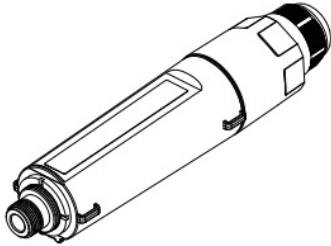


Tube-AHM

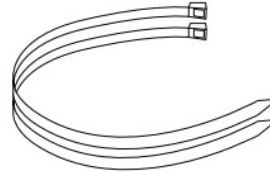
User Quick Guide

Package Contents

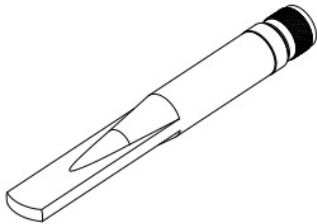
1 x Tube-AH Outdoor AP/CPE



2 x Pole mount cable ties



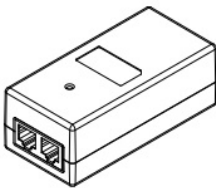
1 x Outdoor N-type Antenna



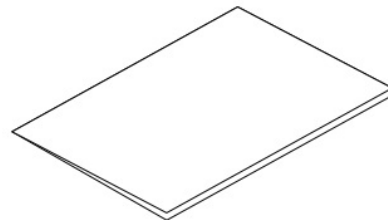
1 x Outdoor Water Resistant Tape



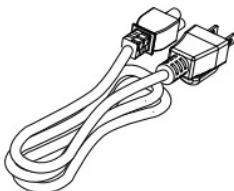
1 x Passive PoE Adapter



