Mini LoRaWAN® Gateway

UG63

User 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 disassembled or remodeled 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.

Declaration of Conformity

UG63 is in conformity with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.

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Revision History

Date	Doc Version	Description
Jan. 5, 2024	V 2.0	Initial version based on UG63 V2
April 3, 2025	V 2.1	1. Add embedded network server. 2. Compatible with ChirpStack v4 packet forwarder.

		3. Add packet forwarder data retransmission. 4. Add schedule reboot, ping tool and hostname. 5. Add protocol parameter to cellular configuration. 6. Add Proprietary Message filter.

Contents

1. Product Introduction

1.1 Overview

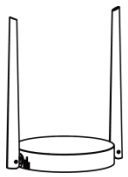
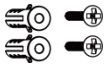
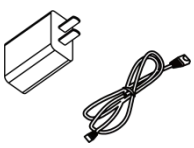
UG63 is an 8-channel lightweight indoor LoRaWAN® gateway. Adopting, the SX1302 chip, UG63 can set up packet forwarding connection between end nodes and mainstream network servers (such as The Things Network, ChirpStack, etc.). With its compact size and high performance, it is highly suitable for independent deployment of LoRaWAN® networks in small-scale scenarios or single spaces. It can also serve as a supplementary gateway, along with UG56/UG65/UG67 or other main gateways, to enhance LoRaWAN® signal coverage in large-scale scenarios by filling in signal blind spots. it is an ideal supplement for wide indoor areas such as offices, parking lots, campuses, etc.

1.2 Key Features

- Equip with SX1302 chip, handing a higher amount of traffic with lower consumption
- 8 half-duplex channels for more than 2000 end-nodes connections
- Small in size for easy carrying & deployment
- Desktop, wall, or ceiling mounting support
- Multi-backhaul backups with Ethernet and Cellular (4G)
- Cover the blind spot of LoRaWAN® network by transmitting data to Milesight UG56/UG65/UG67 controller gateways
- Compatible with mainstream network servers like The Things Industries, ChirpStack, AWS IoT Core for LoRaWAN®, etc.
- Built-in network server and MQTT API for easily integration
- Compatible with remote management system for simple deployment even in remote regions

2. Hardware Introduction

2.1 Packing List

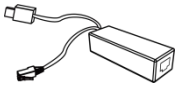

1 × UG63 Device

2 × Wall Mounting Kits

1 × Type-C Cable(1m) & Power Adapter

1 × Quick Guide

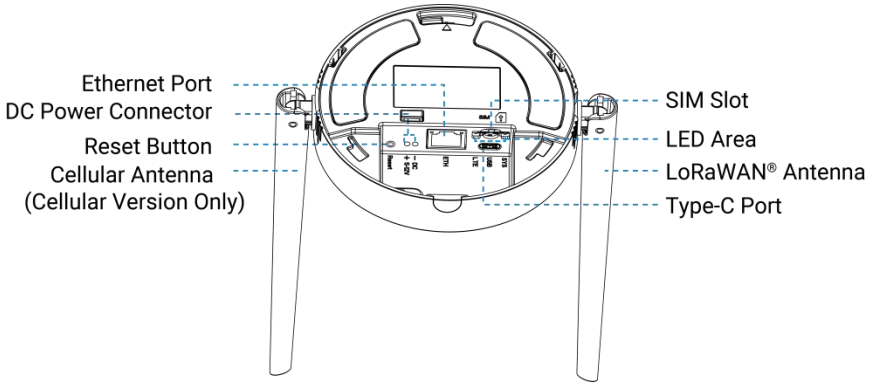
1 × Warranty Card



1 × PoE Splitter (Optional)

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

2.2 Hardware Overview



2.3 LED Indicator and Reset Button

LED Indicators

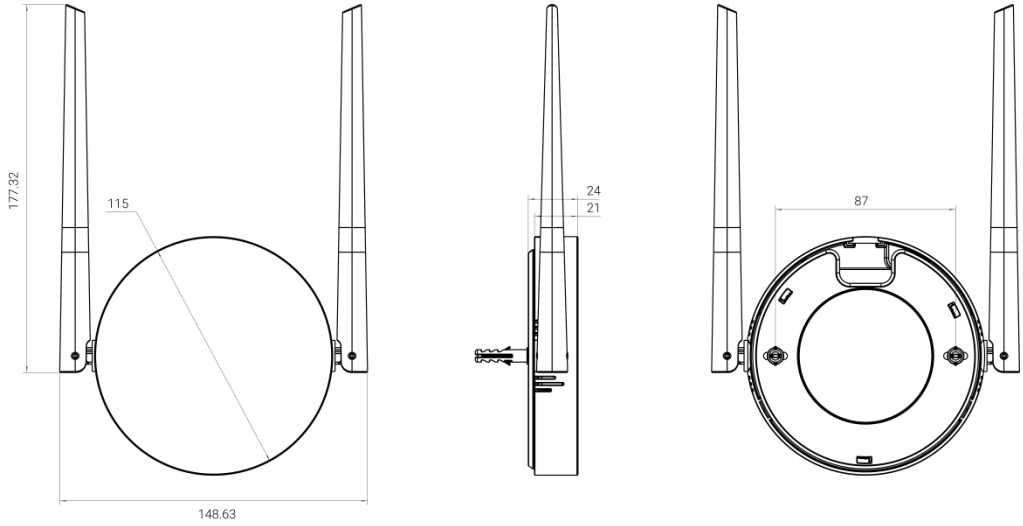
LED	Indication	Status	Description
SYS	Power & System Status	Off	The power is off
		Green Light	The system is running properly
		Red Light	The system goes wrong
LTE	Cellular Status	Off	SIM card is registering or failed to register (or there are no SIM cards inserted)
		Green Light	Blinking slowly: SIM 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
Ethernet Port	Link Indicator	Off	Disconnected or connect failure
		Yellow Blinking	Transmitting data

	Connection Indicator	Off	Ethernet port is disconnected
		Green Light	Ethernet port is connected

Reset Button

Function	Action	LED Indication
Reset to Factory Default	Press and hold the button for more than 5 seconds	SYS: blinks rapidly.

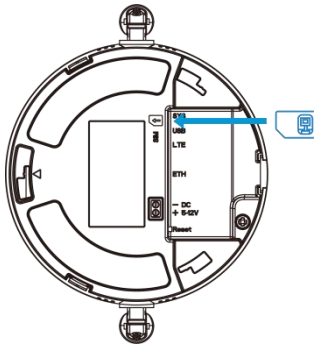
2.4 Dimensions (mm)



3. Hardware Installation

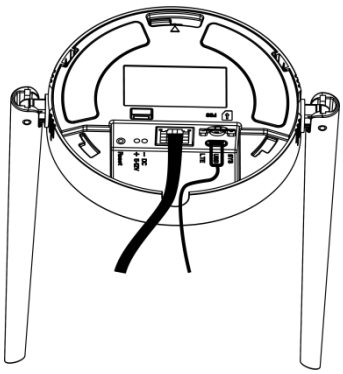
3.1 SIM Card Installation (Cellular Version Only)

Insert the micro (3FF) SIM card into the device according to arrows as follows. If you need to take out the SIM card, press the SIM card and it will pop up automatically.

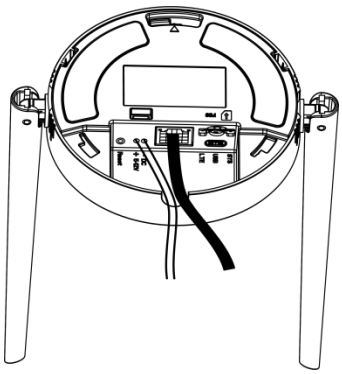


3.2 Power Supply

UG63 can be powered by USB (5V) or a DC power connector (5-12V) by default. When installing the power cables, pass them with Ethernet cables through the groove.

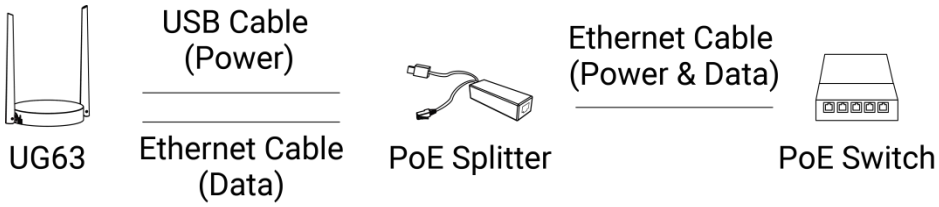


USB Powered



DC Powered

Additionally, it can also be powered by an 802.3af standard PoE source via a PoE splitter.



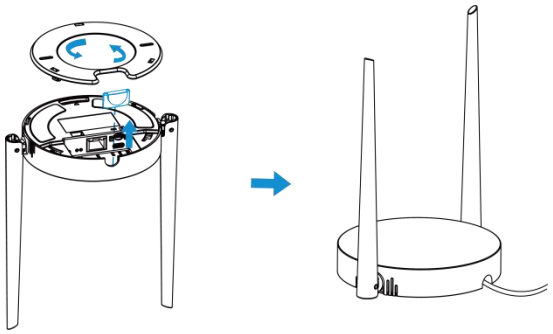
3.3 Gateway Installation

UG63 supports multiple installation methods like desktop, wall mounting, ceiling mounting, etc. Before you start, make sure that all cables have been installed and configurations are completed.

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

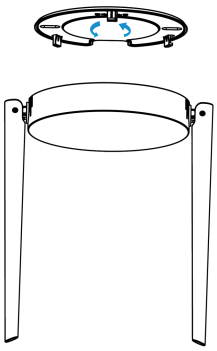
3.3.1 Desktop

Take off the baffle and mounting plate on the back of the device, then you can place the device on the desktop.

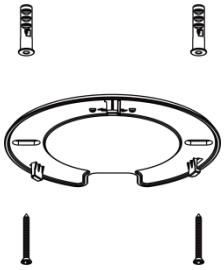


3.3.2 Wall/Ceiling Mounting

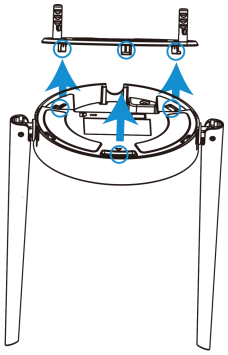
1. Take off the mounting plate on the back of the device.



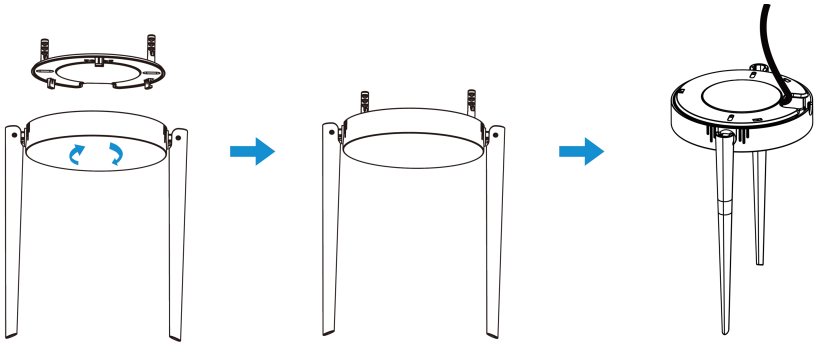
2. Align the mounting plate horizontally to the desired position on the wall or ceiling to mark two mounting holes, drill two holes as these marks, and insert wall plugs into the holes respectively.



