



Semi-industrial LoRaWAN[®] Hotspot UG65

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 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 other electrical devices when installing.
- Check lightning and water protection when used outdoors.
- Do not connect or power the equipment using cables that have been damaged.

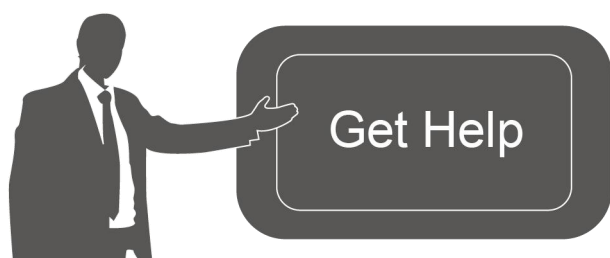
Related Documents

Document	Description
UG65 Datasheet	Datasheet for UG65 LoRaWAN® Hotspot.

The related documents are available on the Milesight website: <https://www.milesight-iot.com>

Declaration of Conformity

UG65 conforms with the essential requirements and other relevant provisions of the CE, FCC, and RoHS.



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

Revision History

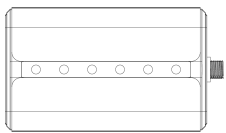
Date	Doc Version	Description
Oct. 12, 2021	V1.0	Initial version
Nov. 23, 2021	V1.1	QR Code Generate Update
Feb. 23, 2022	V1.2	1. Log in web GUI update 2. Add Helium section

Contents

1. Packing List.....	4
2. Hardware Introduction.....	4
2.1 Overview.....	4
2.2 Dimensions.....	5
2.3 LED Indicators.....	5
2.4 Reset Button.....	6
3. Hardware Installation.....	6
3.1 SIM Card Installation (Cellular Version Only).....	6
3.2 Ethernet Cable & Power Cable Installation.....	6
3.3 Antenna Installation.....	7
3.4 Hotspot Installation.....	7
3.4.1 Wall Mounting.....	7
3.4.2 Pole Mounting.....	8
4. Login the Web GUI.....	9
4.1 Wireless Access.....	9
4.2 Wired Access.....	11
5. Network Connection.....	13
5.1 Configure the Ethernet Connection.....	13
5.2 Configure the Wi-Fi Connection.....	13
5.3 Configure the Cellular Connection (Cellular Version Only).....	15
6. Helium Hotspot Setup.....	16
7. Antenna and Frequency Configuration.....	20
8. Helium Advanced Setting.....	20
8.1 Sync.....	20
8.1.1 Sync Status.....	21
8.1.2 Fast Sync.....	21
8.2 Onboarding.....	22
8.3 Operation.....	22

1. Packing List

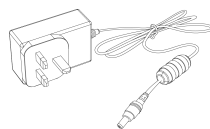
Before you begin to install the UG65 LoRaWAN® hotspot, please check the package contents to verify that you have received the items below.



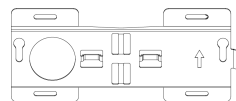
1 × UG65



1 × Ethernet Cable



1 × DC Jack Power Adapter



1 × Mounting Bracket



Bracket Fixing Screws



4 × Wall Mounting Kits



1 × Warranty Card



1 × Quick Start Guide



1 × LoRa Antenna

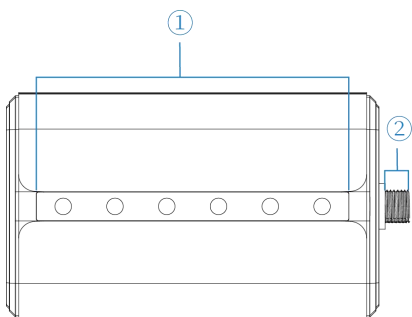


If any of the above items is missing or damaged, please contact your sales representative.

2. Hardware Introduction

2.1 Overview

A. Front Panel



① LED Area

POWER: Power Indicator

STATUS: System Indicator

LoRa: LoRa Indicator

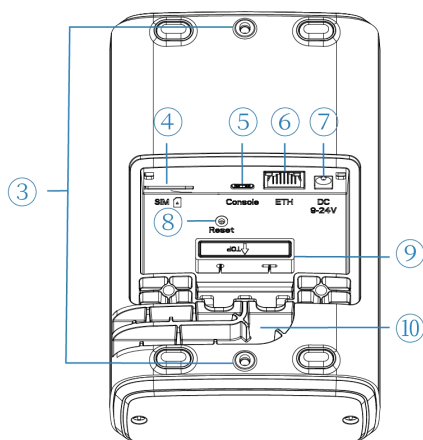
Wi-Fi: Wi-Fi Indicator

LTE: Cellular Indicator

ETH: Ethernet Port Indicator

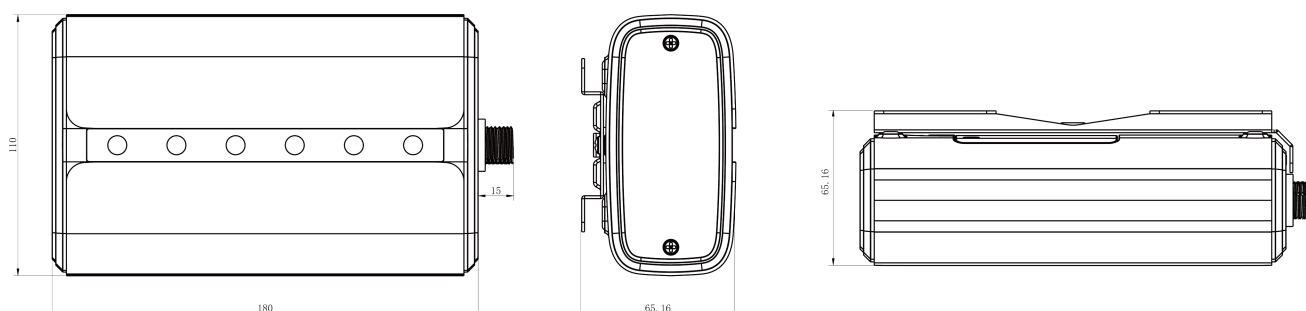
② LoRa Antenna Connector

B. Rear Panel



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

2.2 Dimensions (mm)



2.3 LED Indicators

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

			up successfully
ETH	Ethernet Port Status	Off	Disconnected
		Blue Light	Static: Connected