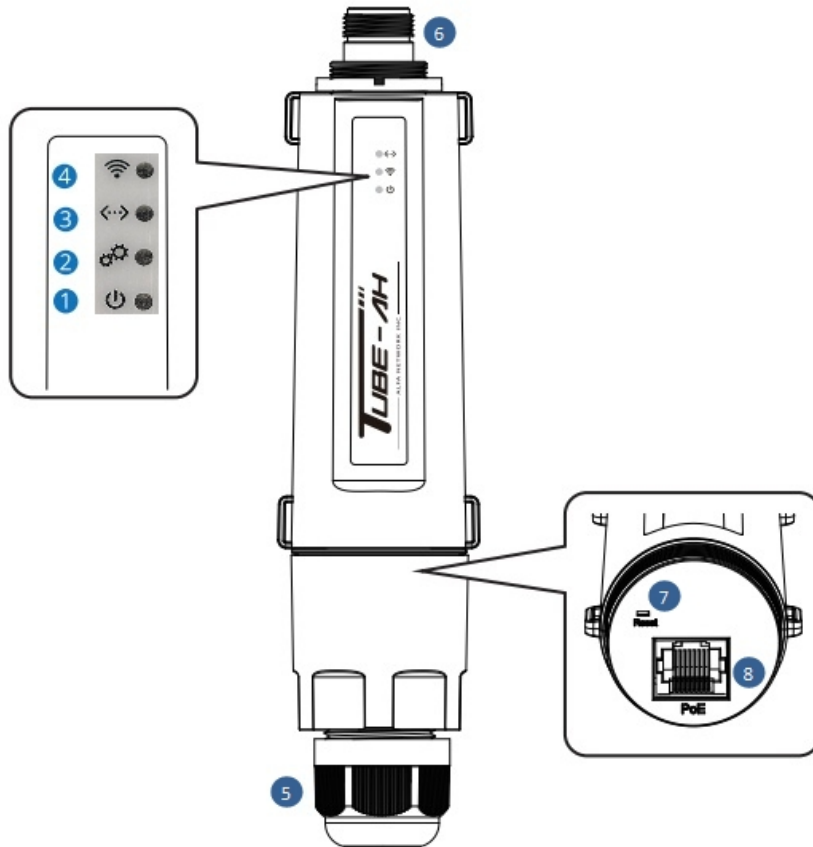
1 x User Guide



1 x Power Cord

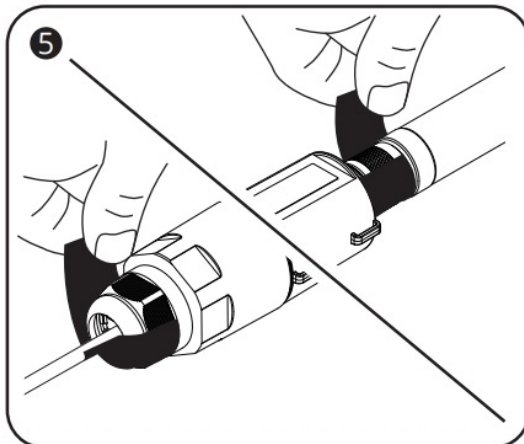
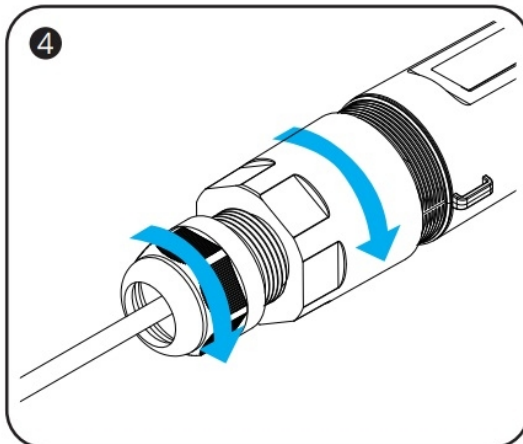
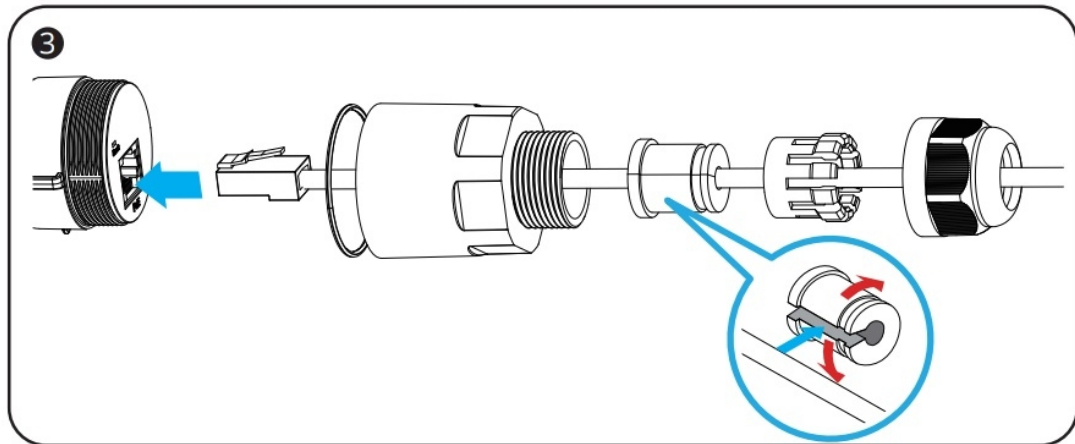
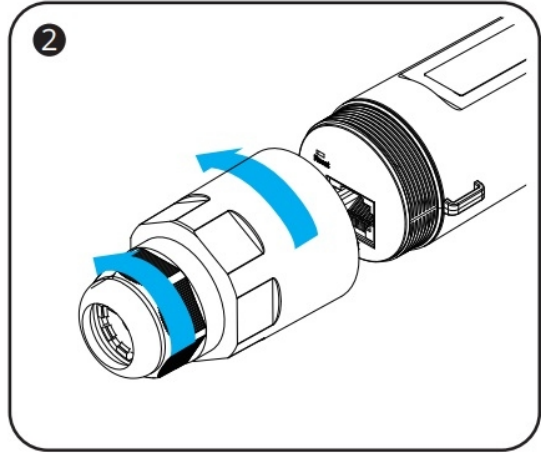
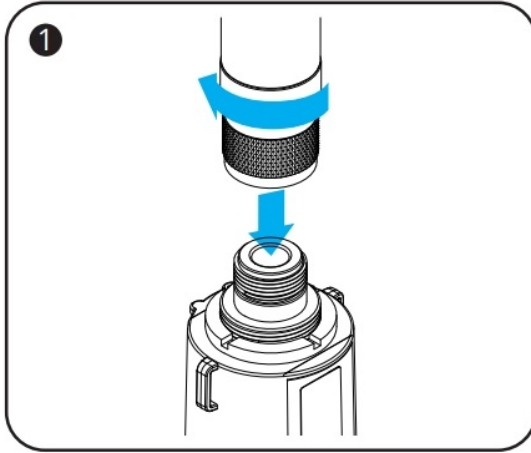


Product Overview

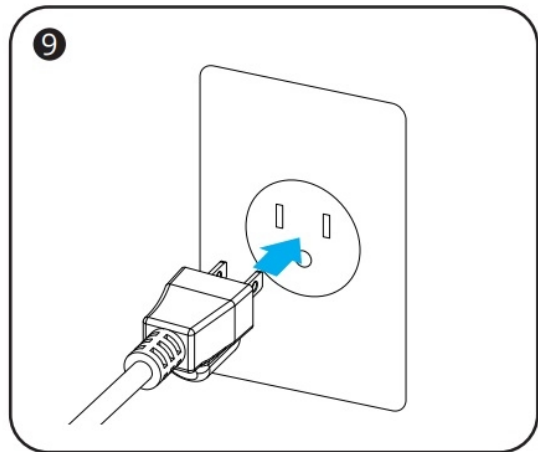
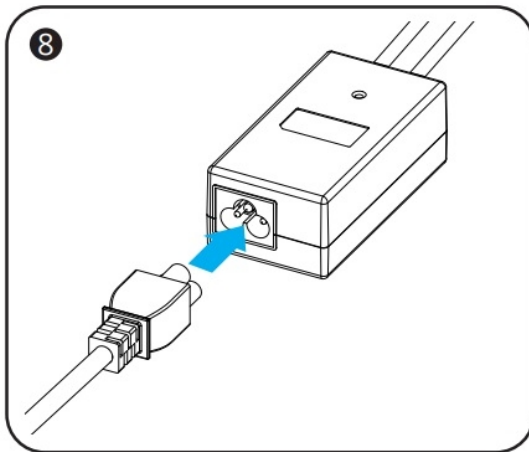
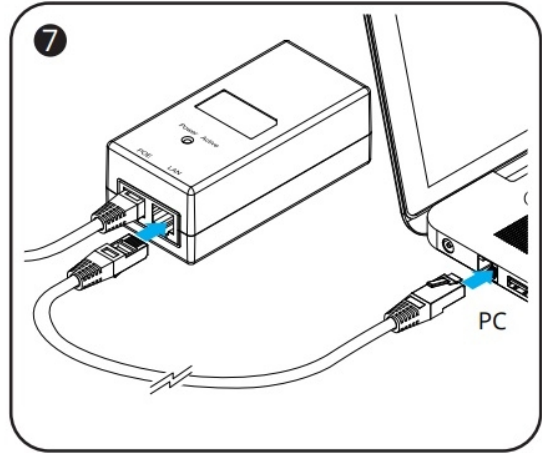
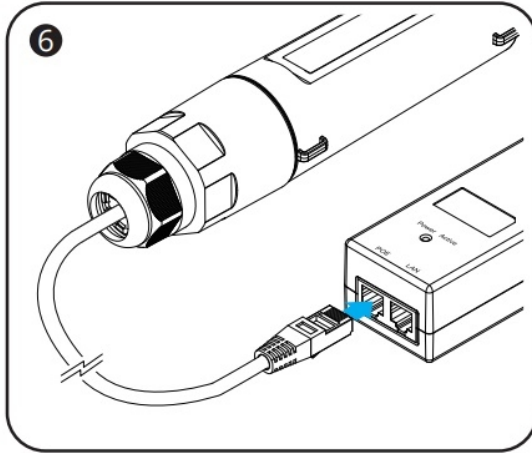


