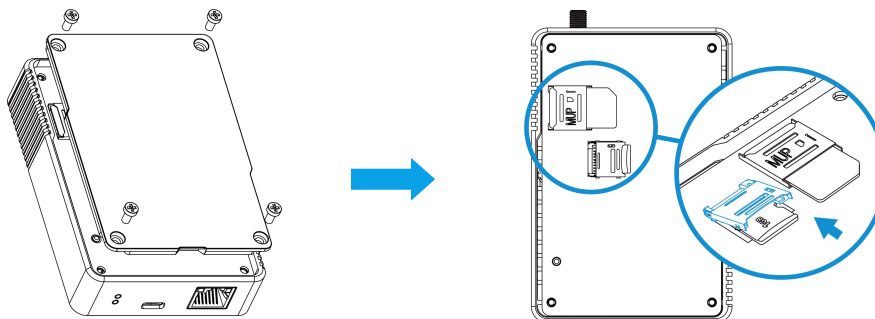

3.2 Antenna Installation

Rotate the LoRa antenna into the antenna connector. The antenna should be installed vertically and kept away from batteries.
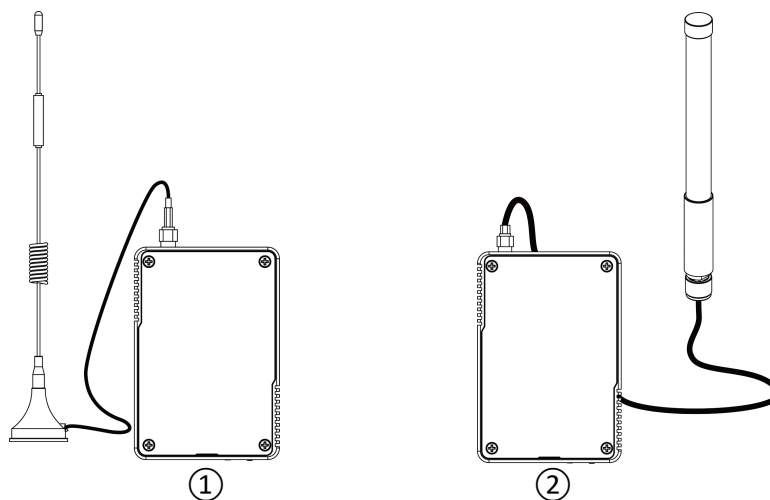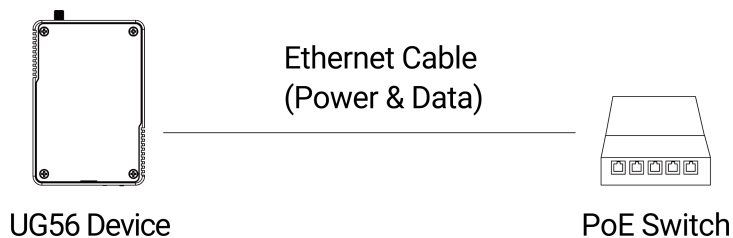

If you need to fix the LoRa fiber-glass antenna to a pole, please pass the LoRa antenna through the antenna clamp and fix it with 4 screws, then wrap the U-bolt around a pole and fix the clamp with nuts and other accessories.
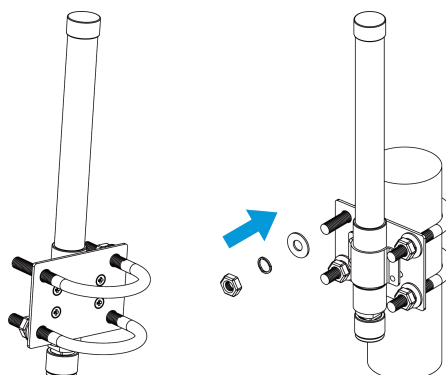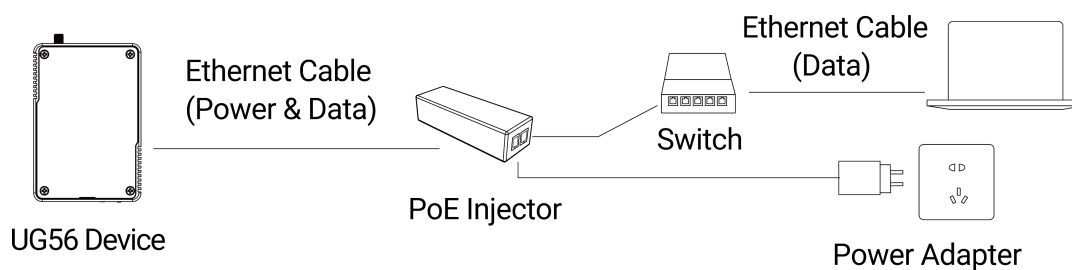
3.3 Power Supply