3. Fix the mounting plate to the wall plugs with screws.



4. Turn the device clockwise to lock it to the mounting plate.



4. Access the Gateway

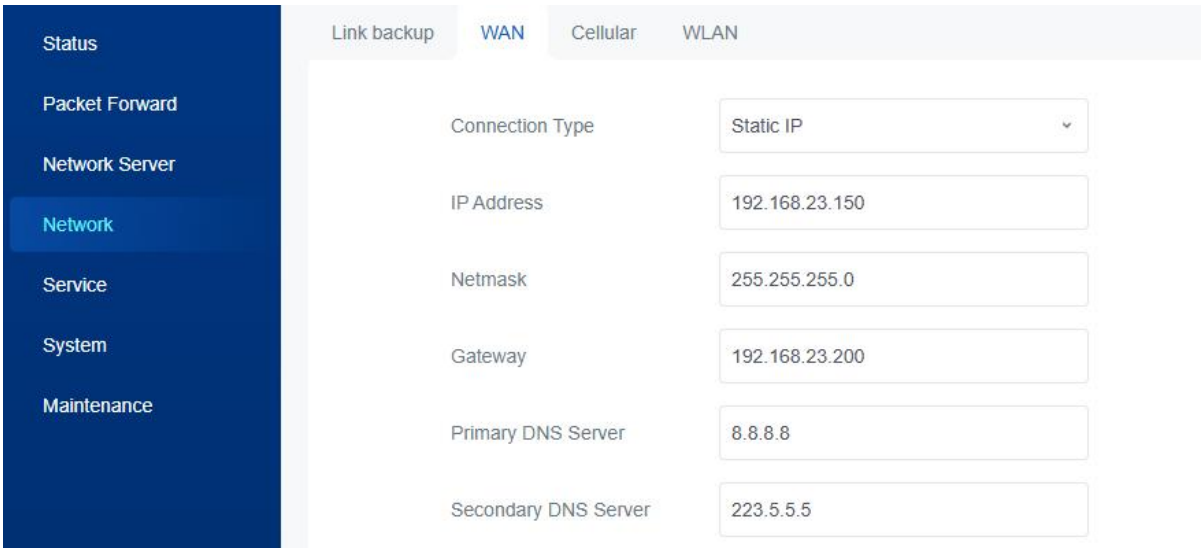
UG63 provides user-friendly web GUI for configuration and users can get access to it via Wi-Fi. The default settings are listed below:
Wi-Fi SSID: **Gateway_XXXXXX** (can be found on the label)
Wi-Fi IP Address: **192.168.1.1**
Browser: **Chrome (Recommended)**
Username: **admin**
Password: **password**

Configuration Steps:
Step 1: Enable the Wireless Network Connection on your computer and search for the corresponding access point, then connect the computer to this access point.
Step 2: Open the browser and type 192.168.1.1 to access the web GUI.
Step 3: Select the language.
Step 4: Enter the default username and password to log in the web GUI.

Step 5: It is suggested to follow the wizard to complete basic settings. Users can also skip all steps or exit the wizard to configure the device.
1) Configure the Link Failover settings to decide the main link as required and ping detection settings. For details please refer to Link Backup chapter.
2) Configure the Ethernet WAN settings to set up network access as required. For details please refer to WAN chapter.
3) Configure the cellular network settings to set up cellular connections. Usually, it is necessary to type the APN parameter to register to cellular networks. For details please refer to Cellular chapter.
4) Configure correct system time. For details please refer to Time chapter.
5) Configure the device to connect a LoRaWAN® network server. For details please refer to Packet Forward-General chapter.
6) Configure the packet filter. For details please refer to Packet Forward-Packet Filters chapter.
7) Configure the WLAN settings. For details please refer to WLAN chapter.
8) Change a device password for security.

Note: The connection type of Ethernet port is DHCP by default. UG63 also supports wired access if you select the connection type of Ethernet port as static IP and assign an IP address to Ethernet port.

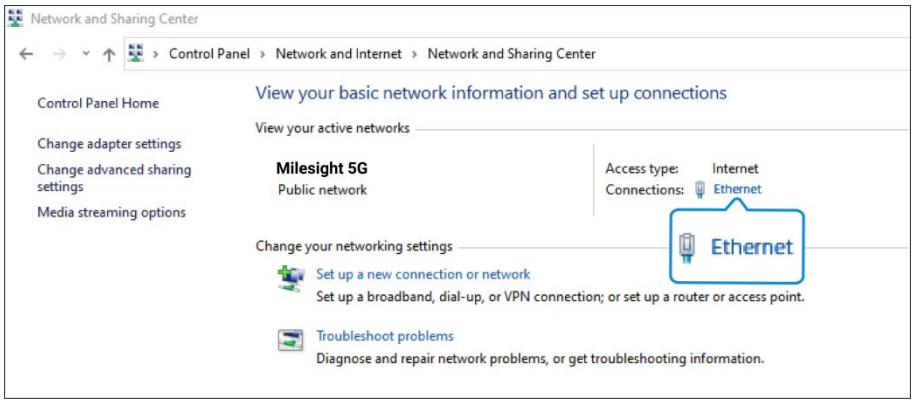
Step 1: Go to **Network > WAN** page to select connection type as **Static IP** and configure an IP address for the Ethernet WAN port.



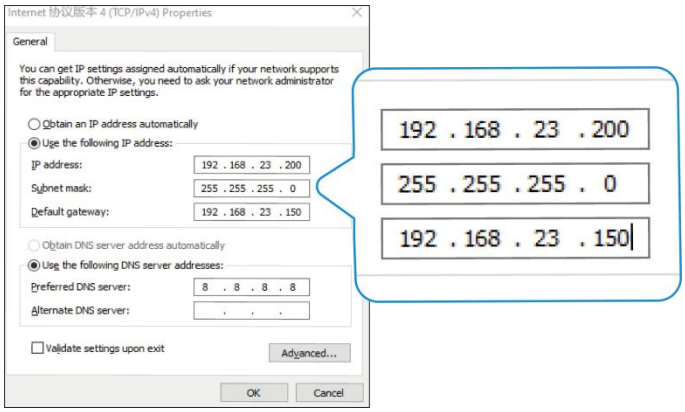
Step 2: Connect computer to Ethernet port of UG63 directly or via switch.

Step 3: Assign the IP address to computer manually. Take Windows 10 system as an example,

A. Go to "Control Panel" → "Network and Internet" → "Network and Sharing Center", then click "Ethernet" (It may have different names).



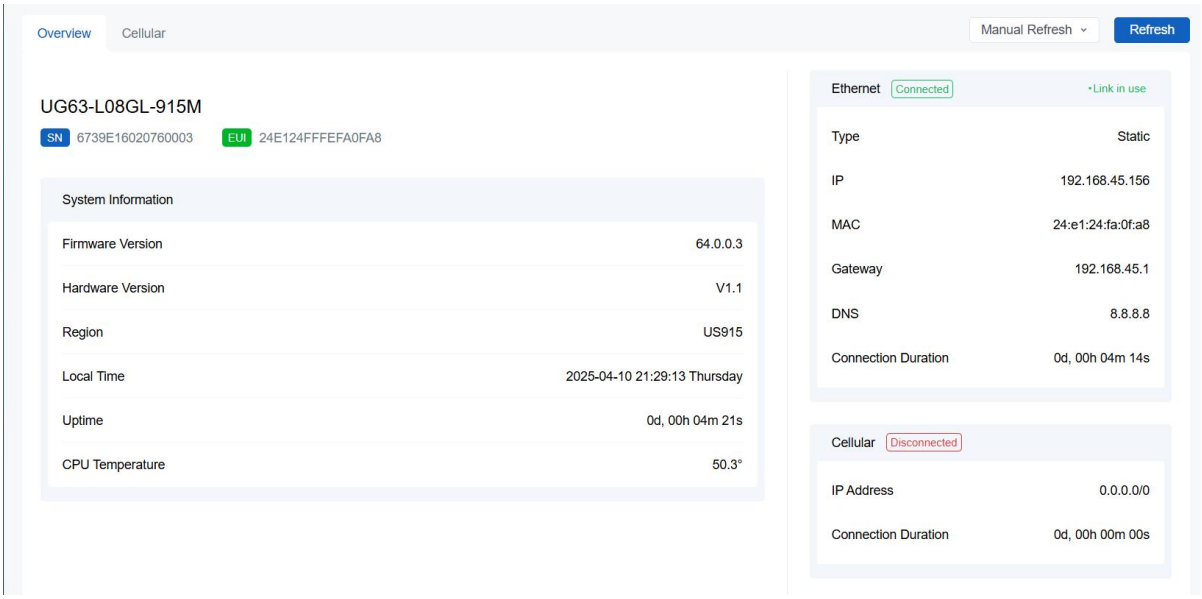
B. Go to "Properties" → "Internet Protocol Version 4 (TCP/IPv4) "and select "Use the following IP address", then assign a static IP manually within the same subnet of UG63.



Step 4: Open the browser and type the IP address of Ethernet port to access the web GUI.

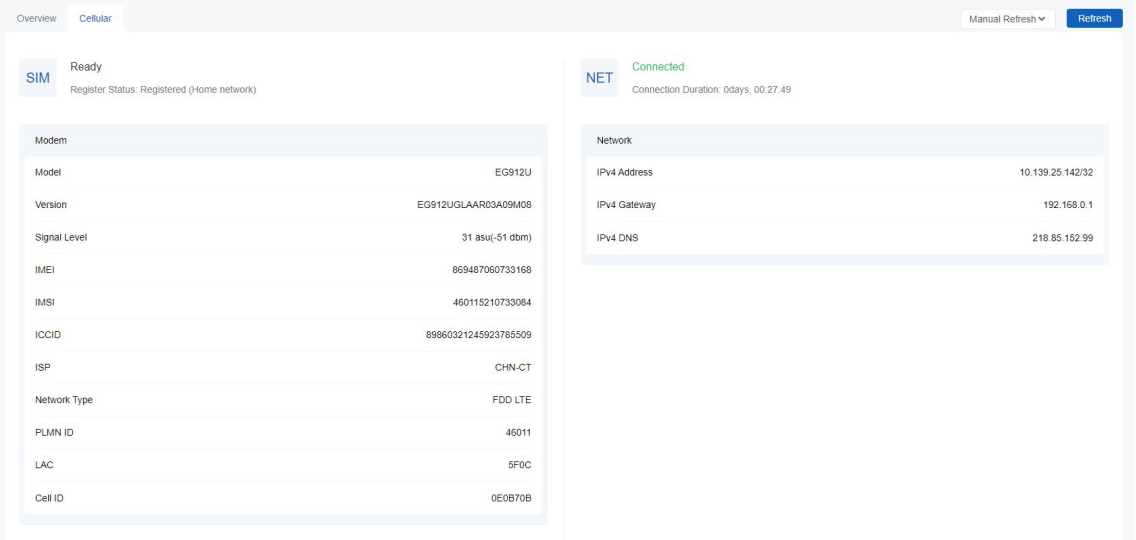
5. Operation Guide

5.1 Status



Overview	
Parameters	**Description**
Model	The whole model name of the gateway.
SN	The serial number of the gateway.
EUI	The unique identifier of the gateway and it's non-editable.
System Information	
Firmware Version	The current firmware version of the gateway.
Hardware Version	The current hardware version of the gateway.

Region	The LoRaWAN® frequency of the gateway. This can be changed on **Packet Forward > Radios** page.
Local Time	The current local time of the system.
Uptime	The information on how long the gateway has been running.
CPU Temperature	The temperature of CPU.
Ethernet	
Type	The latitude of the location.
IP	The IP address of Ethernet port.
MAC	The MAC address of the Ethernet port.
Gateway	The upper gateway address of the Ethernet port.
DNS	The DNS server address of the Ethernet port.
Connection Duration	The information on how long the Ethernet network has been connected.
Cellular (Cellular Version Only)	
IP Address	The IP address of cellular network.
Connection Duration	The information on how long the cellular network has been connected.
WLAN	
SSID	The SSID of the WLAN access point.
LoRaWAN Packet Forward	
Server Type	The LoRaWAN® packet forward connection type.
Server Address	The LoRaWAN® network server address. When server type is Basic Station, this will show LNS URI and CUPS URI.