2.4 Reset Button

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

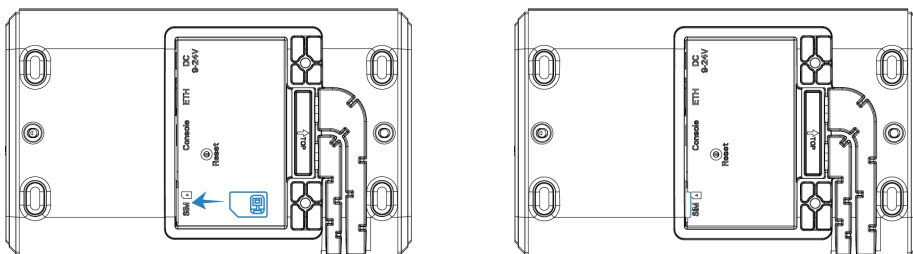
3. Hardware Installation

3.1 SIM Card Installation (Cellular Version Only)

- Use a screwdriver to open the protective cover on the back panel of UG65.
- Insert the SIM card into the device according to the direction icon on the device.

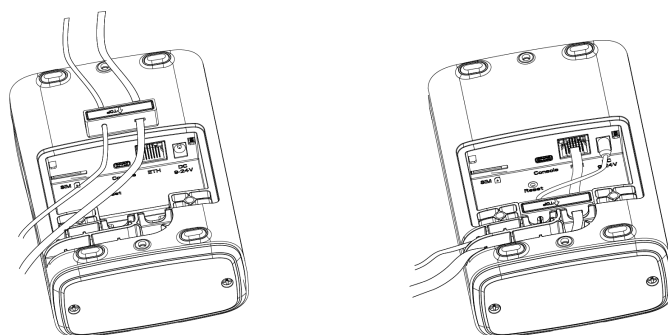
Note:

- If you need to take out the SIM card, press into the SIM card and it will pop up automatically.
- UG65 does not support hot-plugging (also called hot swapping). please turn off the power before inserting or taking off cards.



3.2 Ethernet Cable & Power Cable Installation

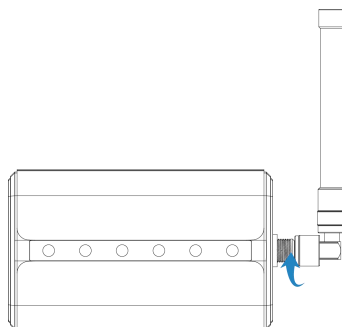
- Connect the Ethernet cable and power cable to corresponding interfaces.
- Pass two cables through the waterproof silicone and slide into the grooves.
- Screw the protective cover back to the device.



UG65 can also be powered by an 802.3af standard PoE injector or other PoE device. If both are connected, DC power is preferred.

3.3 Antenna Installation

The antenna should be installed vertically always on a site with a good signal. After installation, please select the corresponding installation type in web GUI.



Note: do not let the front panel of products faces to walls if using embedded LoRa antennas.

3.4 Hotspot Installation

UG65 can be mounted to a wall or a pole. Before you start, make sure that your SIM card has been inserted, your antennas have been attached and all cables have been installed.

3.4.1 Wall Mounting

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

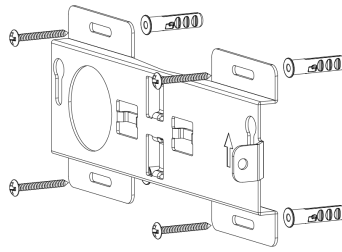
A. Align the mounting bracket horizontally to the desired position on the wall, use a marker pen to mark four mounting holes on the wall, and then remove the mounting bracket from the wall.

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

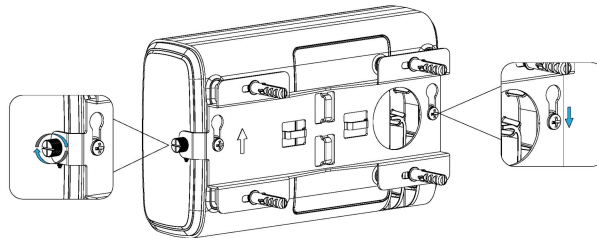
B. Drill four holes with a depth of 32 mm by using your drill with a 6 mm drill bit on the positions you marked previously on the wall.

C. Insert four wall plugs into the holes respectively.

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



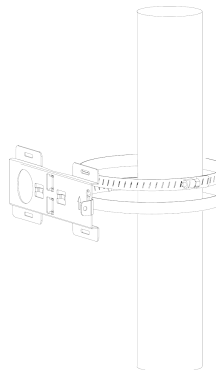
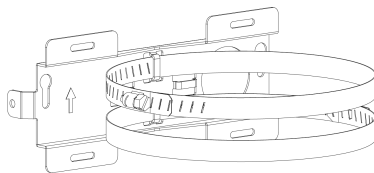
E. Screw the bracket fixing screws to the back panel of the device, then hang the device to the mounting bracket on the wall.



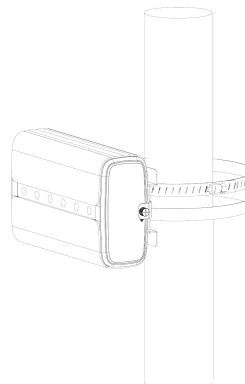
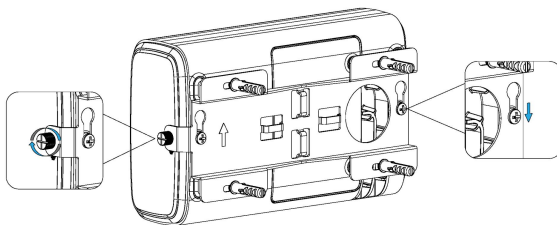
3.4.2 Pole Mounting

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

- A. Loosen the hose clamp by turning the locking mechanism counter-clockwise.
- B. Straighten out the hose clamp and slide it through the rectangular rings in the mounting bracket, wrap the hose clamp around the pole.
- C. Use a screwdriver to tighten the locking mechanism by turning it clockwise.



