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/ [HP0D Full Hotspot for Helium User Manual \(/xwiki/bin/view/Main/User%20Manual%20for%20All%20Gateway%20models/HP0D/\)](#) ▾

# HP0D Full Hotspot for Helium User Manual

Last modified by Xiaoye ([/xwiki/bin/view/XWiki/Xiaoye](#)) on 2022/09/17 10:19



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# 1. Introduction

## 1.1 What is HP0D

The HP0D is an outdoor LoRaWAN Gateway. It lets you bridge LoRa wireless network to an IP network via WiFi, Ethernet, optional 3G or 4G. The LoRa wireless allows users to send data and reach extremely long ranges at low data rates.

HP0D has passed Helium Full Hotspot Approval. It supports the **miner feature from Helium** and has a built-in ATECC608 encryption chip. It can be used as a Helium Full Hotspot for the project. It also supports Semtech packet forwarder and LoRaWAN Station connection, it is fully compatible with LoRaWAN protocol. HP0D supports two LoRaWAN servers at the same time, **users can use HP0D for helium mining and connects max 2 x LoRaWAN servers at the same time.**

**Dragino already paid HP0D \$40 onboarding cost and \$10 location cost for each HP0D.** It is ready to use for Helium, user only needs to input HNT wallet address and use QR Code to onboarding HP0D when it arrives.

HP0D has pre-configured standard LoRaWAN frequency bands to use for different countries. Users can also customize the frequency bands to use in their own LoRaWAN network.

## 1.2 Specifications

### Hardware System:

Linux Part:

- Raspberry Pi 4

**Interface:**

- 10M/100M RJ45 Ports x 1
- LoRaWAN Wireless
- Power Input: 12V 2A, DC

**Operating Condition:**

- Work Temperature: -20 ~ 65°C
- Storage Temperature: -20 ~ 65°C
- Power Input: 12V 2A, DC

## 1.3 Features

- Open-Source Linux system
- RPi4 with 2G /4G or 8G RAM
- Managed by Web GUI, SSH via Internet
- Support Semtech UDP packet forwarder
- Support LoRaWAN Station Connection
- Support Helium Miner
- External fiberglass antenna
- Firmware OTA
- 802.3af PoE
- Lighting Protection
- Remote Monitoring
- Support Helium LoRaWAN server and secondary LoRaWAN server
- Include prepaid \$40 onboarding cost and \$10 location cost.
- Remote.it remote management ([https://wiki.dragino.com/index.php?title=Reverse\\_SSH\\_Access#Use\\_Remote.it\\_service](https://wiki.dragino.com/index.php?title=Reverse_SSH_Access#Use_Remote.it_service)) .

## 1.4 Label info and login name



### 1.4.1 Label information:

**Device hostname:** dragino-xxxxxx  
**Band:** US915/AU915/AS923\_1-AS923\_4/KR920/EU868/IN865/RU864  
**Miner animal name:** xxx-xxx-xxx  
**Miner address:** 12xxxxxx  
**Eth MAC address:** A8: 40: 41: EF: FE: CD  
**Login:** root/d59f2d5b (the root is the Login account for the Web-UI and SSH.)  
**SN:** device serial number.

## 2. Quick Start & Onboarding

The HP0D is configured as a Wi-Fi Access Point by factory default. You can access and configure the HPD after connecting to its Wi-Fi network, or via its WAN Ethernet port.

## 2.1 Connect HP0D Web UI

### 2.1.1 via HP0D's Access Point

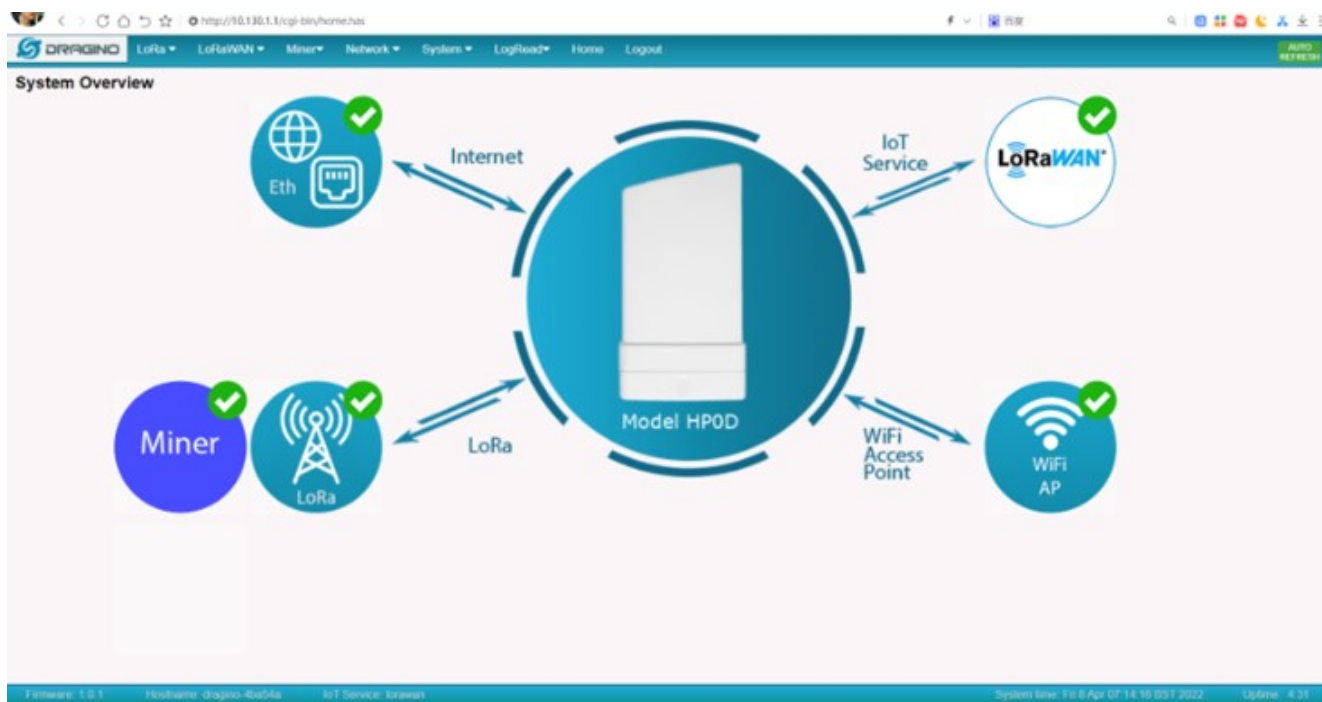
At the first boot of HP0D, it will auto-generate a Wi-Fi network



called : **HPD-dragino-xxxxxx**

with password: **dragino+dragino**

You can use a PC to connect to this Wi-Fi network. The PC will get an IP address 10.130.1.xxx and the HP0D has the default IP 10.130.1.1



## 2.1.2 Connect via HP0D hostname

Connect the HP0D Ethernet port to your router and HP0D will obtain an IP address. If your PC(Windows/Mac/Ubuntu) connects to the same network with the HP0D, you can access the HP0D Web-UI via HP0D's hostname.

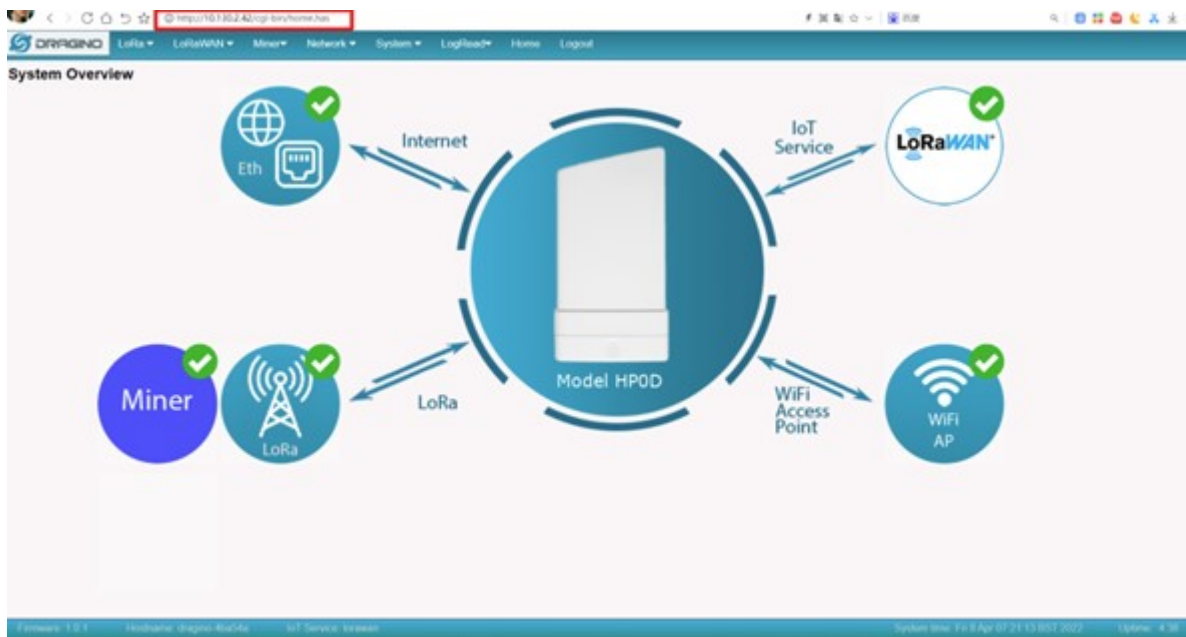
Like: <http://dragino-4ba54a>



## 2.1.3 Connect via Ethernet Port

Connect the HP0D Ethernet port to your router and HP0D will obtain an IP address from your router. In the router's management portal, you should be able to find what IP address the router has assigned to the HP0D.

If you get the IP address from the router, like: 10.130.2.42, you can use this IP address to connect the WEB UI or SSH access of HP0D.



## 2.2 Generate QR Code

Go to **Miner** --> **QR Generate**, input your Helium Wallet Address, and click **Generate**.

**Note:** After onboarding, this wallet will become the owner of this hotspot.



**DRAGINO** LoRa LoRaWAN Miner Network System LogRead Home Logout

### Miner - Configuration

**General**

Up time: Up 2 days

Animal name: ~~any-manifold-plotypus~~

ECC address: /p2p/148tpC8pJZ9PhYhc33K5RwFhiVvggkudGxYr9nDgOmjyAwARaJ8

Version: 2022.03.07.0 [Update to the latest](#)

Region: US915

Height: 34806 1303763

**Fast Sync & Update**

[Fast Sync](#) [Update](#)

**Disk State**

Used: 6.3G / 23% Avail: 22G [Clear Disk](#)

**QR-Generate**

Owner Wallet Address:  [Generate](#) [Clean](#)

**QR-Display**

Use mobile APP then Choose Dragino HP0D and scan to onboarding

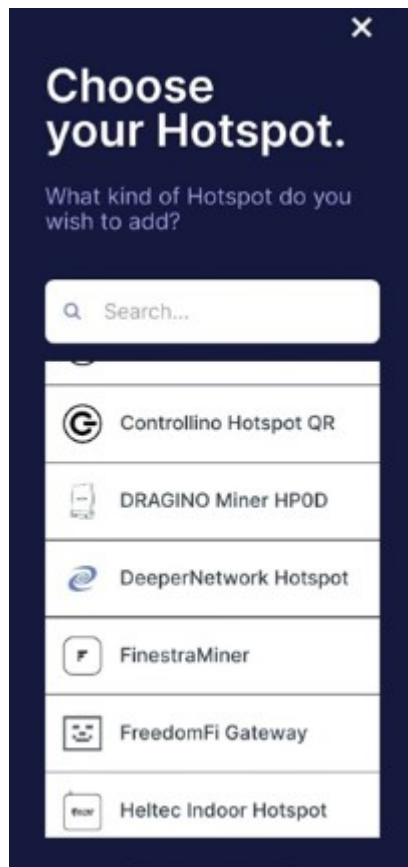
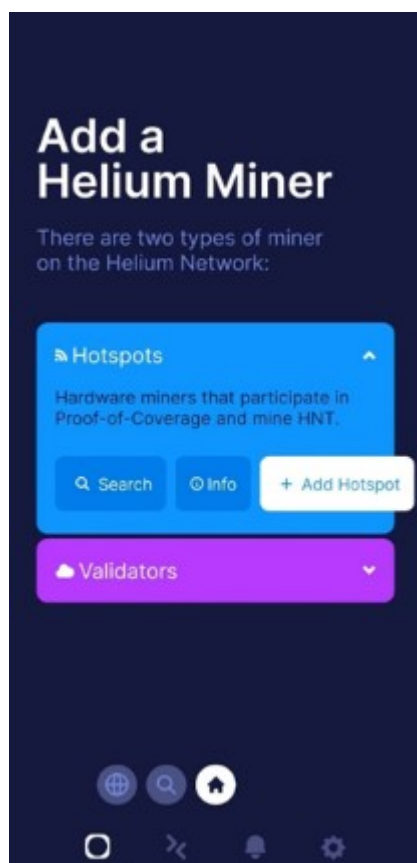
10.130.2.41/cgi-bin/miner-config.htm

## 2.3 Onboarding Hotspot

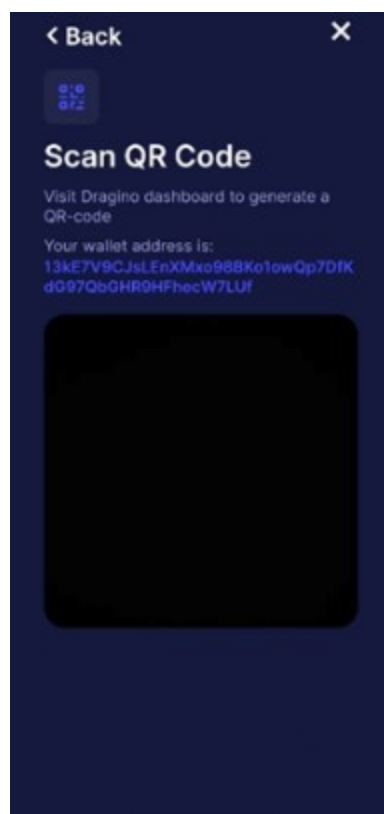
1. Download the Helium Hotspot APP from the Apple or Google Play store.