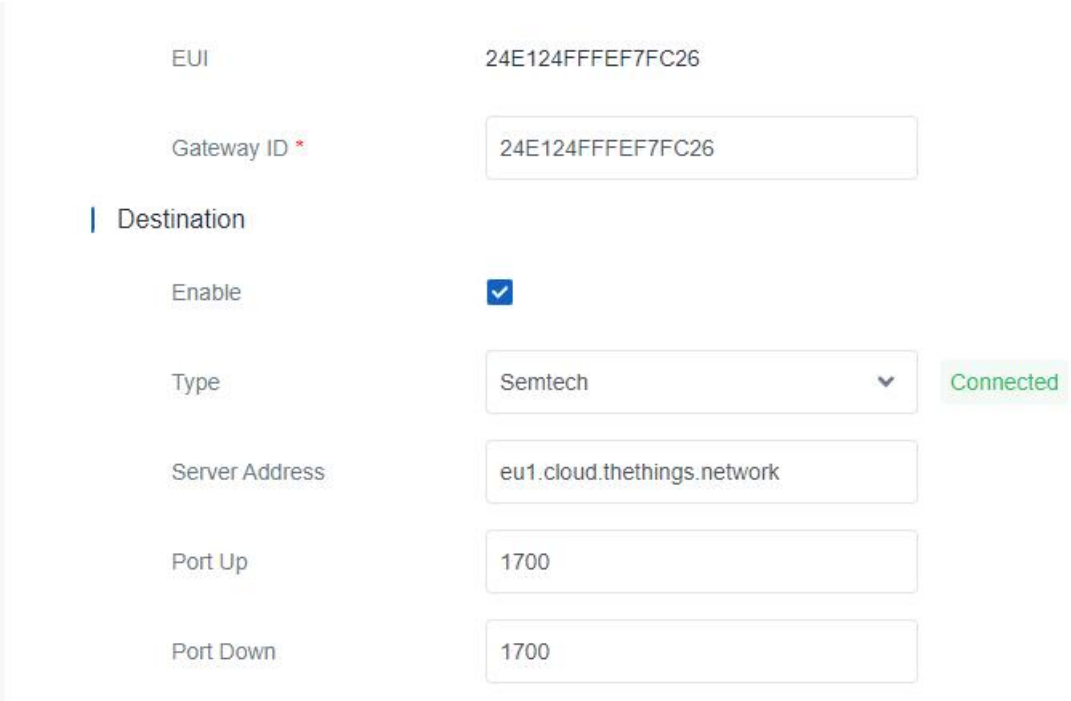
Cellular (Cellular Version Only)	
Parameters	**Description**
Modem	
SIM Status	Corresponding detection status of module and SIM card. ● No SIM Card: the SIM card is not inserted ● SIM Card Error: the SIM card is error ● PIN Error: the PIN code is error ● PIN Required: the SIM card requires to type PIN code ● PUK Required: the SIM card requires to be unlocked by PUK code ● No Signal: no cellular signal ● Ready: the SIM card is inserted ● Down: the SIM card is deactivated
Register Status	The registration status of SIM card.
Model	The name of cellular module.
Version	The firmware version of cellular module.
Signal Level	The RSSI (Received Signal Indicator) of registered cellular network.
IMEI	The IMEI of the cellular module.
IMSI	The IMSI of the SIM card.
ICCID	The ICCID of the SIM card.
ISP	The network provider on which the SIM card registers.
Network Type	The connected network type, such as FDD LTE.
PLMN ID	The current PLMN ID, including MCC, MNC, LAC and Cell ID.
LAC	The location area code of the SIM card.
Cell ID	The Cell ID of the SIM card location.
Network	
Connection Status	The connection status of the cellular network.
Connection Duration	The information on how long the cellular network has been connected.
IPv4 Address	The IPv4 address of the cellular network.
IPv4 Gateway	The IPv4 gateway of the cellular network.
IPv4 DNS	The IPv4 DNS sever of the cellular network.

5.2 Packet Forward

UG63 supports to work as a packet forwarder to set up communication between LoRaWAN® end

devices and LoRaWAN® network server.

5.2.1 General

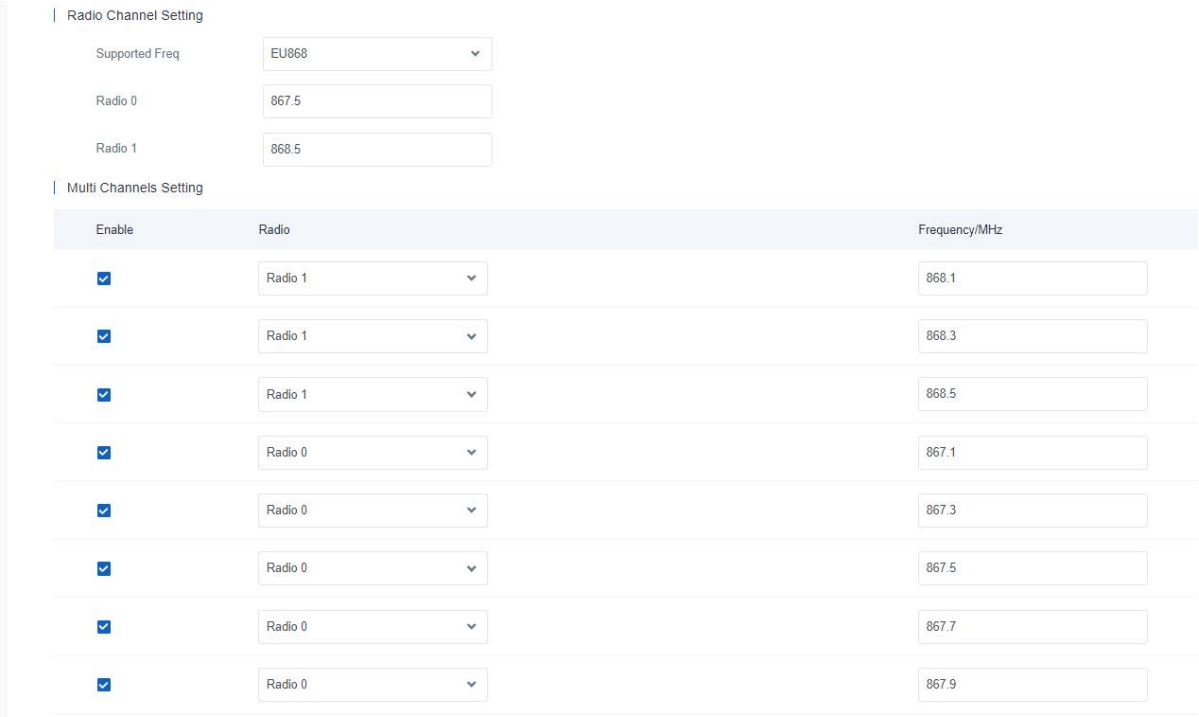


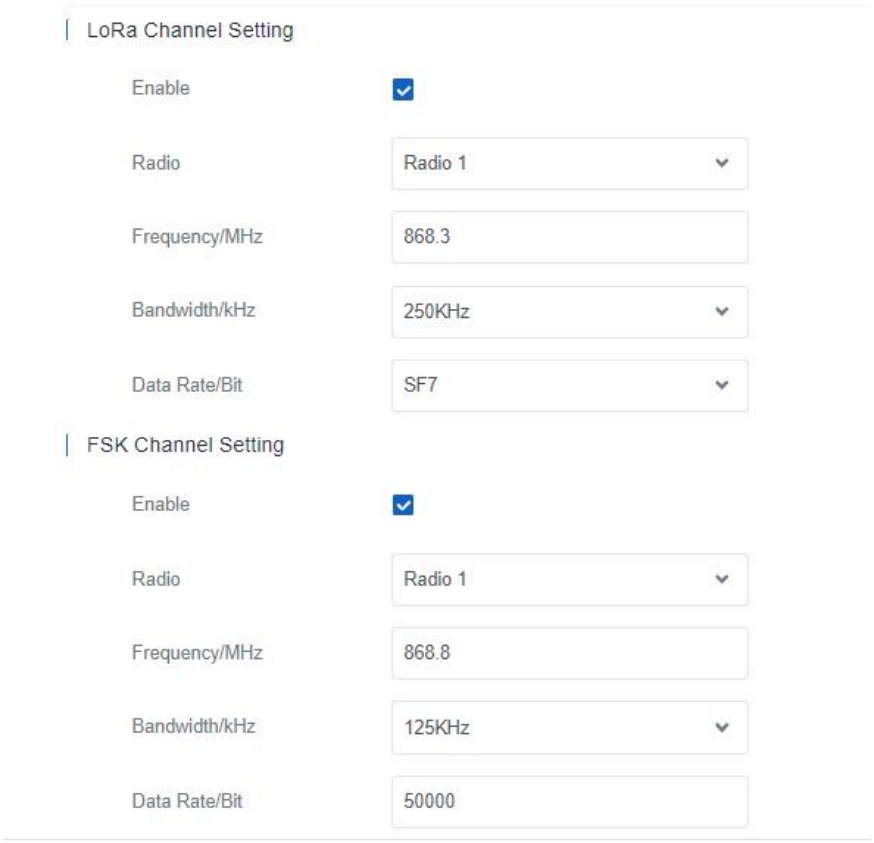
General	
Parameters	**Description**
EUI	The unique identifier of the gateway and it's non-editable.
Gateway ID	The customizable ID for registering gateway to network server, such as The Things Network. It is the same as gateway EUI by default.
Destination	
Enable	Enable or disable the packet forward feature.
Type	Select packet forward type among Semtech, Chirpstack-Generic, Basic Station, Remote Embedded NS, DeviceHub LNS or Milesight Development Platform LNS. **Semtech:** connect to network server through the Semtech UDP protocol. It supports to connect to most mainstream network servers. **Chirpstack-Generic:** connect to Chirpstackv3 via generic MQTT gateway bridge. **Chirpstack-v4:** connect to Chirpstackv4 via MQTT forwarder. **Basic Station:** connect to network server through TCP protocol. When configuring, there is no need to configure both LNS and CUPS settings. **Remote Embedded NS:** connect to embedded network server of Milesight UG65/UG67/UG56 gateways. **Embedded NS:** connect to the embedded network server. **DeviceHub LNS:** connect to Milesight DeviceHub LNS. This needs to select and enable DeviceHub 2.0 option on **Service** page and type the platform

	address. **Milesight Development Platform LNS:** connect to Milesight Development Platform LNS. This needs to select and enable Milesight Development Platform option on **Service** page and add the gateway to your platform account.
Semtech	
Server Address	The LoRaWAN® network server IP address or domain.
Port Up	The UDP port to forward uplinks from end device to network server.
Port Down	The UDP port to forward downlinks from network server to end device.
Data Retransmission	When network is disconnected, the device supports to store up to 500 pieces of Uplink type packets and re-transmit the data to network server after network recovery. **Note:** The device will not save Join Request packets.
Basic Station	
URI	The URL of LoRaWAN® network server. Please type as below format and replace *<server-address>* and *<port>* as real server address and server port. **LNS URI:** *wss://<server-address>:<port>* or *ws://<server-address>:<port>* **CUPS URI:** *https://<server-address>:<port>*
CA File	CA certificate to secure the server domain. **Note:** change the certificate file format as *.trust* before import.
Client Certificate File	Client certificate file to verify the identity of the gateway.
Client Key File	Private key file to verify the identity of the gateway.
Data Retransmission	When network is disconnected, the device supports to store up to 500 pieces of Uplink type packets and re-transmit the data to network server after network recovery. **Note:** The device will not save Join Request packets.
ChipStack-Generic/ChirpStack-v4	
Server Address	The LoRaWAN® network server IP address or domain.
MQTT Port	The LoRaWAN® network server port.
Region ID	The region ID for ChirpStack-v4 server. This value will be typed automatically when changing the **Supported Freq** on **Packet Forward > Radios** page.
User Credentials	After enabled, username and password are required to type for verification.
TLS Authentication	Select “Self signed certificates” or “CA signed server certificate”. **CA signed server certificate:** verify with the certificate issued by Certificate Authority (CA) that pre-loaded on the device. **Self signed certificates:** upload the custom CA certificates, client certificates and secret key for verification.
Data Retransmission	When network is disconnected, the device supports to store up to 500 pieces of Uplink type packets and re-transmit the data to network server after

	network recovery. **Note:** The device will not save Join Request packets.
Remote Embedded NS	
Server Address	The IP address or domain name of Milesight controller gateway.
MQTT Port	The communication port to Milesight controller gateway.
Data Retransmission	When network is disconnected, the device supports to store up to 500 pieces of Uplink type packets and re-transmit the data to network server after network recovery. **Note:** The device will not save Join Request packets.