UG56 can be powered by 802.3af standard PoE or Type-C port (5 VDC). If both are connected, the device will be powered by the former method (PoE).
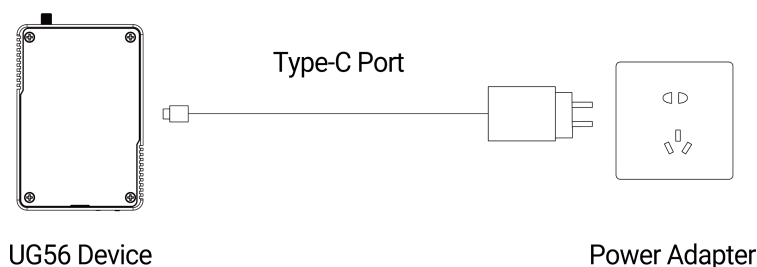
● **Power by a PoE Switch**

Ethernet Cable
(Power & Data)

UG56 Device   PoE Switch

● **Power by a PoE injector**

Ethernet Cable
(Data)

Ethernet Cable
(Power & Data)

Switch

PoE Injector

UG56 Device

Power Adapter

● **Power by a Type-C Port**

Type-C Port

UG56 Device   Power Adapter

Note: When connecting, Ethernet cable of UG56 device side should be installed first, otherwise, PoE devices or gateway may be damaged.

3.4 Gateway Installation

Before you get started, make sure all fittings are installed and the power supply is disconnected.
A. Fix the wall mounting bracket to the device with 2 x M3 bracket fixing screws.
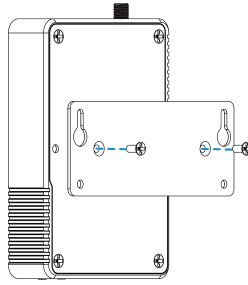
B. Drill 4 holes on the wall according to the wall mounting bracket, then fix the wall plugs into the wall.

C. Fix the device to the wall plugs with M3 wall mounting screws. When installation, it's suggested to fix the upper two screws first.
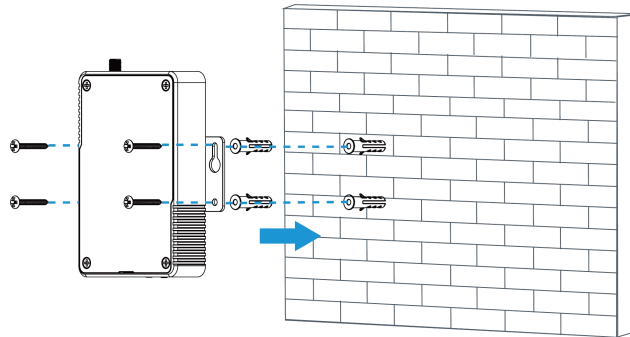
4. Web GUI Access

UG56 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 SSID: **Gateway_********
Username: **admin**
Password: **password**
Browser: **Chrome(recommended)**