**Note: the APP version needs to be greater than 3.11.**

2. To add a hotspot, select **"Hotspot"**. On this tab, click the **"+ Add Hotspot"** in the mid where choose the **"DRAGINO Miner HP0D"**

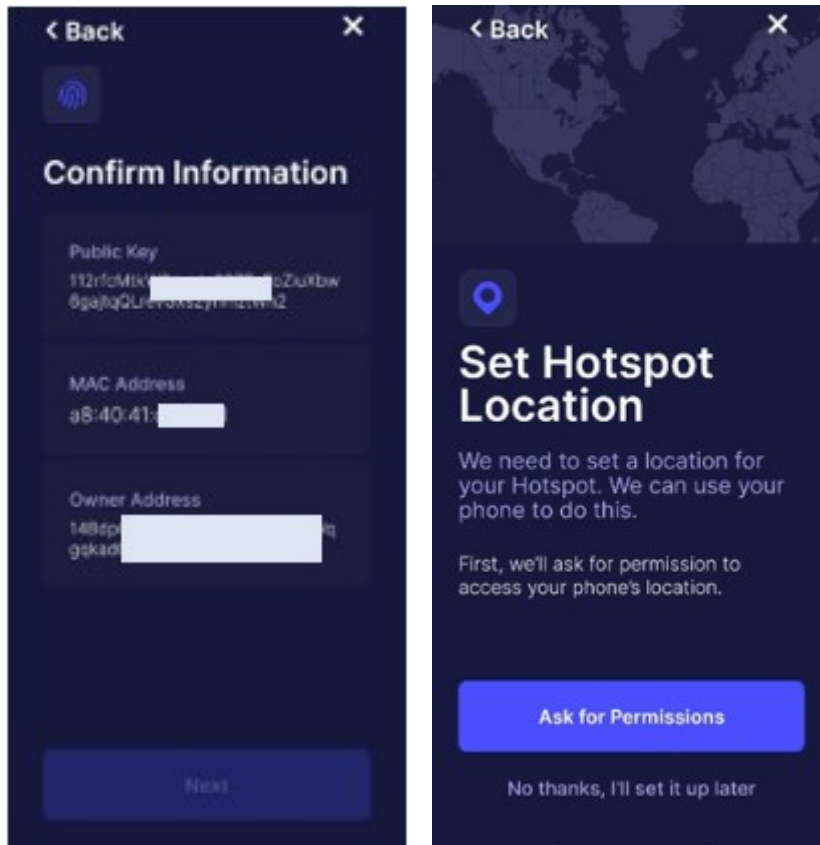


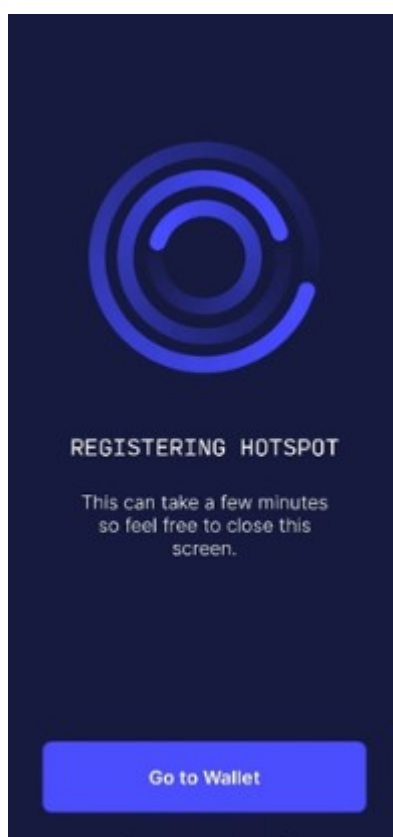
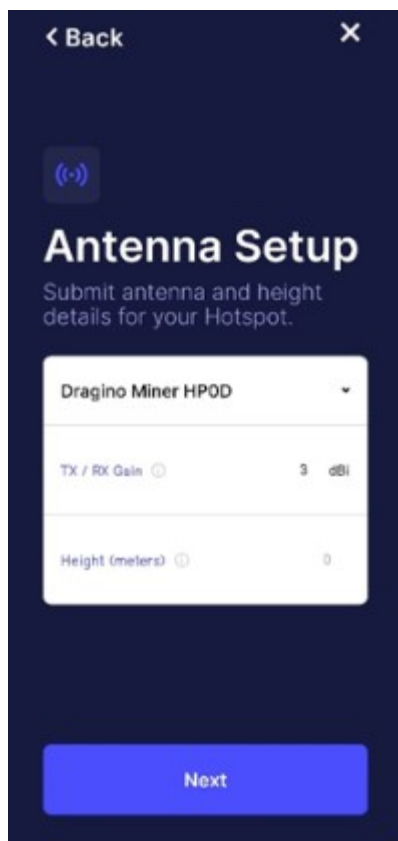
3. Scan the QR Code you generated in the previous step.



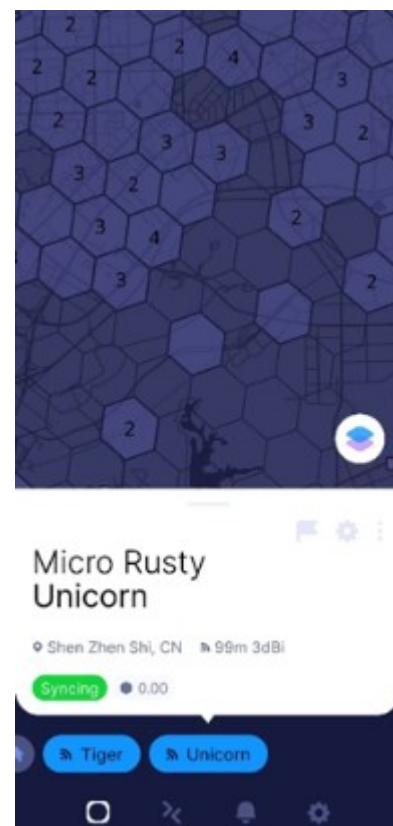
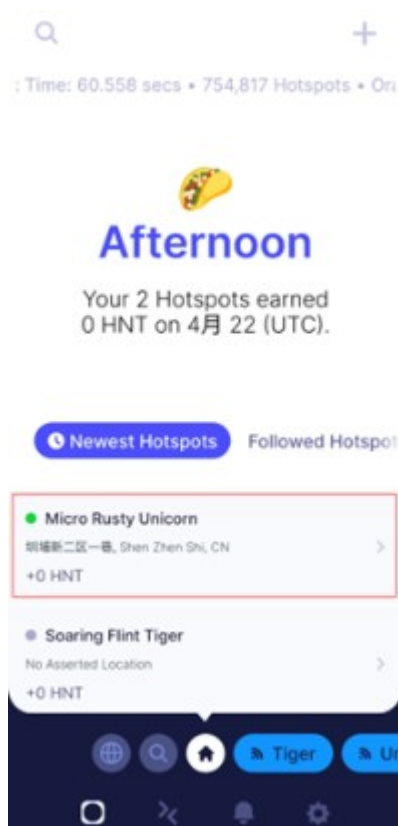
#### 4. Onboarding your device

Mobile APP will get info from the onboarding server. If the MAC address doesn't appear, it means the network connection of the mobile to the onboarding server might have an issue.





5. Check onboarding status where you can check from mobile:

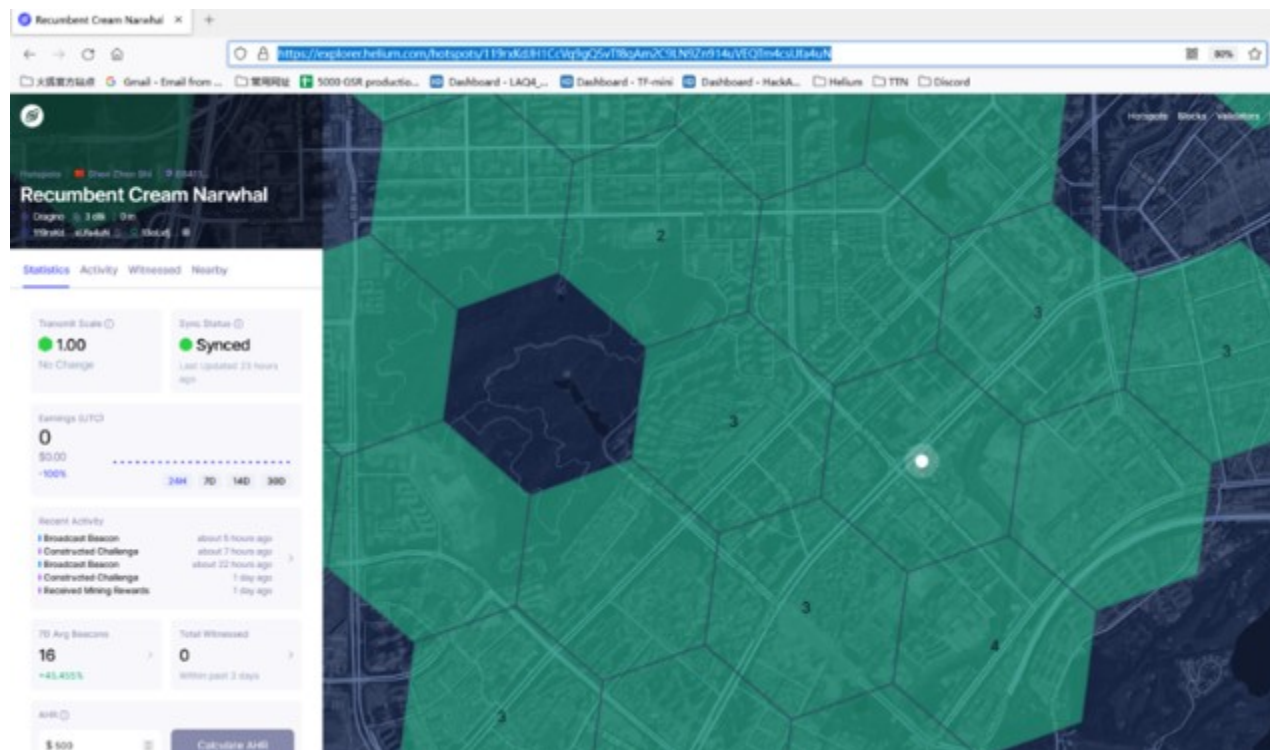


You can also see the hotspot status in the below link:

[https://explorer.helium.com/hotspots/<YOUR\\_HOTSPOT\\_KEY>](https://explorer.helium.com/hotspots/<YOUR_HOTSPOT_KEY>)

Example:

**Green Synced means hotspot works normally.**



## 2.4 Set the Port Forwarding

*Helium Hotspots may not work if the Hotspot is behind a firewall or uses an incompatible NAT type. Other times it may be because of a router configuration or the internet is offline. This article aims to help resolve any issues you may have.*

- **44158/TCP:** the Miner communicates to other Miners over this port. The networking logic knows how to get around a lack of forwarding here, but you will get better performance by forwarding the port
- **1680/UDP:** the radio connects to the Miner over this port. You will not be able to forward packets or participate in Proof of Coverage without this

**Note: Please refer to more detailed Settings**

<https://docs.helium.com/troubleshooting/network-troubleshooting/> (<https://docs.helium.com/troubleshooting/network-troubleshooting/>)

<https://www.youtube.com/watch?v=GKusVC7ovrE> (<https://www.youtube.com/watch?v=GKusVC7ovrE>)

## 3. Check the configuration of HP0D

### 3.1 LoRa frequency configuration

The screenshot shows the DRAGINO web interface for LoRa configuration. The top navigation bar includes links for LoRa, LoRaWAN, Miner, Network, System, LogRead, Home, and Logout. The 'LoRa' tab is selected, and a 'LoRa' sub-tab is also visible. The main content area is titled 'LoRa Configura' and contains the following settings:

- Debug Level:** A dropdown menu set to 'Low'.
- Radio Settings:**
  - Keep Alive Period (sec):** A text input field containing '30'.
  - Frequency Plan:** A dropdown menu set to 'EU868 Europe 868Mhz (863~870)'.
- Static GPS coordinates ?**
  - Enable Static GPS:** An unchecked checkbox.
  - Latitude:** A text input field containing '22.700000'.
  - Altitude (m):** A text input field containing '450'.
  - Longitude:** A text input field containing '114.240000'.
- Current Mode:** Displayed as 'LoRaWAN Semtech UDP' in red text.
- Buttons:** 'Save&Apply', 'Disable', and 'Cancel' buttons are located at the bottom.