LED Indicator / Interface	Descriptions
1 Power Indicator (Blue)	On - Power on Off - No power
2 System Indicator (Red)	Blinking - Device in booting process Blinking Slow -Device is alive
3 Ethernet Indicator (Green)	Blinking - Ethernet is sending or receiving data
4 Wi-Fi Indicator (Amber)	On – Wi-Fi is running properly Blinking - Wi-Fi is sending or receiving data
5 RJ45 Waterproof Connector	Waterproof connector to prevent water and dust from entering the device.
6 N-type Antenna Connector	ANT port is used to connect 1 x outdoor N-type antenna
7 Reset	Reset Default - Press “Reset” button for 10 seconds
8 PoE LAN Port	Fast Ethernet with passive PoE and ESD protection (Passive PoE 12~36 VDC)

Hardware Installation



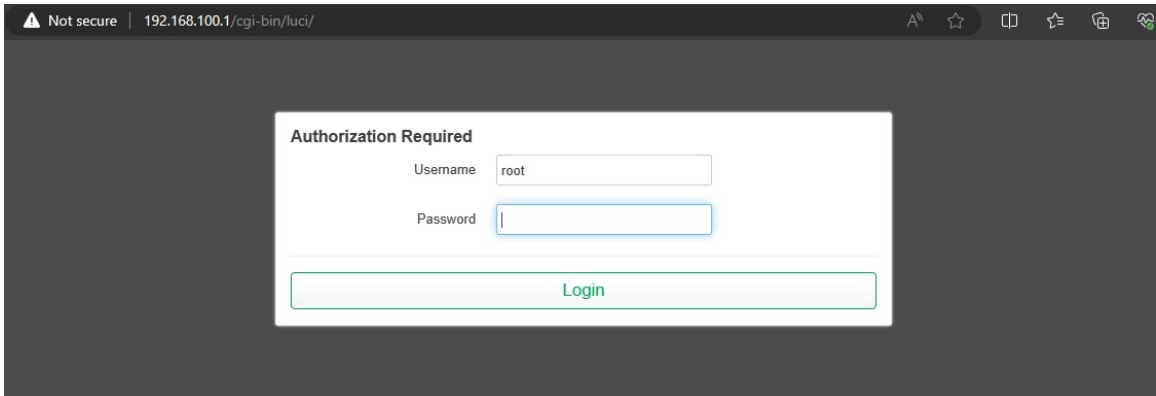
Hardware Installation



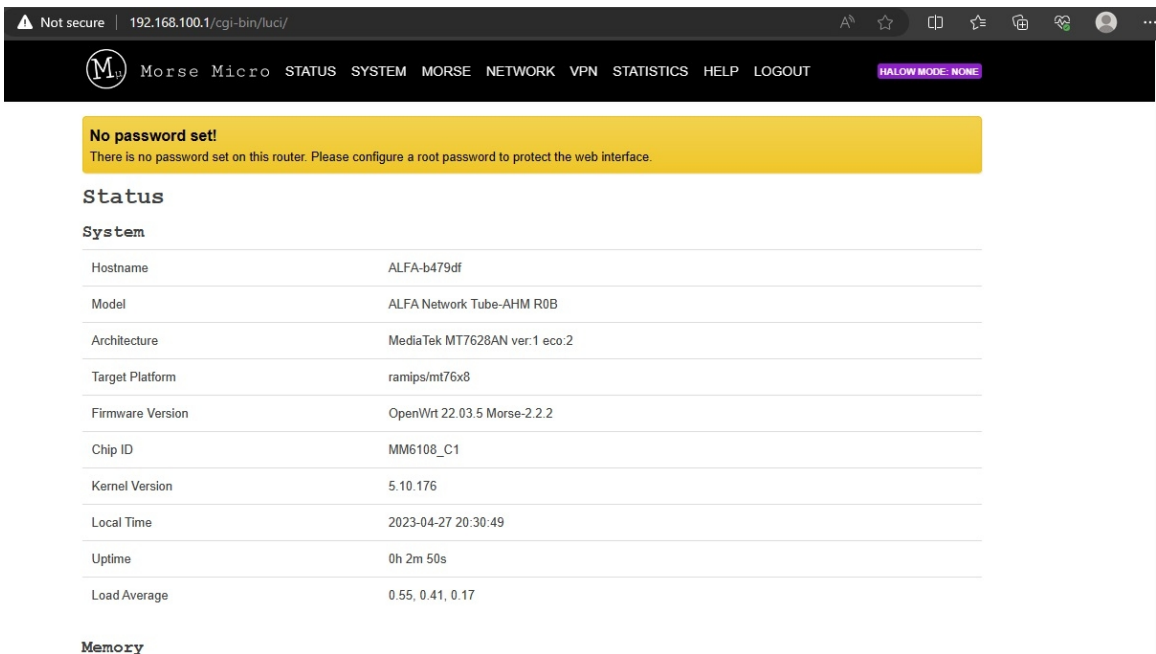
1. Pass the network cable through the various components of the waterproof connector, Connect the Tube-AHM and PoE adapter's PoE port using Ethernet cable. Rotate the waterproof connector until it is tight.
2. Attach Outdoor Omni Antenna to the Tube-AHM and rotate the antenna until it is tight. Seal the gap on the connector with the water resistant tape.
3. Connect the PoE adapter's LAN port to Computer using Ethernet cable.
4. Connect power cord to PoE adapter and plug in the power outlet.