D. Screw the bracket fixing screws to the back panel of the device, then hang the device to the mounting bracket on the pole.



4. Login the Web GUI

UG65 provides a web-based configuration interface for management. If this is the first time you configure the hotspot, 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_*******

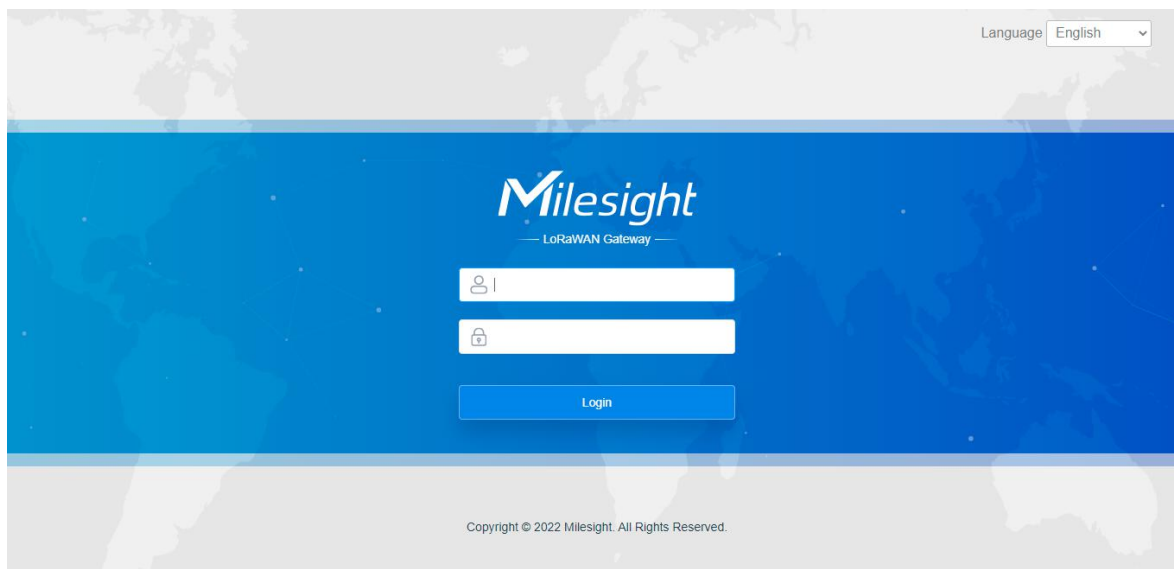
Username: **admin**

Password: **password**

4.1 Wireless Access

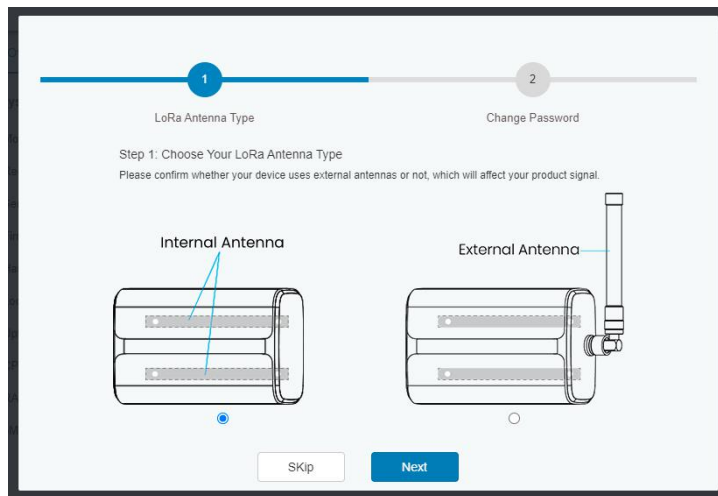
A. Enable wireless network connection on your computer and search for access point **"Gateway_*****"** to connect it.

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.

C. After logging, select the correct antenna type according to your antenna installation and change the default password following the guide.



After the guide completed, you can view system information and perform more advanced settings.

Milesight

For your device security, please change the default password.

Status Overview Cellular Network WLAN VPN Host List Help

Packet Forwarder

Network Server

Network

System

Maintenance

APP

System Information

Model	UG65-L00E-470M-EA-H32
Region	CN470
Serial Number	6819B4300645
Firmware Version	61.0.0.36
Hardware Version	V1.3
Local Time	2021-11-18 10:31:08 Thursday
Uptime	13:10:05
CPU Load	9%
RAM (Capacity/Available)	2048MB/629MB(30.71%)
eMMC (Capacity/Available)	27.9Gi/14.5Gi(52.03%)

Manual Refresh Refresh

Model Show the model name of router.
Region Show the Region of router.
Serial Number Show the serial number of router.
Firmware Version Show the current firmware version of router.
Hardware Version Show the current hardware version of router.
Local Time Show the current local time of system.
Uptime Show the information on how long the router has been running.
CPU Load



Disable WLAN feature or add password after you completed all hotspot settings!