### 3.2 Check the LoRaWAN Server Address



**DRAGINO** LoRa LoRaWAN Miner Network System LogRead Home Logout

## LoRaWAN Configuratio

**General Settings**

Email:

Gateway EUI:

**Primary LoRaWAN Server**

Service Provider:  Server Address:

Uplink Port:  Downlink Port:

**Primary Packet Filter**

Fport Filter ?  DevAddr Filter ?

**Secondary LoRaWAN Server**

Service Provider:

**Secondary Packet Filter**

Fport Filter ?  DevAddr Filter ?

Current Mode: **LoRaWAN Semtech UDP**

### 3.2.1 Configure the Secondary LoRaWAN Server

**DRAGINO** LoRa LoRaWAN Miner Network System LogRead Home

## LoRaWAN Configuration

**General Settings**

Email:

Gateway EUI:

**Primary LoRaWAN Server**

Service Provider:  Server Address:

Uplink Port:  Downlink Port:

**Primary Packet Filter**

Fport Filter ?  DevAddr Filter ?

**Secondary LoRaWAN Server**

Service Provider:  Server Address:

Uplink Port:  Downlink Port:

**Secondary Packet Filter**

Fport Filter ?  DevAddr Filter ?

Current Mode: **LoRaWAN Semtech UDP**

**Add gateway**

**General settings**

Gateway ID:

Gateway EUI:

Gateway name:

Gateway description:

Optional gateway description: can also be used to save notes about the gateway

Gateway Server address:

The address of the Gateway Server to connect to

Require authenticated connection: ☐ Enabled

Controls whether this gateway may only connect if it uses an authenticated Basic Station or MQTT connection

Gateway status:

**LoRa Configuration**

Debug Level:

**Radio Settings**

Keep Alive Period (sec):

Frequency Plan:  **Frequency Plan must match**

Frequency Sub Band:

**Static GPS coordinates**

Enable Static GPS: ☐

Latitude:  Altitude (m):

Longitude:

Current Mode: **LoRaWAN Semtech UDP**

**Frequency Plan must match**

United States 902-928 MHz, FSB 2 (used by TTN)

**Schedule downlink late**

☐ Enabled

Enable server-side buffer of downlink messages

**Enforce duty cycle**

☒ Enabled

Recommended for all gateways in order to respect spectrum regulations

**Schedule any time delay**

500 milliseconds

Configure gateway delay (minimum: 130ms, default: 130ms)

**Gateway updates**

**Automatic updates**

☐ Enabled

Gateway can be updated automatically

**Channel**

Stable

Channel for gateway automatic updates

**After configuration, click "Create gateway"**

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**Overview** **Applications** **Gateways** **Organizations**

EU1 Community **No support plan**

kilight

Gateways > hp0d-xiao

**hp0d-xiao**  
ID: hp0d-xiao

↑ 26,936 ↓ 0 • Last activity 10 seconds ago

1 Collaborator 0 API keys

**General information**

Gateway ID: hp0d-xiao

Gateway EUI: E4 5F 01 F0 FE 63 92 BF

Gateway description: None

Created at: May 30, 2022 19:59:04

Last updated at: Jun 7, 2022 16:17:23

Gateway Server address: eu1.cloud.thethings.network

**LoRaWAN information**

Frequency plan: US\_902\_928\_FSB\_2

Global configuration:

**Live data**

See all activity →

16:17:37 Receive gateway status Metrics: { ackr: 0, rxfw: 1, rxin: 1, ... }

16:17:23 Update gateway [ "frequency\_plan\_id" ]

16:17:17 Receive uplink message DevAddr: 26 0B DA A7 <> FCnt: ...

16:17:07 Receive gateway status Metrics: { ackr: 0, rxfw: 0, rxin: 0, ... }

16:16:37 Receive gateway status Metrics: { ackr: 0, rxfw: 1, rxin: 1, ... }

16:16:30 Receive uplink message DevAddr: 26 0B F0 A8 <> FCnt: ...

**Location**

Change location settings →

No location information available

### 3.3 Check Miner configuration



DRAGINO

LoRaLoRaWANMinerNetworkSystemLogReadHomeLogout

Miner

### Miner - Configuration

#### General

Up time	Up 29 hours	
Animal name	zany-mangold-plotypus	
ECC address	/p2p/112fcMk4W2cxrdc9S7ExFo7luYbu6ga8tqOLreuGxc2yfbmztMh2	
Version	2022.03.07.0	Update to the latest
Region	US915	
Height	34771 1302657	

#### Fast Sync & Update

Fast Sync

Update

#### Disk State

Used	5.7G / 21%	Avail	23G	Clear Disk
------	------------	-------	-----	------------

#### QR-Generate


Owner Wallet Address	Example: 13gb8SJg8M2SyLakna8xxxxxxxxx7pvY4R3kgMSYGzAKE1B	Generate	Clean
----------------------	--	----------	-------

#### QR-Display

Input Wallet Address to Generate QR Code!

**Note:** Check the Region and Height, the default height is greater than 1, if it is 1 please Click the mid button of Update, and then wait 10mins to check here.

## 3.4 Check the Miner state


LoRa ▾
LoRaWAN ▾
Miner ▾
Network ▾
System ▾
LogRead ▾
Home
Logout

## Miner State

Block absorbing status: Block Height: 1376708

```

2022-05-31 09:03:40.969 9 [info] <0.1904.1>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 20687 post took 10725 ms height 1376694
2022-05-31 09:04:17.951 9 [info] <0.2044.1>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 11626 post took 97 ms height 1376695
2022-05-31 09:06:44.522 8 [info] <0.1887.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 41357 post took 22582 ms height 1376696
2022-05-31 09:08:43.025 8 [info] <0.2217.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 36928 post took 48 ms height 1376697
2022-05-31 09:09:49.197 8 [info] <0.2217.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 1 absorb took 43030 post took 22687 ms height 1376698
2022-05-31 09:10:09.521 8 [info] <0.2217.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 1 absorb took 19829 post took 39 ms height 1376699
2022-05-31 09:12:40.899 8 [info] <0.2709.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 2 absorb took 52692 post took 17604 ms height 1376700
2022-05-31 09:13:09.971 8 [info] <0.2709.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 1 absorb took 27992 post took 523 ms height 1376701
2022-05-31 09:13:45.405 8 [info] <0.2709.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 1 absorb took 25416 post took 9578 ms height 1376702
2022-05-31 09:16:11.902 8 [info] <0.3186.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 56601 post took 114 ms height 1376703
2022-05-31 09:17:03.607 8 [info] <0.3186.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 49707 post took 1444 ms height 1376704
2022-05-31 09:17:41.572 8 [info] <0.3186.0>%blockchain_txn:unvalidated_absorb_and_commit:[511,29] validation took 0 absorb took 37319 post took 152 ms height 1376705
  
```

**P2P summary:**

name	result
connected	yes
dialable	yes
nat_type	symmetric
height	1376705

**P2P network:**

address	name	listen_ad	connecti	nat	last_upda
/p2p/1lul1Jbu2y8Ujh8sfaNLfYVAcqJzJD6u5y	magnificent-peach	1	11	symmetr	80.99s

listen\_addr (prioritized)

/p2p/1jWhcuKrPCNk5o8kncr4b1XAjBKZoZrG6D9eeUfTp6WxGcMk/p2p-circuit/p2p/1lul1Jbu2y8Ujh8sfaNLfYVAcqJzJD6u5y
--

**Note:** Absorption status can show whether the hotspot is working properly. The p2p network can see how your hotspot is interacting with the surrounding hotspots. Usually, the nat\_type should be 'none'.

## 4. Installation of Antenna

HP0D uses Fiber Glass Antenna.



*The user needs to connect the antenna cable's SMA connector to the HP03 and connect the N-Type connector to the antenna and install it as below:*



## 5. SSH Access for Linux console

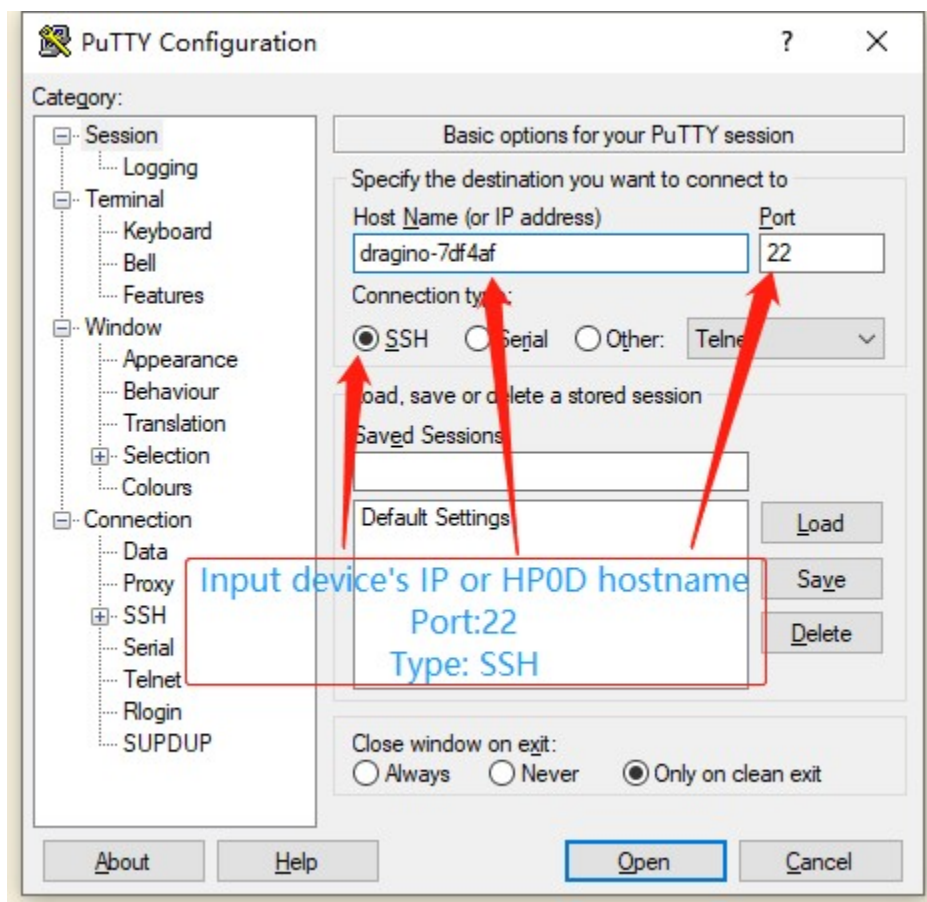
*Connect the HP0D Ethernet port to your router and HP0D will obtain an IP address from your router.*

*In the router's management portal, you should be able to find what IP address the router has assigned to the HP0D.*

*You can use this IP or hostname of HP0D to connect the WEB UI or SSH access of HP0D.*

*Make sure your PC and the HP0D are in the same network, the use an SSH tool (such as **putty** (<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>) ) to access it.*

Below are screenshots:



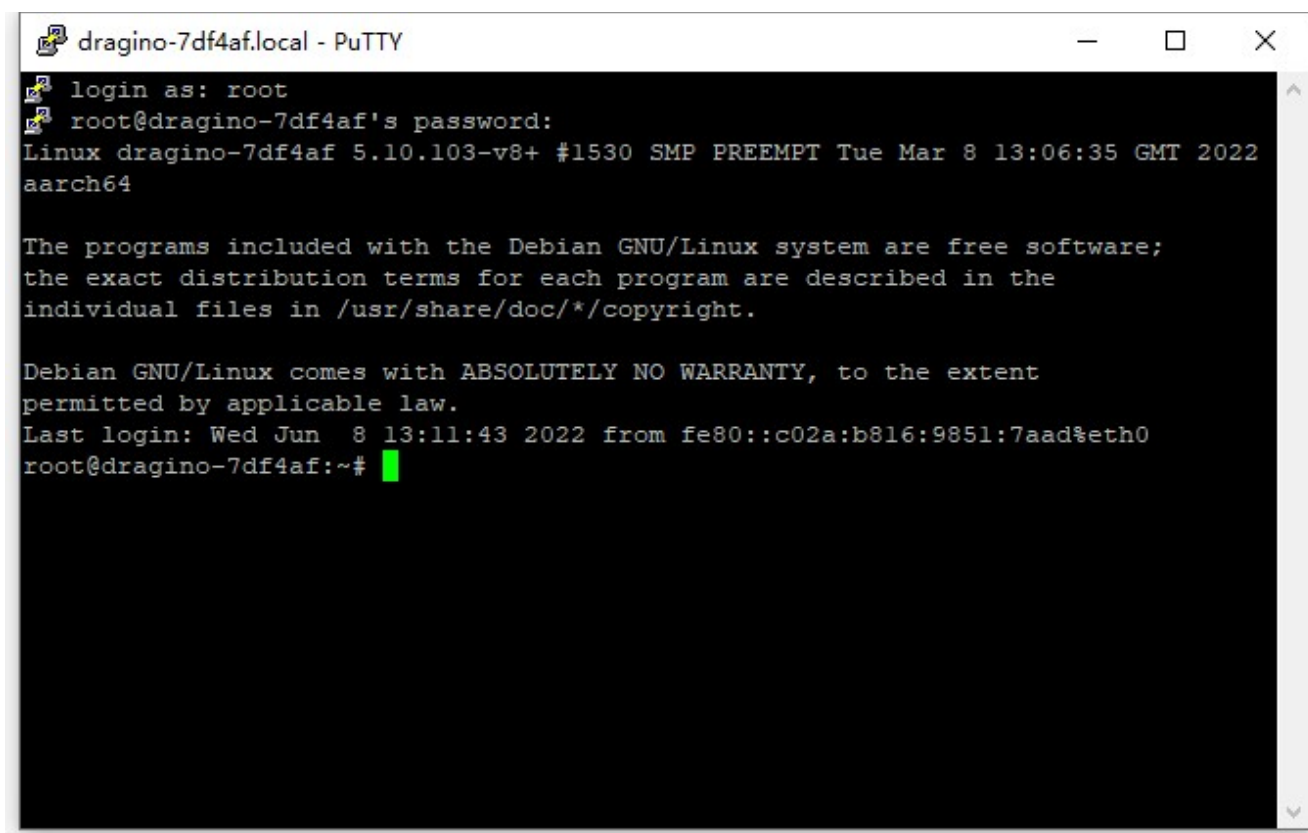
**IP address:** IP address of HP0D or hostname of HP0D ( Such as dragino-7df4af )

**Port:** 22

**User Name:** root

**Password:** Randomly generated (found on device's label)

After logging in, you will be in the Linux console and can enter commands as shown below.



```
dragino-7df4af.local - PuTTY
login as: root
root@dragino-7df4af's password:
Linux dragino-7df4af 5.10.103-v8+ #1530 SMP PREEMPT Tue Mar 8 13:06:35 GMT 2022
aarch64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Wed Jun  8 13:11:43 2022 from fe80::c02a:b816:9851:7aad%eth0
root@dragino-7df4af:~#
```

## 6. How to change the Wireless function of HP0D

*The wireless function is configured as AP by default and the web page does not support configuration, if you want to configure it as STA(client)connection mode, you can configure your WiFi info on the **/Network/WiFi** page.*

**Note: the wireless state is as AP**




## 6.1 Access WiFi configuration page

The screenshot shows the "WiFi" configuration page in the DRAGINO web interface. The page has a navigation bar at the top with tabs: LoRa, LoRaWAN, Miner, Network (selected), System, LogRead, Home, and Logout. Below the navigation bar, the "WiFi" section is active, showing a dropdown menu with options: WiFi, Network Status, and Firewall. The main content area is divided into three sections:

- WiFi Mode**: A dropdown menu set to "WiFi Access Point (AP)". Below it are "Save&Apply" and "Cancel" buttons.
- WiFi Access Point Settings**: Fields for "WiFi Name SSID" (HPD-dragino-6392f), "Passphrase (8-32 char)" (masked with dots), "AP Channel (1-11)" (11), and "Encryption" (WPA2). There are "Show" and "Save" buttons.
- WiFi WAN Client Settings**: Fields for "Host WiFi SSID" and "Passphrase" (masked with dots). There are "Show" and "Save" buttons.

## 6.2 Enter your WiFi information and save



 LoRa ▼ LoRaWAN ▼ Miner ▼ Network ▼ System ▼ LogRead ▼ Home Logout

## WiFi

### WiFi Mode

Mode WiFi Access Point (AP) ▼

Save&Apply Cancel

### WiFi Access Point Settings

WiFi Name SSID HPD-dragino-6392

Passphrase (8-32 char) ..... Show

AP Channel (1-11) 11

Save Cancel

Encryption WPA2 ▼

### WiFi WAN Client Settings

Host WiFi SSID PDCN


Passphrase ..... Show

Save Cancel

**step 1**

**step 2**

## 6.3 Change the WiFi mode.

 LoRa ▼ LoRaWAN ▼ Miner ▼ Network ▼ System ▼ LogRead ▼ Home Logout

## WiFi

### WiFi Mode

Mode WiFi Access Point (AP) ▼

Save&Apply Cancel

**Step 1**

**Step 2**

### WiFi Access Point Settings

WiFi Name SSID HPD-dragino-6392

Passphrase (8-32 char) ..... Show

AP Channel (1-11) 11

Save Cancel

Encryption WPA2 ▼

### WiFi WAN Client Settings

Host WiFi SSID PDCN

Passphrase ..... Show

Save Cancel

## 6.4 Wait system to restart

**DRAGINO** LoRa LoRaWAN Miner Network System LogRead Home Logout

**WiFi** Please wait for system to restart. Time remaining: 25

**WiFi Mode**

Mode: WiFi Client (STA)

Save&Apply Cancel

**WiFi Access Point Settings**

WiFi Name SSID: HPD-dragino-6392

Passphrase (8-32 char): \*\*\*\*\* Show

AP Channel (1-11): 11

Encryption: WPA2

Save Cancel

**WiFi WAN Client Settings**

Host WiFi SSID: PDCN

Passphrase: \*\*\*\*\* Show

Save Cancel

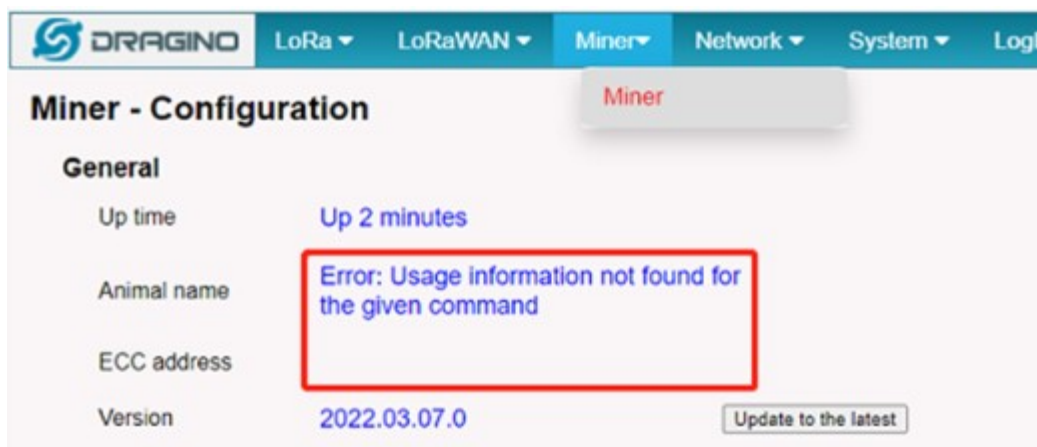
**Note:** When the time remaining is finished it will turn to the home page.

## 6.5 Check the STA state









*HP0D is establishing a connection to the Helium server and is not finished. And you might see above.*

*It might relate to the network which might be up to 10mins.*

## 7.4 Onboarding – Bad Gateway



*This is caused by the process leading too long which just needs to refresh the page.*

## 7.5 Onboarding -- Why did QR Code generate always fail?

**Miner - Configuration**

**General**

Up time: Up 5 hours

Animal name: micro-robot-miner

ECC address: /p2p/112WZKRSBGMWMEGOLWYELLZGHR1D4UDBFHD0A0EN1KZAMGPR

Version: 2022.03.23.1

Region: US915

Height: 11

**Fast Sync & Update**

*This may be related to the current block height, if the device is synchronizing to the latest height or if the device block height is much lower than the current height as the above picture like '11', the QR code generation may fail.*

## 7.6 Onboarding -- Why is the QR Code not quite the same as the manual?

**QR-Generate**

Owner Wallet Address:

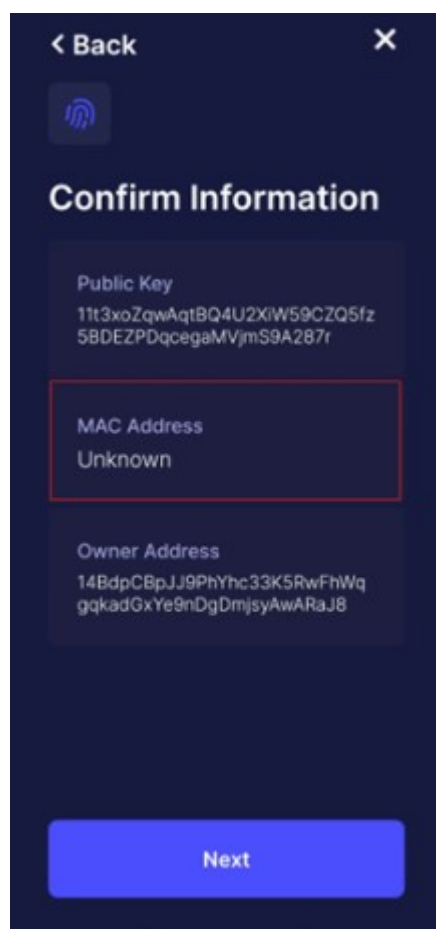
**QR-Display**

Use mobile APP then Choose Dragino HP0D and scan to onboarding

*Please ensure that you enter the correct wallet address and that your network is up and running, the user can click the button of 'Clean' to re-generate the QR Code.*

## 7.7 Onboarding – MAC address is 'Unknown' after

## scan QR Code

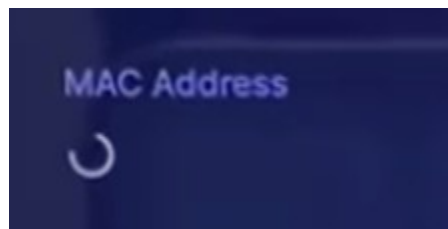


***If you see the MAC Address shows the 'Unknown' where is due to the provisioning error, please contact us to help you solve it.***

## 7.8 Onboarding – MAC address is being refreshed after scanning the QR Code

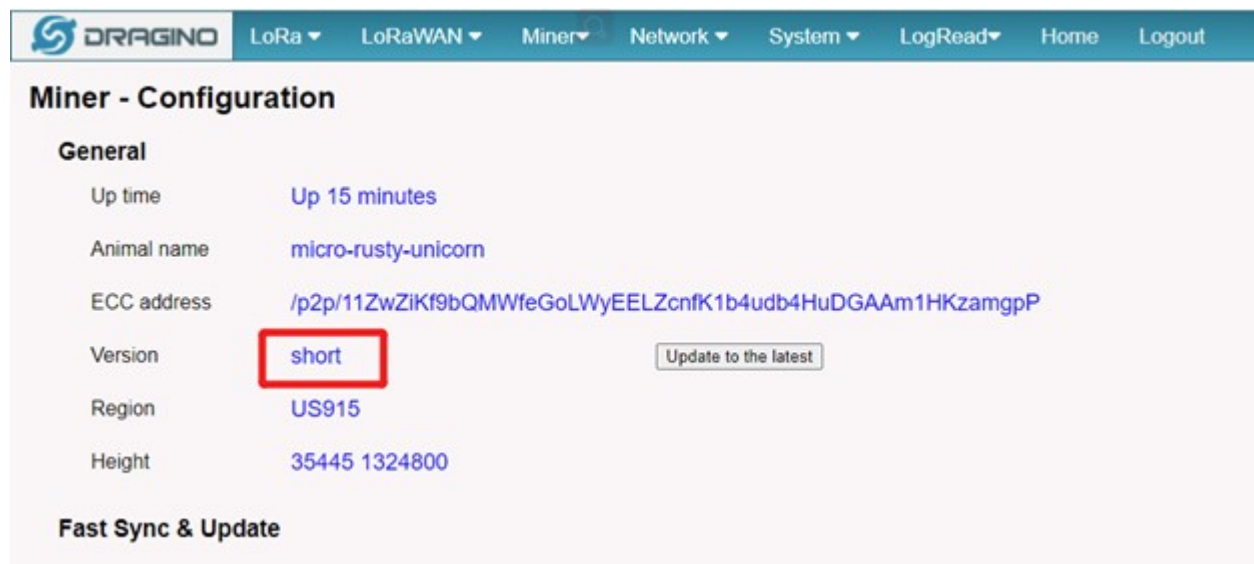
***After scanning the QR Code, Mobile APP will connect to the Helium onboarding server and provide the public key/ wallet address to the onboarding server. The server will return the match MAC address for this hotspot.***