Open Setup Page and Login

Open a browser then type 192.168.100.1 into the address bar to access the setup page, default username is “root” and no need password.



After logging in, the “STATUS” page will be shown.



How to Setup AP Mode

Please go to the “MORSE → HaLow Configuration” page.

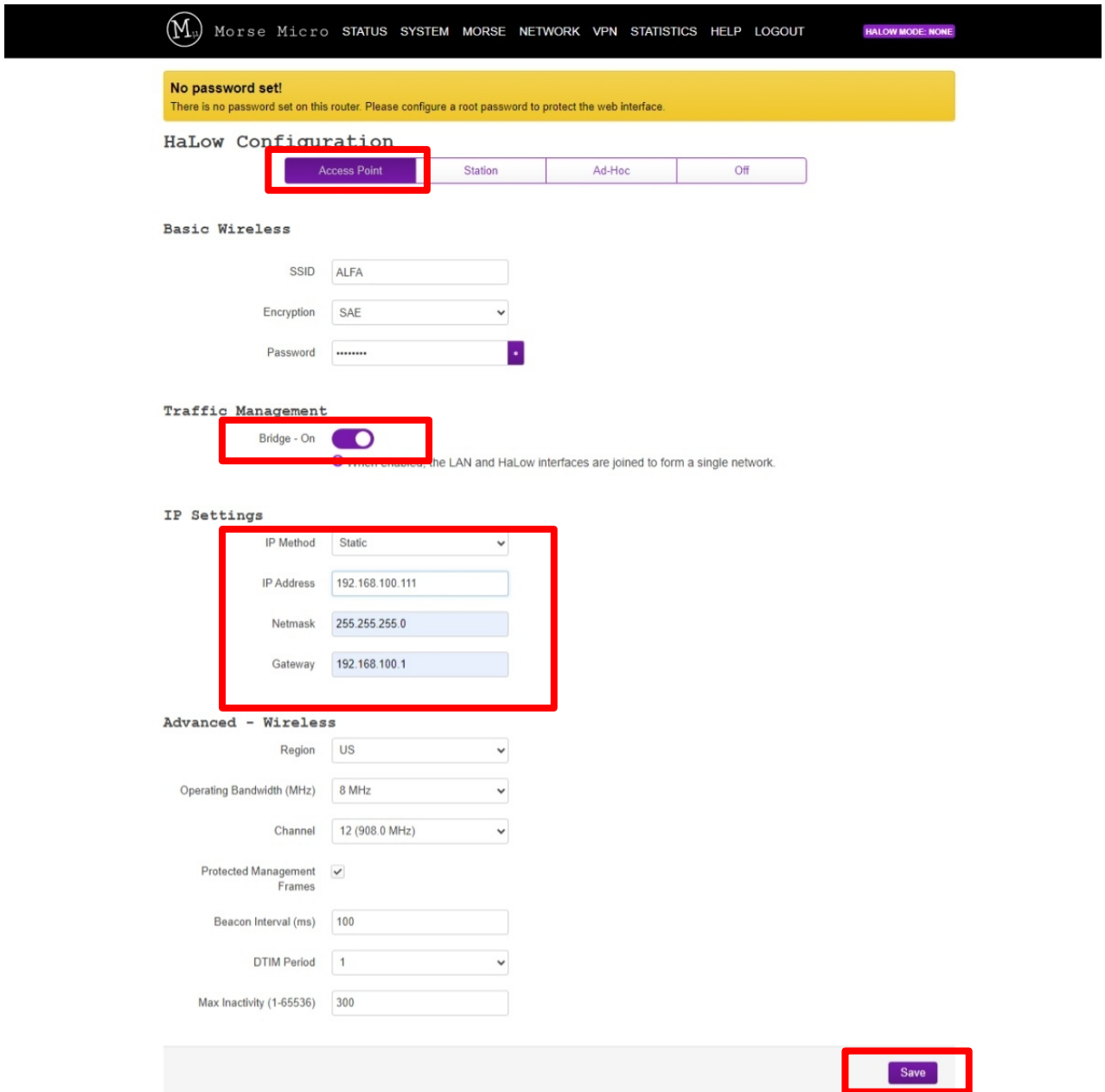
The screenshot shows the web interface of an ALFA Network device. The browser address bar displays '192.168.100.1/cgi-bin/luci/'. The navigation menu includes 'Morse Micro', 'STATUS', 'SYSTEM', 'MORSE', 'NETWORK', 'VPN', 'STATISTICS', 'HELP', and 'LOGOUT'. A purple badge indicates 'HALLOW MODE: NONE'. A yellow warning banner states 'No password set! There is no password set on this router. Please configure a password for the web interface.' A red box highlights the 'HaLow Configuration' option in the 'MORSE' dropdown menu. Below the banner is a 'Status' section with a table of system information.

System	
Hostname	ALFA-b479df
Model	ALFA Network Tube-AHM R0B
Architecture	MediaTek MT7628AN ver:1 eco:2
Target Platform	ramips/mt76x8
Firmware Version	OpenWrt 22.03.5 Morse-2.2.2
Chip ID	MM6108_C1
Kernel Version	5.10.176
Local Time	2023-04-27 20:37:27
Uptime	0h 9m 27s
Load Average	0.08, 0.21, 0.16

cgi-bin/luci/admin/morse/morsewizard

How to Setup AP Mode

- 1).Click "Access Point" page
- 2).Enable "Bridge" mode
- 3).IP Settings → "Static", and fill the IP Address, Netmask, Gateway information.
- 4).After the setting is completed, please click the "Save" button.