Status

Packet Forwarder

Network Server

Network

Interface

Firewall

DHCP

DDNS

Link Failover

Port WLAN Loopback

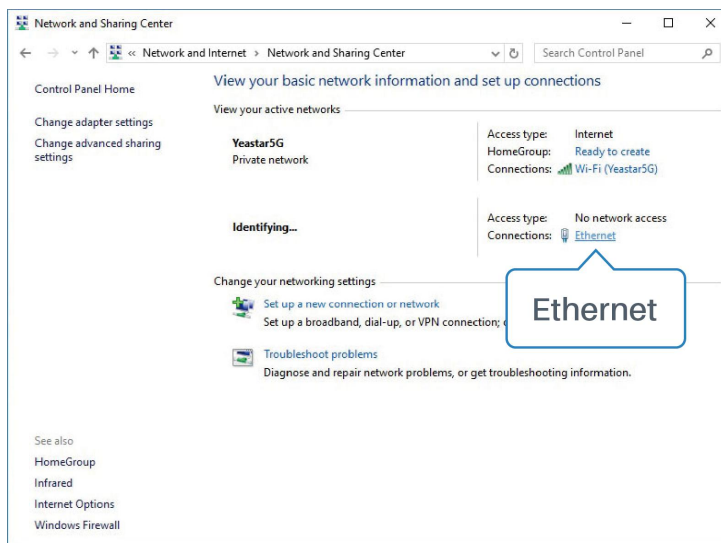
WLAN

Enable	<input checked="" type="checkbox"/>
Work Mode	AP
SSID Broadcast	<input checked="" type="checkbox"/>
AP Isolation	<input type="checkbox"/>
Radio Type	802.11n(2.4GHz)
Channel	Auto
SSID	Gateway_F1B4D0
BSSID	24:e1:24:f1:b4:d0
Encryption Mode	WPA2-PSK
Cipher	Auto
Key	*****

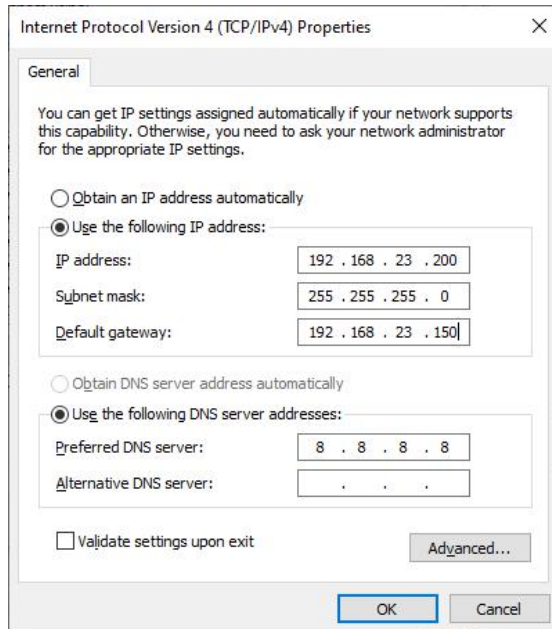
4.2 Wired Access

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

A. Go to “Control Panel” → “Network and Internet” → “Network and Sharing Center”, then click “Ethernet” (May have different names).



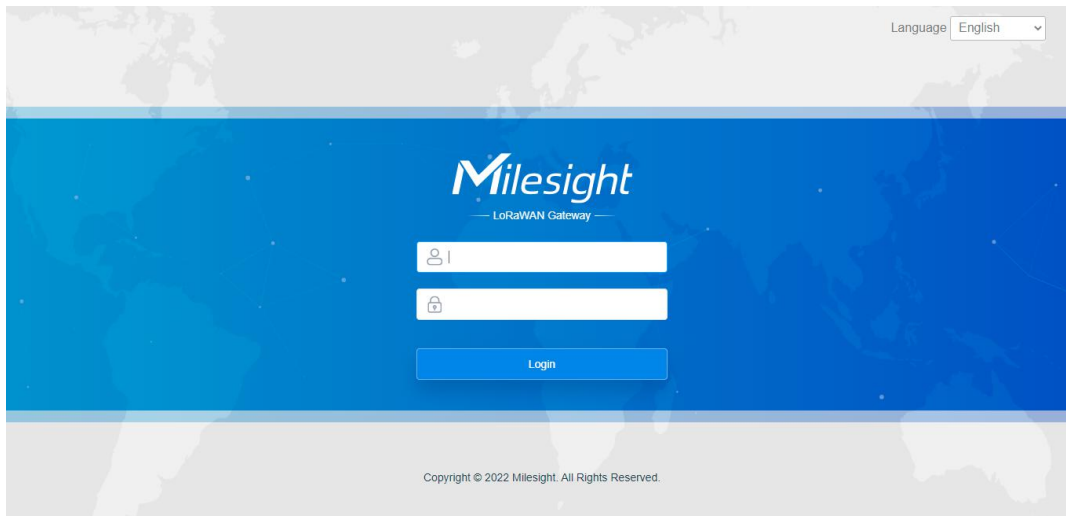
B. Go to “Properties” → “Internet Protocol Version 4 (TCP/IPv4)” and select “Use the following IP address”, then assign a static IP manually within the same subnet of the hotspot.



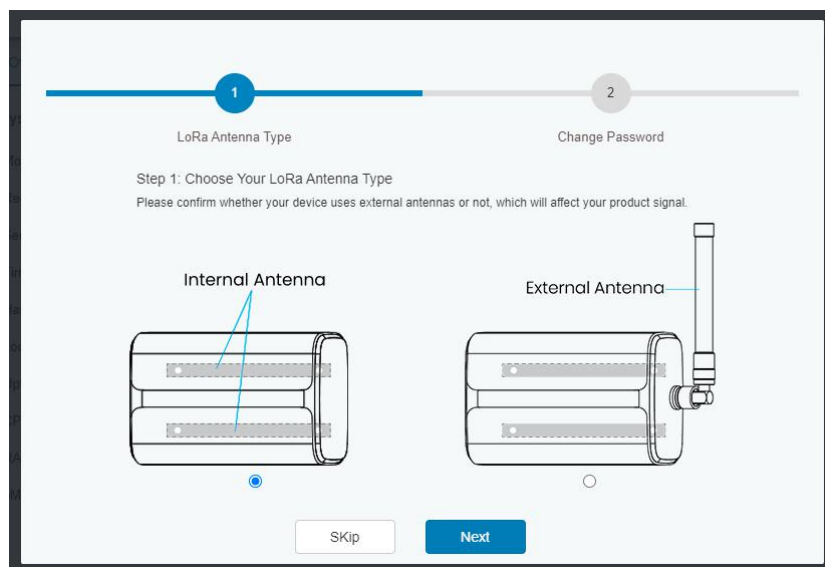
C. Open a web browser on your PC (Chrome is recommended) and type in the IP address **192.168.23.150** to access the web GUI, enter the username and password, click “Login”.