***If you don't see the MAC address, make sure your mobile has a good internet connection.***



## 7.9 HP0D Web --> Miner --> Version shows 'short'

*This is caused by the server connection delay, which does not affect the regular use.*



## 7.10 Mobile APP crash after scanning the QR Code?

- *Make sure you have input the correct Wallet address to generate QR Code.*
- *Make sure your mobile app uses the same wallet address as the one to generate QR Code.*
- *Make sure your mobile app's relevant permission is enabled.*
- *Known: The Android 11 version may cause this kind of issue.*

## 7.11 Why the frequency/region is not the same as what I purchased?

*Each HP0D is inspected and configured prior to shipping.*

*If your HP0D Web-UI – Miner region is not the same as the shell labels, please contact our support team that will solve this issue for you.*

## 7.12 Can use the frequency to a region where is no support?

***Please make sure that the region supports this frequency, you can confirm the appropriate frequency through this link:***

<https://docs.helium.com/lorawan-on-helium/frequency-plans> (<https://docs.helium.com/lorawan-on-helium/frequency-plans>)

## 7.13 Can change the frequency of the HP0D Miner?

*We do not recommend doing this, it may damage your device*

## 7.14 Low Reward and not transmit issue

*We had released the 0524 version for the miner, Users can check the miner version in the HP0D web UI.*

*If it is lower than the 0524 version, users can manually upgrade it via the 'draginoups' command in the HP0D's CLI.*

### Lowered Proof-of-Coverage Rate and Rewards

[Subscribe](#)

**Update** - The core team has tagged a new release for Hotspot Makers 2022.05.24.0. It is up to each Hotspot Manufacturer to send the software update over-the-air to their fleet.

May 25, 00:02 UTC

**Update** - GM 🇺🇸 Helium!

We have optimistic news today thanks to help provided by one of our own community members nmc. With their help, the core team was able to find a root cause of the “flatline” that some Hotspots had been seeing since activating Light Hotspots.

To explain it simply: on a Hotspot, one of the lower-level processes (HTTP2 client) that is used when connecting to a challenger, stalls, and never returns since there is no timeout explicitly set. The fix is to add a default timeout and a monitor so it knows to “wake back up”.

Next steps for the fix

1. The core team will send the fix to Testnet and Mainnet on alpha and beta Hotspots as soon as it is ready. 1-2 hours from now. Let it sit for an hour and confirm that everything works.
2. Tag the build for Hotspot Makers as “Urgent” and “Mandatory”.
3. Hotspot Makers will send the update down to their fleet.

May 24, 15:49 UTC

## 7.15 Why is my miner version not the latest

*By default, as soon as a new version of helium is released, we will push the upgrade the same day.*

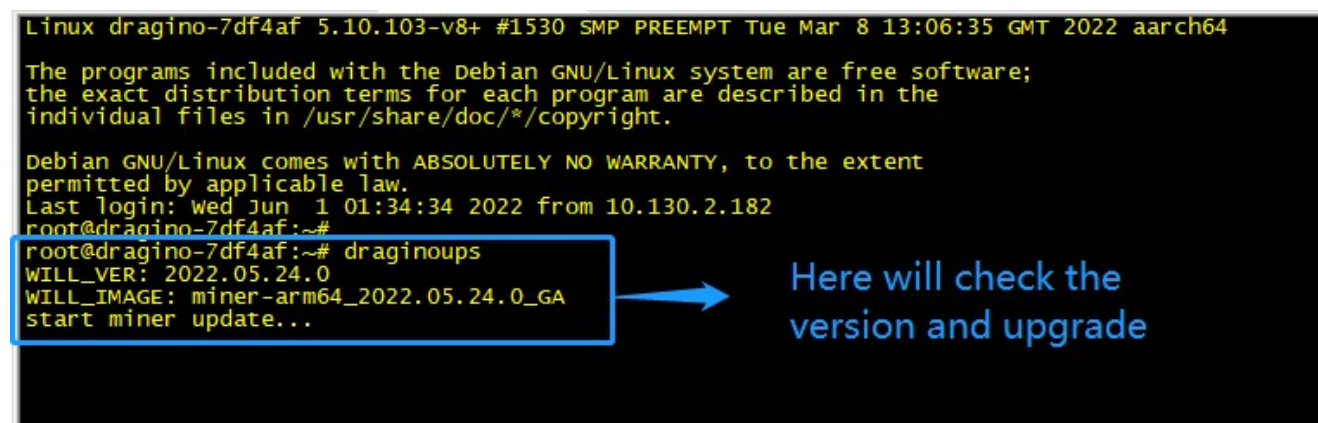
*However, the download and upgrade may fail due to the network.*

You can reboot your hotspot where the hotspot will try to upgrade when per booting.

**and We offer manual check methods:**

**Use the "draginoups" command to check**

**Note:** How to access the hotspot CLI refer to ( Such as Step 5. (<http://8.211.40.43/xwiki/bin/view/Main/User%20Manual%20for%20All%20Gateway%20models/HP0D#H5.SSHAccessforLinuxconsole>) )



```
Linux dragino-7df4af 5.10.103-v8+ #1530 SMP PREEMPT Tue Mar 8 13:06:35 GMT 2022 aarch64
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: wed Jun 1 01:34:34 2022 from 10.130.2.182
root@dragino-7df4af:~#
root@dragino-7df4af:~# draginoups
WILL_VER: 2022.05.24.0
WILL_IMAGE: miner-arm64_2022.05.24.0_GA
start miner update...
```

Here will check the version and upgrade

## 7.16 Why is my miner running down?

*the default, the Miner is managed by docker.*

*If you find the miner is offline where the miner is running down.*

**What You can do?**

**1. Reboot the hotspot and check again.**

*Usually, if the miner is just down, then a reboot is the quickest way*

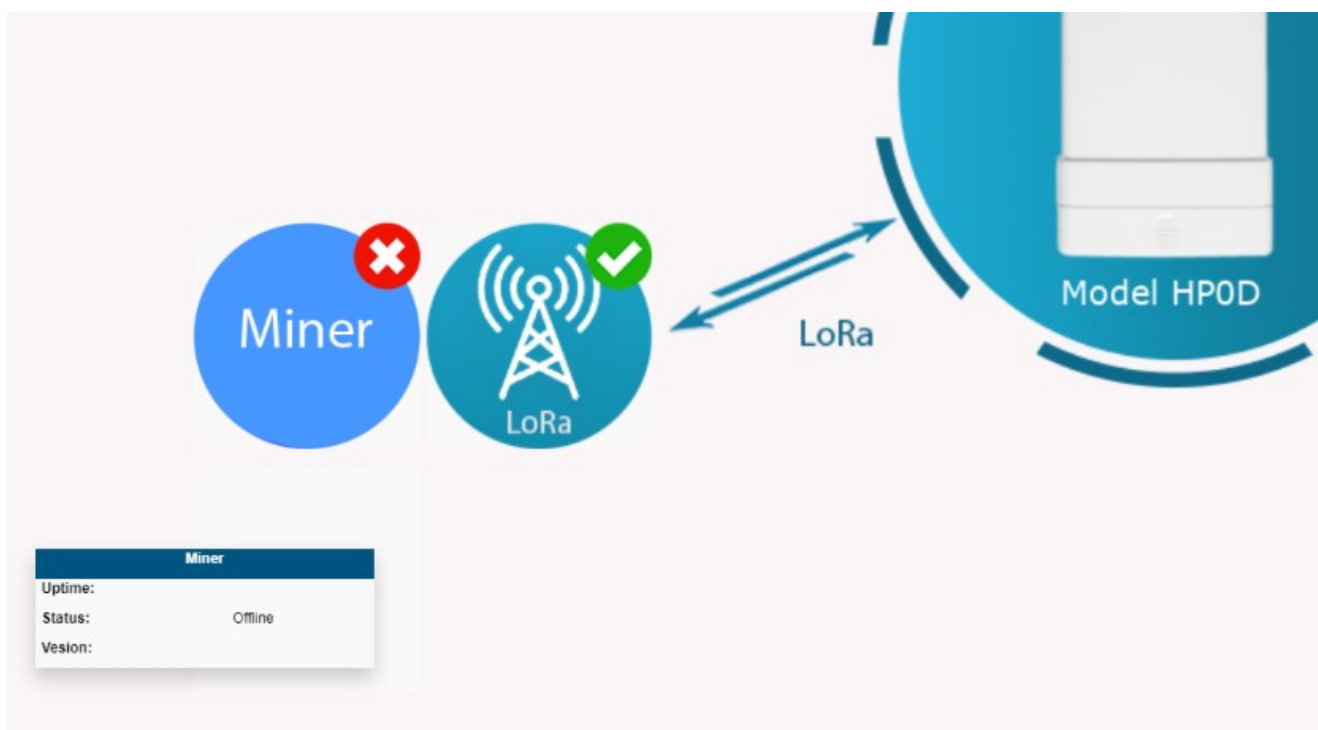
**2. Reinstall the Miner manually.**

*If rebooting does not solve the problem you can reinstall MINER by one of the following methods*

1). There is an update button in the middle of the miner page, click this button and then the miner will be reinstalled.

2). Run the "**minerup update**" command to reinstall the miner







LoRa ▾ LoRaWAN ▾ Miner ▾ Network ▾ System ▾ LogRead ▾ Home Logout

## Miner - Configuration

### General

Up time

Animal name

ECC address

Version

Update to the latest

Region

Height\_local

Height\_remote 1389642

### Fast Sync & Update

Fast Sync

Update

### Disk State

Used

Avail

Clear Disk

### QR-Generate

Owner Wallet Address

14BdpCBpJJ9PhYhc33K5RwFhWggqkadGxYe9nDgDmjsyAwARaJ8

Generate

Clear

### QR-Display

Use mobile APP then Choose Dragino HP0D and scan to onboarding

## 7.17 More commands for debugging.

I'm trapped somewhere, what can I do first?

*dragino provides a method of self-testing*

- 1.) Is Hotspot's Miner running?
- 2.) Is the miner version up to date?
- 3.) Is the height gap between local height and remote height kept within 100

**Note:** You can find the above three points on the Miner page, and If you are familiar with the Linux command line you can use the following command

```
minerup update #--> reinstall miner but not clearing memory
```

```
minerup flush    #--> reinstall miner and clear memory
minerup snap     #--> load a snap_short to sync the block height
minerup gap      #--> check the height between local and remote.
draginoup        #--> check the miner version gap between local and remote.

doker ps         #--> show the miner running state
miner versions   #--> show the miner version
```

## 7.18 Why does my hotspot not have some of the features described in this Wiki

*This is the result of the OTA not being updated in time*

*You can reboot your hotspot or upgrade these packages manually.*

```
apt update
apt install dragino*
```

## 8. How to flash a new OS for the hotspot, the hotspot's setting will be factory settings

The hotspot is based on the Rpi-4B so the OS has been installed on the SD card.

So you have to re-flash the image into the SD card.