The screenshot shows the web interface of an ALFA Network device. At the top, there is a navigation bar with the logo and menu items: MORSE MICRO STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT. A yellow warning banner states "No password set! There is no password set on this router. Please configure a root password to protect the web interface." Below this is the "HaLow Configuration" section with four tabs: "Access Point" (highlighted with a red box), "Station", "Ad-Hoc", and "Off".

The "Basic Wireless" section contains the following fields:

- SSID: ALFA
- Encryption: SAE
- Password: [Redacted]

The "Traffic Management" section has a "Bridge - On" toggle switch (highlighted with a red box) which is currently turned on. Below it, a note says "When enabled, the LAN and HaLow interfaces are joined to form a single network."

The "IP Settings" section (highlighted with a red box) is configured as follows:

- IP Method: Static
- IP Address: 192.168.100.111
- Netmask: 255.255.255.0
- Gateway: 192.168.100.1

The "Advanced - Wireless" section includes the following settings:

- Region: US
- Operating Bandwidth (MHz): 8 MHz
- Channel: 12 (908.0 MHz)
- Protected Management Frames: [Checked]
- Beacon Interval (ms): 100
- DTIM Period: 1
- Max Inactivity (1-65536): 300

At the bottom right, there is a "Save" button (highlighted with a red box).

How to Setup AP Mode

Please go to the “NETWORK → Wireless” page.

The screenshot shows the ALFA Network web interface. At the top, there is a navigation bar with the following items: Morse Micro, STATUS, SYSTEM, MORSE, NETWORK, VPN, STATISTICS, HELP, and LOGOUT. A "HALLOW MODE: AP" indicator is visible in the top right corner. A yellow banner at the top of the main content area displays the message "No password set! There is no password set on this router. Please configure a root password for the device." Below this banner, a dropdown menu is open, showing options: Wireless, Switch, Routing, DHCP and DNS, Diagnostics, and Firewall. The "Wireless" option is highlighted with a red box. The main configuration area is titled "HaLow Configuration" and has two tabs: "Access Point" (selected) and "Station". Under "Basic Wireless", there are three input fields: "SSID" with the value "ALFA", "Encryption" set to "SAE", and "Password" (masked with dots). Under "Traffic Management", there is a "Bridge - On" toggle switch which is turned on, with a note: "When enabled, the LAN and HaLow interfaces are joined to form a single network." Under "IP Settings", there is an "IP Method" dropdown menu set to "Static". The browser address bar shows the URL: /cgi-bin/luci/admin/morse/morsewizard. The browser's security indicator shows "Not secure".

How to Setup AP Mode

Click “Edit” button for Wi-Fi HaLow settings

Not secure | 192.168.100.111/cgi-bin/luci/admin/network/wireless

Morse Micro STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT HALLOW MODE: AP

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

Wireless Overview

radio0	Morse Micro HaLow WiFi 802.11 Channel: 12 (908.000 GHz) Bitrate: ? Mbit/s	Restart Scan Add
dBm	SSID: ALFA Mode: Master BSSID: 00:C0:CA:B4:79:DF Encryption: WPA3 SAE (CCMP)	Disable Edit Remove
disabled	SSID: ? Mode: Client Wireless is disabled	Enable Edit Remove

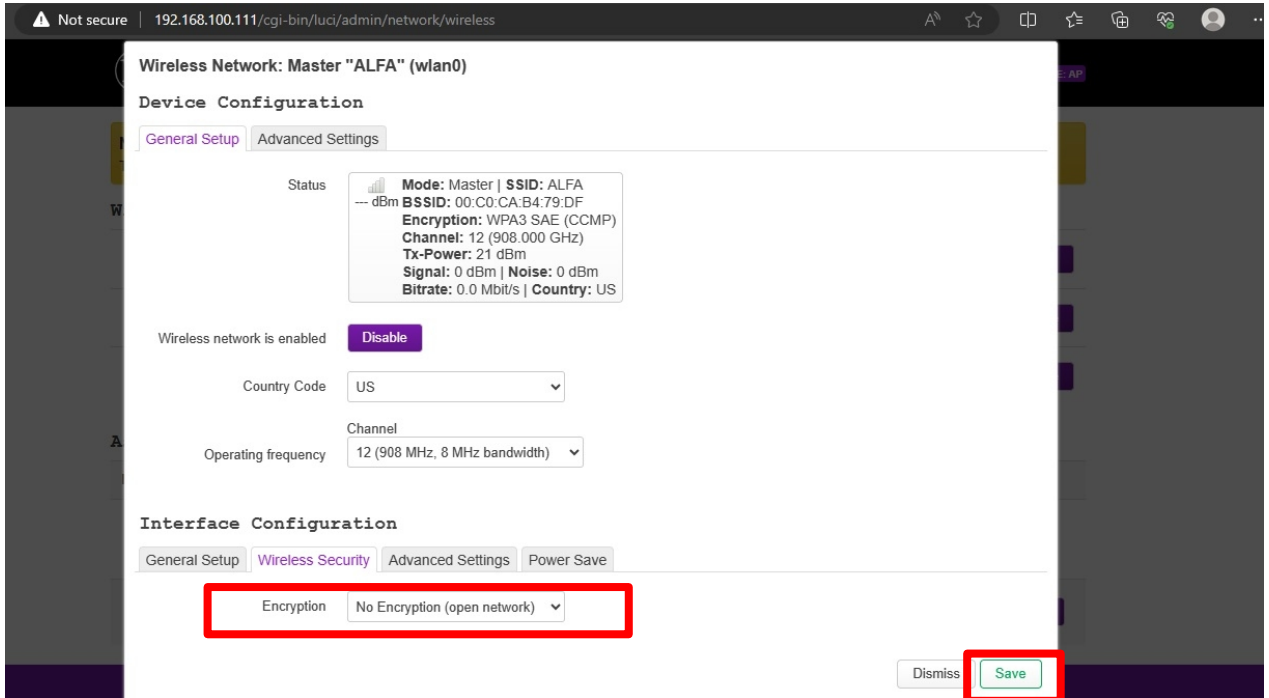
Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
No information available				

Save & Apply Save Reset

How to Setup AP Mode

- 1).Wireless Security → Encryption → “No Encryption”.
- 2).After the setting is completed, please click the "Save" button.



