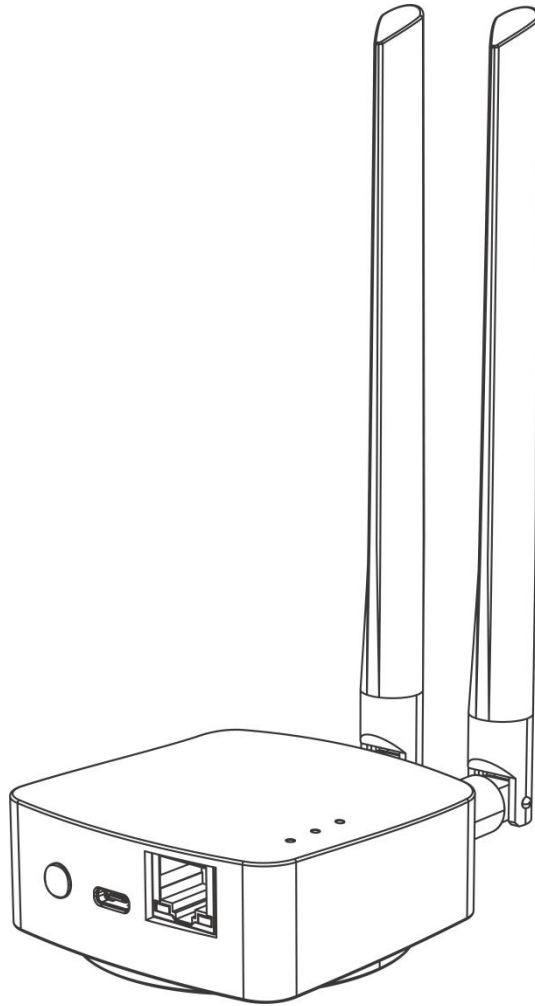


# ThinkNode G4

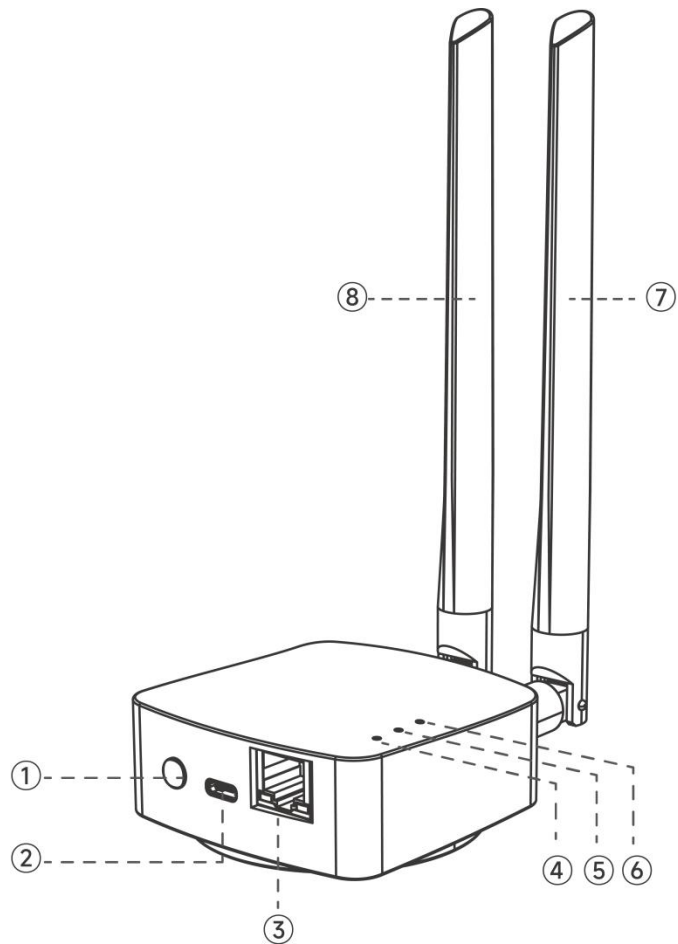
WiFi Hallow Gateway



## User Manual

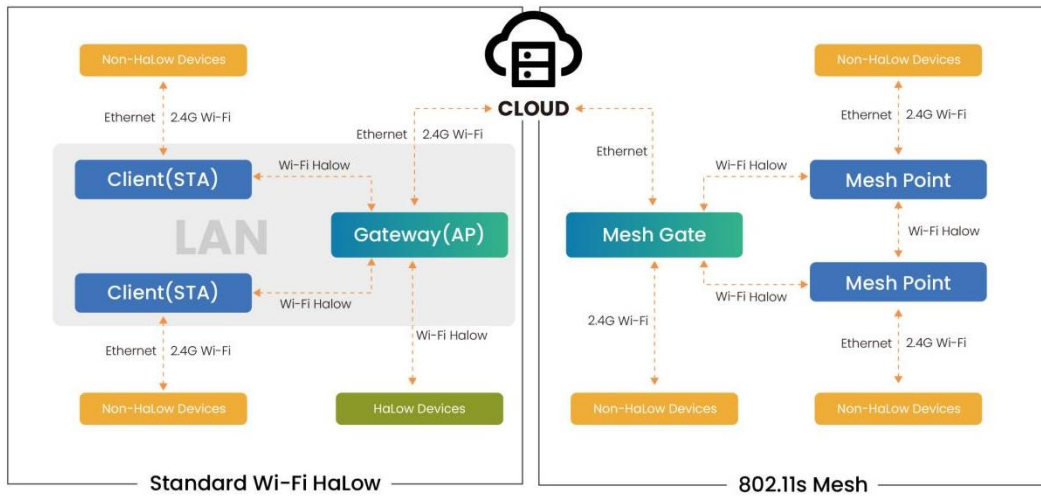
## Device Part

- ① CFG Button
- ② USB-C Port: 5V/1A
- ③ Ethernet Port
- ④ LINK Status LED
- ⑤ Halow Status LED
- ⑥ PWR Status LED
- ⑦ WiFi Antenna
- ⑧ Halow Antenna



- PWR LED: Indicates the power status, the red light stays on when powered;
- Halow LED: Indicates the connection status with other wifi halow devices, the blue light stays on when connected;
- Link LED: Indicates the configuration status. During gateway setup, the green light blinks. After the gateway is set to AP or Mesh Gate and gets an IP address, the green light will remain on steadily.

## Working principle



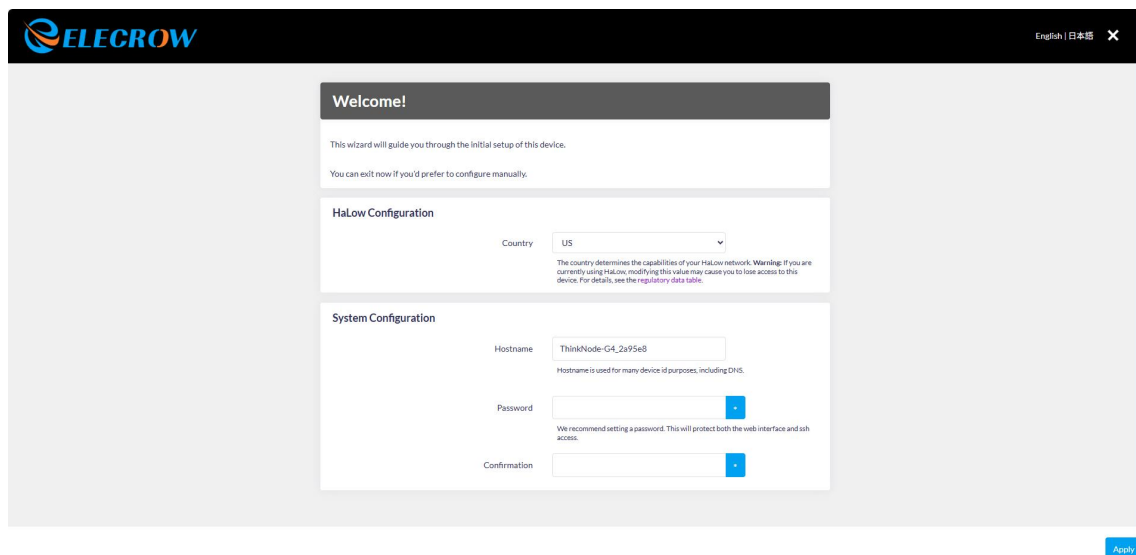
## Gateway configuration pre-preparation

1. Connect the USB-C power cable, the red light will turn on. Wait 2~3 minutes until the green light is flashing/steady, then you can start.
2. Press and hold the CFG button for 3 seconds to enter configuration mode (Note: press and hold the CFG button for 10 seconds to restore factory settings).
3. Open the Wi-Fi list on your phone/computer and connect to ThinkNode-G4\_XXXX, Default password: **elecrow.com**.

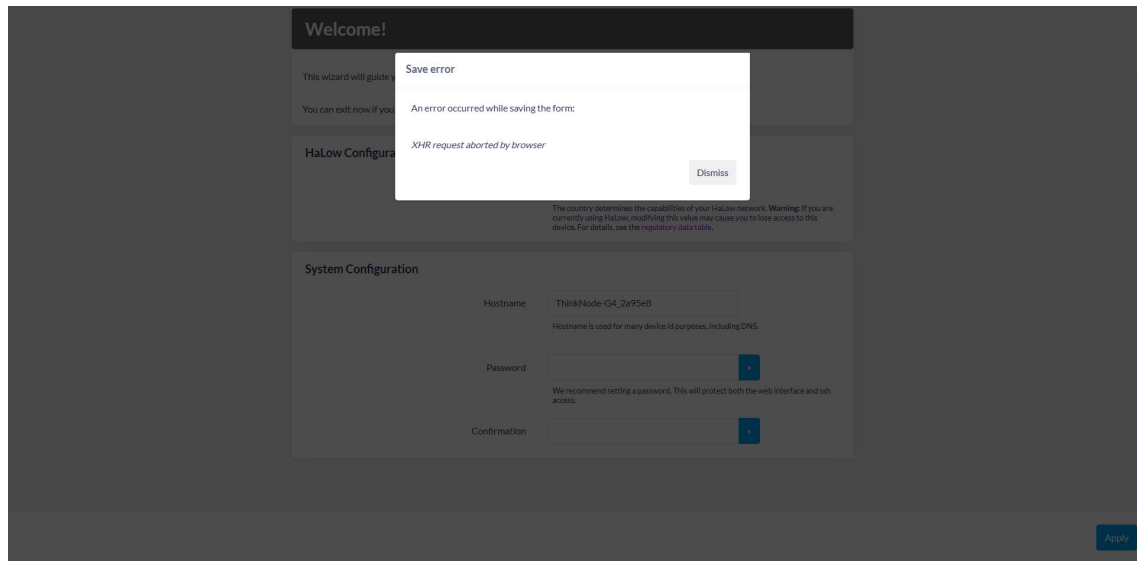
- In your browser, enter: **10.42.0.1** to open the gateway configuration page. Enter the password you want; If you don't want to set a password, you can click **“Log in”** directly.



- Set the **“Country”** and **“Hostname”**, then enter the password you want again, if you don't want to set a password, you can click **“Apply”** directly.

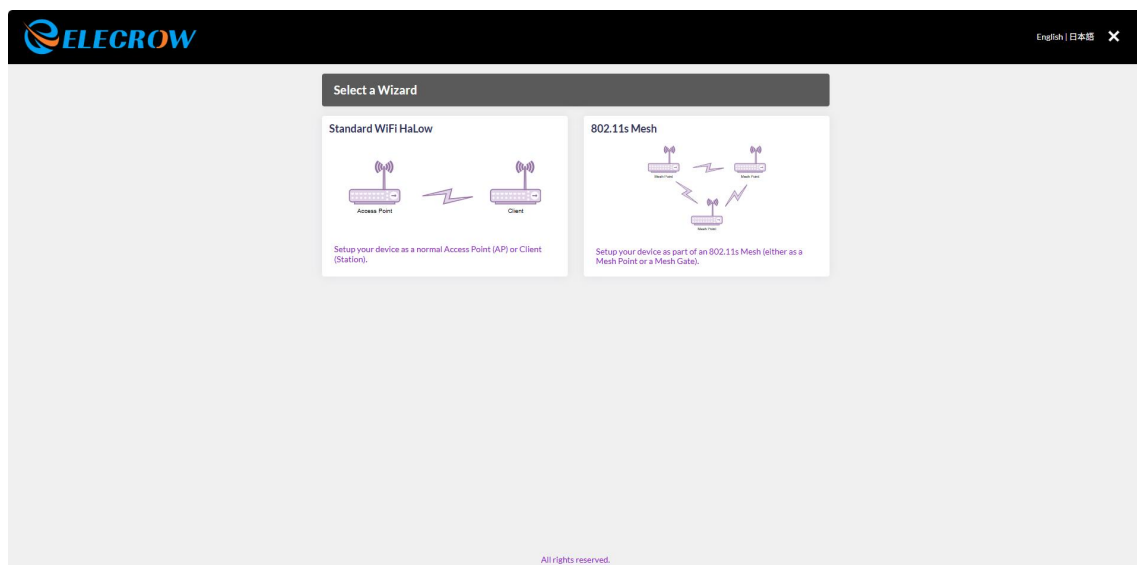


**Note:** If this happens, it means the connection to ThinkNode-G4\_XXXX was lost. You need to reconnect to the Wi-Fi—automatic connection is recommended.