4.1 Wireless Access

A. Enable wireless network connection on your computer and search for access point "**Gateway_********" to connect it.

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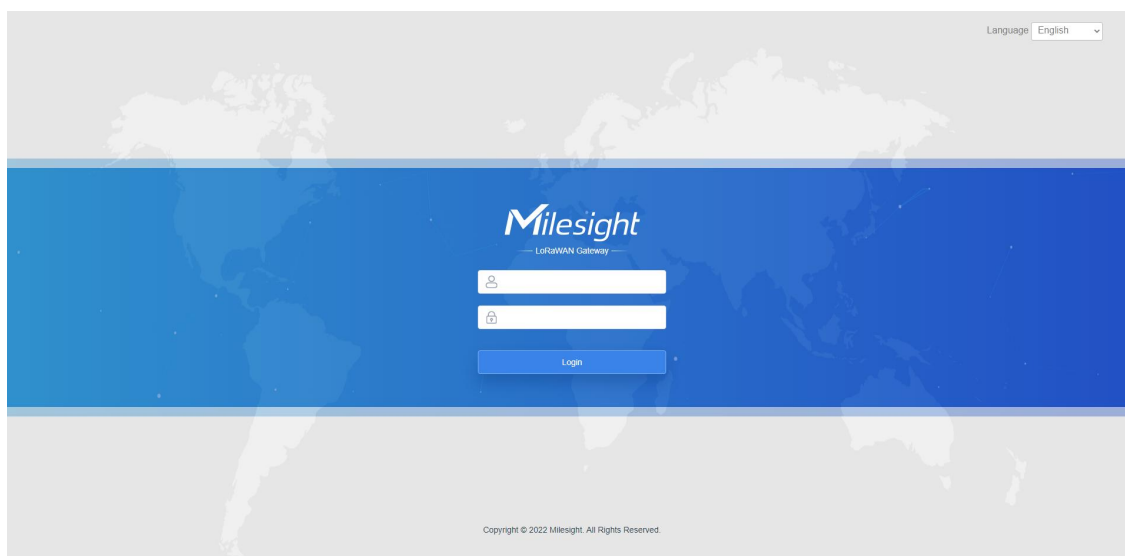
⚠️ **If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.**

D. After logging the web GUI, follow the guide to complete the basic configurations. It's suggested that you change the password for the sake of security.

Change Your Default Password

For your device security, please change the default password in time.

Old Password   [_____]

New Password   [_____]

Confirm New Password   [_____]

[Close]   [Save]

E. You can view system information and perform configuration of the gateway.

4.2 Wired Access

Connect PC to UG56 ETH port directly or through PoE injector to access the web GUI of gateway. The following steps are based on Windows 10 system for your reference.

A. Go to "Control Panel" → "Network and Internet" → "Network and Sharing Center", then click "Ethernet" (It may have different names).
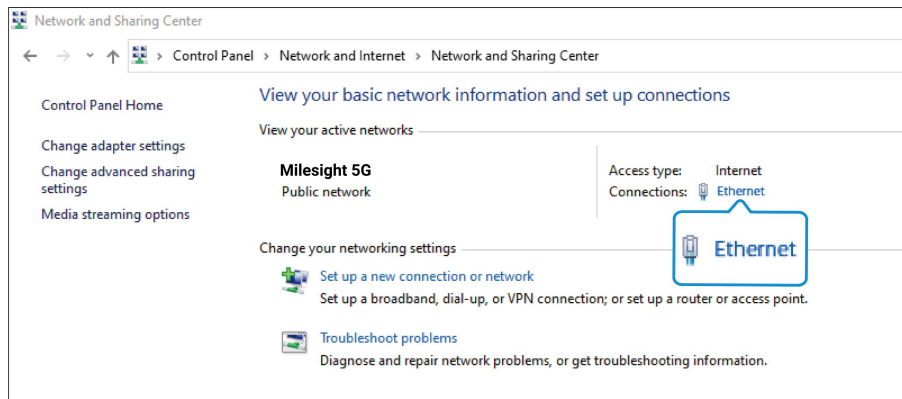
B. Go to "Properties" → "Internet Protocol Version 4 (TCP/IPv4) "and select "Use the following IP address", then assign a static IP manually within the same subnet of UG56.
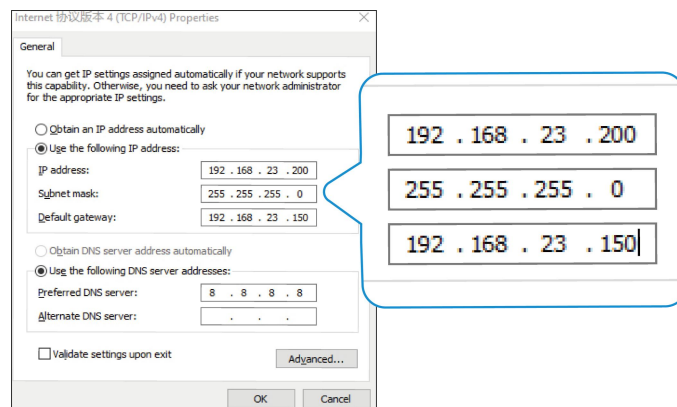
C. Open a Web browser on your PC (Chrome is recommended) and type in the IP address 192.168.23.1 50 to access the web GUI.