How to Setup AP Mode

Don't forget to click the “Save & Apply” button.

The screenshot shows the Morse Micro web interface. At the top, there is a navigation bar with the Morse Micro logo and menu items: STATUS, SYSTEM, MORSE, NETWORK, VPN, STATISTICS, HELP, and LOGOUT. A notification bar indicates 'HALLOW MODE: AP' and 'UNSAVED CHANGES: 2'. A yellow warning box states 'No password set! There is no password set on this router. Please configure a root password to protect the web interface.'

The 'Wireless Overview' section contains three entries:

- radio0**: Morse Micro HaLow WiFi 802.11, Channel: 12 (908.000 GHz) | Bitrate: ? Mbit/s. Buttons: Restart, Scan, Add.
- dBm**: SSID: ALFA | Mode: Master, Interface has 1 pending changes. Buttons: Disable, Edit, Remove.
- disabled**: SSID: ? | Mode: Client, Wireless is disabled. Buttons: Enable, Edit, Remove.

The 'Associated Stations' section has a table with columns: Network, MAC address, Host, Signal / Noise, and RX Rate / TX Rate. Below the table, it says 'No information available'.

At the bottom right, there are three buttons: 'Save & Apply' (highlighted with a red box), 'Save', and 'Reset'.

How to Setup AP Mode

Please change the IP Address of the computer to the same network segment as Tube-AHM.

Network & internet > Advanced network settings

Network adapters

- Wi-Fi: TP-Link_DCF8 | Intel(R) Wi-Fi 6E AX211 160MHz [Disable]
- 乙太網路**: 網路 29 | Intel(R) Ethernet Connection (16) I219-V
 - Media state: Enabled
 - Bytes sent: 1,660,106
 - Bytes received: 3,428,439
 - Link speed: 100 (Mbps)
 - Duration: 00:58:47
 - Rename this adapter
 - View additional properties
 - More adapter options

More settings

- Advanced sharing settings: Change network discovery and sharing settings

乙太網路 Properties

Networking Sharing

Connect using:
Intel(R) Ethernet Connection (16) I219-V [Configure...]

This connection uses the following items:

- Client for Microsoft Networks
- File and Printer Sharing for Microsoft Networks
- QoS 封包排程器
- 網際網路通訊協定第 4 版 (TCP/IPv4)
- Microsoft Network Adapter 多工器通訊協定
- Microsoft LLDP 通訊協定驅動程式
- 網際網路通訊協定第 6 版 (TCP/IPv6)

Install... Uninstall Properties

Description
傳輸控制通訊協定/網際網路通訊協定 (TCP/IP)。這是預設的廣域網路通訊協定，提供不同網路之間的通訊能力。

OK Cancel

網際網路通訊協定第 4 版 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 192 . 168 . 100 . 123

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . . |

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

Validate settings upon exit [Advanced...]

OK Cancel

How to Setup AP Mode

When the Client connects to the AP, it will be shown on the "STATUS" page.

Not secure | 192.168.100.111/cgi-bin/luci/admin/status/overview

Morse Micro STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT HALLOW MODE: AP

There are no active leases

Wireless

radio0

Type: Morse Micro HaLow WiFi 802.11
 Channel: 12 (908.000 MHz)
 Bitrate: 29.2 Mbit/s

SSID: ALFA
 Mode: Master
 BSSID: 00:C0:CA:B4:79:DF
 Encryption: None
 Associations: 1

SSID: ?
 Mode: Client
 Wireless is disabled

Associated Stations

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
Master "ALFA" (wlan0)	00:C0:CA:B3:DA:55	?	-90 dBm	5.8 Mbit/s, 8 MHz, MCS 1 29.3 Mbit/s, 8 MHz, MCS 6, Short GI

Disabled.