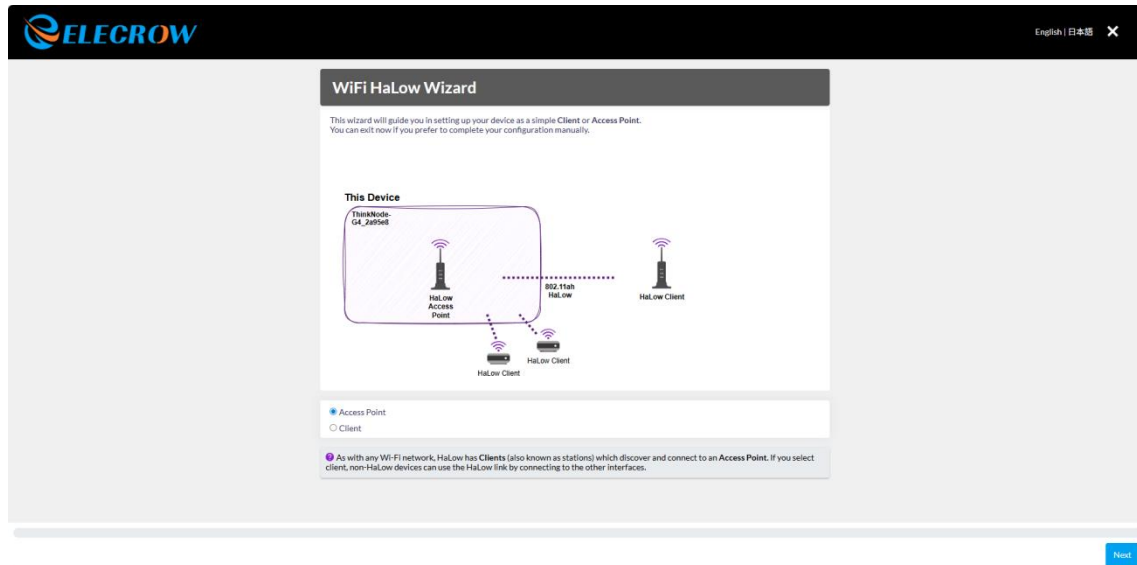


## Wi-Fi HaLow Gateway(AP) Mode

1. Complete the "**Gateway configuration pre-preparation**";
2. Select "**Standard WiFi HaLow**";

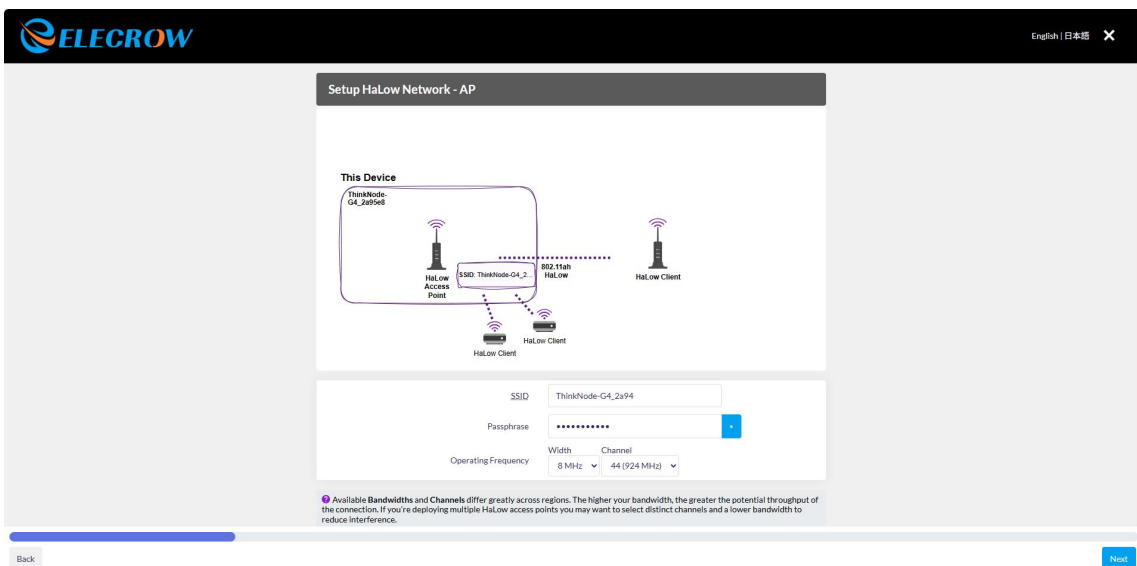


### 3. Select "Access Point" and click "Next".



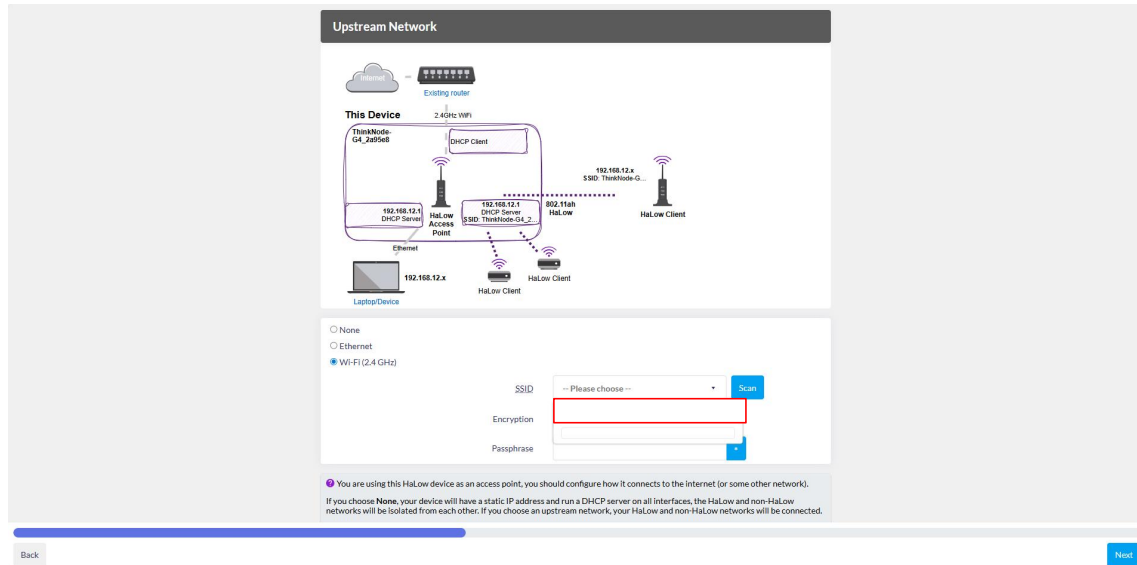
### 4. Setup HaLow Network - AP, parameter descriptions:

- SSID: The Wi- Fi HaLow gateway (AP) hotspot name;
- Password: The Wi- Fi HaLow gateway (AP) hotspot password, Default: elecrow.com;
- Width: Higher bandwidth gives faster data rates but shorter range and higher power consumption;
- Channel: Each bandwidth has specific frequencies used as channels. When other Wi- Fi HaLow devices are nearby, you can set different channels to reduce interference.

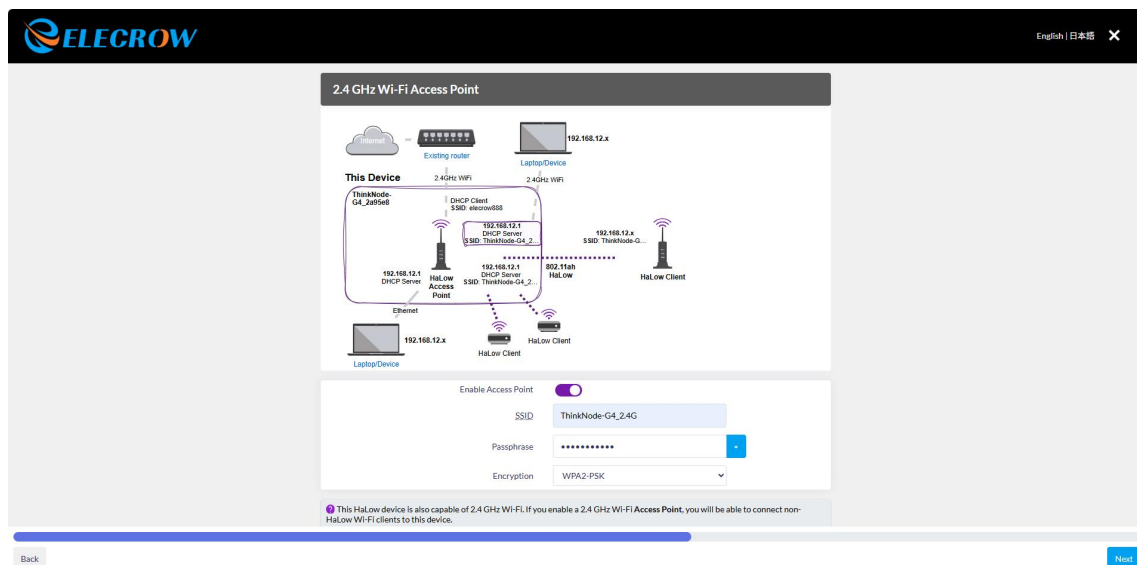




**Note:** If you choose the "Wi- Fi (2.4GHz)" mode, you can click "Scan" or enter the available Wi- Fi name and password in the fields;



6. Turn on "**Enable Access Point**". This access point provides a HaLow hotspot as well as a standard 2.4 GHz Wi- Fi hotspot. Set your 2.4 GHz Wi- Fi hotspot name and password, and make sure it is not the same as the AP hotspot name from step 4.



- Remember your AP gateway **"IP address"** , then click **"Apply"** to complete the configuration.

Almost there...

Existing router

LaptopDevice 192.168.12.x

This Device

HiLow Access Point

HiLow DHCP Server

HiLow DHCP Client

HiLow Client

- Connect other HiLow-enabled devices to use your new HiLow network.
- Connect 2.4 GHz devices to your network.
- Connect Ethernet devices to your network.

Click Apply to persist your configuration.

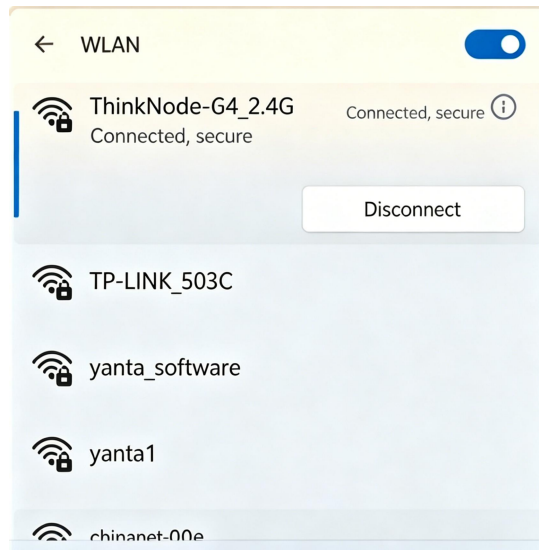
Back Apply

Wizard Complete

Click below to exit the wizard

Leave wizard

- Open the WiFi list on your computer/phone and connect to the 2.4 GHz Wi-Fi hotspot you set in step 6;



- In your browser, enter the AP gateway **“IP address”** from step 7 and enter the password from **“Gateway configuration pre-preparation”**, if there is no password, you can click **“Log in”** directly;



10. You can view various parameter information in the **AP gateway**'s admin interface;

The screenshot shows the admin interface with a sidebar on the left containing: Home, Quick Config, Wizards, Advanced Config, Upgrade, Status, System, Services, Network, Statistics, Help, and Log out. The main content area includes:

- Access Point (HaLow)**: SSID ThinkNode-G4\_2a94, Device wlan0, 0 Connected Devices.
- Local Network**: Name(s) ahwlan, IPv4 192.168.12.1/24, IPv6 None, 1 DHCP Leases.
- Uplink (2.4 GHz)**: SSID elecrow888, Device phy0-sta0, IP 192.168.50.20, Speed 144.4 Mbps, Connected.
- Access Point (2.4 GHz)**: SSID ThinkNode-G4\_2.4G, Device phy0-ap0, Speed (avg) 72.2 Mbps, 1 Connected Devices.
- Mode**: HaLow Access Point, showing a network diagram.
- Network Interfaces**: Diagram showing eth0.1, phy0-ap0, ahwlan, wlan0, phy0-sta0, and wifi24lan.
- System**: Model ThinkNode-G4, Hostname ThinkNode-G4\_2a95e8, Linux Kernel 5.15.150.