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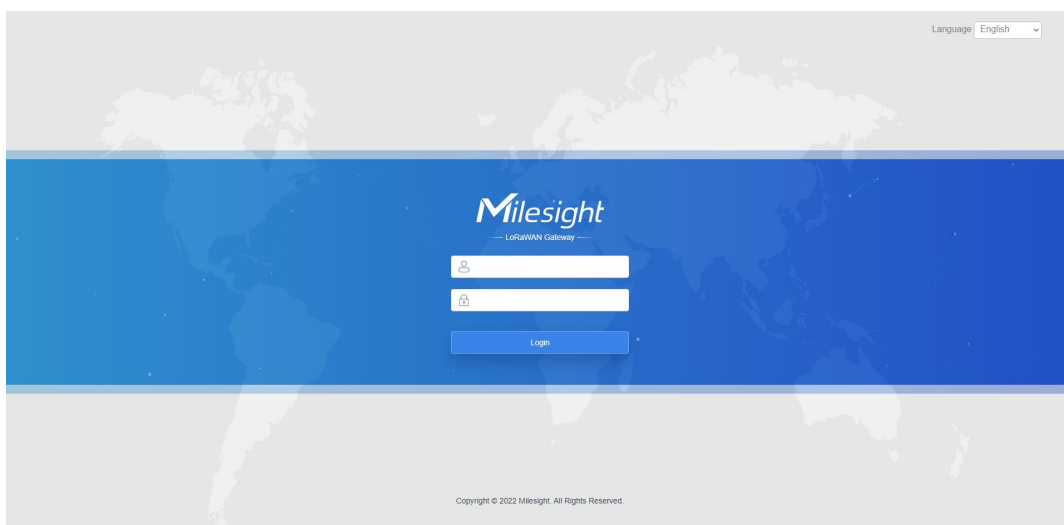
⚠️ **If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.**

E. After logging the web GUI, follow the guide to complete the basic configurations. It's suggested that you change the password for the sake of security.

Change Your Default Password

For your device security, please change the default password in time.

Old Password

New Password

Confirm New Password

Close Save

F. You can view system information and perform configuration of the gateway.

5. Network Connection

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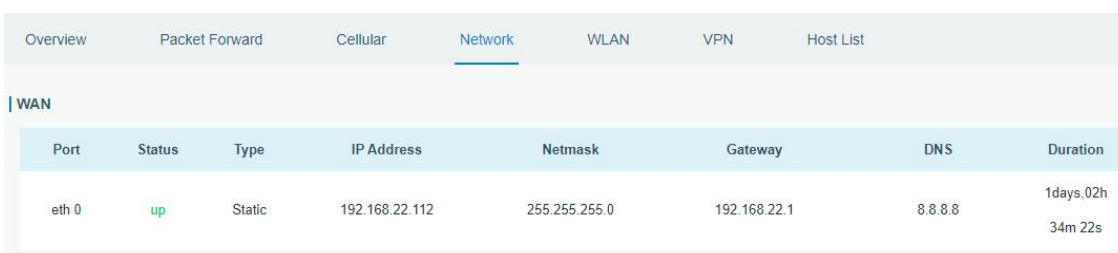
5.1 Configure the Ethernet Connection

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.

C. Connect Ethernet port of gateway to the 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 Wi-Fi Connection

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

B. Click "Scan" to search for Wi-Fi access points. Select the available one and click "Join Network".

C. Type the 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.

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.