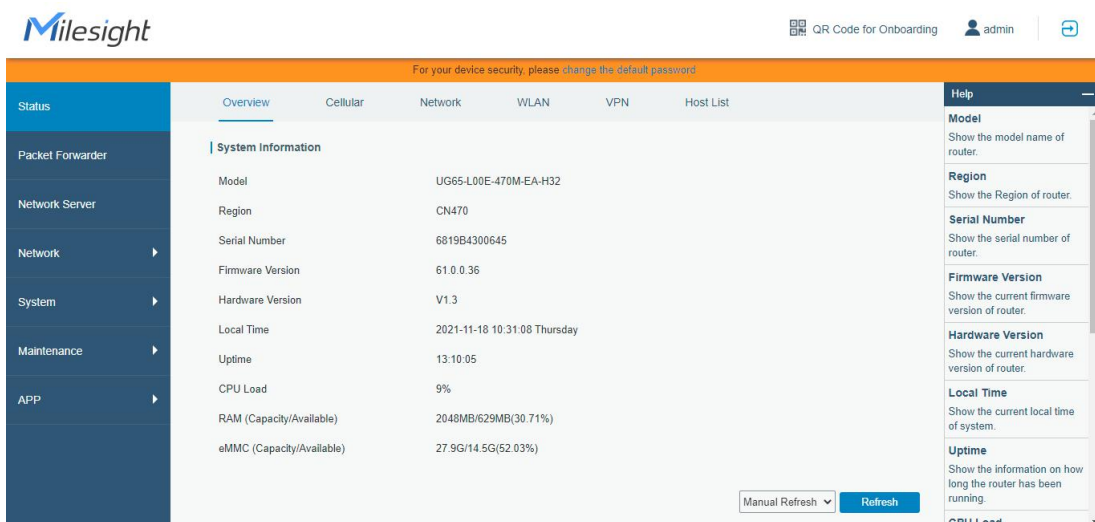
If you enter the username or password incorrectly more than 5 times, the login page will be locked for 10 minutes.



D. After logging, select the correct antenna type according to your antenna installation and change the default password following the guide.



After the guide completed, you can view system information and perform more advanced settings.



5. Network Connection

This section explains how to connect the hotspot to the 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, click “Save & Apply” for changes to take effect.

Port	WLAN	Cellular	Loopback
Port_1			
Port	eth 0		
Connection Type	Static IP		
IP Address	192.168.22.112		
Netmask	255.255.255.0		
Gateway	192.168.22.1		
MTU	1500		
Primary DNS Server	8.8.8.8		
Secondary DNS Server	114.114.114.114		
Enable NAT	<input checked="" type="checkbox"/>		

B. Connect Ethernet port of hotspot to network devices like router or modem.

C. Log in the web GUI via the newly assigned IP address and go to “Status” → “Network” to check Ethernet port status.

Overview

Packet Forward

Cellular

Network

WLAN

VPN

Host List

WAN

Port	Status	Type	IP Address	Netmask	Gateway	DNS	Duration
eth 0	up	Static	192.168.22.112	255.255.255.0	192.168.22.1	8.8.8.8	1days,02h 34m 22s

5.2 Configure the Wi-Fi Connection

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

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

Note: please do use [wired access](#) method to access the web GUI of hotspot, or you will fail to configure Wi-Fi setting.

Port

WLAN

Cellular

Loopback

< GoBack

SSID	Channel	Signal	Cipher	BSSID	Security	Frequency	
AAA	Auto	-61dBm	AES	24:e1:24:f0:c4:13	WPA-PSK/WPA2-PSK	2412MHz	<div>Join Network</div>

C. Type the key of Wi-Fi.

Port	WLAN	Cellular	Loopback
WLAN			
Enable	<input checked="" type="checkbox"/>		
Work Mode	Client		Scan
SSID	AAA		
BSSID	24:e1:24:f0:c4:13		
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 that the hotspot has connected to Wi-Fi successfully.

Overview	Packet Forward	Cellular	Network	WLAN
WLAN Status				
Wireless Status	Enabled			
MAC Address	24:e1:24:f0:de:14			
Interface Type	Client			
SSID	AAA			
Channel	Auto			
Encryption Type	WPA-PSK/WPA2-PSK			
Cipher	AES			
Status	Connected			
IP Address	192.168.1.145			
Netmask	255.255.255.0			
Connection Duration	0 days, 02:44:45			

E. Go to "Network" → "Failover" → "WAN Failover" to switch the wlan0 as main interface, then gateway can use the Wi-Fi to access the Internet.

Main Interface	Backup Interface	Startup Delay(s)	Up Delay(s)	Down Delay(s)	Track ID	Operation
wlan0	eth 0	30	0	0	1	✕ +

Save

5.3 Configure the Cellular Connection (Cellular Version Only)

- Go to “Network” → “Interface” → “Cellular” → “Cellular Setting” page to enable cellular settings.
- Choose relevant network type and fill in SIM card information like APN or PIN code, click “Save” and “Apply” for changes to take effect.

Cellular Setting

Enable ☒

Network Type Auto

APN

Username

Password

Access Number

PIN Code

Authentication Type Auto

Roaming ☒

- 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 the LTE indicator. If it keeps on light statically, it means SIM has dialed up successfully.