5.2.2 Radios





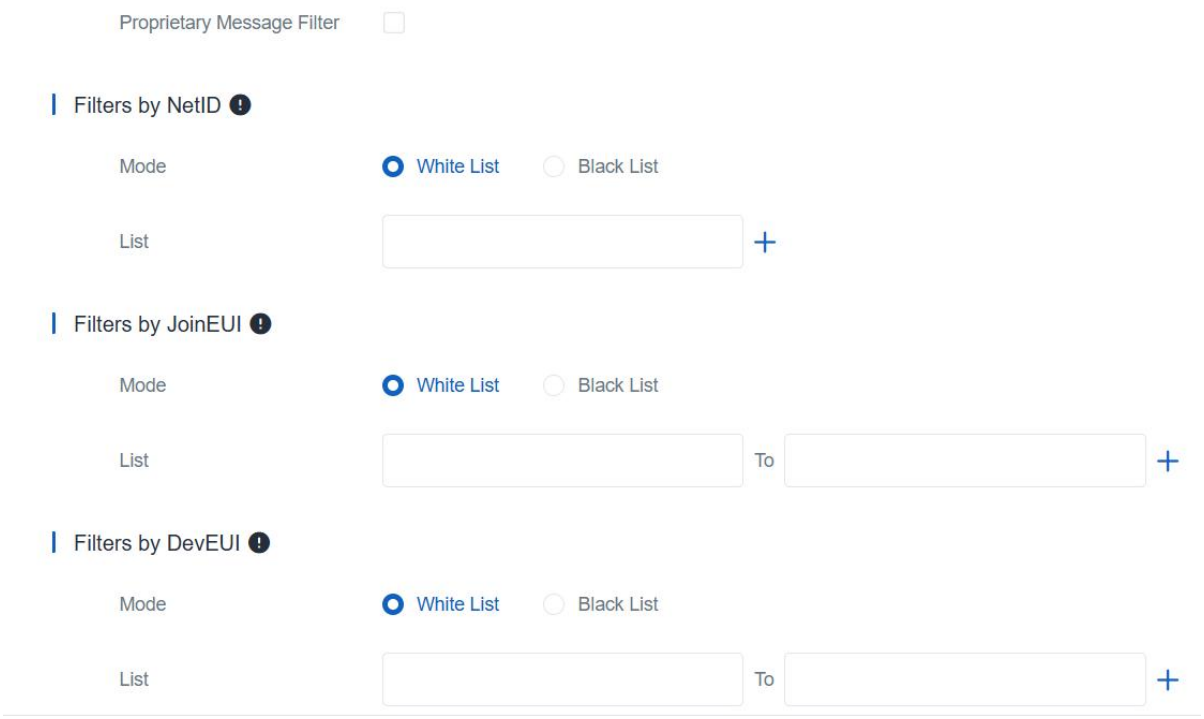
Radios	
Parameters	**Description**
Radio Channel Setting	
Supported Freq	The LoRaWAN® frequency plan used for the uplink and downlink frequencies and datarates. Available options depend on the gateway's model: **-470M:** CN470 **-868M:** EU868, RU864, IN865 **-915M:** US915, AU915, KR920, AS923-1&2&3&4
Radio 0/Radio 1	The center frequencies to receive packets from LoRaWAN® nodes.
Multi Channels Setting	
Enable	Enable or disable this channel to transmit packets.
Radio	Choose Radio 0 or Radio 1 as the center frequency.
Frequency/MHz	Set the frequency of this channel. Range: center frequency ± 0.4625.
LoRa/FSK Channel Setting	
Enable	Enable or disable this channel to transmit packets.
Radio	Choose Radio 0 or Radio 1 as the center frequency.
Frequency/MHz	Set the frequency of this channel.
Bandwidth/kHz	Set the bandwidth of this channel.

Data Rate/Bit	Set the data rate.

5.2.3 Packet Filters

UG63 supports to filter uplink packets via different conditions to reduce network congestion, save network traffic and ensure the safe operations.

Note: When the destination type is Embedded NS, this feature will not work.



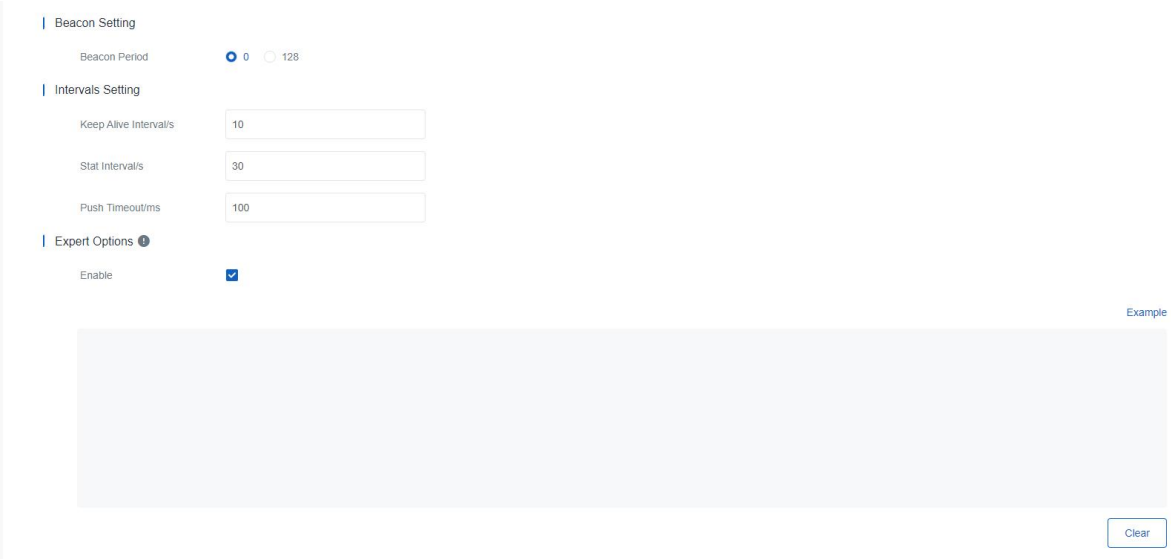
Packet Filters	
Parameters	**Description**
Proprietary Message Filter	Enable to not forward the proprietary message packets (Mtype=111).
Filters by NetID	Forward/Not forward the uplink packets that meet the NetID.
Filters by JoinEUI	Forward/Not forward the join request packets that meet the JoinEUI range.
Filters by DevEUI	Forward/Not forward the join request packets that meet the DevEUI range.
Mode	Select the filter mode as black list or white list. **White List:** Only forward the packets in this list to the network server. **Black List:** Only forward the packets except this list to the network server.
List	Set the specific filtering value or range list. Every condition supports to add 5 lists at most.

Note:

1. When join EUI and devEUI are both configured, only packets that meet both conditions will be forwarded.

2. When a third-party network server assigns filter condition to gateway, the gateway will use network server settings in priority.

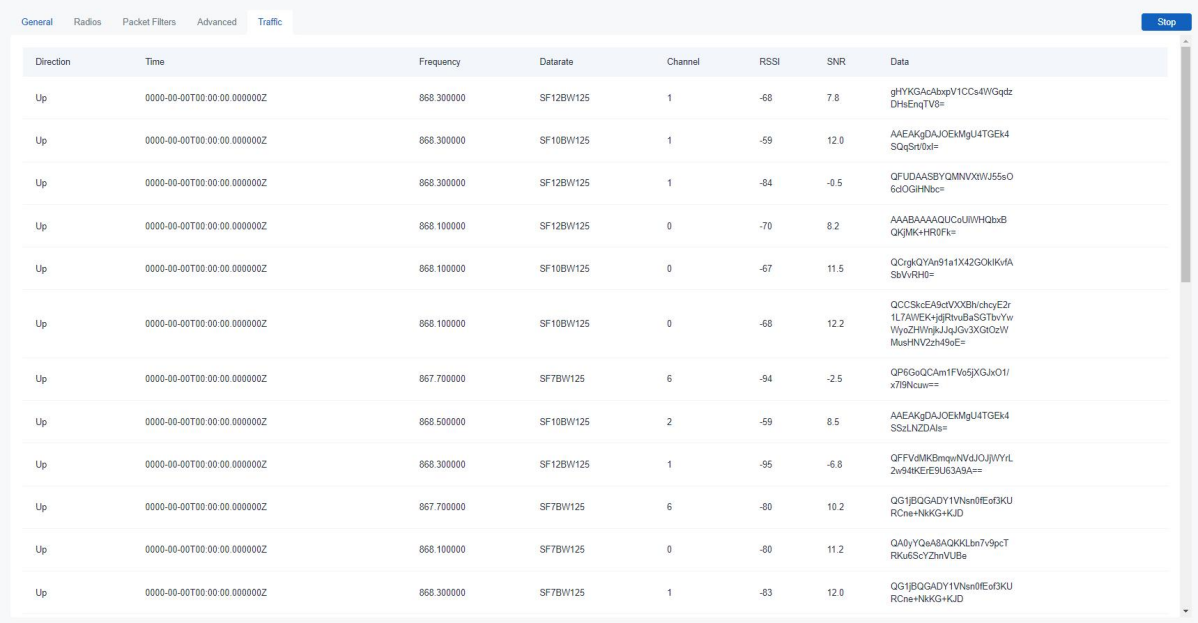
5.2.4 Advanced



Advanced	
Parameters	**Description**
Beacon Setting	
Beacon Period	Interval of gateway sending beacons for Class B device time synchronization. 0 means the gateway will not send beacons. Please select the value as 128 if end device type is Class B.
Intervals Setting	
Keep Alive Interval/s	The interval of keepalive packet which is sent from gateway to network server to keep the connection stable and alive.
Start Interval/s	The interval to update the network server with gateway statistics.
Push Timeout/ms	The timeout to wait for the response from server after the gateway sends data.
Expert Options	
Enable	After enabled, the device supports customizing the configuration file to configure packet forwarder and customized configuration will overwrite the packet forward configurations of web GUI. To customize configuration file with correct format, click “Example” to go to reference page.

5.2.5 Traffic

UG63 supports to display latest 30 pieces of traffic received from end devices or network server.

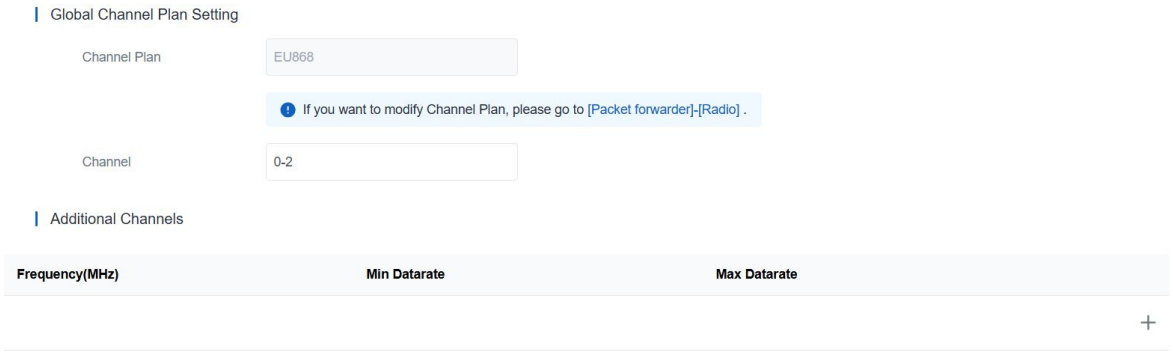


Traffic	
Parameters	**Description**
Fresh/Stop	**Fresh:** click to fresh this page to update latest data automatically. **Stop:** click to stop fresh this page to update latest data.
Direction	The transmission direction of this packet.
Time	The receiving time of this packet.
Frequency	The frequency of receiving or sending this packet.
Datarate	The datarate of this packet.
Channel	The frequency channel of receiving or sending this packet.
RSSI	The received signal strength of this packet.
SNR	The signal-to-noise ratio of this packet.
Data	The encrypted data of this packet.

5.3 Network Server

UG63 supports to work as a LoRaWAN® network server when the packet forwarder type is selected to **Embedded NS**.

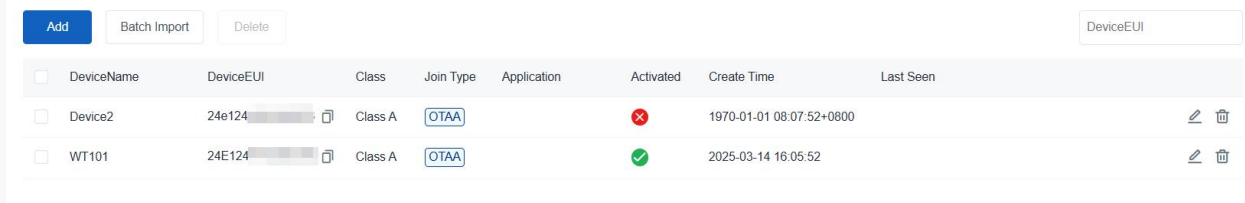
5.3.1 General Setting



General	
Parameters	**Description**
Channel Plan	Show the LoRaWAN® frequency plan used for the uplink and downlink frequencies and data rates.
Channel	Allow end devices to communicate with specific frequency channels. Leaving it blank means using all the default standard usable channels specified in the LoRaWAN® regional parameters document. It allows entering the index of the channels. **Examples:** 1, 40: Enabling Channel 1 and Channel 40 1-40: Enabling Channel 1 to Channel 40 1-40, 60: Enabling Channel 1 to Channel 40 and Channel 60
Additional Channels	For some regional variants, if allowed by your LoRaWAN® region, you can use Additional Plan to configure additional channels undefined by the LoRaWAN® Regional Parameters, like EU868 and KR920.