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 light statically, it means SIM has dialed up successfully.
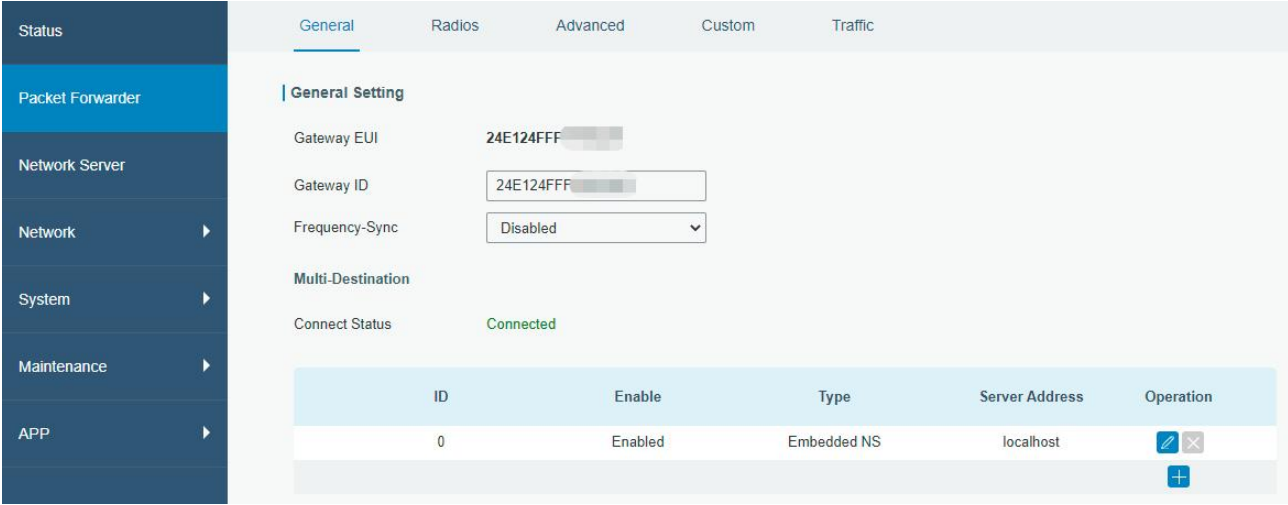
6. Packet Forwarder Configuration

UG has installed multiple packet forwarders including Semtech, Chirpstack-Generic MQTT broker, etc. This section explains how to connect the gateway to network servers.
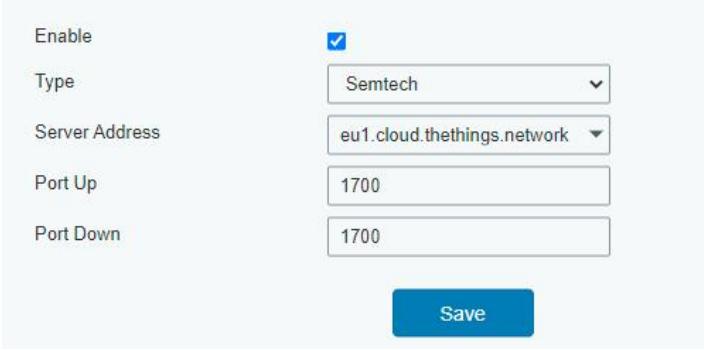
⚠ **Make sure the gateway connects to the network as shown in <u>Section 5</u>.**

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

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

C. Go to "Packet Forwarder" → "Radio" page, center frequency and channels. The channels of the gateway and network server need to be the same.

Region	US915

Name	Center Frequency/MHz
Radio 0	904.3
Radio 1	905.0

Multi Channels Setting

Enable	Index	Radio	Frequency/MHz
☑	0	Radio 0	903.9
☑	1	Radio 0	904.1
☑	2	Radio 0	904.3
☑	3	Radio 0	904.5
☑	4	Radio 1	904.7
☑	5	Radio 1	904.9
☑	6	Radio 1	905.1
☑	7	Radio 1	905.3

D. Add the gateway on network server page. For more details about the network server connection please refer to Milesight IoT Support portal.

E. Go to "Traffic" page to view the data communication of UG56.

| 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

UG56 can work as network server and transmit data to Milesight IoT Cloud or another platform via MQTT/HTTP/HTTPS.

⚠️ **Make sure the gateway connects to the network as shown in [Section 5](#).**

7.1 Connect UG56 to Milesight IoT Cloud

A. Go to "Packet Forwarder" → "General" page to enable the embedded network server.

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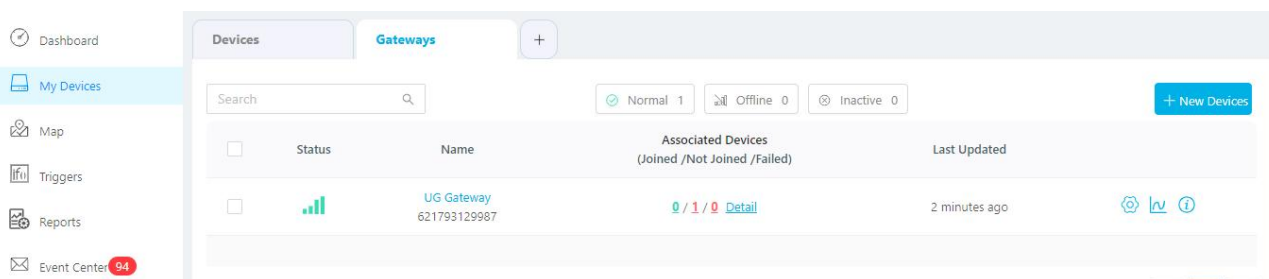