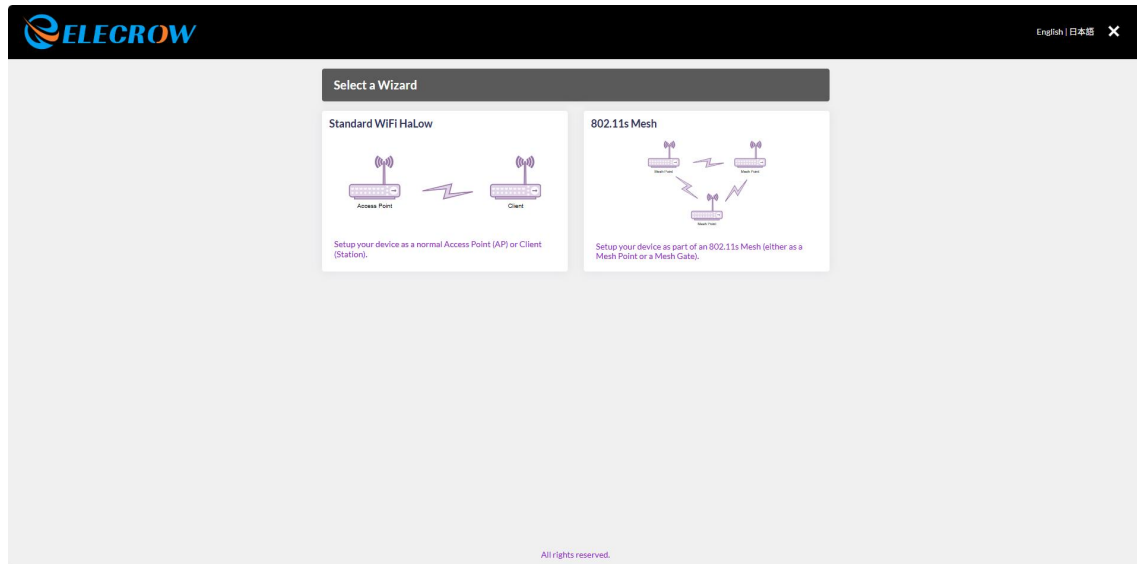
11. Click **“Quick Config”** to quickly modify the configuration you just made;

The screenshot shows the 'Quick Configuration' page with a sidebar on the left containing: Home, Quick Config, Wizards, Advanced Config, Upgrade, Status, System, Services, Network, Statistics, Help, and Log out. The main content area includes:

- Quick Configuration**: A diagram showing the device's network setup, including an existing router, laptop devices, and access points.
- Network Interfaces**: A table showing the configuration for various network interfaces.

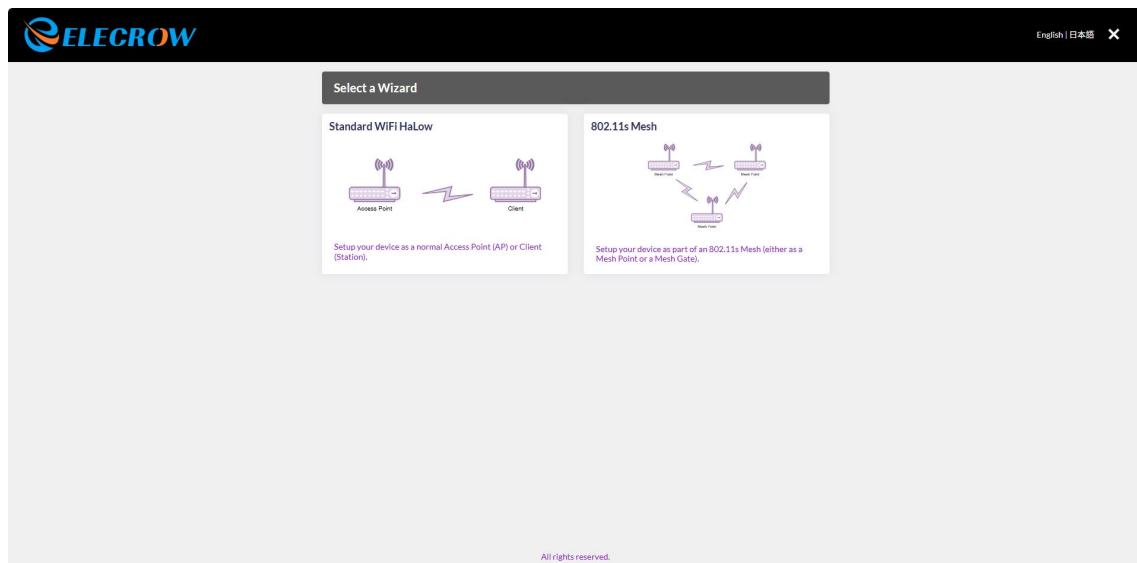
Name	Forward	Wireless	Ethernet	DHCP Server	Protocol	IPv4 address
lan	None		None	<input type="checkbox"/>	Static IP	10.42.0.1
ahwlan	wifi24lan	ThinkNode-G4_2.4G ThinkNode-G4_2a94	eth0.1	<input checked="" type="checkbox"/>	Static IP	192.168.12.1
wifi24lan	None	elecrow888	None	<input type="checkbox"/>	DHCP Client	

12. Click **"Wizards"** to reconfigure the **"Access Point"** or **"Client"** in **"Standard WiFi HaLow mode"**. Note: If your initial mode is **"Standard WiFi HaLow mode"**, you cannot directly switch to **"802.11s Mesh mode"**. You must complete the **"Gateway Configuration Pre-preparation"** steps again before selecting **"802.11s Mesh mode"**.

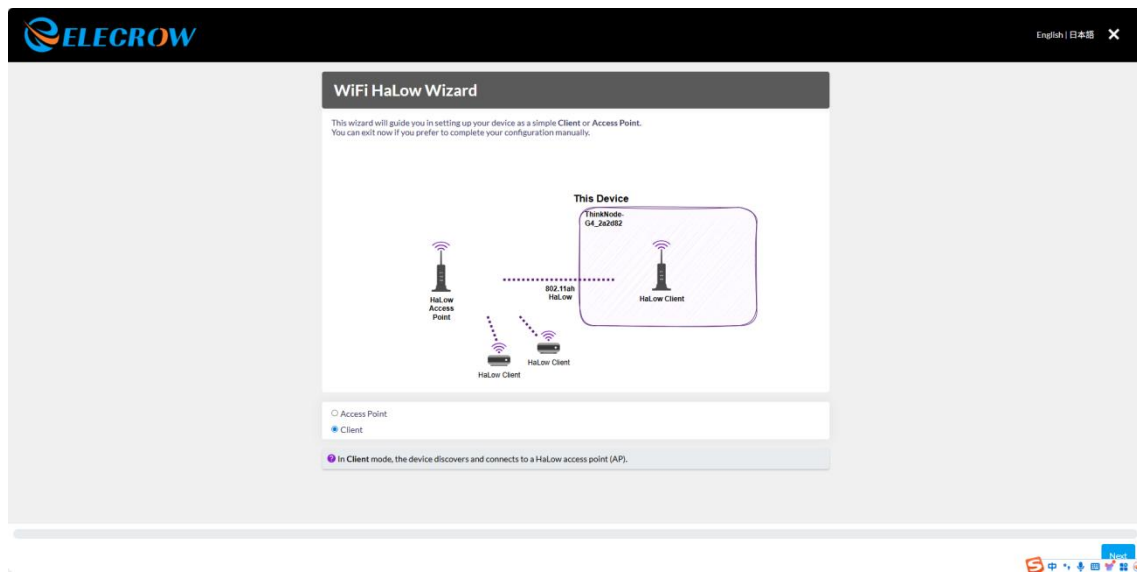


## Wi-Fi HaLow Client(STA) Mode

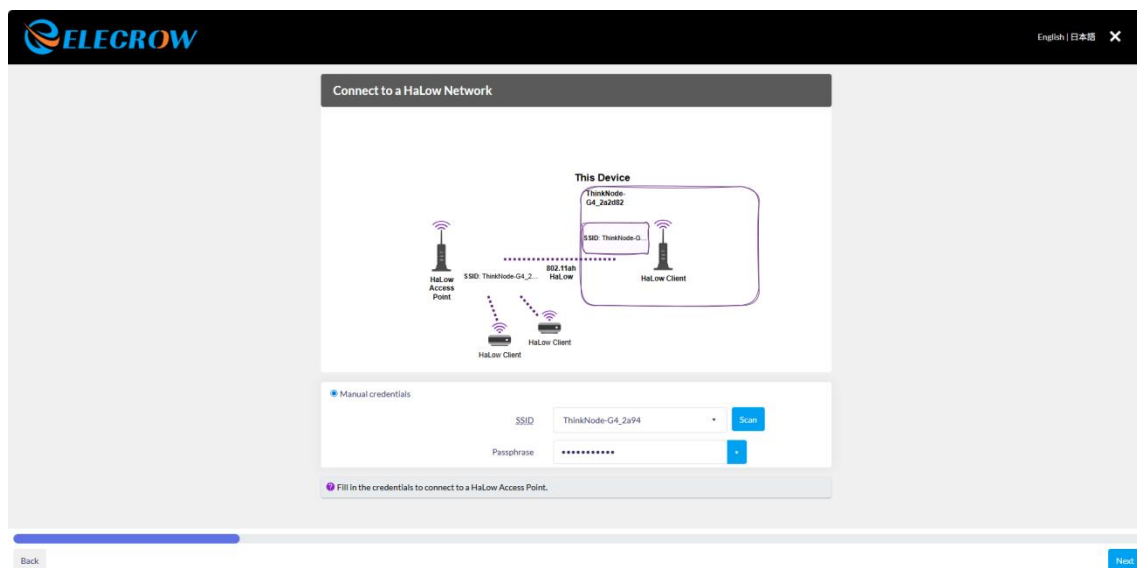
1. Complete the **"Gateway configuration pre-preparation"**;
2. Select **"Standard Wi- Fi HaLow"**;



3. Select "**Client**" and click "**Next**";



4. Click "**Manual credentials**". You can click "**Scan**" or directly enter the AP hotspot name and password you want to connect to (see step 4 in the "**Wi- Fi HaLow Gateway (AP) Mode**" for reference);



5. Choose a Traffic Mode. Parameter descriptions are as follows:

- None: This device will have a static IP address and run a DHCP server on the non-Halow interface, non-halow and halow networks are isolated.
- Bridge: non- halow devices obtain IP from your halow link.
- Extender: non-halow devices obtain IP from the DHCP server on this device and this device uses NAT to forward IP traffic.

The screenshot shows the 'Traffic Mode' configuration page in the ELECROW web interface. At the top, there is a network diagram illustrating the device's role as an extender. It shows a 'Halow Access Point' connected to 'This Device' via a '802.11ah Halow' link. 'This Device' contains a 'DHCP Client (SSID: ThinkNode-G)' and a 'DHCP Server (SSID: ThinkNode-G)'. The device is also connected to 'Halow Clients' and a 'Laptop/Device' via an 'Ethernet' interface. The device's IP address is shown as '10.42.0.x'. Below the diagram, there are three radio button options: 'None', 'Bridge', and 'Extender'. The 'Extender' option is selected. A note below the options reads: 'In Extender traffic mode, non-HaLow devices obtain IPs from the DHCP server on this device and this device uses NAT to forward IP traffic.' At the bottom of the page, there are 'Back' and 'Next' buttons.