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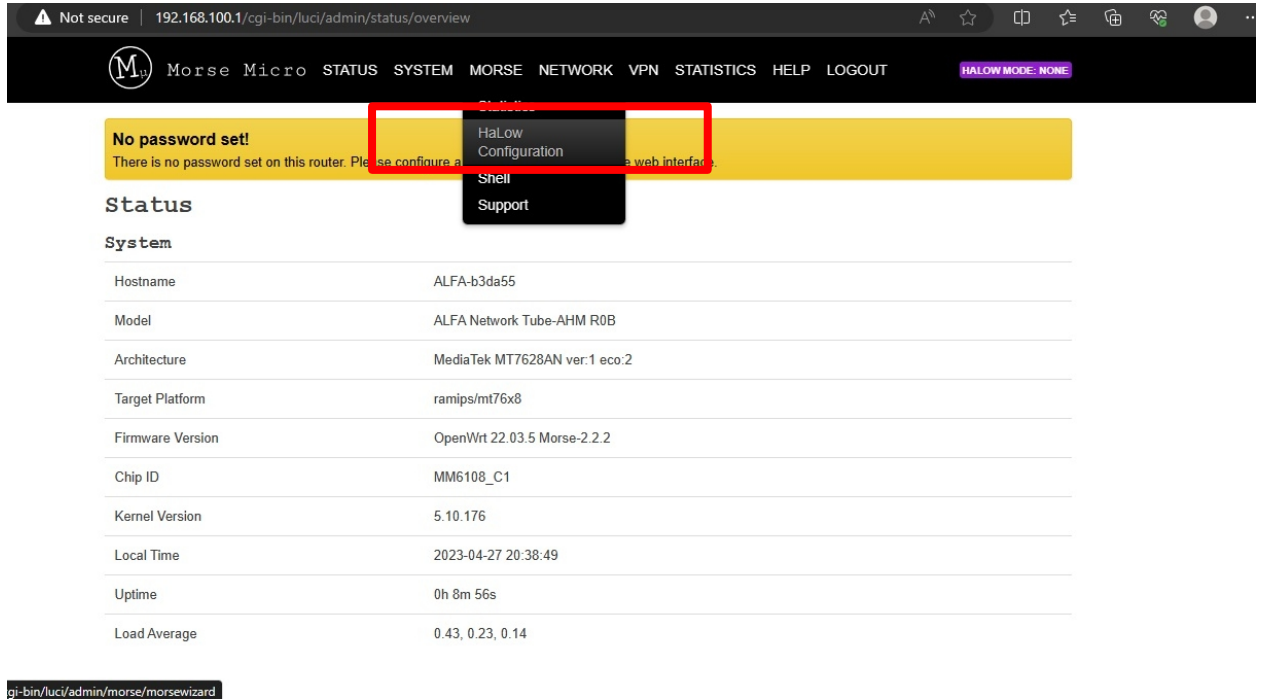
Note: When you reload the web page, please note whether you have changed the device IP!



Note: After the device settings are completed, if you change the settings in the WEB UI of the AP, "Save & Apply" the changes may cause the Client to disconnect!
 Solution: Please go to NETWORK --> Wireless page to turn off Encryption (None Encryption), Client will restore the connection.

How to Setup Client Mode

Please go to the “MORSE → HaLow Configuration” page.



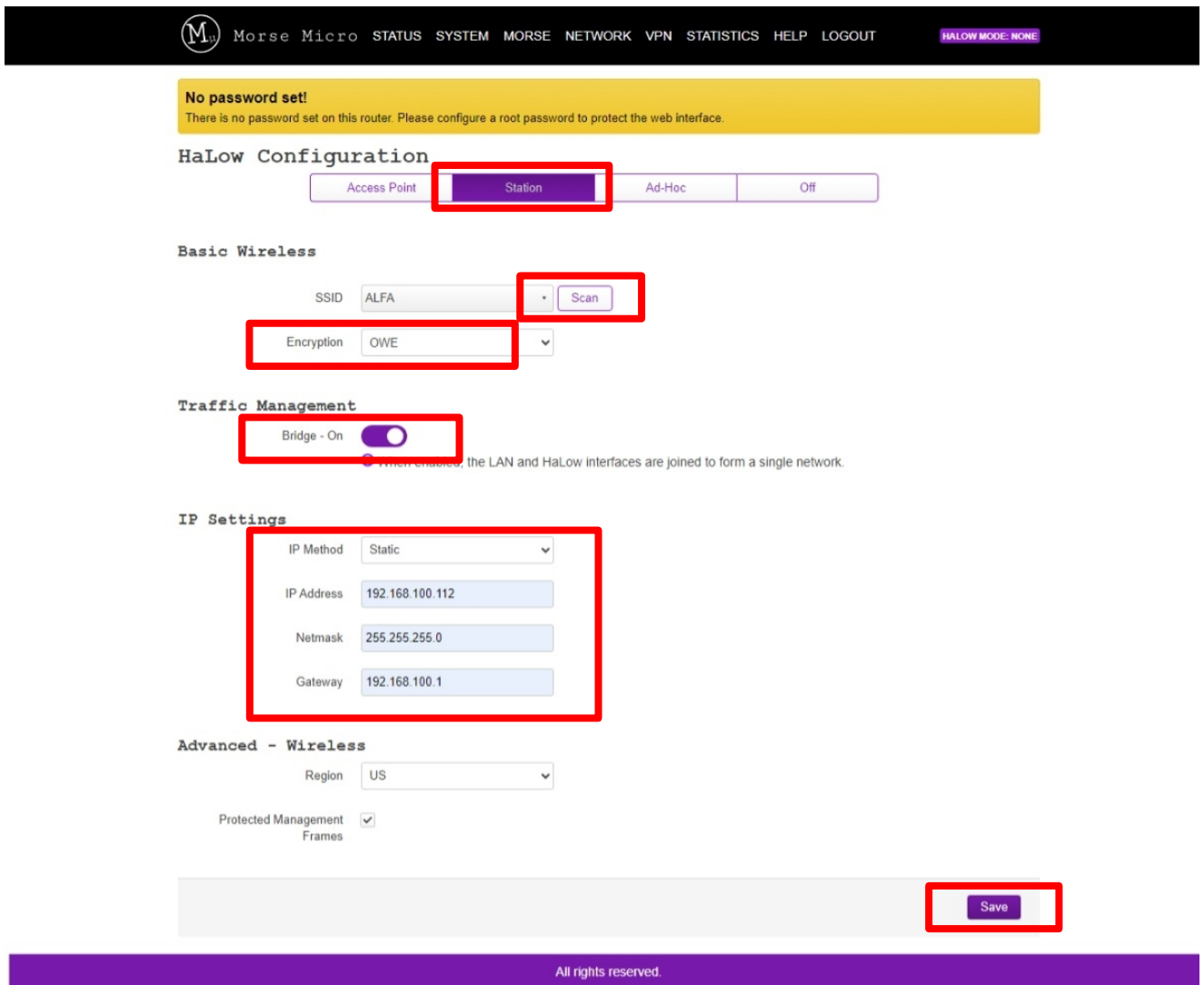
The screenshot shows the web interface of an ALFA Network device. The browser address bar shows the URL `192.168.100.1/cgi-bin/luci/admin/status/overview`. The navigation menu includes `Morse Micro STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT`. A yellow warning banner at the top states "No password set!". A dropdown menu is open over the "STATUS" link, with "HaLow Configuration" highlighted. Below the banner, the "Status" page is displayed, showing system information in a table.