Overview	Packet Forward	Cellular	Network	WLAN
Modem				
Status	Ready			
Model	EC25			
Version	EC25ECGAR06A07M1G			
Signal Level	23asu (-67dBm)			
Register Status	Registered (Home network)			
IMEI	860425047368939			
IMSI	460019425301842			
ICCID	89860117838009934120			
ISP	CHN-UNICOM			
Network Type	LTE			
PLMN ID				
LAC	5922			
Cell ID	340db83			
Network				
Status	Connected			
IP Address	10.132.132.59			
Netmask	255.255.255.240			
Gateway	10.132.132.60			

6. Helium Hotspot Setup

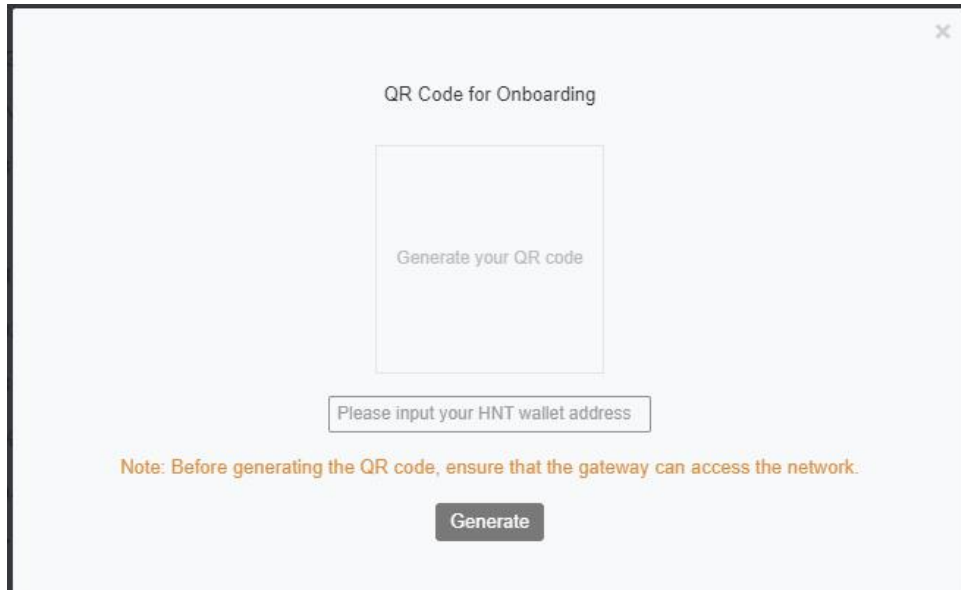
- Download Helium App from Google Play or Apple App Store and create a Helium Wallet.
- Log in the web GUI, click "QR Code for Onboarding" at the top right corner.

The screenshot shows the Milesight web GUI. At the top, there's a navigation bar with the Milesight logo, a QR code for onboarding, and a user profile labeled 'admin'. Below this is a status bar with a message: "For your device security, please change the default password". The main content area has a sidebar on the left with menu items: Status, Packet Forwarder, Network Server, Network, System, Maintenance, and APP. The main panel displays "System Information" with the following details:

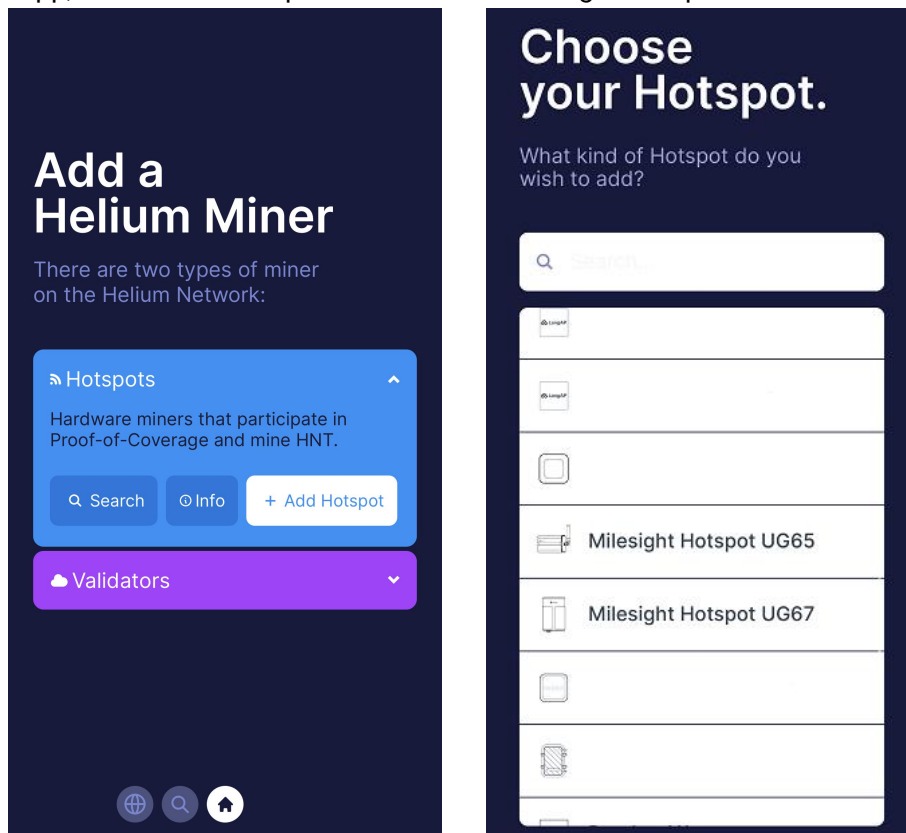
System Information	Value
Model	UG65-L00E-470M-EA-H32
Region	CN470
Serial Number	6819B4300645
Firmware Version	61.0.0.36
Hardware Version	V1.3
Local Time	2021-11-18 10:31:08 Thursday
Uptime	13:10:05
CPU Load	9%
RAM (Capacity/Available)	2048MB/629MB(30.71%)
eMMC (Capacity/Available)	27.9G/14.5G(52.03%)

At the bottom right of the main panel, there are buttons for "Manual Refresh" and "Refresh". On the right side, there is a "Help" sidebar with a list of items: Model, Region, Serial Number, Firmware Version, Hardware Version, Local Time, Uptime, and CPU Load. Each item has a brief description of what it shows.