6. Turn on "**Enable Access Point**". This device also provides a standard 2.4 GHz WiFi hotspot. Set your 2.4 GHz WiFi hotspot name and password, and it is not the same as the AP gateway's 2.4 GHz WiFi hotspot name;

The screenshot shows the '2.4 GHz Wi-Fi Access Point' configuration page in the ELECROW web interface. At the top, there is a network diagram illustrating the device's role as a 2.4 GHz WiFi access point. It shows a 'Halow Access Point' connected to 'This Device' via a '802.11ah Halow' link. 'This Device' contains a 'DHCP Client (SSID: ThinkNode-G)' and a 'DHCP Server (SSID: ThinkNode-G)'. The device is also connected to 'Halow Clients' and a 'Laptop/Device' via an 'Ethernet' interface. The device's IP address is shown as '10.42.0.x'. Below the diagram, there is a toggle switch for 'Enable Access Point' which is turned on. Below the toggle, there are input fields for 'SSID' (ThinkNode-G4\_number2), 'Passphrase', and a dropdown for 'Encryption' (WPA2-PSK). A note at the bottom reads: 'This HaLow device is also capable of 2.4 GHz Wi-Fi. If you enable a 2.4 GHz Wi-Fi Access Point, you will be able to connect non-HaLow Wi-Fi clients to this device.' At the bottom of the page, there are 'Back' and 'Next' buttons.

7. Click "**Apply**" to complete the STA gateway configuration;

**ELECROW** English | 日本語

Almost there...

- Connect another device via Ethernet to use your new HaLow link.
- Connect another device via 2.4 GHz Wi-Fi to use your new HaLow link.

Click **Apply** to persist your configuration.

Back Apply

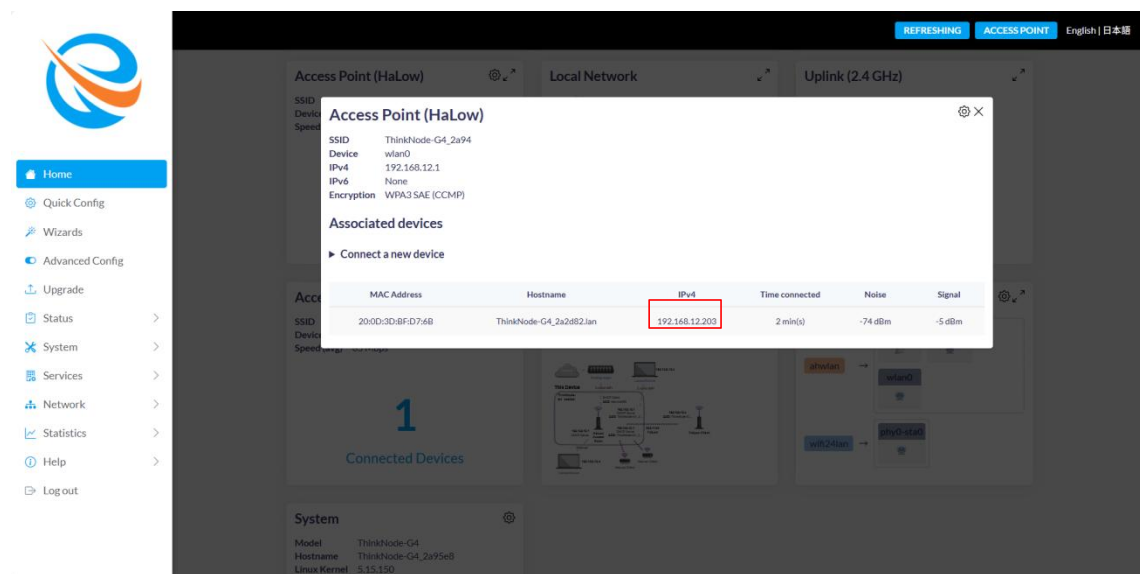
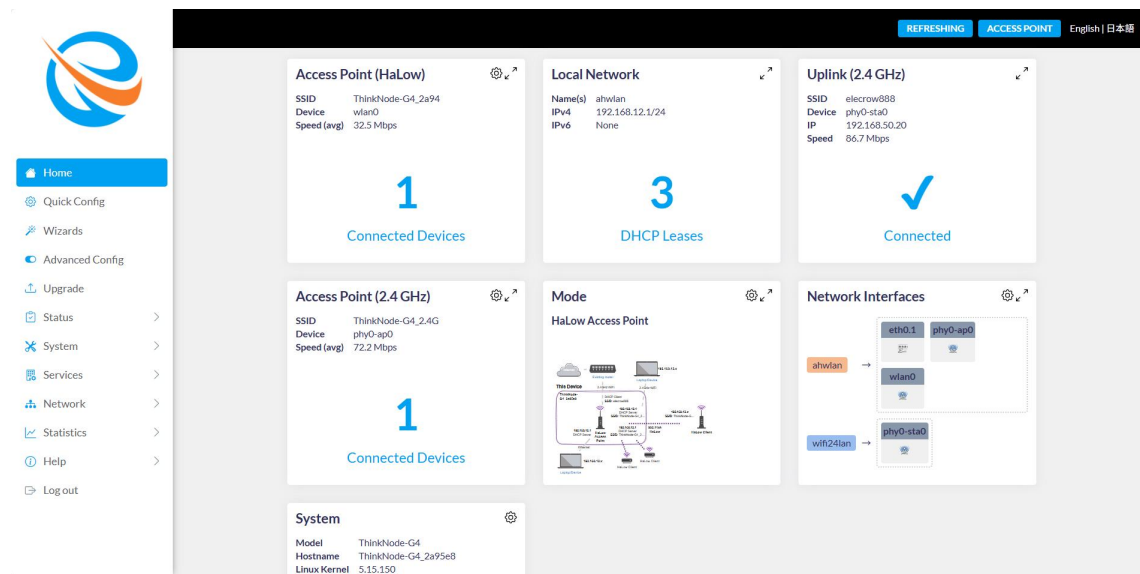
**ELECROW** English | 日本語

## Wizard Complete

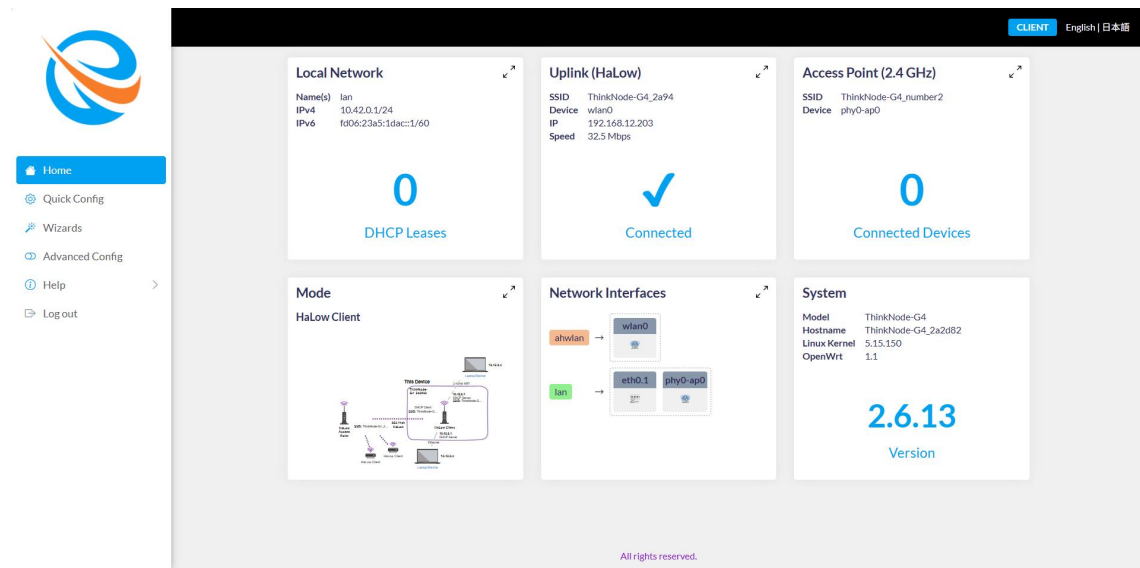
Click below to exit the wizard

Leave wizard

8. Open the **AP gateway' s admin interface** and click "**Connected Devices**" to see the STA gateway' s **"IP address"**



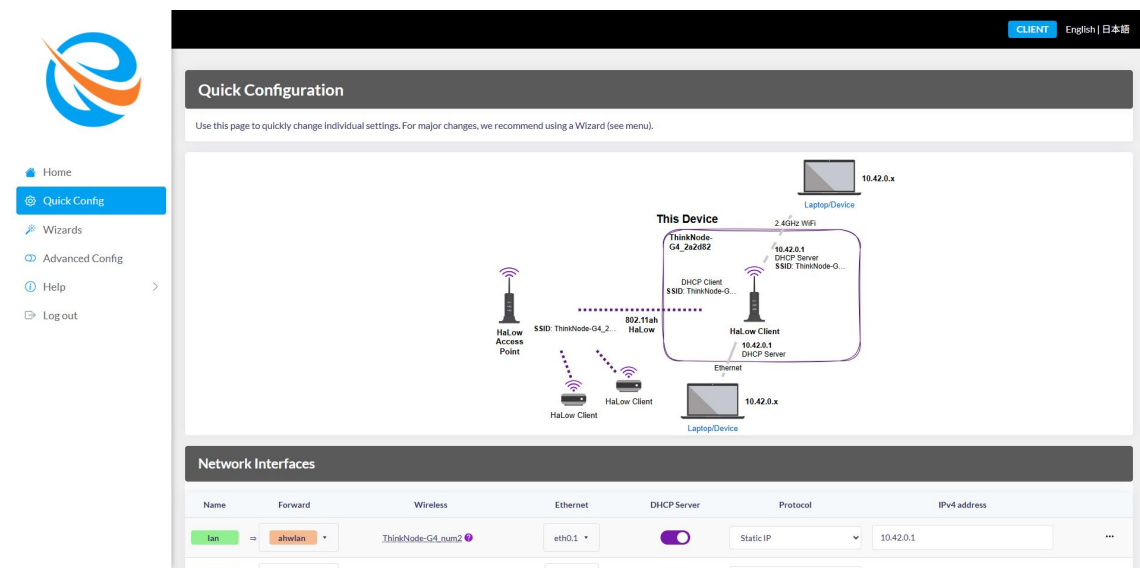
9. In your browser, enter the STA gateway's "IP address" .



The screenshot shows the OpenWrt dashboard with the following sections:

- Local Network:** Shows IP addresses for wlan0 (10.42.0.1/24) and lan (10.0.2.3as:1dac:1/60). It displays 0 DHCP Leases.
- Uplink (HaLow):** Shows SSID ThinkNode-G4\_2a94, Device wlan0, IP 192.168.12.203, and Speed 32.5 Mbps. It is marked as Connected.
- Access Point (2.4 GHz):** Shows SSID ThinkNode-G4\_number2 and Device phy0-ap0. It displays 0 Connected Devices.
- Mode:** Set to HaLow Client.
- Network Interfaces:** Shows wlan0 connected to ahwlan and eth0.1 connected to lan. phy0-ap0 is also shown.
- System:** Model ThinkNode-G4, Hostname ThinkNode-G4\_2a2d82, Linux Kernel 5.15.150, OpenWrt 1.1, and Version 2.6.13.