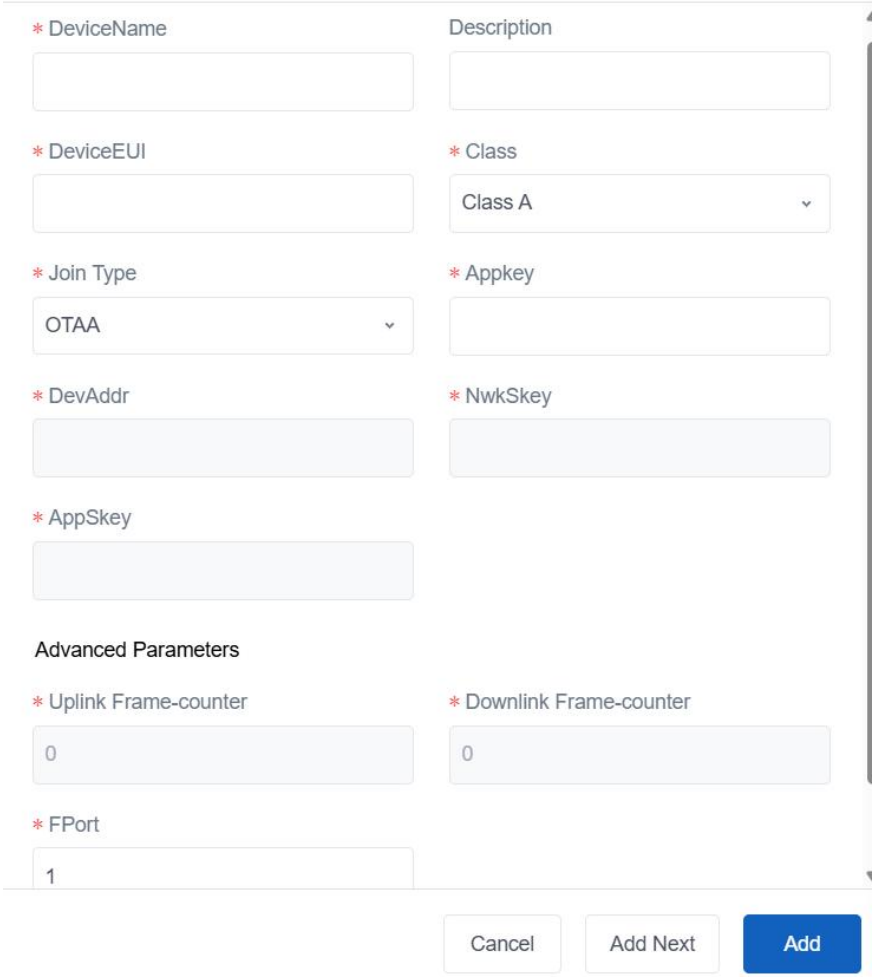
5.3.2 Devices

A device is the end-device connecting to, and communicating over the LoRaWAN® network. The gateway supports to add 20 devices at most.



Devices	
Parameters	**Description**
Add	Click to add a device.
Batch Import	Click to add bulk devices. You can download and adjust the template file, and then upload the file to add multiple devices.
Delete	Check the boxes of devices to delete.
Device Name	Show the name of the device.

Device EUI	Show the EUI of the device.
Class	Show the class type of the device.
Join Type	Show the join type of the device.
Application	Show the name of the device's application.
Activated	Show the network status of the device.
Create Time	Show the create time of the device.
Last Seen	Show the time of the last packet received.
Operation	Edit or delete the device.



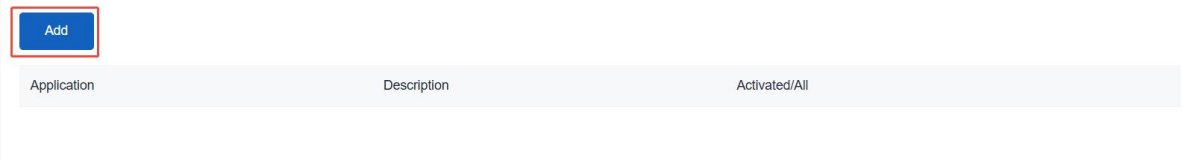
Add Device Configuration	
Parameter	**Description**
Device Name	Enter the name of this device.
Description	Enter the description of this device.
Device EUI	Enter the EUI of this device.
Class	Choose class type as Class A or Class C.
Join Type	Choose join type as OTAA or ABP.
App Key	Whenever an end-device joins a network via over-the-air activation, the application key is used for derive the Application Session key.
Dev Addr	The device address identifies the end-device within the current network.
NwkS Key	The network session key is specific for the end-device. It is used by

	the end-device to calculate the MIC or part of the MIC (message integrity code) of all uplink data messages to ensure data integrity.
AppS Key	The AppSKey is an application session key specific for the end-device. It is used by both the application server and the end-device to encrypt and decrypt the payload field of application-specific data messages.
Uplink Frame-counter	The number of data frames that sent uplink to the network server. It will be incremented by the end-device and received by the end-device. Users can reset a personalized end-device manually, then the frame counters on the end-device and the frame counters on the network server for that end-device will be reset to 0.
Downlink Frame-counter	The number of data frames which received by the end-device downlink from the network server. It will be incremented by the network server. Users can reset a personalized end-device manually, then the frame counters on the end-device and the frame counters on the network server for that end-device will be reset to 0.
FPort	Enter the downlink port of device, it's 85 by default for Milesight devices.
Frame-Counter Validation	If disable the frame-counter validation, it will compromise security as it enables people to perform replay-attacks.

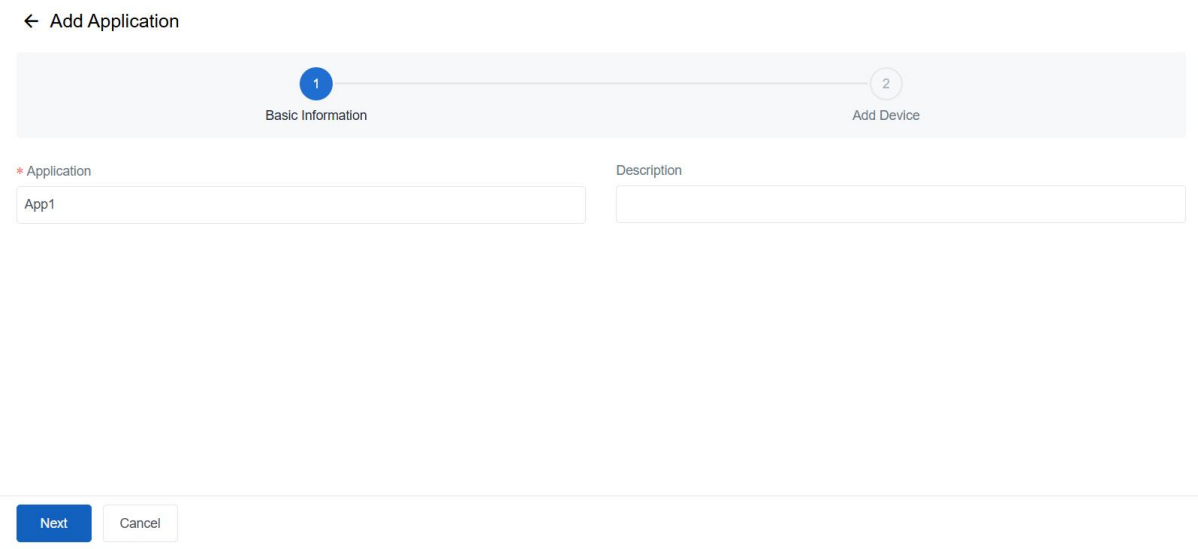
5.3.3 Application

An application is a collection of devices with the same purpose/of the same type. Users can add a series of devices to the same application which needs to send to the same server. The gateway supports to add 5 applications at most and every application can only connect to one MQTT broker.

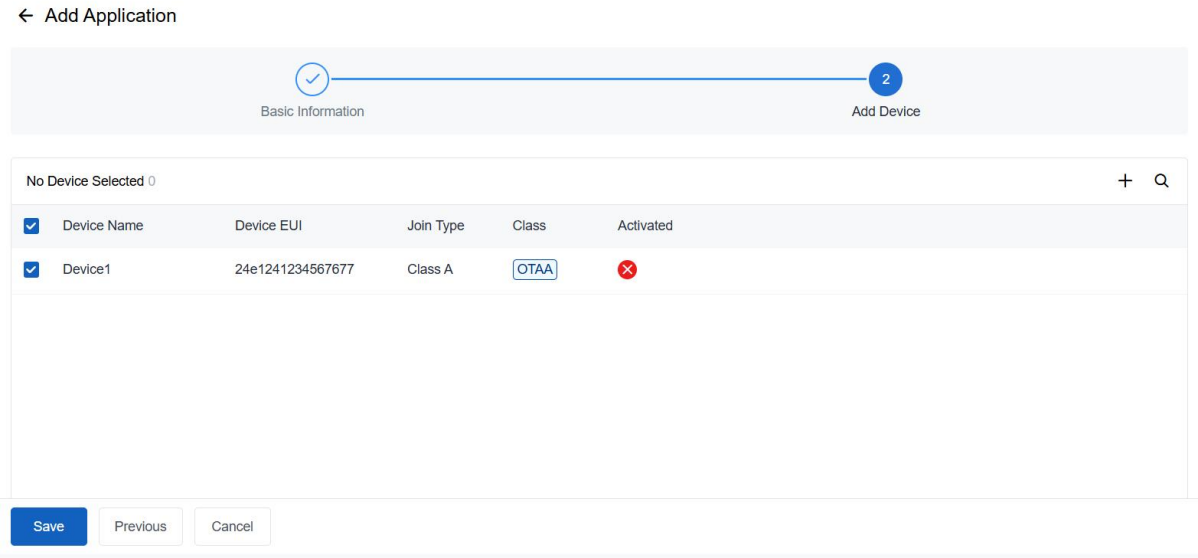
1. Click **Add** to add an application.



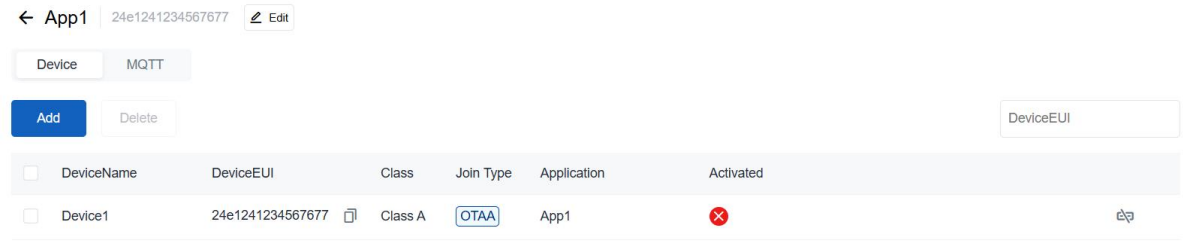
2. Customize an application name and type the description, then click **Next**.