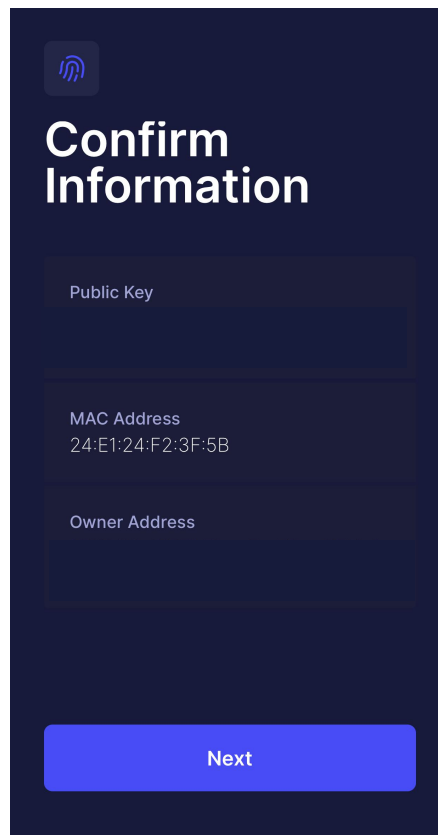
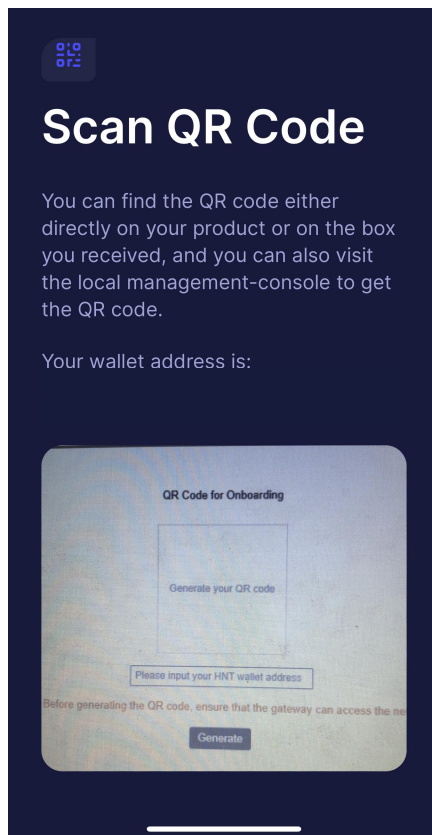
- Fill in the wallet address in hotspot web GUI and click "Generate" to generate the QR code.



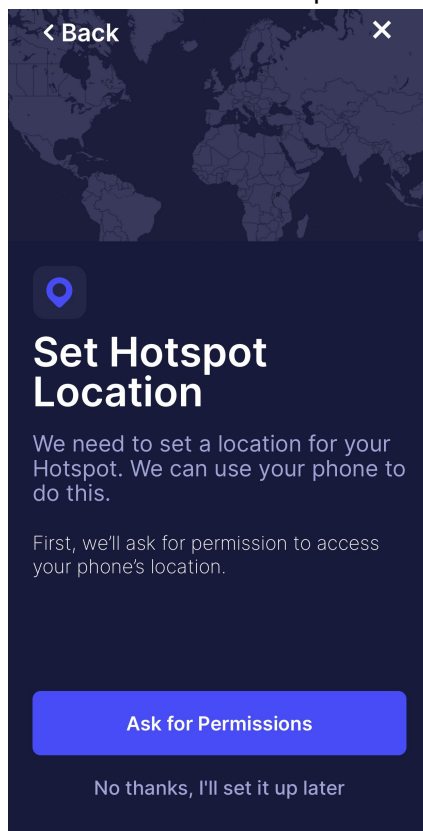
D. Open Helium App, click "+Add Hotspot" and choose "Milesight Hotspot UG65" from the list.




E. Scan the QR code on the hotspot login web GUI, then App will get the hotspot information. Click "Next".



F. Click “Ask for Permissions” to set hotspot location, then click “Set Location”.



G. Set hotspot antenna gain and height according to your external antenna type, it's 1dBi by default. Click "Next" and "Register Hotspot". This registration requires \$10 and it's already paid by Milesight.



Antenna Setup

Submit antenna and height details for your Hotspot.

Milesight Hotspot UG65

TX / RX Gain ⓘ 1.0 dBi


Height (meters) ⓘ 0

Next

Location Fee

Your Location Fee (\$10) has been prepaid.

Confirm the location selected is correct and register your Hotspot.

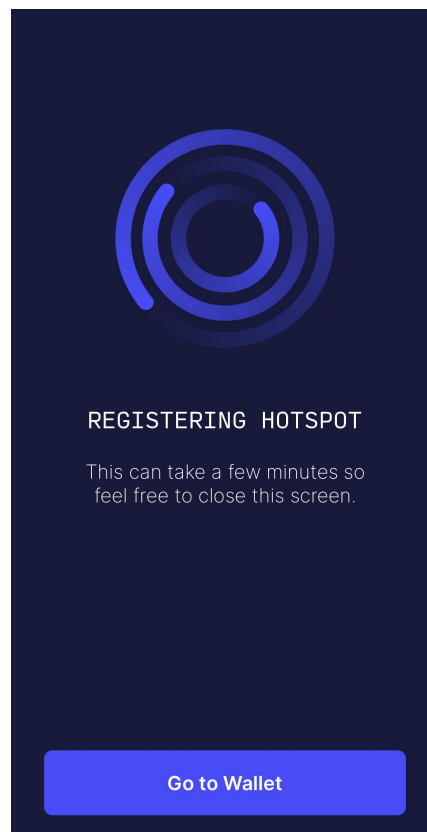


Loading...