10. Click "Quick Config" to quickly modify the configuration you just made;



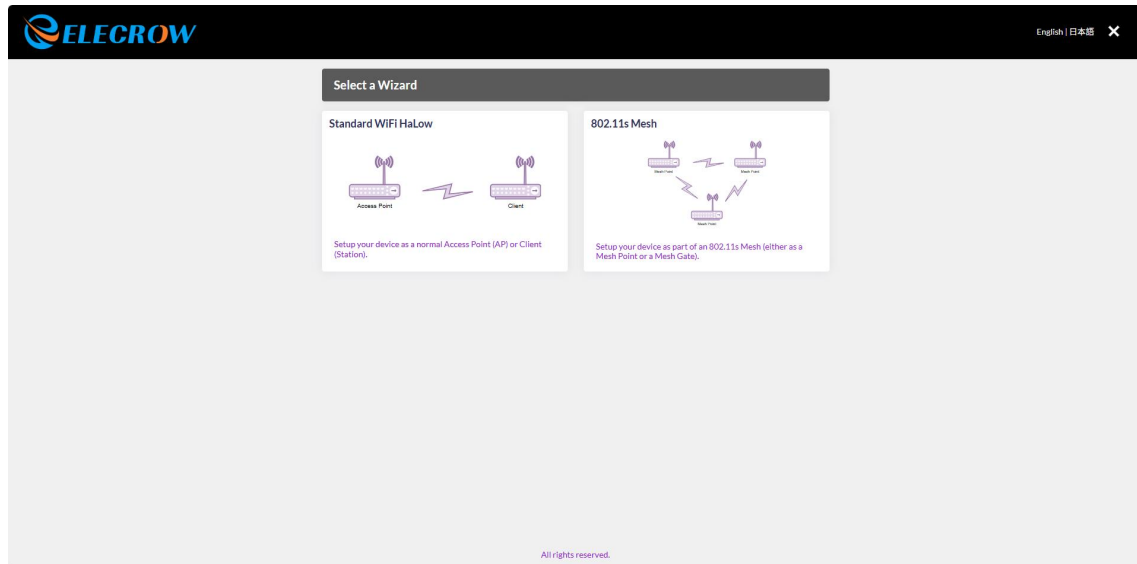
The screenshot shows the OpenWrt Quick Configuration page with a network diagram and a configuration table.

**Network Diagram:** Shows a HaLow Access Point connected to a HaLow Client. The HaLow Client is connected to a Laptop/Device (10.42.0.x) via 2.4GHz WiFi. The HaLow Client is also connected to another Laptop/Device (10.42.0.x) via Ethernet. The HaLow Client is configured as a DHCP Client (SSID: ThinkNode-G4\_2a2d82) and a DHCP Server (SSID: ThinkNode-G4\_2a2d82).

**Network Interfaces Table:**

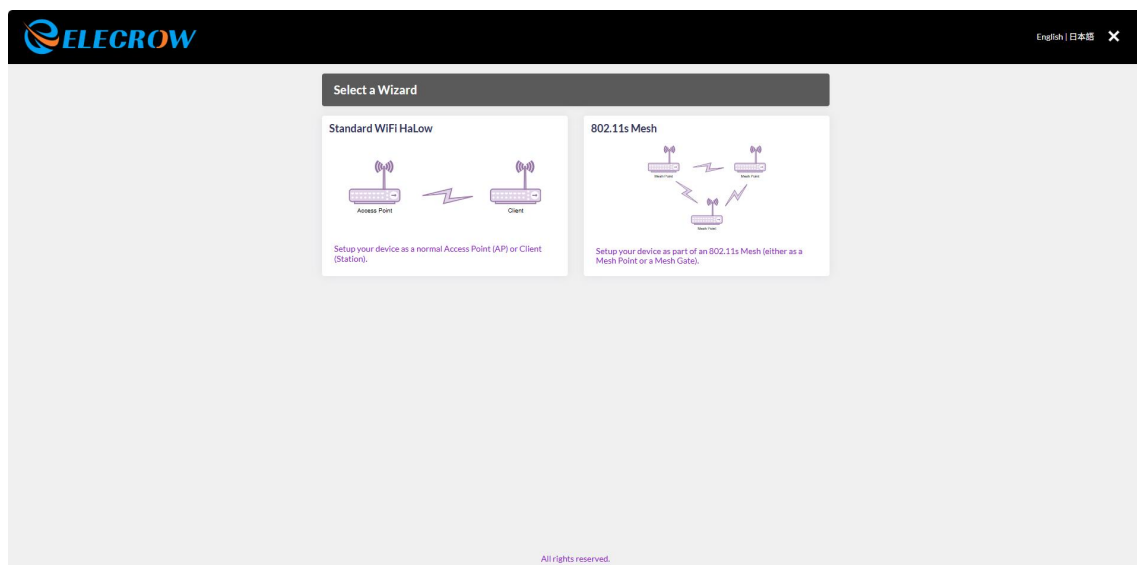
Name	Forward	Wireless	Ethernet	DHCP Server	Protocol	IPv4 address
lan	ahwlan	ThinkNode-G4_num2	eth0.1	<input checked="" type="checkbox"/>	Static IP	10.42.0.1

11. Click "**Wizards**" to reconfigure the "**Access Point**" or "**Client**" in "**Standard WiFi HaLow mode**". Note: If your initial mode is "**Standard WiFi HaLow mode**", you cannot directly switch to "**802.11s Mesh mode**". You must complete the "**Gateway Configuration Pre-preparation**" steps again before selecting "**802.11s Mesh mode**".

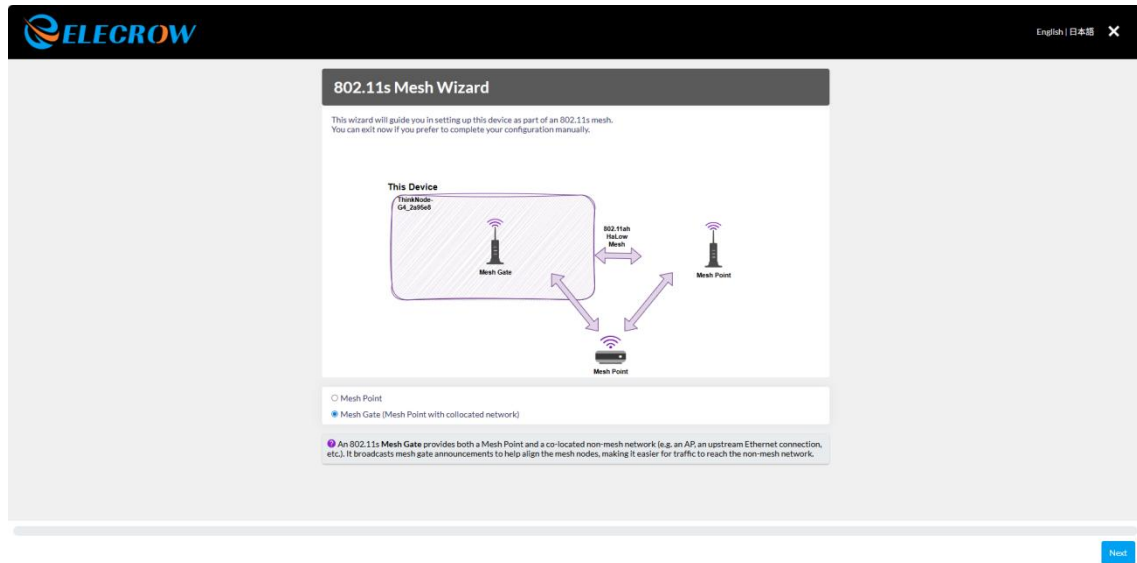


## Wi-Fi HaLow Mesh Gate Mode

1. Complete the "**Gateway configuration pre-preparation**";
2. Select "**802.11s Mesh**";

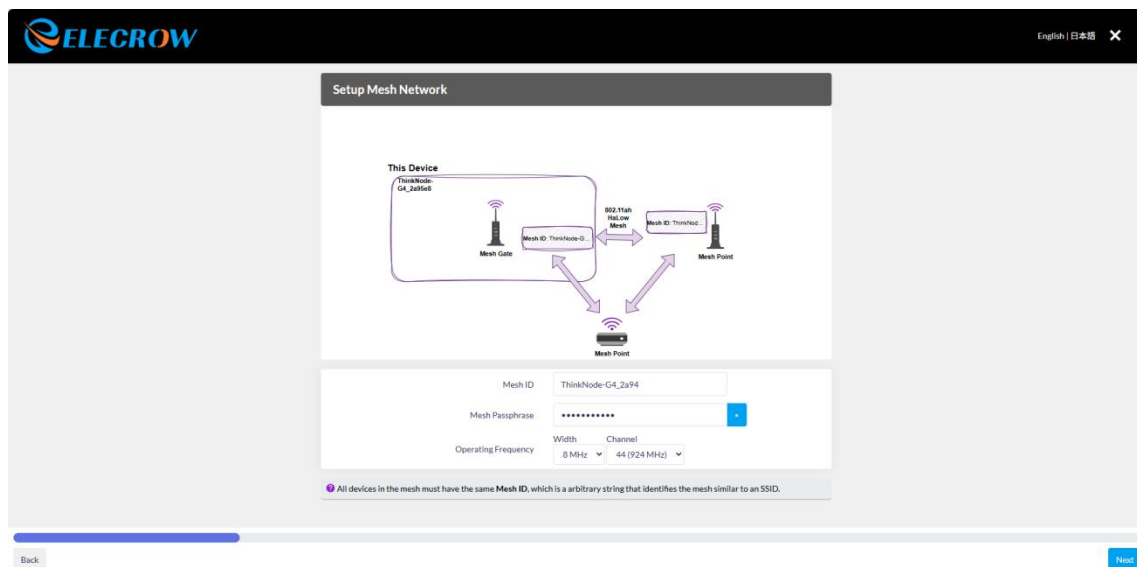


### 3. Select "Mesh Gate" and click "Next";



### 4. Setup Mesh Network — parameter descriptions:

- Mesh ID: The Mesh gateway name;
- Password: The Mesh gateway password, Default: elecrow.com;
- Width: Higher bandwidth gives faster data rates but shorter range and higher power consumption;
- Channel: Each bandwidth uses specific frequencies as channels. When other Wi-Fi HaLow devices are nearby, setting different channels can reduce interference;



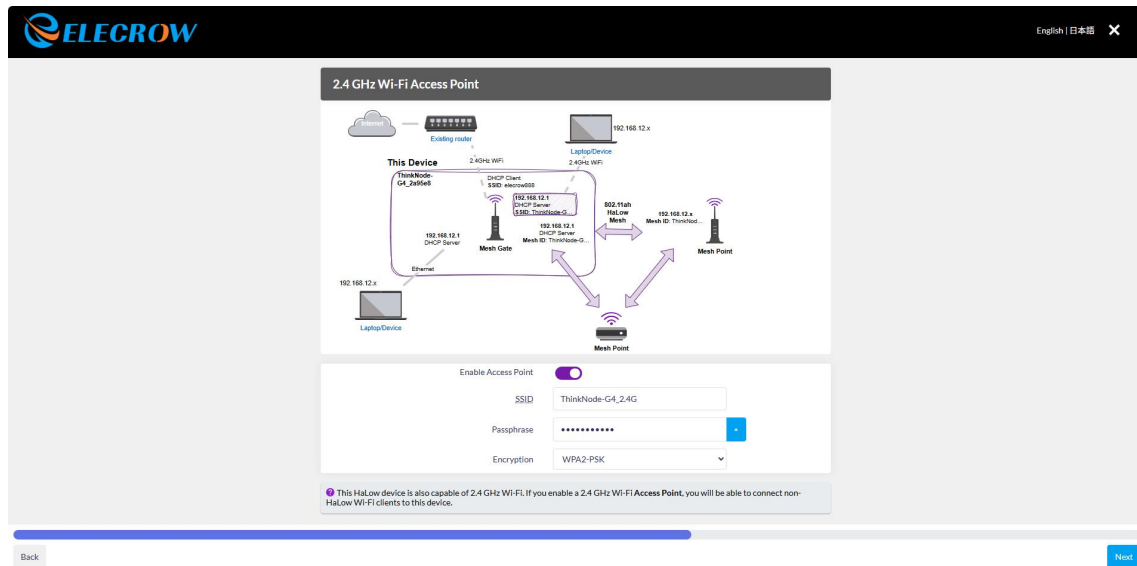
5. Choose an "Upstream Network" connection type. This determines how the access point (AP) connects to the network. Parameter descriptions:

- None: your device will have a static IP address and run a DHCP server on all interfaces, the Halow and non-Halow network will be isolated from each other.
- Ethernet-Bridge: your device and halow connected devices obtain IP addresses from your current upstream network.
- Ethernet-Router: the halow connected devices obtain IP addresses from DHCP server on this device, and this device uses NAT to forward IP traffic.
- Wi-Fi(2.4GHz): the halow connected devices obtain IP addresses from the DHCP server on this device, and this device uses NAT to forward IP traffic.