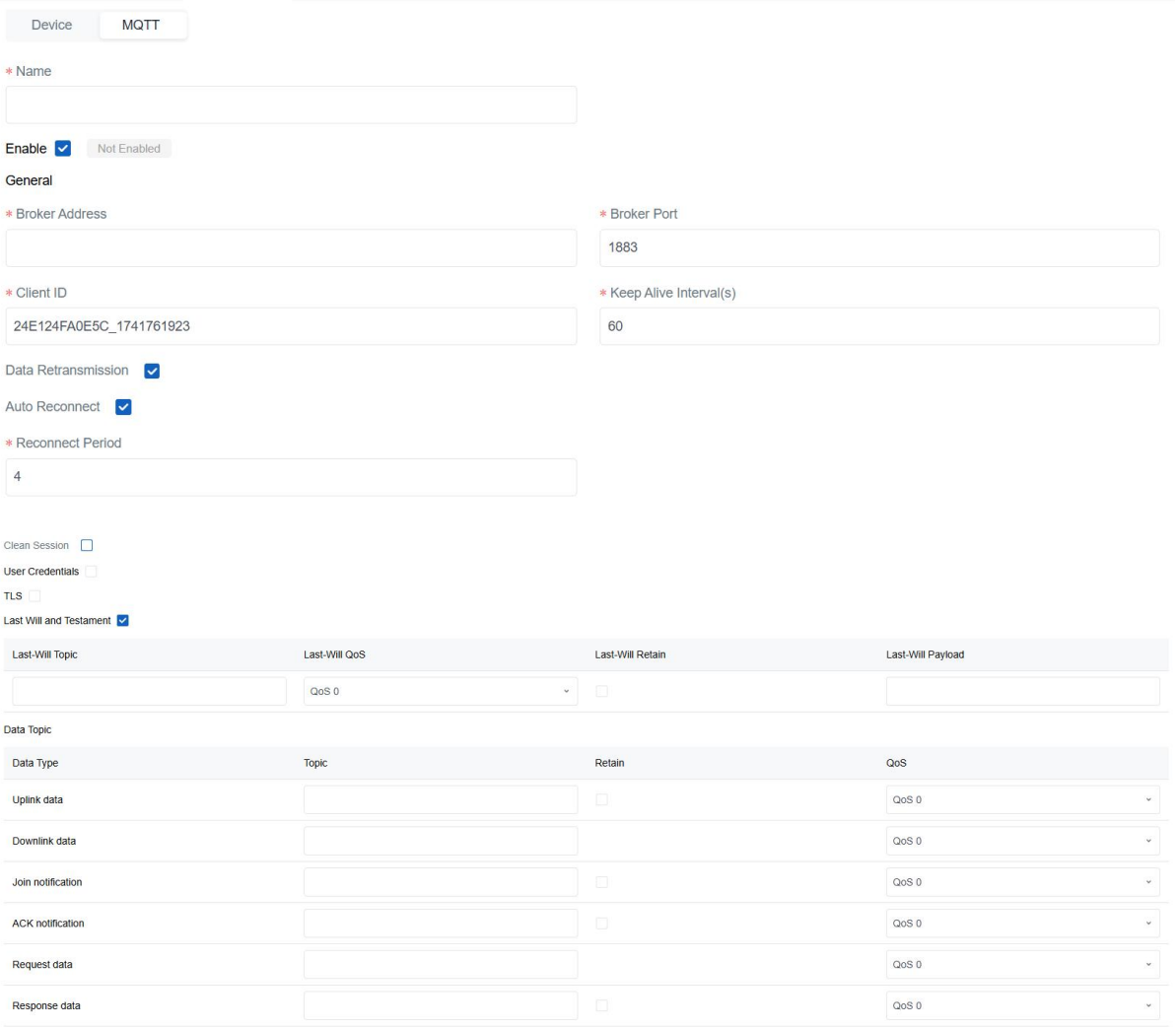
3. Select the devices to add to this application, then click **Save**. You can also click "+" to add a new device to this list if there is not suitable device.



4. Go to **Device** page to add or delete the devices in this application.



5. Go to **MQTT** page to configure the MQTT broker information to set up the communication between end devices and the MQTT broker.

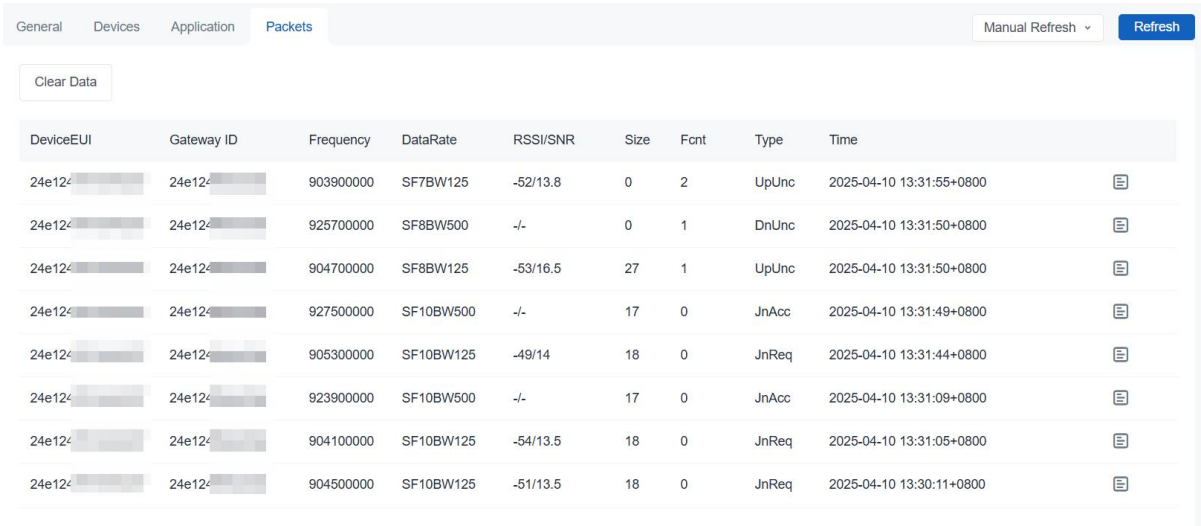


MQTT Settings	
Parameter	**Description**
Name	Customize a name for this MQTT connection.
Enable	Enable or disable this MQTT connection.
Broker Address	MQTT broker address to receive data.
Broker Port	MQTT broker port to receive data.
Client ID	Client ID is the unique identity of the client to the server. It must be unique when all clients are connected to the same server, and it is the key to handle messages at QoS 1 and 2.
Connection Timeout/s	If the client does not get a response after the connection timeout, the connection will be considered as broken. The Range: 1-65535
Keep Alive Interval/s	After the client is connected to the server, the client will send heartbeat packet to the server regularly to keep alive. Range: 1-65535
Data Retransmission	When network is disconnected, the device supports to store up to 100 pieces of all types of packets and re-transmit the data to MQTT broker after network recovery.
Auto Reconnect	When connection is broken, try to reconnect the server automatically.

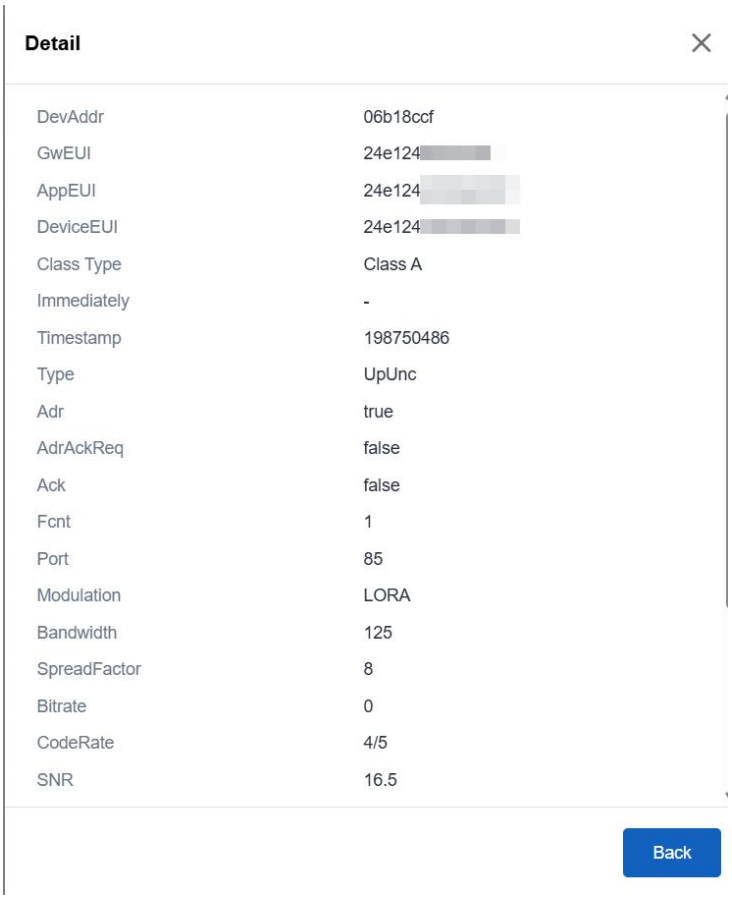
	Reconnect Period: The interval to reconnect the server.
Clean Session	When enabled, the connection will create a temporary session and all information will lose when the client is disconnected from broker; when disabled, the connection will create a persistent session that will remain and save offline messages until the session logs out overtime.
User Credentials	Enable or disable user credentials for connecting to the MQTT broker.
TLS	Enable the TLS encryption in MQTT communication. **CA-signed server certificate:** verify with the certificate issued by Certificate Authority (CA) that pre-loaded on the device. **Self-signed certificates:** upload the custom CA certificates (.crt or .pem), client Certificates(.crt) and secret key(.key) for verification. **Note:** if MQTT broker type is HiveMQ, please enable **TLS** and set the option as **CA signed server certificate.**
Last Will and Testament	Last will message is automatically sent when the MQTT client is abnormally disconnected. It is usually used to send device status information or inform other devices or proxy servers of the device's offline status. **Last-Will Topic:** Customize the topic to receive last will messages. **Last-Will QoS:** QoS0, QoS1 or QoS2 are optional. **Last-Will Retain:** Enable to set last will message as retain message. **Last-Will Payload:** Customize the last will message contents.
Data Topics	
Data Type	Data type to communicate with MQTT broker: **Uplink Data:** receive device uplink packets **Downlink Data:** send downlink commands to device **Join Notification:** receive join request packets from devices **ACK Notification:** receive ACK packets from devices **Request data:** send requests to enquire and configure the gateway. **Response data:** receive the requested responses
Topic	Topic name of the data type used for publishing.
Retain	Enable to set the latest message of this topic as retain message.
QoS	QoS 0 – Only Once This is the fastest method and requires only 1 message. It is also the most unreliable transfer mode. QoS 1 – At Least Once This level guarantees that the message will be delivered at least once, but may be delivered more than once. QoS 2 – Exactly Once QoS 2 is the highest level of service in MQTT. This level guarantees that each message is received only once by the intended recipients. QoS 2 is the safest and slowest quality of service level.

5.3.4 Packets

SG50 supports to display latest 500 pieces of packets.



Packets	
Parameters	**Description**
Clear Data	Click to clear the data in this page.
Device EUI	The device EUI of the packet.
Gateway ID	The ID of the gateway to send this packet.
Frequency	The frequency of receiving or sending this packet.
Datarate	The datarate of this packet.
RSSI/SNR	The received signal strength and signal-to-noise ratio of this packet.
Size	The size of this packet.
Fcnt	The frame counter of this packet.
Type	Show the type of the packet: JnAcc - Join Accept Packet JnReq - Join Request Packet UpUnc - Uplink Unconfirmed Packet UpCnf - Uplink Confirmed Packet - ACK response from network requested DnUnc - Downlink Unconfirmed Packet DnCnf - Downlink Confirmed Packet- ACK response from end-device requested
Time	The receiving time of this packet.
	Check the details of this packet.



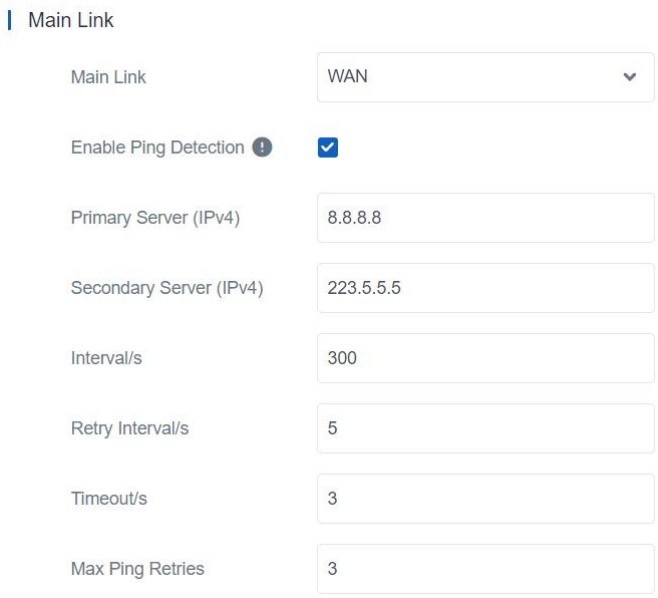
Packets-Detail	
Parameters	**Description**
DevAddr	Click to clear the data in this page.
GwEUI	The ID of the gateway to send this packet.
AppEUI	The app EUI of the device which sending this packet.
Device EUI	The device EUI of the packet.
Class Type	The class type of the device which sending this packet.
Immediately	Whether to send this downlink packet immediately.
Timestamp	Show the time to receive this packet after packet forwarder starts running. Unit: ms
Type	Show the type of the packet: JnAcc - Join Accept Packet JnReq - Join Request Packet UpUnc - Uplink Unconfirmed Packet UpCnf - Uplink Confirmed Packet - ACK response from network requested DnUnc - Downlink Unconfirmed Packet DnCnf - Downlink Confirmed Packet- ACK response from end-device requested
Adr	Whether the device enables ADR.
AdrAckReq	In order to validate that the network is receiving the uplink messages, nodes periodically transmit ADRACKReq message. This is 1 bit long.