TX / RX Gain: 1 dBi
Height: 0 meters

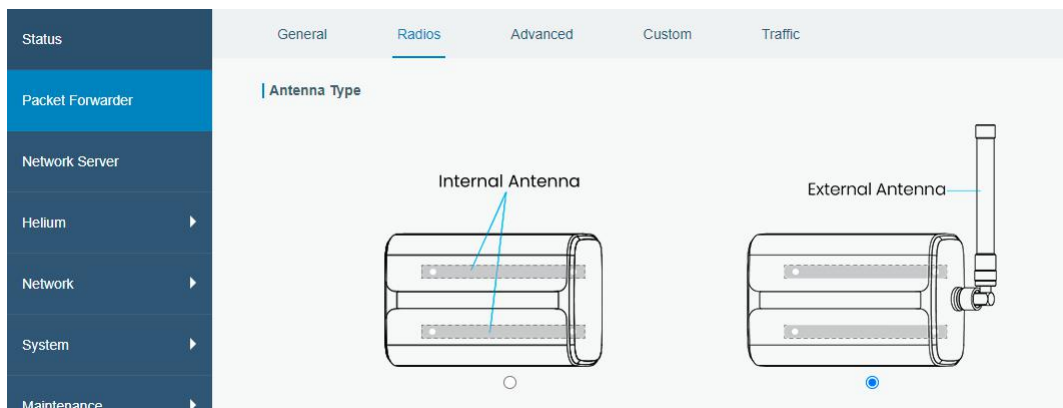
Register Hotspot

H. It will submit all hotspot information and add it to the Helium network.



7. Antenna and Frequency Configuration

A. Go to “Packet Forwarder” → “Radio” page to configure correct antenna type according to your antenna installation mode.



B. Center frequency and channels can also be configured here. Usually, the channels should be the same as LoRaWAN® nodes and network server.

Region: US915

Name	Center Frequency/MHz
Radio 0	<input type="text" value="904.3"/>
Radio 1	<input type="text" value="905.0"/>

Multi Channels Setting

Enable	Index	Radio	Frequency/MHz
<input checked="" type="checkbox"/>	0	Radio 0	<input type="text" value="903.9"/>
<input checked="" type="checkbox"/>	1	Radio 0	<input type="text" value="904.1"/>
<input checked="" type="checkbox"/>	2	Radio 0	<input type="text" value="904.3"/>
<input checked="" type="checkbox"/>	3	Radio 0	<input type="text" value="904.5"/>
<input checked="" type="checkbox"/>	4	Radio 1	<input type="text" value="904.7"/>
<input checked="" type="checkbox"/>	5	Radio 1	<input type="text" value="904.9"/>
<input checked="" type="checkbox"/>	6	Radio 1	<input type="text" value="905.1"/>
<input checked="" type="checkbox"/>	7	Radio 1	<input type="text" value="905.3"/>

8. Helium Advanced Setting

Milesight UG65 Helium hotspot provides options to get the latest sync status and Helium process status and control.

8.1 Sync

Sync page is used for checking sync status and configure the sync settings.

8.1.1 Sync Status



QR Code for Onboarding

admin



For your device security, please change the default password

Status
Packet Forwarder
Network Server
Helium
Sync
Onboarding
Operation
Network

Sync Status Fast Sync

Hotspot Sync Status Synced

Time	Hotspot Height	Blockchain Height
2022-02-23 11:09:05	1238277	1238296
2022-02-23 11:04:05	1238277	1238290
2022-02-23 10:59:04	1238277	1238277
2022-02-23 10:54:04	1238277	1238277
2022-02-23 10:49:03	1238275	1238275
2022-02-23 10:44:03	1238270	1238269

Item	Description
Hotspot Sync Status	<p>There are 4 status:</p> <p>Not syncing: the hotspot does not start the syncing.</p> <p>Absorbing: when the hotspot is absorbing the snapshot, other sync operations and Helium reboot are forbidden.</p> <p>Syncing: the hotspot is catching up the latest blockchain height.</p> <p>Synced: when the hotspot height is within the range of 100 of blockchain height, it will shows synced.</p>
Hotspot Height	Show the latest 6 hotspot height records, the record will update every 5 minutes.
Blockchain Height	Show the latest 6 blockchain height records, the record will update every 5 minutes.

8.1.2 Fast Sync

Status
Packet Forwarder
Network Server
Helium
Sync
Onboarding

Sync Status Fast Sync

Automatic Sync

Snapshot Address
Milesight Server

Save

Manual Sync (Download and absorb the snapshot from the Milesight server)

Sync

Item	Description
Automatic Sync	Hotspot will download and absorb the latest snapshot from the selected address automatically when current height far behind the latest blockchain height. Default: Milesight server

Manual Sync

Click “Sync” to download and absorb the snapshot from the Milesight server.

8.2 Onboarding

This page is used for generating QR code for onboarding and check hotspot events. You can also click the button on the top right corner to generate the QR code.

The screenshot displays the 'Onboarding' interface. On the left, a dark blue sidebar contains a navigation menu. The 'Onboarding' option is highlighted in blue. The main content area is light gray and features a sub-header 'Onboarding'. Underneath, there's a section titled 'QR Code for Onboarding' which includes a text field for 'Helium Wallet Address' and a 'Generate' button. A note below states, 'Note: Ensure that the Internet access is available.' Below this is a large rectangular box with the text 'Generate Your QR Code'. Further down, there's a section titled 'Hotspot Events' with a 'View' button.

Item	Description
QR Code for Onboarding	Type the wallet address, then click “Generate” to generate the QR code for hotspot onboarding. Before generate, ensure the hotspot can access the Internet.
Hotspot Events	Click “View” to check hotspot transaction status and information. Including onboard and transfer hotspot.

8.3 Operation

This page is used for setting Helium upgrade interval and operate the Helium process.

Status
Packet Forwarder
Network Server
Helium
Sync
Onboarding
Operation
Network
System
Maintenance
APP

Operation

Automatic Upgrade

Helium Version2022.01.29.0
Enable☒
Upgrade Schedule24 h

Save

Helium Log

Log FileDownload

Helium Reboot

Reboot

Helium Reset

Reset

Operation	
Item	Description
Automatic Upgrade	
Helium Version	Show the current hotspot Helium program version.
Enable	When enabled, the hotspot will check and upgrade the Helium version automatically.
Upgrade Schedule	Set the time interval of checking Helium version. If there is a newer version, the hotspot will update the version automatically. Range: 1-168 hours.
Helium Log	
Download	Download the Helium logs containing the Helium progress running status, configuration changes, and so on.
Helium Reboot	
Reboot	Reboot the Helium progress.
Helium Reset	
Reset	Reset the Helium progress and block data, then download the latest Helium progress automatically.

[END]