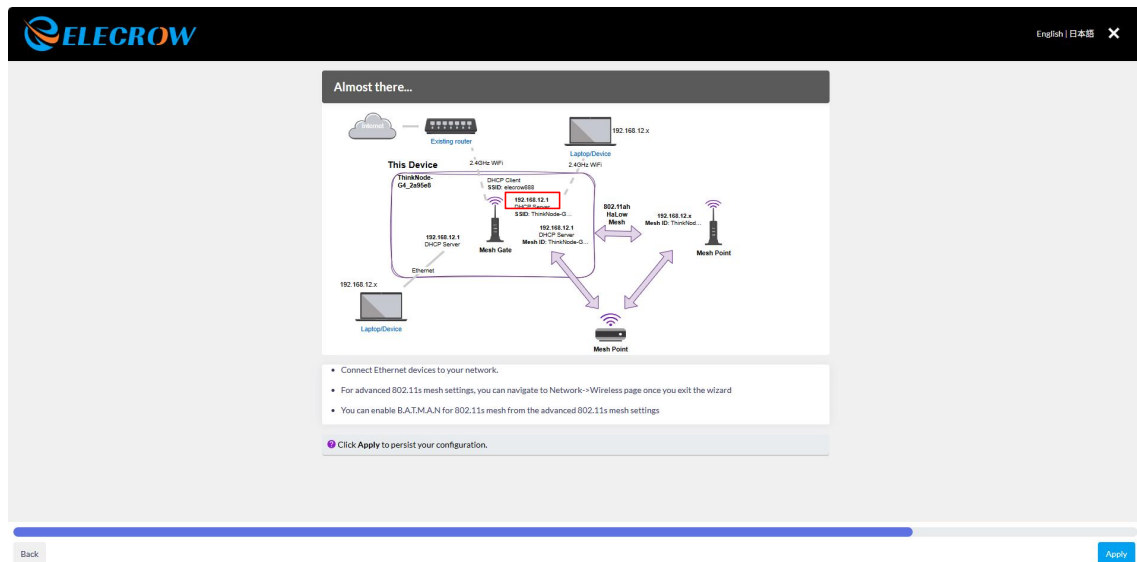
Note: If you choose the "**Wi- Fi (2.4 GHz)**" mode, you can click "**Scan**" or enter the available Wi- Fi name and password in the fields;

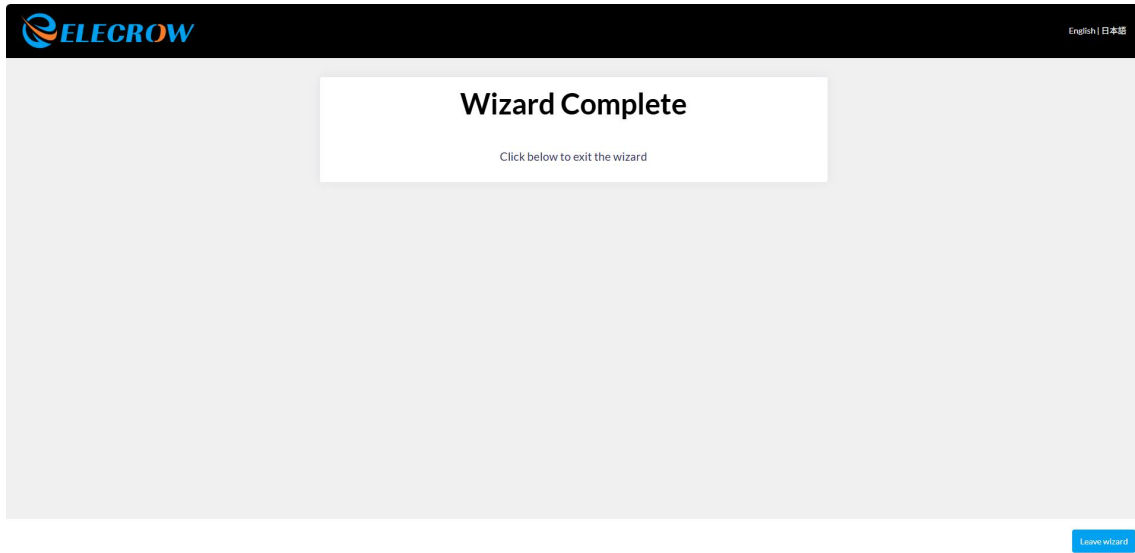
The screenshot displays the 'Upstream Network' configuration interface. At the top, there is a network diagram showing an 'Existing router' connected to 'This Device'. 'This Device' is connected to an 'Existing router' via Ethernet (192.168.12.x). It also has a '2.4GHz WiFi' interface connected to a 'Mesh Gate' (192.168.12.1) which acts as a 'DHCP Server' and 'Mesh ID: Through Hole G'. The 'Mesh Gate' is connected to a 'Mesh Point' (192.168.12.x) which also acts as a 'Mesh ID: Through Hole'. A 'Laptop/Device' is connected to the 'Mesh Gate' via Ethernet (192.168.12.x). Below the diagram, there are radio buttons for 'None', 'Ethernet', and 'Wi-Fi (2.4 GHz)'. The 'Wi-Fi (2.4 GHz)' option is selected. Below these are fields for 'SSID', 'Encryption', and 'Passphrase'. The 'SSID' field has a dropdown menu with '-- Please choose --' and a 'Scan' button. The 'Encryption' field has a dropdown menu with '-- Please choose --'. The 'Passphrase' field has a dropdown menu with '-- Please choose --'. A note at the bottom states: 'If you use a Wi-Fi upstream, fill in the Wi-Fi AP credentials. The HaLow connected devices obtain IP addresses from the DHCP server on this device, and this device uses NAT to forward IP traffic.'

6. Turn on **"Enable Access Point"**. This device also provides a standard 2.4 GHz Wi- Fi hotspot. Set your 2.4 GHz Wi- Fi hotspot name and password, and make sure it is not the same as the Mesh gateway name from step 4;

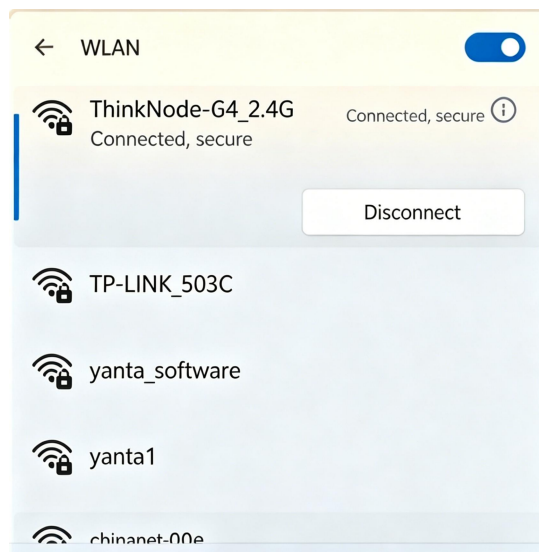


7. Remember your Mesh gateway **"IP address"** , then click **"Apply"** to complete the configuration;





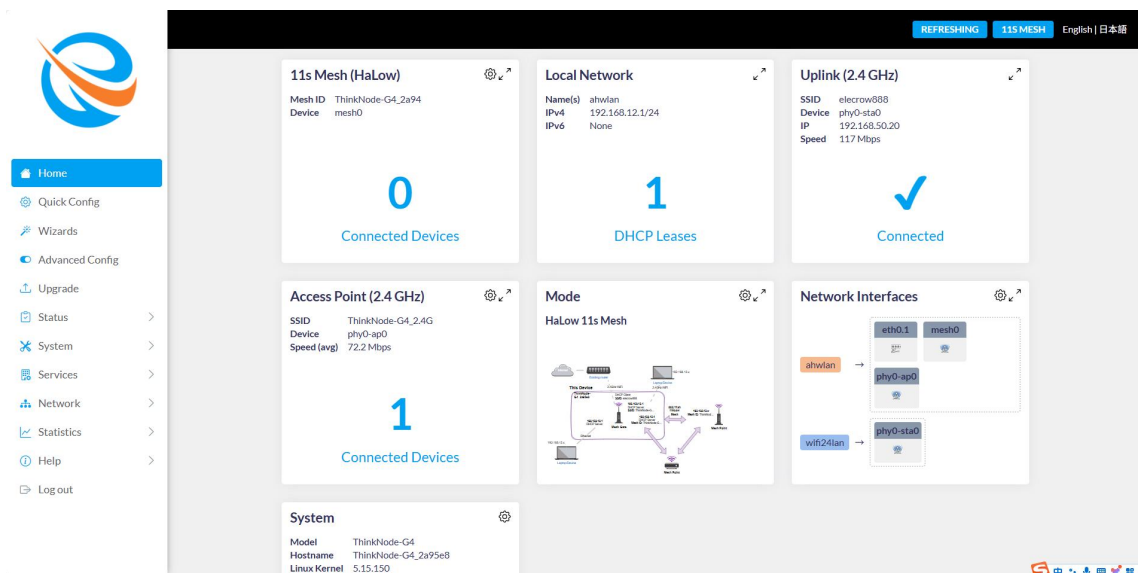
8. Open the Wi- Fi list on your computer/phone and connect to the 2.4 GHz Wi- Fi hotspot you set in step 6;



9. In your browser, enter the AP gateway **"IP address"** from step 7 and enter the password from the **"Gateway Configuration Pre-preparation"** , if there is no password, you can click **"Log in"** directly;



10. You can view various parameter information in the **Mesh Gate' s admin interface**;



11. Click **"Quick Config"** to quickly modify the configuration you just made;

Name	Forward	Wireless	Ethernet	DHCP Server	Protocol	IPv4 address
lan	None		None	<input type="checkbox"/>	Static IP	10.42.0.1
ahwlan	wifi24lan	ThinkNode-G4_2a29d ThinkNode-G4_2a29d (mesh)	eth0.1	<input checked="" type="checkbox"/>	Static IP	192.168.12.1
wifi24lan	None	elecrow@80	None	<input type="checkbox"/>	DHCP Client	

12. Click **"Wizards"** to reconfigure the **"Mesh Gate"** or **"Mesh Point"** in **"802.11s Mesh mode"**. Note: If your initial mode is **"802.11s Mesh mode"**, you cannot directly switch to **"Standard WiFi Halow mode"**. You must complete the **"Gateway Configuration Pre-preparation"** steps again before selecting **"Standard WiFi Halow mode"**;

**Select a Wizard**

**Standard WiFi HaLow**

Setup your device as a normal Access Point (AP) or Client (Station).

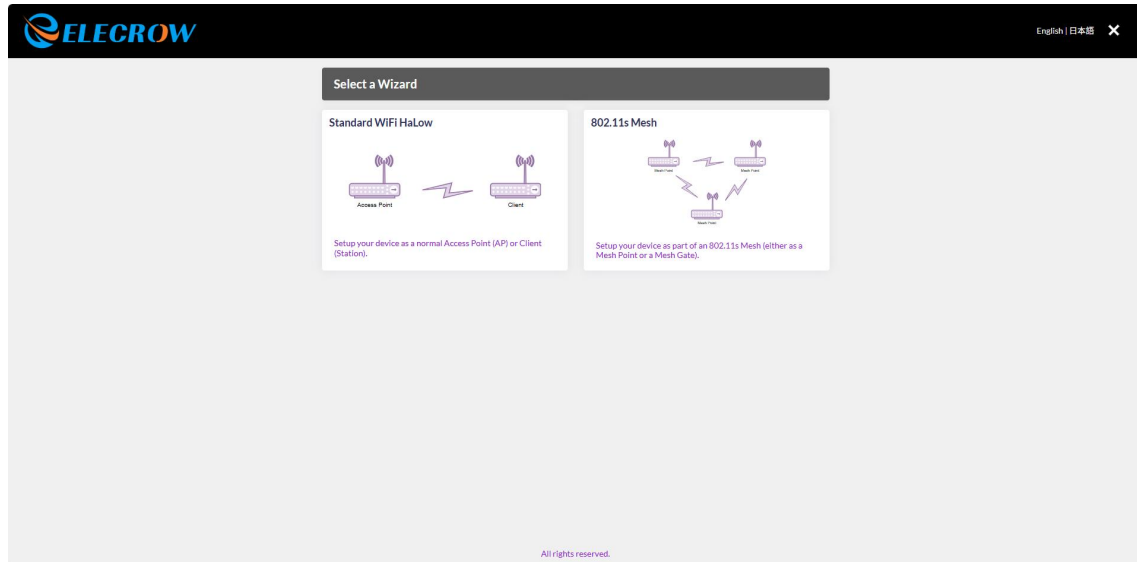
**802.11s Mesh**

Setup your device as part of an 802.11s Mesh (either as a Mesh Point or a Mesh Gate).