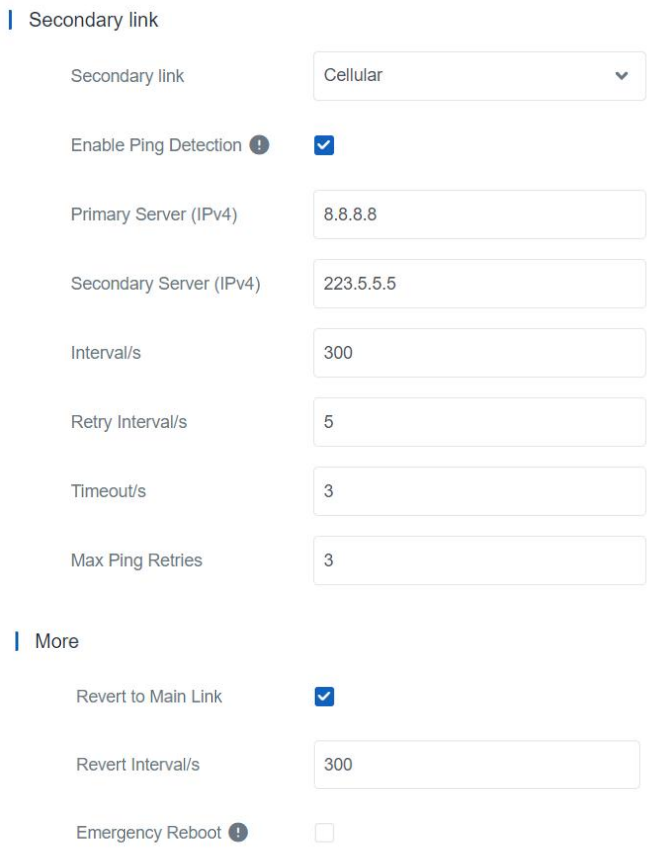
	True: Network should respond in ADR_ACK_DELAY time to confirm that it is receiving the uplink messages. False: ADR is disabled or Network does not respond in ADR_ACK_DELAY.
Ack	Whether this is ACK packet.
Fcnt	The frame counter of this packet.
Port	The FPort to transmit this packet. If this packet is MAC command, the port is 0; if this packet contains application data, the port is not 0 (1-233).
Modulation	LoRa means the physical layer uses the LoRa modulation.
Bandwidth	The bandwidth of this frequency channel.
Spreading Factor	The SF of this packet.
Bitrate	The bitrate of this frequency channel.
CodeRate	The coderate of this frequency channel.
RSSI	The received signal strength of this packet.
SNR	The signal-to-noise ratio of this packet.
Power	The TX power of this device.
Payload (b64)	The payload of this packet with base64 format.
Payload (hex)	The payload of this packet with HEX format.
MIC	The MIC of this packet. MIC is a cryptographic message integrity code, computed over the fields MHDR, FHDR, FPort and the encrypted FRMPayload.

5.4 Network

5.4.1 Link Backup

UG63 supports to set the priorities of both network links and the ping detection settings to check if the link is available.



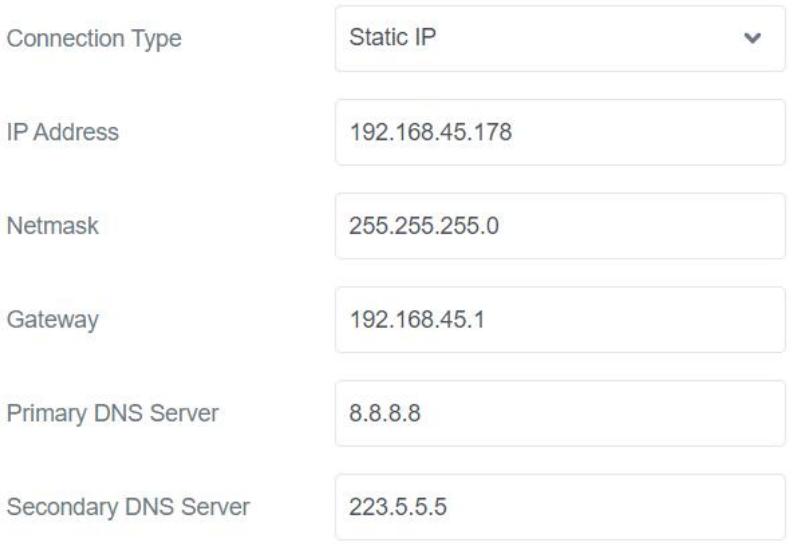


Link Backup	
Parameters	**Description**
Main Link	Select from WAN and Cellular.
Secondary Link	Select from WAN (Cellular) or None.
Enable Ping Detection	After enabled, the device will send ICMP packets to corresponding servers to detect the connection periodically. **Note:** it is suggested to disable this option if the device is connected to the private network (Non-internet).
Primary Server (IPv4)	The device will send ICMP packet to this server address to determine whether the Internet connection is still available or not.
Secondary Server (IPv4)	The device will try to ping the secondary server address if primary server is not available.
Interval/s	Time interval between two Pings.
Retry Interval/s	When ping failed, the device will ping again at every retry interval.
Timeout/s	The maximum time which the device will wait for a response to a ping request. If it does not receive a response for the timeout, the ping request will be considered to have failed.
Max Ping Retries	The number of times the device will retry sending a ping request until determining that the connection has failed.
More	

Revert to Main Link	When the connection of main link returns back, reverting back to main link.
Recovery interval/s	Specify the number of seconds to wait for switching to the main link, 0 means disable the function.
Emergency Reboot	Enable to reboot the device if no link is available.

5.4.2 WAN

UG63 supports to connect Ethernet port to a router to get network access.

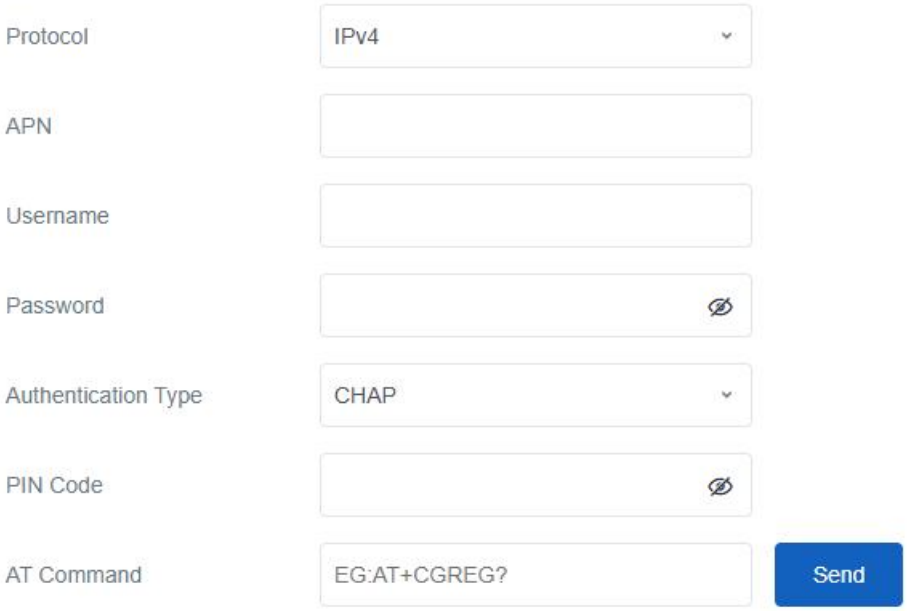


WAN	
Parameters	**Description**
Connection Type	Select connection type as required. **Static IP**: assign a static IP address, netmask and gateway for Ethernet WAN port. **DHCP Client**: configure Ethernet WAN interface as DHCP Client to obtain IP address automatically.
Primary DNS Server	Set the primary IPv4 DNS server.
Secondary DNS Server	Set the secondary IPv4 DNS server.
Static IP	
IP Address	Set the IPv4 address of the Ethernet port.
Netmask	Set the Netmask for Ethernet port.
Gateway	Set the gateway for Ethernet port's IPv4 address.
DHCP	

Use Peer DNS	Obtain DNS from DHCP server.

5.3.3 Cellular (Cellular Version Only)

UG63 supports to insert a SIM card to get cellular network connections.

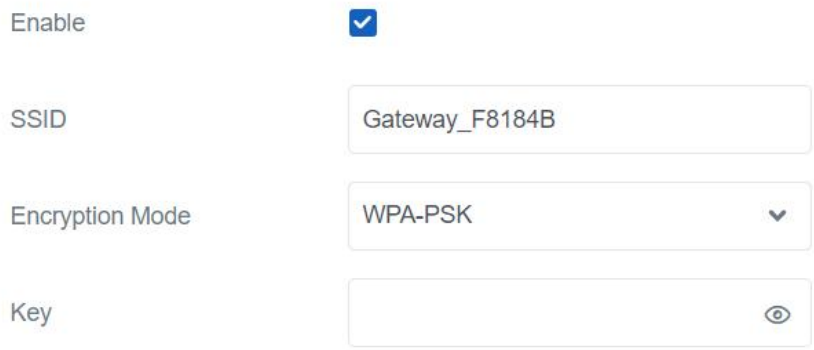


Cellular	
Parameters	**Description**
Protocol	Select from "IPv4", and "IPv4/IPv6".
APN	The Access Point Name for cellular dial-up connection provided by local ISP. Please contact cellular operator or search for the Internet to get it.
Username	The username for cellular dial-up connection provided by local ISP.
Password	The password for cellular dial-up connection provided by local ISP.
Authentication Type	Select from None, PAP and CHAP.
PIN Code	A 4-8 characters PIN code to unlock the SIM.
AT Command	Send AT Command to get cellular information or configure advanced settings.

5.3.4 WLAN

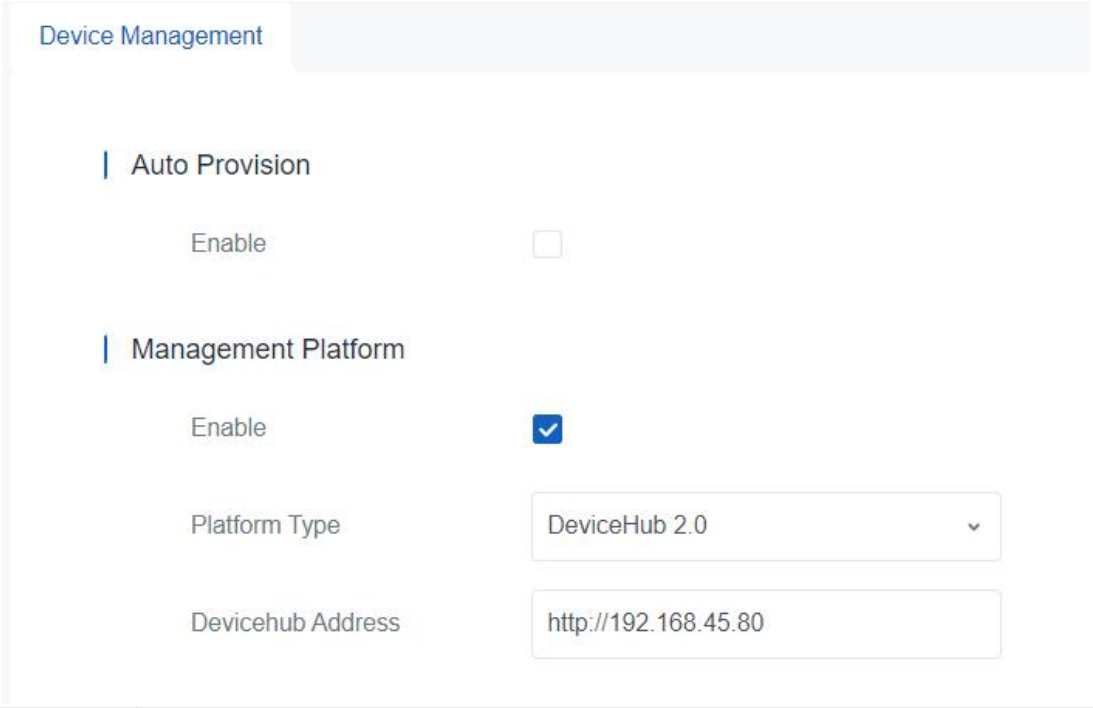
UG63 supports wlan feature to work as AP mode to configure device and it can not connect to other access points.

Note: one UG63 device only supports 2 devices' WLAN connection to log in this device at the same time.



WLAN	
Parameters	**Description**
Enable	Enable or disable Wi-Fi feature.
SSID	The unique name for this device Wi-Fi access point. The default SSID is Gateway_XXXXXX. (XXXXX=last 6 digits of MAC address)
Encryption Mode	No Encryption and WPA-PSK are optional.
Key	Customize the Wi-Fi password when security mode is WPA-PSK. Length: 8--63. Limitation: any ASCII characters except blank.