**Warning: Do not reset unless necessary**

### ***Preparations:***

1. *Open the HP0D shell, and take out the SD card from the Raspberry PI 4B (Make sure the SD card is empty )*
2. *Download the OS image: ( Such as **draginohp0d-1.9img** (<http://repo.dragino.com/release/hp0d-image/draginohp0d-1.9.img>) )*
3. *A card reader device*
4. *A Flash software tool ( Such as **balenaEtcher** (<https://www.balena.io/etcher/>) )*

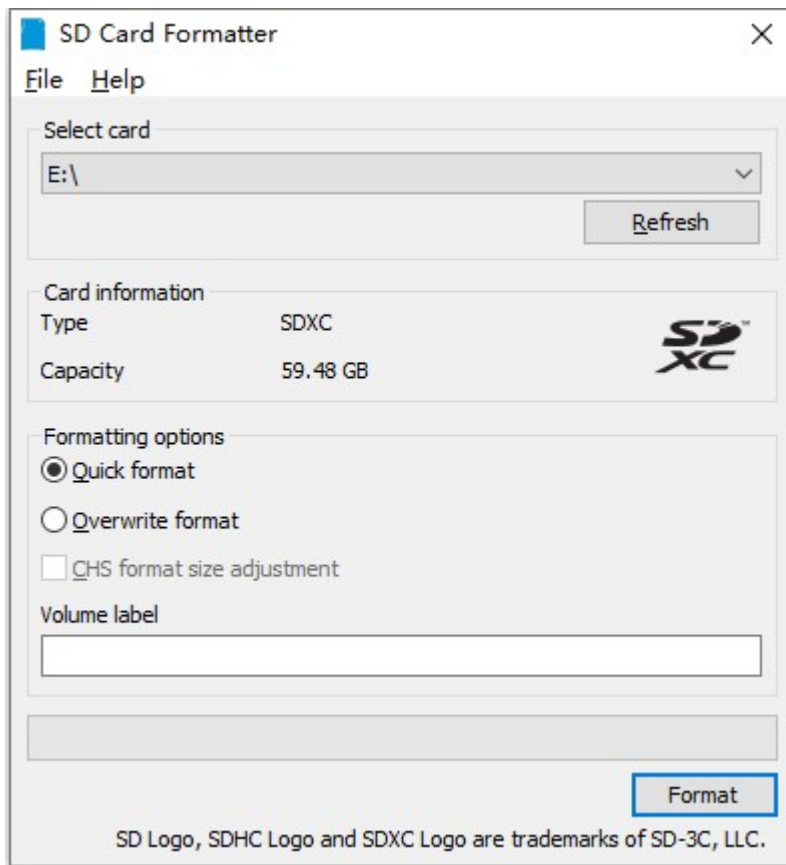
5. SD Card **formatter** (<http://repo.dragino.com/release/tool/PanasonicSDFormatter.zip>)

**HP0D's enclosure**

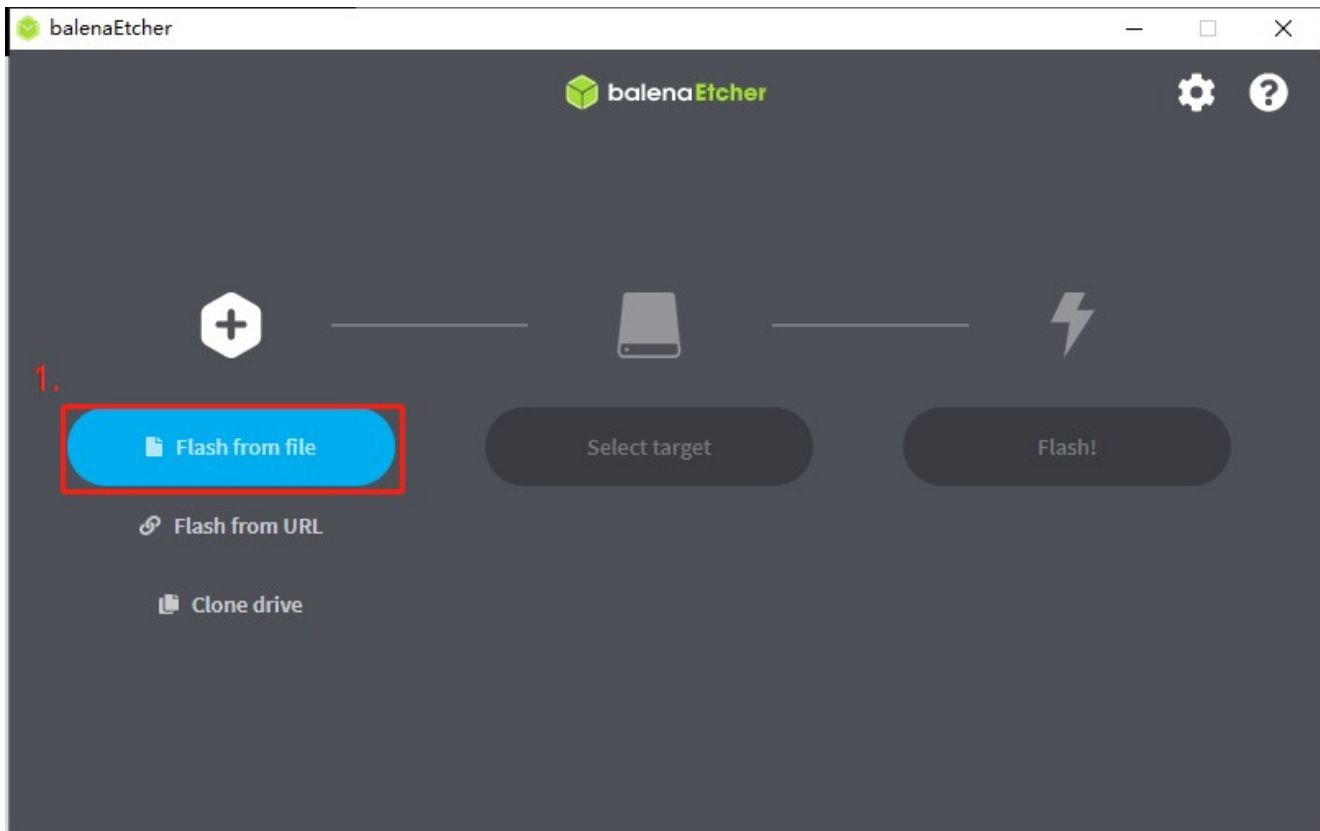




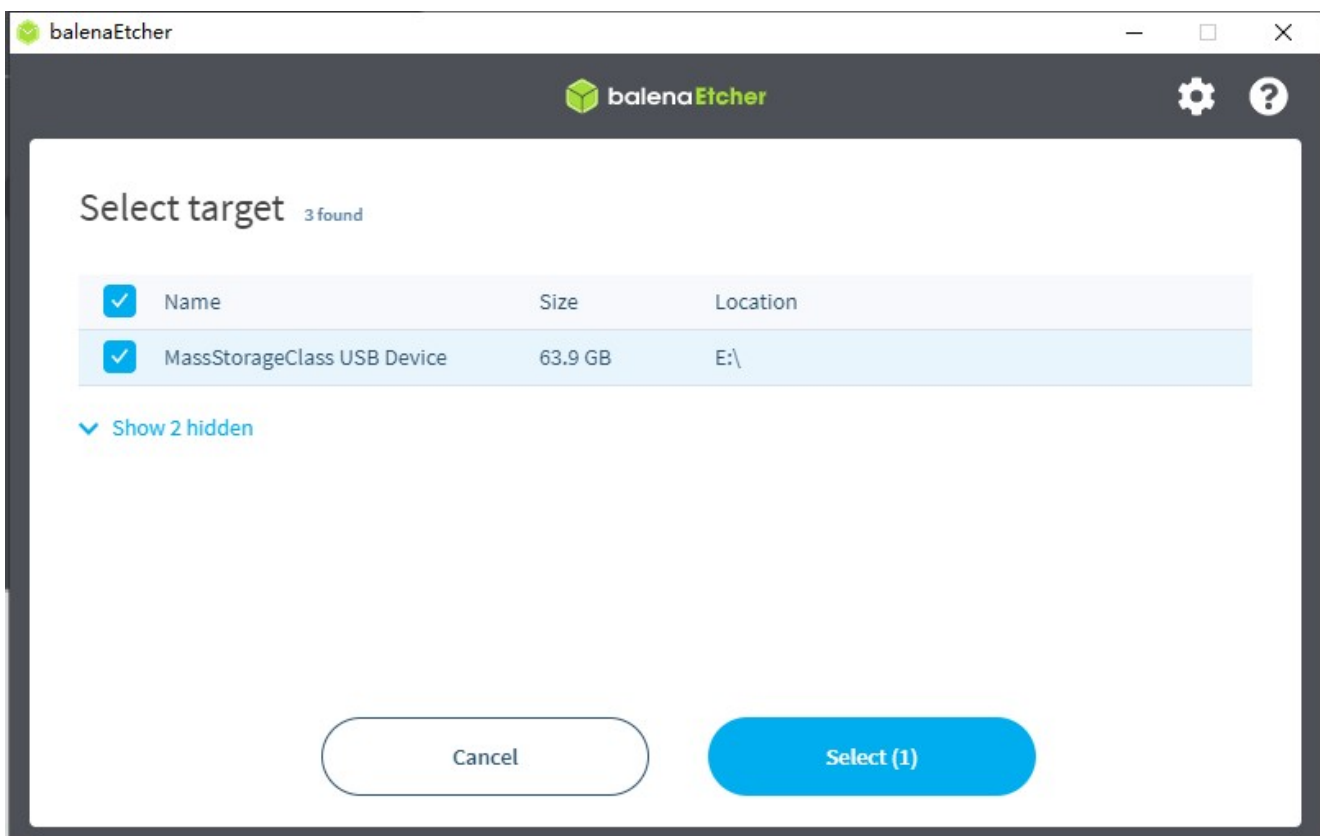
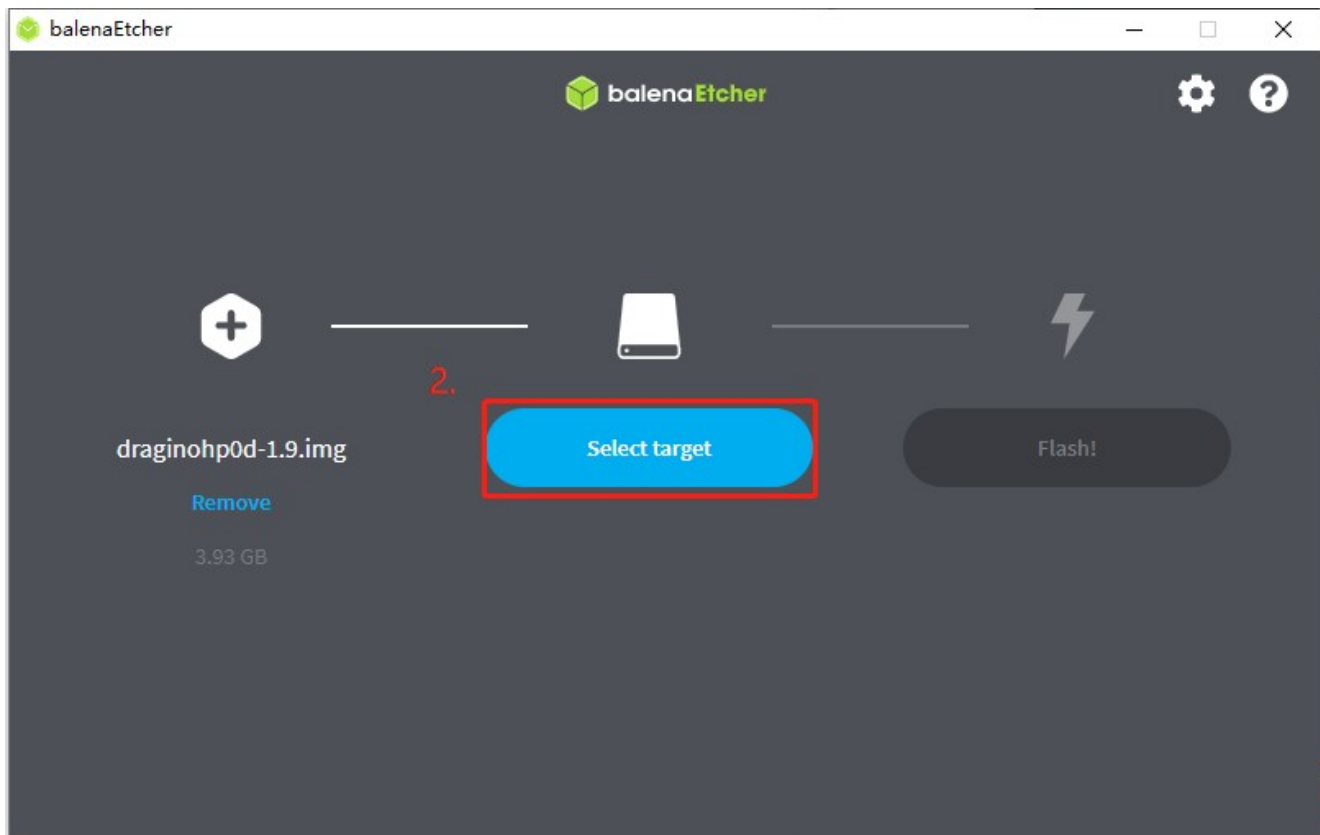
## Step 1. Formatting the SD Card