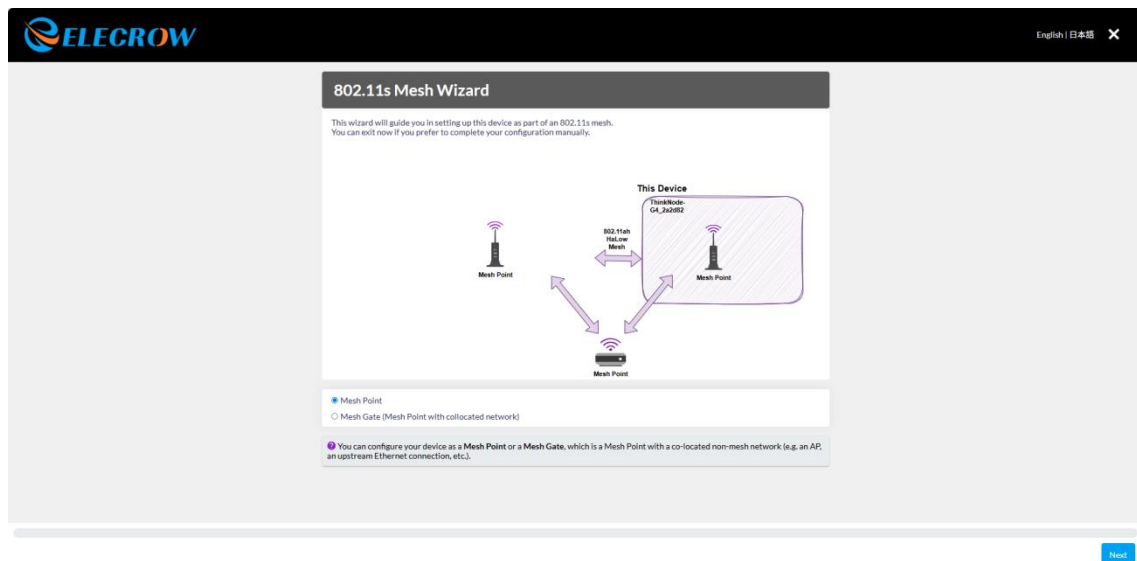
All rights reserved.

# Wi-Fi HaLow Mesh Point Mode

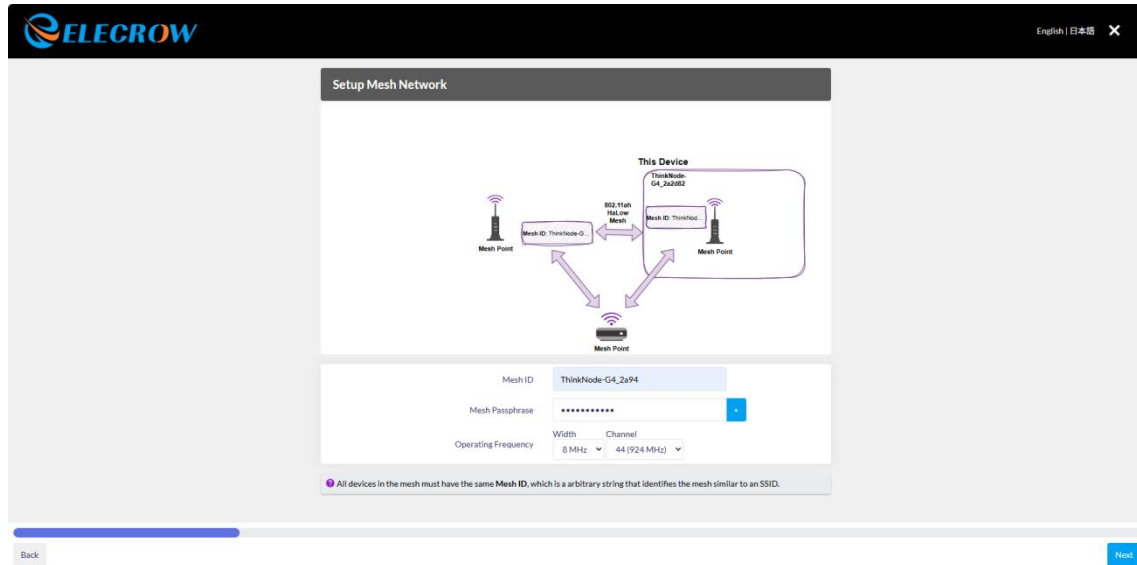
1. Complete the "**Gateway Configuration Pre-preparation**";
2. Select "**802.11s Mesh**";



3. Select "**Mesh Point**" and click "**Next**";

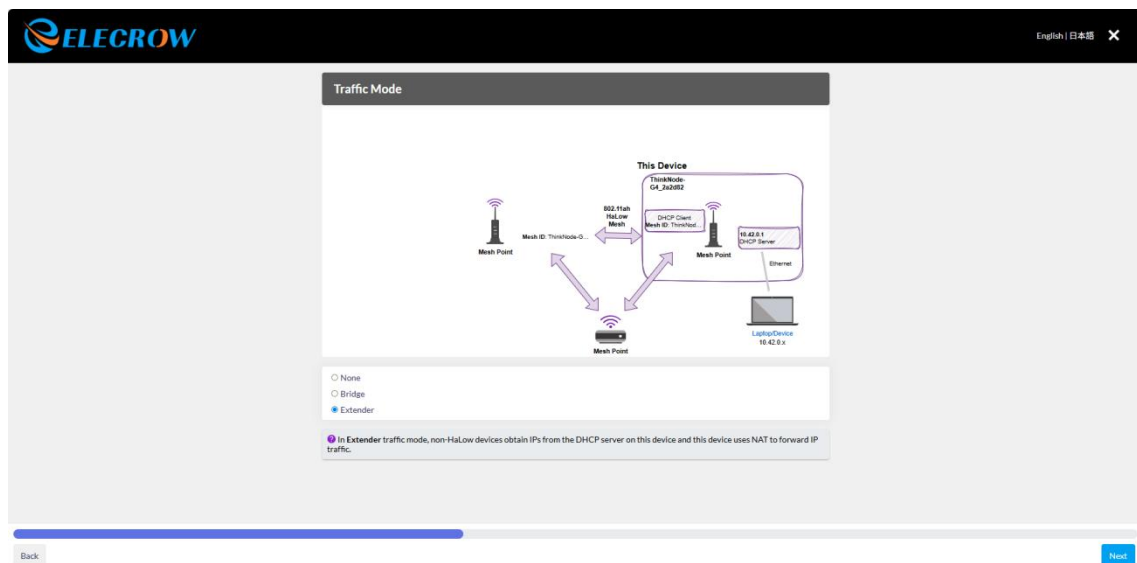


4. Enter the Mesh Gate name and password you want to connect to (see step 4 in the “Wi- Fi HaLow Mesh Gate Mode” for reference).

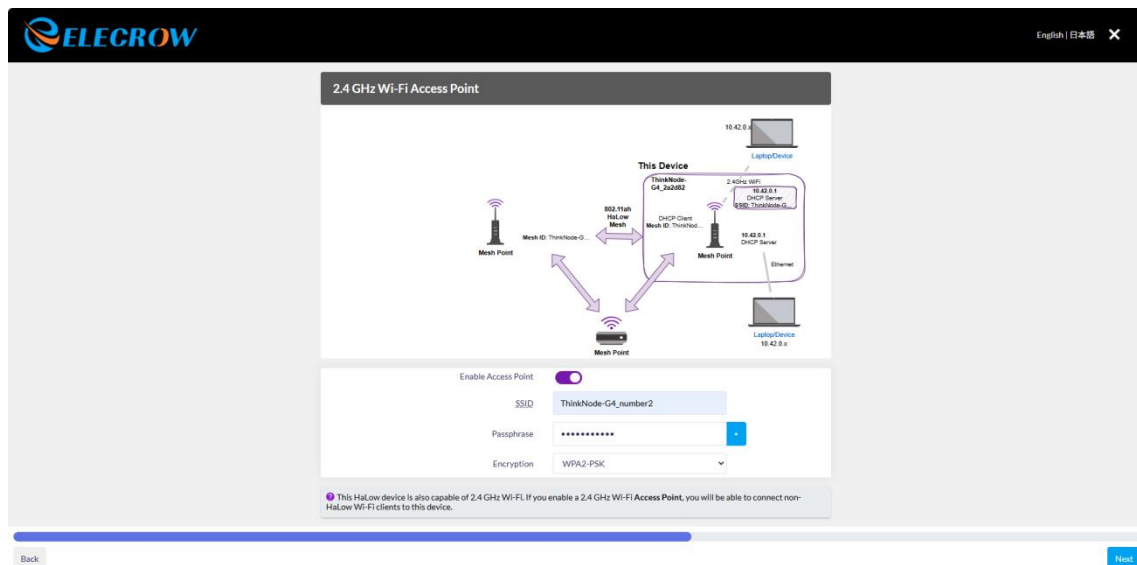


5. Choose a Traffic Mode. Parameter descriptions are as follows:

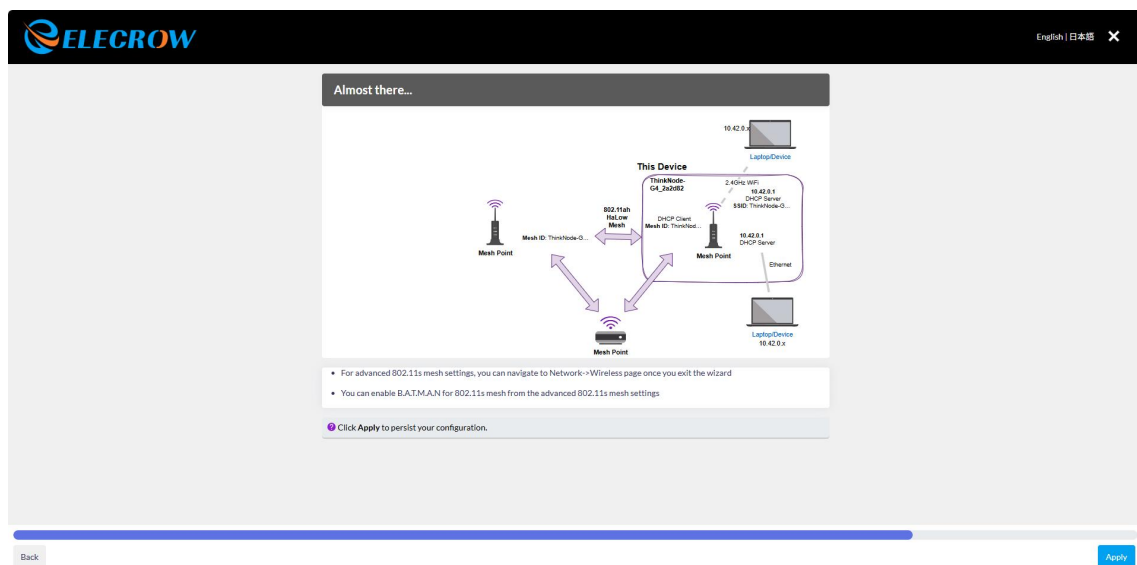
- None: This device will have a static IP address and run a DHCP server on the non-Halow interface, non-halow and halow networks are isolated.
- Bridge: non- halow devices obtain IP from your halow link.
- Extender: non-halow devices obtain IP from the DHCP server on this device and this device uses NAT to forward IP traffic.