5.5 Service



Parameters	Description

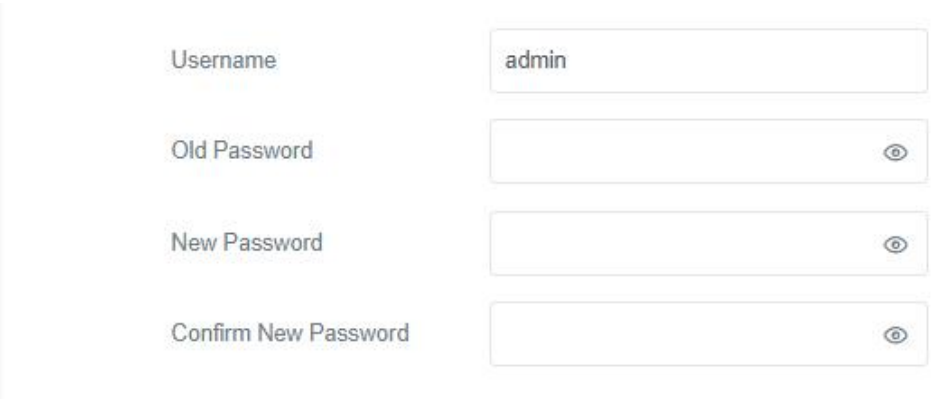
Auto Provision	Enable to receive the configurations from Milesight Development Platform once after the device is connected to Internet. This will work even management platform mode is disabled.
Management Platform	
Enable	Enable the device to be managed by Milesight management platforms.
Platform	Milesight DeviceHub 2.0 or Milesight Development Platform is optional.
DeviceHub Address	Set the DeviceHub server IP address or domain name.

5.6 System

5.6.1 General

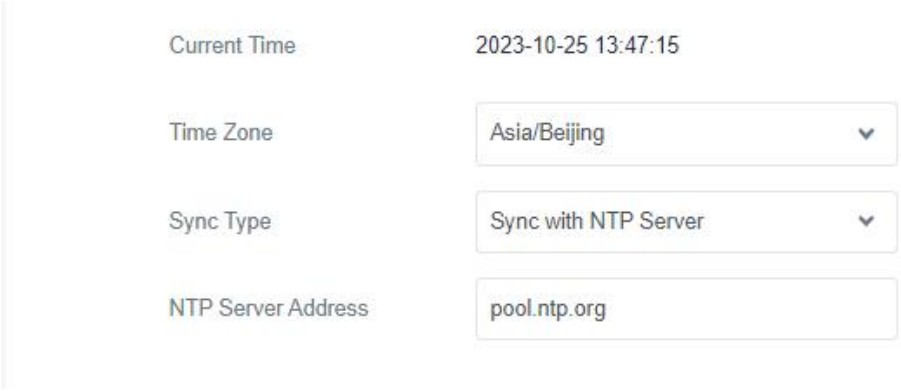
The gateway supports to change the hostname.

5.6.2 User



Parameters	Description
Username	Enter a new username. Only capital, lowercase, digits, "_", and "-" are allowed.
Old Password	Enter the old password.
New Password	Enter a new password.
Confirm New Password	Enter the new password again.

5.6.3 Time



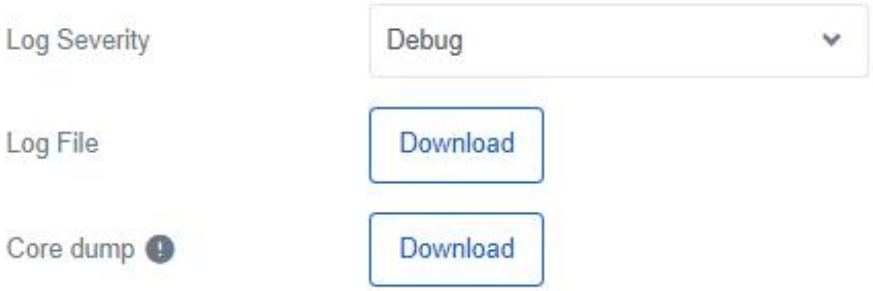
Parameters	Description
Current Time	Show the current system time.
Time Zone	Click the drop-down list to select the time zone you are in.
Sync Type	It's fixed as Sync with NTP Server.
NTP Server Address	Set the NTP Server's IP address or domain name.

5.6.4 Access Service

Parameters	Description
Local access	Enable or disable the local access of HTTP.
Access port	Set the service port of HTTP.

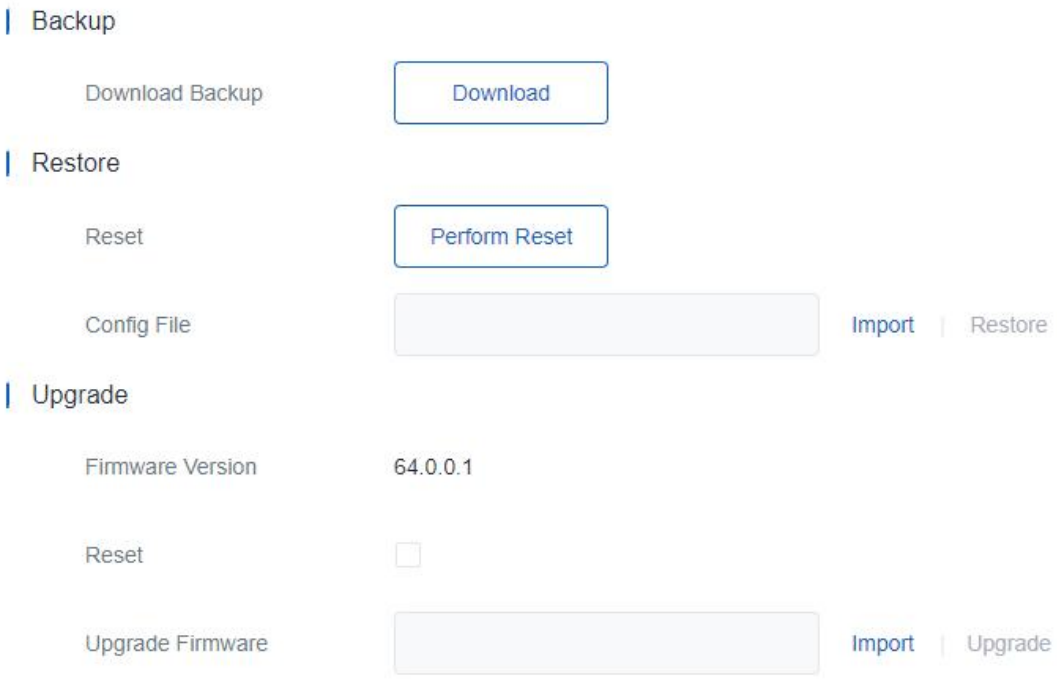
5.7 Maintenance

5.7.1 Log



Parameters	Description
Log Severity	The list of severities follows the syslog protocol.
Log File	Download log file.
Core dump	Core dump file contains a snapshot of a program's memory at a specific point in time when the program encounters a critical error or crashes, which can be used for debugging and troubleshooting purposes.

5.7.2 Backup/Upgrade

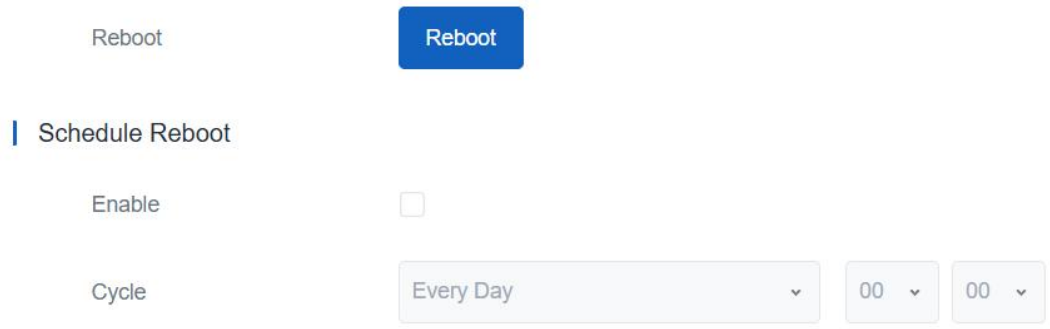


Backup/Upgrade	
Parameters	**Description**
Backup	
Backup	Export the current configuration file to the PC.
Restore	
Reset	Reset device to factory default settings. The device will restart after reset process is done.

Config File	Click "Import" button to select configuration file, and then click "Restore" button to upload the configuration file to the device.
Upgrade	
Firmware Version	Show the current firmware version.
Reset	When this option is enabled, the device will be reset to factory defaults after upgrade.
Upgrade Firmware	Click "Import" button to select the new firmware file, and click "Upgrade" to upgrade firmware. **Note:** 1) Ensure that the distance between the computer and the SG50 device is not too far during the upgrade; otherwise, the upgrade process may fail. 2) After upgrade, the device will restart automatically. Please reconnect Wi-Fi to access the web GUI. 3) After upgrade, clean the caches of the browser if there is abnormal display of web GUI.

5.7.3 Reboot

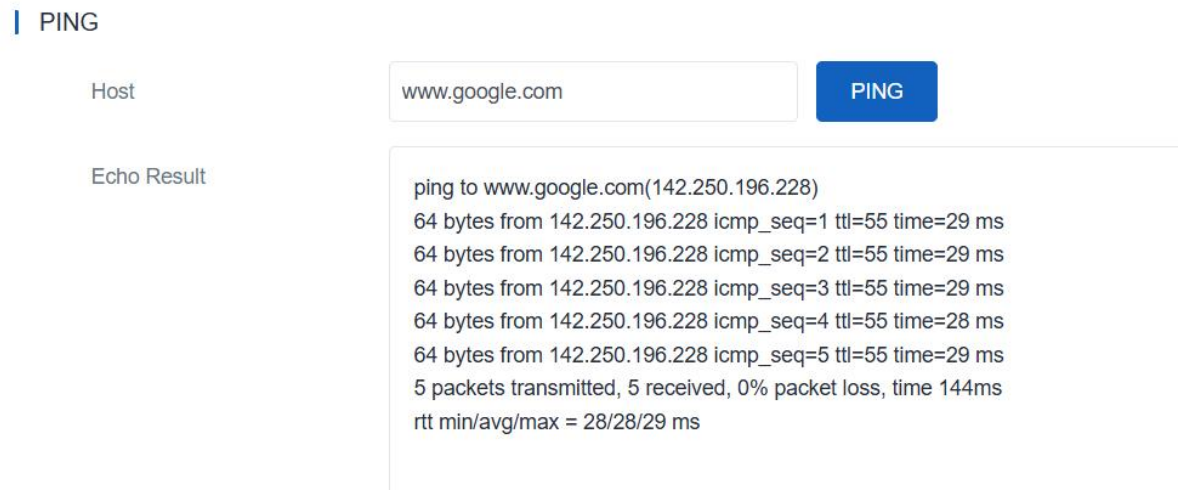
On this page, you can reboot the gateway and return to the login page. We strongly recommend clicking “Save” button before rebooting the gateway so as to avoid losing the new configuration.



Reboot	
Parameters	**Description**
Reboot	Reboot the device immediately.
Schedule Reboot	
Enable	Enable or disable to reboot regularly.
Cycle	Select the reboot cycle as day/week/month and configure the time.

5.7.4 Ping

Ping tool is engineered to check the outer network connectivity by typing IPv4 address or domain name.



Appendix

Default Frequency

Supported Freq	Channel/MHz
CN470	471.9, 472.1, 472.3, 472.5, 472.7,472.9, 473.1, 473.3 (8~15)
EU868	868.1, 868.3, 868.5, 867.1, 867.3, 867.5, 867.7, 867.9
IN865	865.0625, 865.4025, 865.6025, 865.985, 866.185, 866.385, 866.585, 866.785
RU864	868.9, 869.1, 869.3, 867.3, 867.5, 867.7, 867.9, 868.1
AU915	916.8, 917, 917.2, 917.4, 917.6, 917.8, 918, 918.2 (8~15)
US915	903.9, 904.1, 904.3, 904.5, 904.7, 904.9,905.1, 905.3 (8~15)
KR920	922.1, 922.3, 922.5, 922.7, 922.9, 923.1, 923.3, 923.5
AS923-1	923.2, 923.4, 922, 922.2, 922.4, 922.6, 922.8, 923
AS923-2	921.2, 921.4, 921.6, 921.8, 922, 922.2, 922.4, 922.6
AS923-3	916.6, 916.8, 917, 917.3, 917.4, 917.6, 917.8, 918
AS923-4	917.3, 917.5, 917.7, 917.9, 918.1, 918.3, 918.5, 918.7

-END-