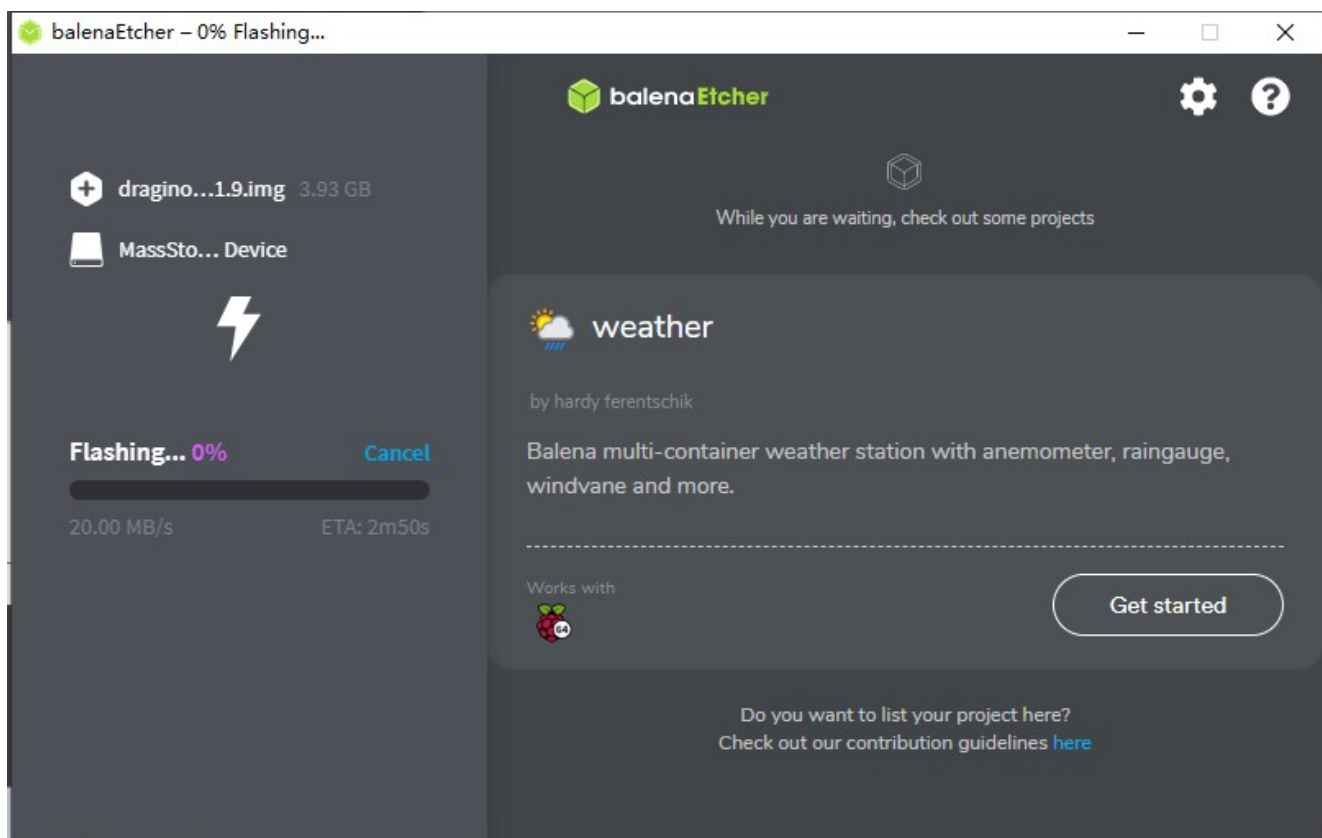
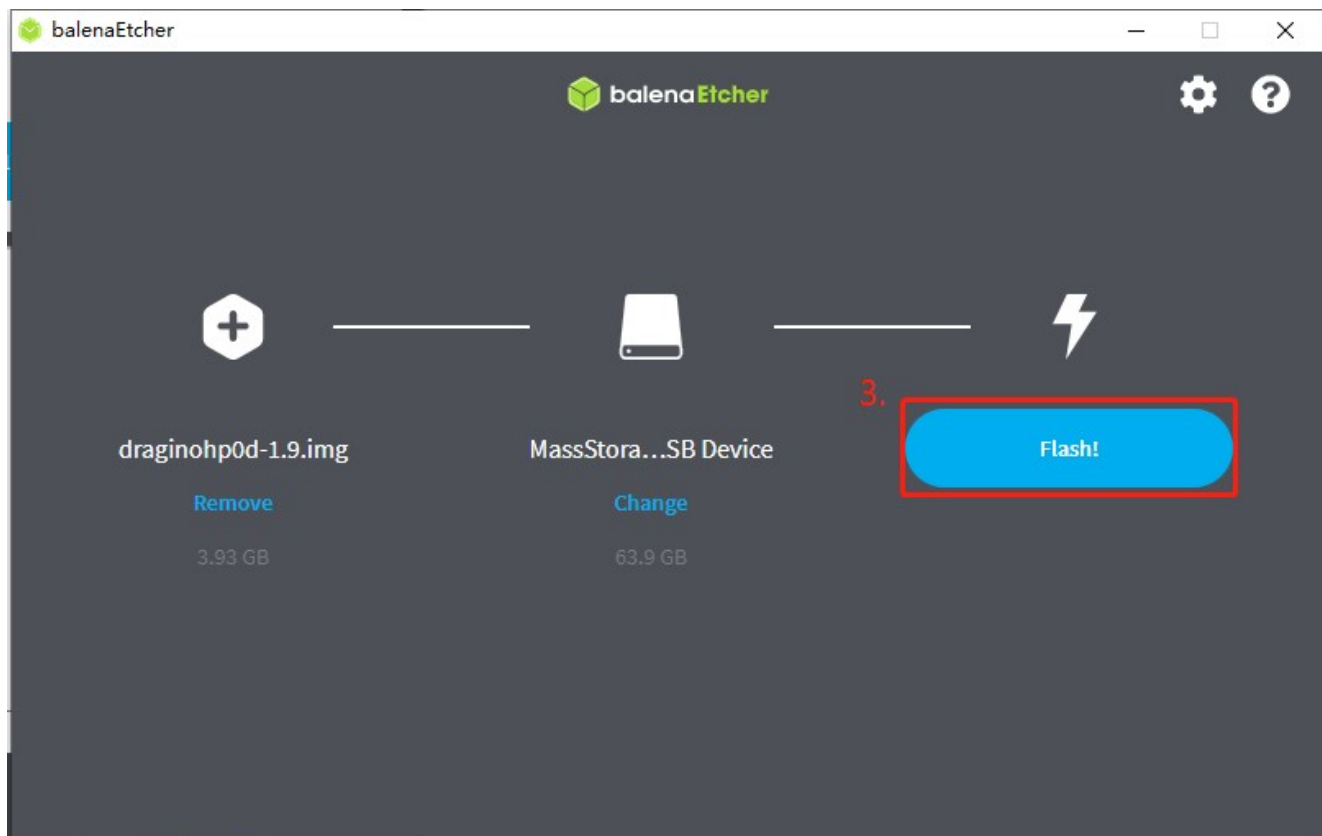
## Step 2. Select the OS image



### Step 3. Select the target

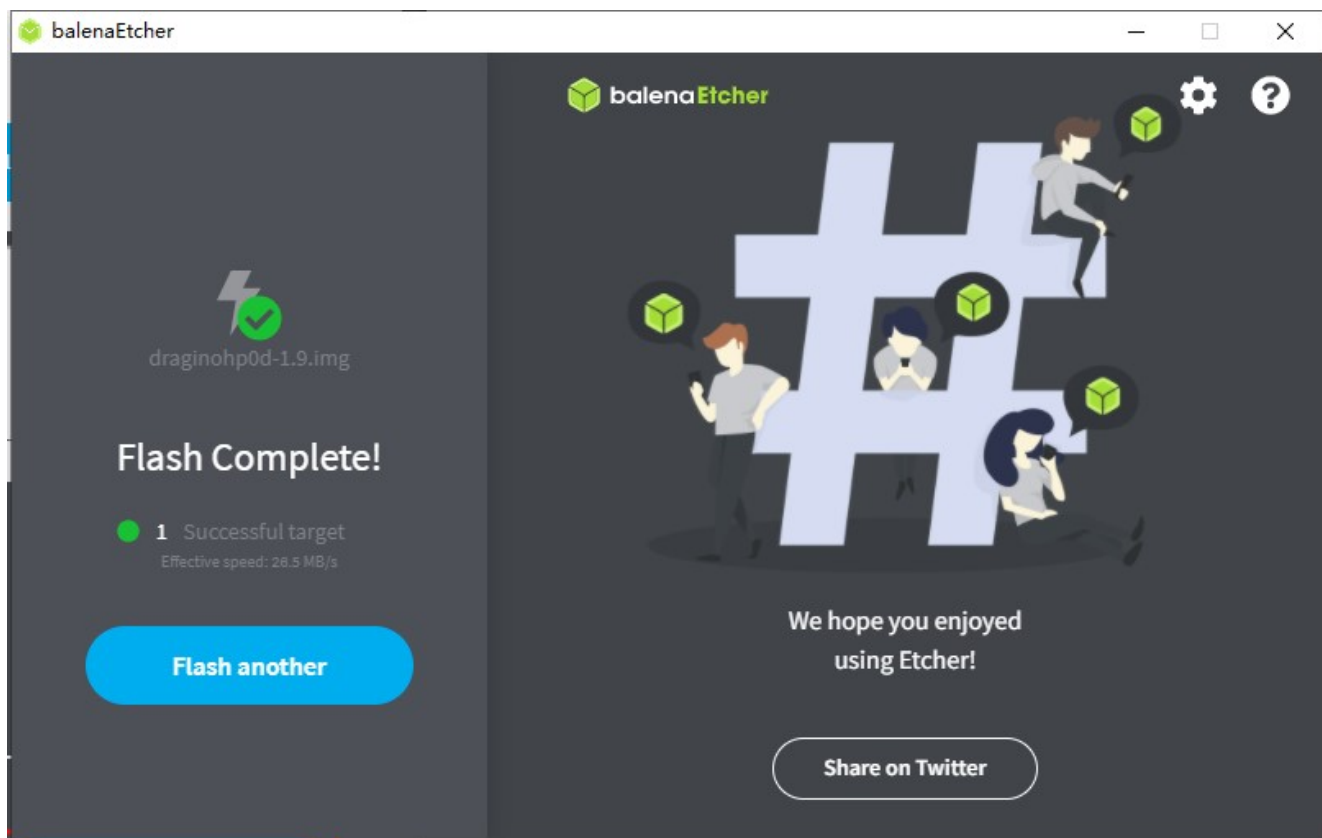


## Step 4. Flash start





## Flash Complete



## Step 4. Re-install the SD card into the hotspot and boot it

## Step 5. Configure the correct region for the miner

by the default, the factory settings apply to the US915.

if your region is not the US915, you have to configure the correct region for the miner.

Access the hotspot CLI, and run these Linux commands

```
###update the software of dragino  
apt update  
apt install dragino*
```



```

root@dragino-98a9dd:~# apt update
Hit:1 http://47.89.8.92 hparam64 InRelease
Hit:2 http://archive.raspberrypi.org/debian bullseye InRelease
Hit:3 https://download.docker.com/linux/debian bullseye InRelease
Hit:4 http://deb.debian.org/debian bullseye InRelease
Hit:5 http://deb.debian.org/debian bullseye-updates InRelease
Err:6 http://security.debian.org/debian-security bullseye-security InRelease
   Temporary failure resolving 'deb.debian.org' Temporary failure resolving 'security.debian.org'
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
26 packages can be upgraded. Run 'apt list --upgradable' to see them.
W: Failed to fetch http://security.debian.org/debian-security/dists/bullseye-security/InRelease Temporary failure resolving 'deb
W: Some index files failed to download. They have been ignored, or old ones used instead.
root@dragino-98a9dd:~# apt install dragino
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'dragino-ui' for glob 'dragino*'
Note, selecting 'draginofwd' for glob 'dragino*'
Note, selecting 'draginoup' for glob 'dragino*'
Note, selecting 'dragino-utility' for glob 'dragino*'
dragino-ui is already the newest version (2022-05-31).
dragino-utility is already the newest version (2022-06-08).
draginofwd is already the newest version (2022-05-15).
draginoup is already the newest version (2022-06-08).
0 upgraded, 0 newly installed, 0 to remove and 26 not upgraded.
root@dragino-98a9dd:~# uci set miner.general.region=EU868
root@dragino-98a9dd:~# uci commit miner
root@dragino-98a9dd:~# minerup update

```

####configure the correct region for the miner and update it

uci set miner.general.region=<Region; Such as AS923\_1/AU915/US915/EU868/IN865>

uci commit miner

minerup update

```

root@dragino-98a9dd:~# uci set miner.general.region=EU868
root@dragino-98a9dd:~# uci commit miner
root@dragino-98a9dd:~# minerup update
uci: Entry not found
miner
miner
Untagged: quay.io/team-helium/miner:miner-arm64_2022.06.02.1_GA
Untagged: quay.io/team-helium/miner@sha256:43d2bde49fe11fc459682edfdabaf9b09a44b843dbe106ff71863f2e8fd4c79
Deleted: sha256:1f6f64922cd0abbbd36932d6758e3d3c1b1817f20aab632db5a0d1b9f9348ca5
Deleted: sha256:f56faf11be87365034b3755df92d3dfc66eeb4d51b2589677a021a1cbe71d1f9
Deleted: sha256:e52ffdf0cf28d141891a0f4c7b0a1da004cfcbd3c0e0af647aa92d5a6bf97e83
Deleted: sha256:5dc6a2bfa3738c9460ac42b6631a9445f1fd2b856f0e870bd3d558390291b3c7
Deleted: sha256:183c87cf818d86a70b3d06dece2b063bd23f0a4b7ff51c49bdbcba6587966a0f
Deleted: sha256:4f4ce317c6bbf55719e49973d32d33ba456d7cb08693a6d6fb372690eacee23b
Total reclaimed space: 0B
Unable to find image 'quay.io/team-helium/miner:miner-arm64_2022.06.02.1_GA' locally
miner-arm64_2022.06.02.1_GA: Pulling from team-helium/miner
9981e73032c8: Pull complete
fd6f084d705e: Pull complete
4b3fe8923f0a: Pull complete
f0db6f44d43d: Pull complete
9b509b9260be: Pull complete
Digest: sha256:43d2bde49fe11fc459682edfdabaf9b09a44b843dbe106ff71863f2e8fd4c79
Status: Downloaded newer image for quay.io/team-helium/miner:miner-arm64_2022.06.02.1_GA
921576742a47c9eb50487ebba678ce146ba4f56960798c558dd86c7d3b6c05c