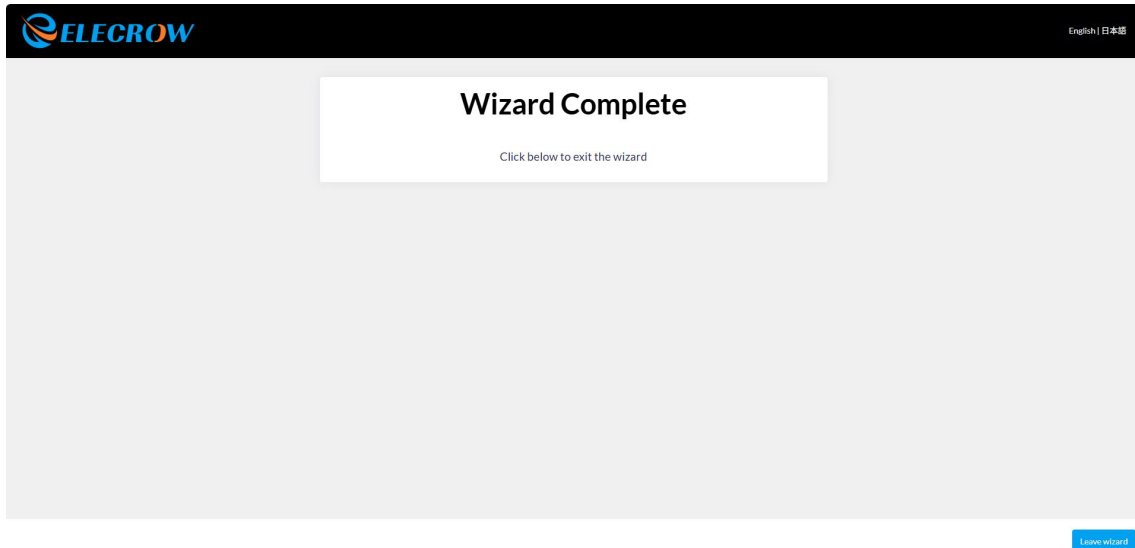


6. Turn on "**Enable Access Point**". This device also provides a standard 2.4 GHz Wi-Fi hotspot. Set your 2.4 GHz Wi-Fi hotspot name and password, and make sure it is not the same as the Mesh Gate's 2.4 GHz hotspot name;

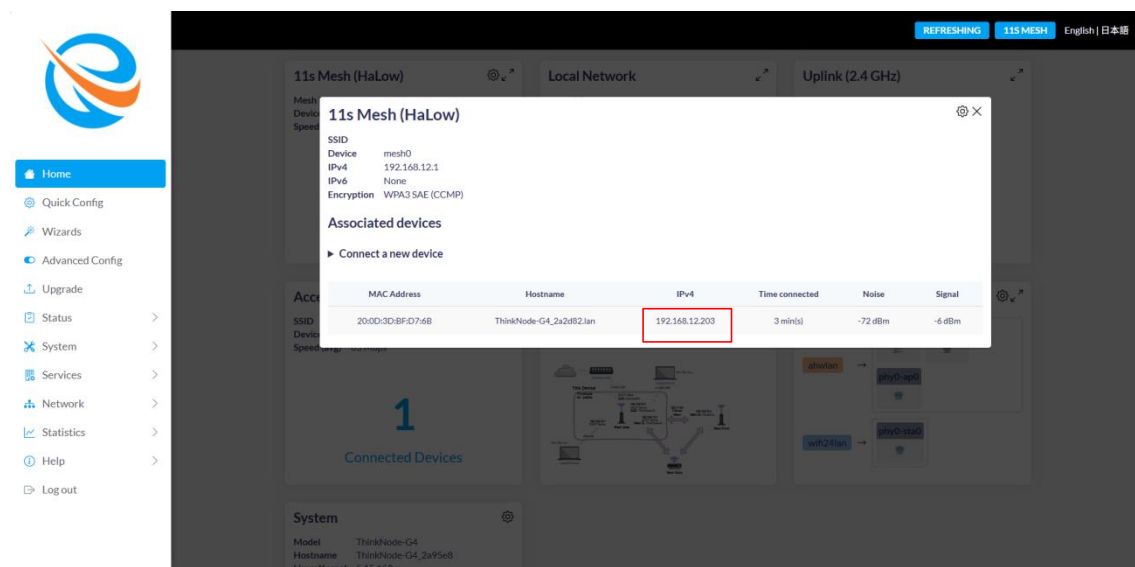
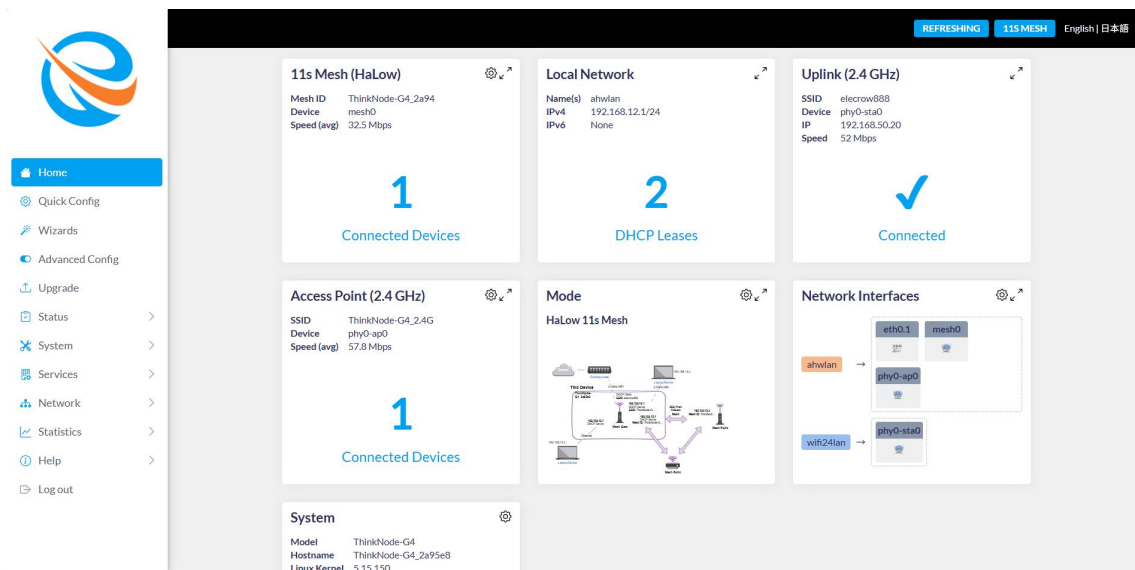


7. Click "**Apply**" to complete the Mesh Point gateway configuration;





8. Open the **Mesh Gate**' s admin interface and click "**Connected Devices**" to see the Mesh Point' s "**IP address**" ;



9. In your browser, enter the Mesh Point's "IP address" ;

The screenshot displays the 11s MESH configuration interface. On the left is a navigation menu with options: Home, Quick Config, Wizards, Advanced Config, Help, and Log out. The main content area contains several status cards:

- 11s Mesh (HaLow)**: Mesh ID: ThinkNode-G4\_2a94, Device: mesh0, Speed (avg): 32.5 Mbps. Status: 1 Connected Devices.
- Local Network**: Name(s): lan, IPv4: 10.42.0.1/24, IPv6: fd7a:2c38:142a::1/60. Status: 1 DHCP Leases.
- Uplink (HaLow)**: SSID: ThinkNode-G4\_2a94, Device: mesh0, IP: 192.168.12.203, Speed: 32.5 Mbps. Status: Connected.
- Access Point (2.4 GHz)**: SSID: ThinkNode-G4\_number2, Device: phy0-ap0. Status: 0 Connected Devices.
- Mode**: HaLow 11s Mesh.
- Network Interfaces**: Shows mesh0, ahwlan, lan, eth0.1, and phy0-ap0.
- System**: Model: ThinkNode-G4, Hostname: ThinkNode-G4\_2a2d82, Linux Kernel: 5.15.150.

10. Click "Quick Config" to quickly modify the configuration you just made;

The screenshot shows the Quick Configuration page. At the top, it says "Quick Configuration" and "Use this page to quickly change individual settings. For major changes, we recommend using a Wizard (see menu)."

The network diagram illustrates the following connections:

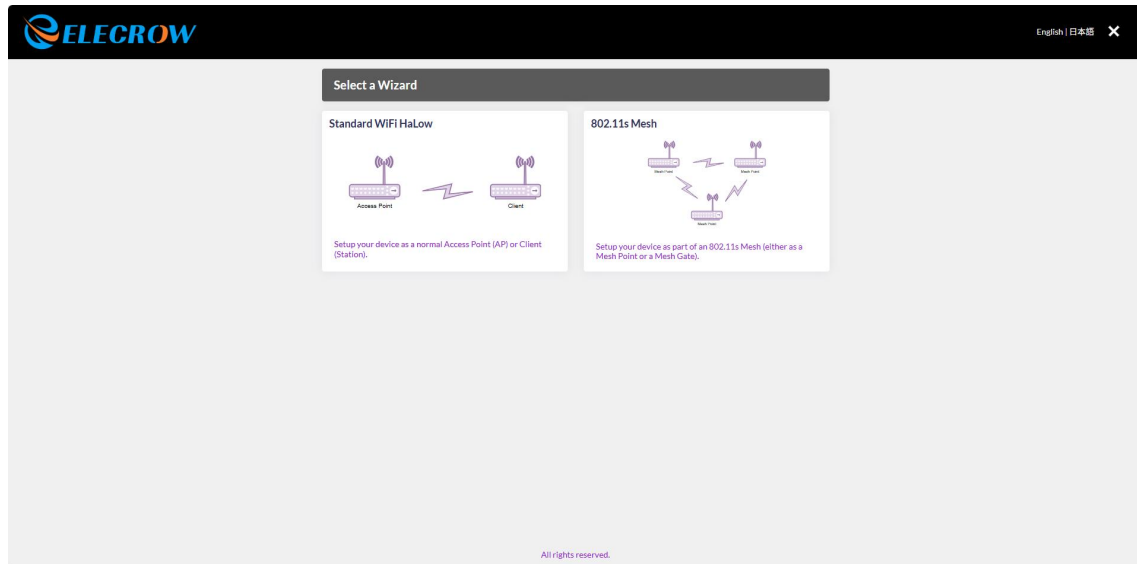
- This Device** (ThinkNode-G4\_2a2d82) is connected to two **Mesh Points** (Mesh ID: ThinkNode-G4) via 802.11ah HaLow Mesh.
- This Device** is connected to two **Laptop Devices** (10.42.0.x) via 2.4GHz WiFi.
- This Device** is connected to one **Laptop Device** (10.42.0.x) via Ethernet.

The **Network Interfaces** table is as follows:

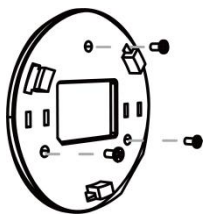
Name	Forward	Wireless	Ethernet	DHCP Server	Protocol	IPv4 address
lan	ahwlan	ThinkNode-G4_num2	eth0.1	<input checked="" type="checkbox"/>	Static IP	10.42.0.1
ahwlan	None	ThinkNode-G4_2a94 (mesh)	None	<input type="checkbox"/>	DHCP Client	

Below the table is a **Wireless** section.

11. Click "**Wizards**" to reconfigure the "**Mesh Gate**" or "**Mesh Point**" in "**802.11s Mesh mode**". Note: If your initial mode is "**802.11s Mesh mode**", you cannot directly switch to "**Standard WiFi Halow mode**". You must complete the "**Gateway Configuration Pre-preparation**" steps again before selecting "**Standard WiFi Halow mode**";

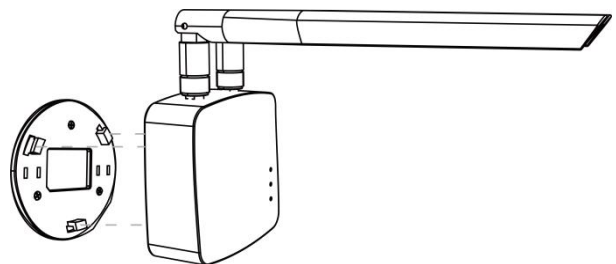


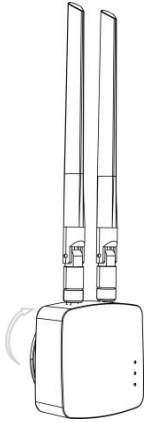
## Base Installation



1. Secure the base to the wall or other target installation area using screws

2. Align the bottom slots of the ThinkNode G4 with the mounting pegs on the base





3. Rotate the ThinkNode G4 clockwise until it locks securely into position

## Main Specifications

Product Name	ThinkNode G4
CPU	HLK-7628N Module
System Memory	DDR2:128 MB
Flash	32 MB
Communication Chip	FGH100M
Frequency Band	Sub-1 GHz/2.4 GHz
Networking mode	AP/STA/Mesh
Input	5V/1A
Interfaces	USB-C,RP-SMA(Wifi Halow/Wifi),RJ45(WAN/LAN)
Dimensions	75*75*30mm(Exclude antenna)
Weight	81.6 g

## Part List

- ThinkNode G4 x1
- Antenna x2
- Base x1
- User Manual x1
- USB-A to USB-C Cable x1