C. Go to "Network Server" → "General" page to enable the network server and "Milesight IoT Cloud" mode.
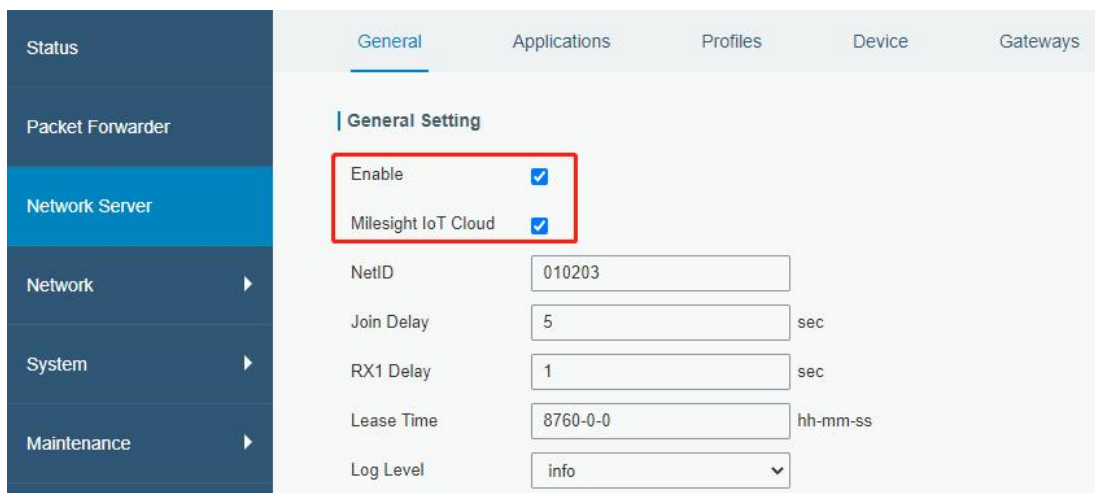
D. Log in the Milesight IoT Cloud. Then go to "My Devices" page and click "+New Devices" to add gateway to Milesight IoT Cloud via SN. Gateway will be added under "Gateways" menu.
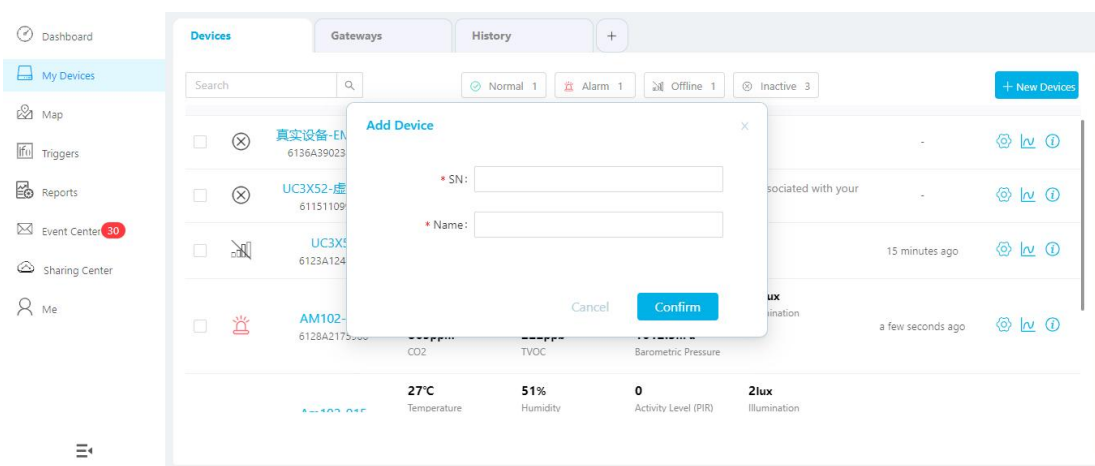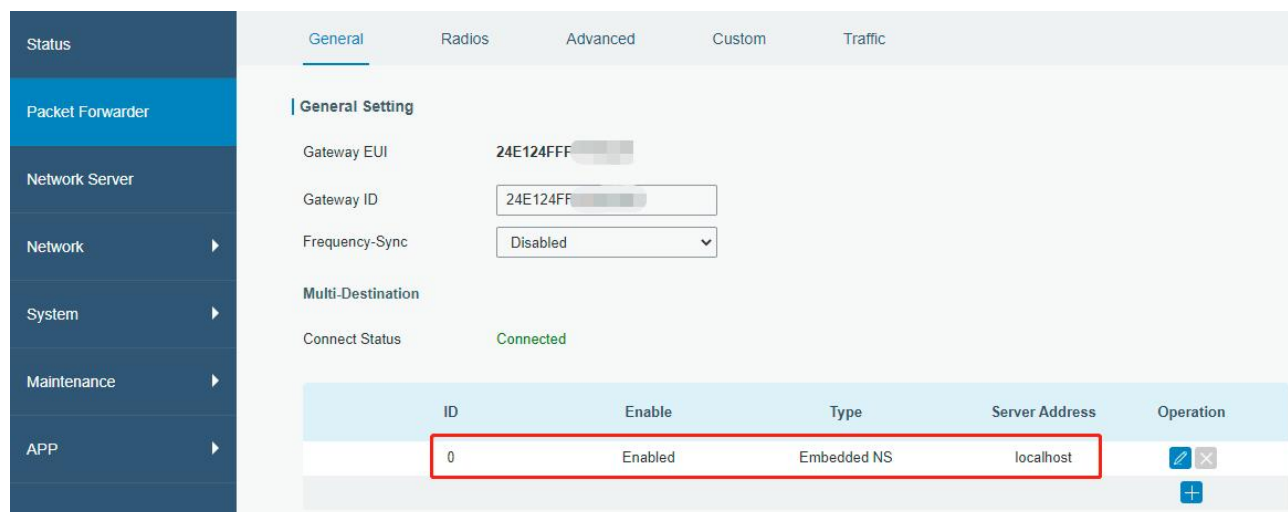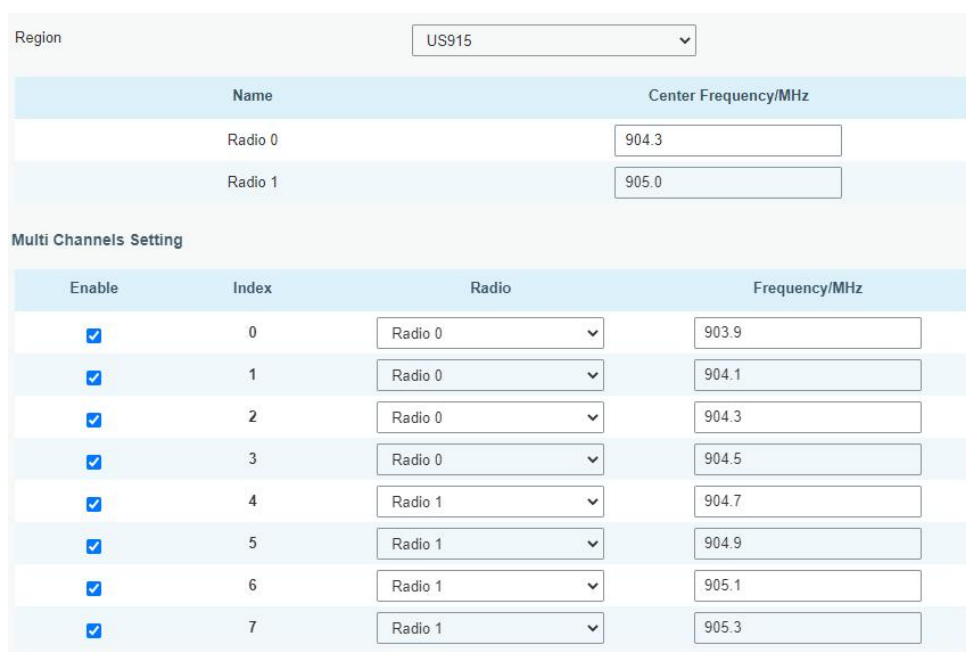

E. The gateway is online on Milesight IoT Cloud.

7.2 Connect UG56 to MQTT/HTTP Server

A. Go to "Packet Forwarder" → "General" page to enable the embedded network server.

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

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

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

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

You can also click "Bulk Import" if you want to add many nodes all at once.

Click "Template Download" to download template file and add device information to this file. Application

and device profile should be the same as you created on 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									
4									
5									

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.

| Network Server

Clear   Search 🔍

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]