```

####check the miner version

draginoup

```

root@dragino-98a9dd:~# draginoup
WILL_VER: 2022.06.02.1
WILL_IMAGE: miner-arm64_2022.06.02.1_GA
root@dragino-98a9dd:~#

```

```
###unlock the function of wireless
rfkill unblock wlan
uci set wireless.general.mode=ap
uci commit wireless
```

```
root@dragino-3bd0f6:~# rfkill
ID TYPE      DEVICE      SOFT      HARD
 0 wlan      phy0        blocked   unblocked
 1 bluetooth hci0        unblocked unblocked
root@dragino-3bd0f6:~# rfkill unblock wlan
root@dragino-3bd0f6:~# uci set wireless.general.mode=ap
root@dragino-3bd0f6:~# uci commit wireless
root@dragino-3bd0f6:~# rfkill
ID TYPE      DEVICE      SOFT      HARD
 0 wlan      phy0        unblocked unblocked
 1 bluetooth hci0        unblocked unblocked
root@dragino-3bd0f6:~#
```

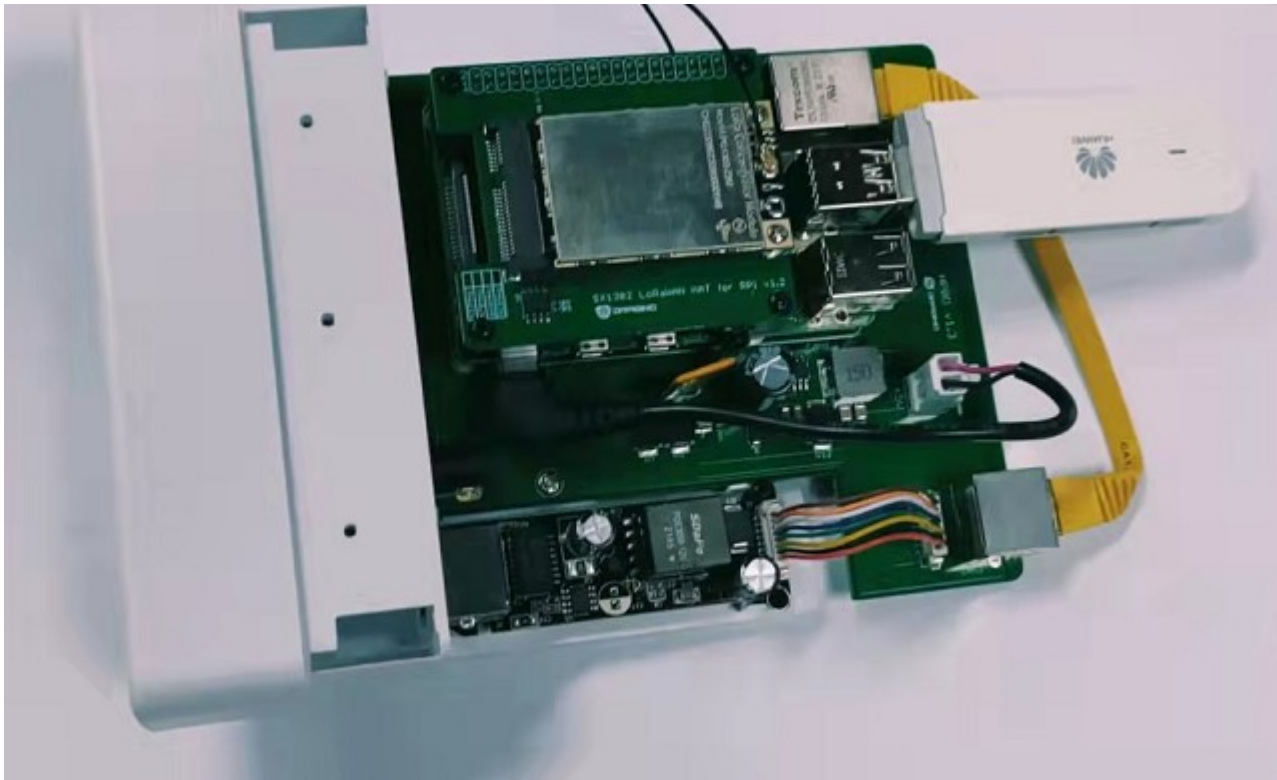
## 9. How does the HP0D access to the network via a USB 4G Dongle

We have reserved enough space inside the HP0D to use a USB 4G Dongle, so you can install a USB 4G Dongle in order for the hotspot to access the network via 4G.

### *Preparations:*

- 1). A USB 4G Dongle, Such as HUAWEI E3327,ZTE...
- 2). A Sim card that can access the 4g network.
- 3). open the hotspot's shell.

### 9.1. Open the HP0D shell and access the USB 4G Dongle into the Rpi.



## 9.2. Checking the USB 4G Dongle network

We have installed drivers for common USB 4G Dongle,

and managed by NetworkManager, once hp0d detects an available USB 4G Dongle it will try to dial up the range network

***HUAWEI-E3327***



```
root@dragino-3bd0f6:~# lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 012: ID 12d1:14db Huawei Technologies Co., Ltd. E353/E3131
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
root@dragino-3bd0f6:~# ifconfig
docker0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    inet6 fe80::42:91ff:fe8a:999b prefixlen 64 scopeid 0x20<link>
    ether 02:42:91:8a:99:9b txqueuelen 0 (Ethernet)
    RX packets 10963179 bytes 5237872731 (4.8 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10940192 bytes 10408038748 (9.6 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.123.165 netmask 255.255.255.0 broadcast 192.168.123.255
    inet6 fe80::d0b0:c32c:838a:f108 prefixlen 64 scopeid 0x20<link>
    ether e4:5f:01:3b:d0:f6 txqueuelen 1000 (Ethernet)
    RX packets 11859155 bytes 11743400320 (10.9 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10594232 bytes 5145516093 (4.7 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.8.119 netmask 255.255.255.0 broadcast 192.168.8.255
    inet6 fe80::da43:90be:5753:d06f prefixlen 64 scopeid 0x20<link>
    ether 00:1e:10:1f:00:00 txqueuelen 1000 (Ethernet)
    RX packets 18 bytes 2123 (2.0 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 29 bytes 4230 (4.1 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 642752 bytes 49481741 (47.1 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 642752 bytes 49481741 (47.1 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vetha9bc97b: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 169.254.11.248 netmask 255.255.0.0 broadcast 169.254.255.255
    inet6 fe80::6cb9:4c38:f5e3:1357 prefixlen 64 scopeid 0x20<link>
    inet6 fe80::6013:6dff:fe74:3367 prefixlen 64 scopeid 0x20<link>
    ether 62:13:6d:74:33:67 txqueuelen 0 (Ethernet)
    RX packets 8795569 bytes 5017167668 (4.6 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10931779 bytes 10173070833 (9.4 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@dragino-3bd0f6:~#
```

ZTE

```

root@dragino-3bd0f6:~# lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 010: ID 19d2:1403 ZTE WCDMA Technologies MSM ZTE WCDMA Technologies MSM
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
root@dragino-3bd0f6:~# ifconfig
docker0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
    inet6 fe80::42:91ff:fe8a:999b prefixlen 64 scopeid 0x20<link>
    ether 02:42:91:8a:99:9b txqueuelen 0 (Ethernet)
    RX packets 10961811 bytes 5237549808 (4.8 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10938621 bytes 10406291631 (9.6 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.123.165 netmask 255.255.255.0 broadcast 192.168.123.255
    inet6 fe80::d0b0:c32c:838a:f108 prefixlen 64 scopeid 0x20<link>
    ether e4:5f:01:3b:d0:f6 txqueuelen 1000 (Ethernet)
    RX packets 11857162 bytes 11741611623 (10.9 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10592680 bytes 5145145731 (4.7 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 642655 bytes 49473948 (47.1 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 642655 bytes 49473948 (47.1 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

usb0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.0.101 netmask 255.255.255.0 broadcast 192.168.0.255
    inet6 fe80::5c12:ddc3:3e46:ac3e prefixlen 64 scopeid 0x20<link>
    ether 32:e5:48:9c:0b:fd txqueuelen 1000 (Ethernet)
    RX packets 37 bytes 2979 (2.9 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 30 bytes 5865 (5.7 KiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vetha9bc97b: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 169.254.11.248 netmask 255.255.0.0 broadcast 169.254.255.255
    inet6 fe80::6cb9:4c38:f5e3:1357 prefixlen 64 scopeid 0x20<link>
    inet6 fe80::6013:6dff:fe74:3367 prefixlen 64 scopeid 0x20<link>
    ether 62:13:6d:74:33:67 txqueuelen 0 (Ethernet)
    RX packets 8794209 bytes 5016826889 (4.6 GiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 10930198 bytes 10171321736 (9.4 GiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

root@dragino-3bd0f6:~# █

```

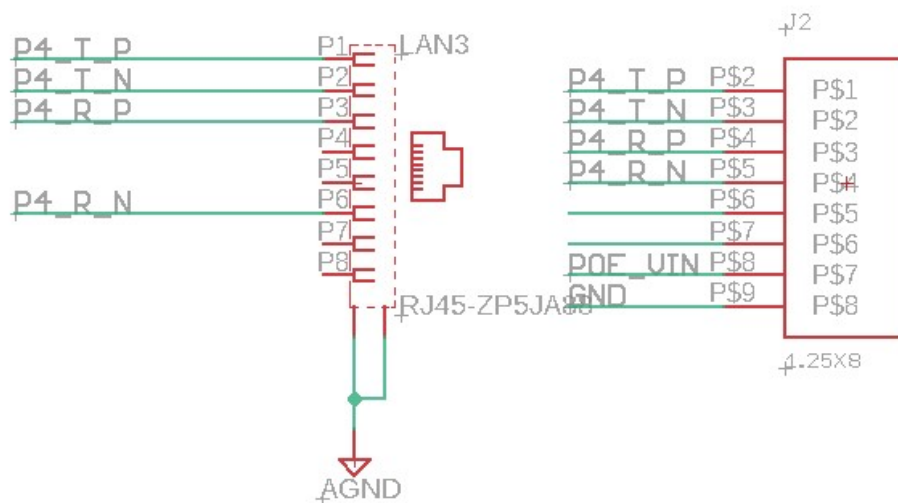
## 10. PoE introduction

The HP0D is use the **IEEE 802.3 af compliant PoE port** (input 44 ~ 57 v, output 12V)

So you can use the PoE switches or PoE injector to power the device.

**Note:** The RJ45 Indicator light only represents the PoE power supply, so when you use DC to power the hotspot and the RJ45 indicator light is off ---> this is normal

Wiring schematic:



## 11. OTA Version Info

### When does the OTA update happen?

*HP0D will check OTA update on a) Every Booting. b) Every Night. Below is the OTA update version info*

#### # 2022/05/14

1. Update to the latest miner version: miner-arm64\_2022.05.13.0\_GA
2. Add postinst after auto-update
3. Add Miner version mark.
4. Add fast sync if miner GAP is large

#### # 2022/05/18

1. Update minerup to speed up synchronized blocks

#### # 2022/05/24



1. *Update to the latest miner version: miner-arm64\_2022.05.24.0\_GA*

## # 2022/05/31

1. *Add WiFi STA icon display*
2. *Optimize AP icon display*
3. *Optimize home icon display*
4. *Fix for Miner icon URL bug*
5. *Add the secondary server configuration*

## 12. Supports

*If you are experiencing issues and can't solve them, you can send mail to [support@dragino.com](mailto:support@dragino.com) (mailto:support@dragino.com) .*

*With your question as detailed as possible. We will reply and help you in the shortest.*

## 13. Order Info

**HP0D-XXX**

**XXX:** Frequency Band

- **AS923:** LoRaWAN AS923 band
- **AU915:** LoRaWAN AU915 band
- **EU868:** LoRaWAN EU868 band
- **KR920:** LoRaWAN KR920 band
- **US915:** LoRaWAN US915 band
- **IN865:** LoRaWAN IN865 band

## 14. Manufacturer Info

**Shenzhen Dragino Technology Development co. LTD**

Room 202, Block B, BCT Incubation Bases (BaoChengTai), No.8 CaiYunRoad

Longcheng Street, LongGang District; Shenzhen 518116, China



## 15. FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.



Tags:

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