System	
Hostname	ALFA-b3da55
Model	ALFA Network Tube-AHM R0B
Architecture	MediaTek MT7628AN ver:1 eco:2
Target Platform	ramips/mt76x8
Firmware Version	OpenWrt 22.03.5 Morse-2.2.2
Chip ID	MM6108_C1
Kernel Version	5.10.176
Local Time	2023-04-27 20:38:49
Uptime	0h 8m 56s
Load Average	0.43, 0.23, 0.14

At the bottom left of the screenshot, the URL `g-j-bin/luci/admin/morse/morsewizard` is visible.

How to Setup Client Mode

- 1).Click "Station" page.
- 2).Click "Scan" button for AP scan, and Encryption type select "OWE".
- 3).Enable "Bridge" mode
- 4).IP Settings → "Static", and fill the IP Address, Netmask, Gateway information.
- 5).After the setting is completed, please click the "Save" button.



The screenshot shows the web interface for configuring the HaLow mode. At the top, there is a navigation bar with the Morse Micro logo and menu items: STATUS, SYSTEM, MORSE, NETWORK, VPN, STATISTICS, HELP, and LOGOUT. A notification banner indicates "No password set!". The main configuration area is titled "HaLow Configuration" and includes several sections:

- HaLow Configuration:** A tabbed interface with "Station" selected.
- Basic Wireless:** SSID is set to "ALFA". The "Scan" button is highlighted. Encryption is set to "OWE".
- Traffic Management:** The "Bridge - On" toggle is turned on.
- IP Settings:** IP Method is set to "Static". IP Address is 192.168.100.112, Netmask is 255.255.255.0, and Gateway is 192.168.100.1.
- Advanced - Wireless:** Region is set to "US" and Protected Management Frames is checked.

A "Save" button is located at the bottom right of the configuration area.

How to Setup Client Mode

Please change the IP Address of the computer to the same network segment as Tube-AHM.

Network & internet > Advanced network settings

乙太網路
網路 26 | Intel(R) Ethernet Connection (16) I219-V

Media state: Enabled
Bytes sent: 604,790
Bytes received: 1,431,524
Link speed: 100 (Mbps)
Duration: 00:03:02

Rename this adapter
View additional properties
More adapter options

More settings

Advanced sharing settings
Change network discovery and sharing settings

Data usage

乙太網路 Properties

Networking Sharing

Connect using:
Intel(R) Ethernet Connection (16) I219-V

This connection uses the following items:

- Client for Microsoft Networks
- File and Printer Sharing for Microsoft Networks
- QoS 封包排程器
- 網際網路通訊協定第 4 版 (TCP/IPv4)
- Microsoft Network Adapter 多工器通訊協定
- Microsoft LLDP 通訊協定驅動程式
- 網際網路通訊協定第 6 版 (TCP/IPv6)

Install... Uninstall Properties

Description
傳輸控制通訊協定/網際網路通訊協定 (TCP/IP)。這是預設的廣域網路通訊協定，提供不同網路之間的通訊能力。

OK Cancel

網際網路通訊協定第 4 版 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically
 Use the following IP address:

IP address: 192 . 168 . 100 . 124
Subnet mask: 255 . 255 . 255 . 0
Default gateway: . . .

Obtain DNS server address automatically
 Use the following DNS server addresses:

Preferred DNS server: . . .
Alternate DNS server: . . .

Validate settings upon exit

Advanced...
OK Cancel

How to Setup Client Mode

When the Client connects to the AP, it will be shown on the "STATUS" page.

The screenshot shows the web interface for the ALFA Network. The browser address bar shows '192.168.100.112/cgi-bin/luci/admin/status/overview'. The navigation menu includes Morse Micro, STATUS, SYSTEM, MORSE, NETWORK, VPN, STATISTICS, HELP, and LOGOUT. A 'HALLOW MODE: STA' button is visible.

Below the navigation menu, there is a table for active leases, which is currently empty with the message 'There are no active leases'.

The 'Wireless' section shows the configuration for 'radio0':

- Type: Morse Micro HaLow WiFi 802.11
- Channel: 12 (908.000 MHz)
- Bitrate: 26.3 Mbit/s
- SSID: ALFA
- Mode: Client
- BSSID: 00:C0:CA:B4:79:DF
- Encryption: None
- Associations: 1

The 'Associated Stations' section contains a table with the following data:

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
Client "ALFA" (wlan0)	00:C0:CA:B4:79:DF	?	-78/-110 dBm	32.5 Mbit/s, 8 MHz, MCS 7, Short GI 26.3 Mbit/s, 8 MHz, MCS 6

The table row is highlighted with a red border. Below the table, the 'EasyMesh' section is shown as 'Disabled'.

The footer of the page contains the text 'All rights reserved.'



Note: When you reload the web page, please note whether you have changed the device IP!



Note: After the device settings are completed, if you change the settings in the WEB UI of the AP, "Save & Apply" the changes may cause the Client to disconnect!
Solution: Please go to NETWORK --> Wireless page to turn off Encryption (None Encryption), Client will restore the connection.

How to Setup with the Router

*** For example, if your front-end router settings are as follows:

Gateway IP: 192.168.0.1

DHCP Server Range: 192.168.0.2~192.168.0 253

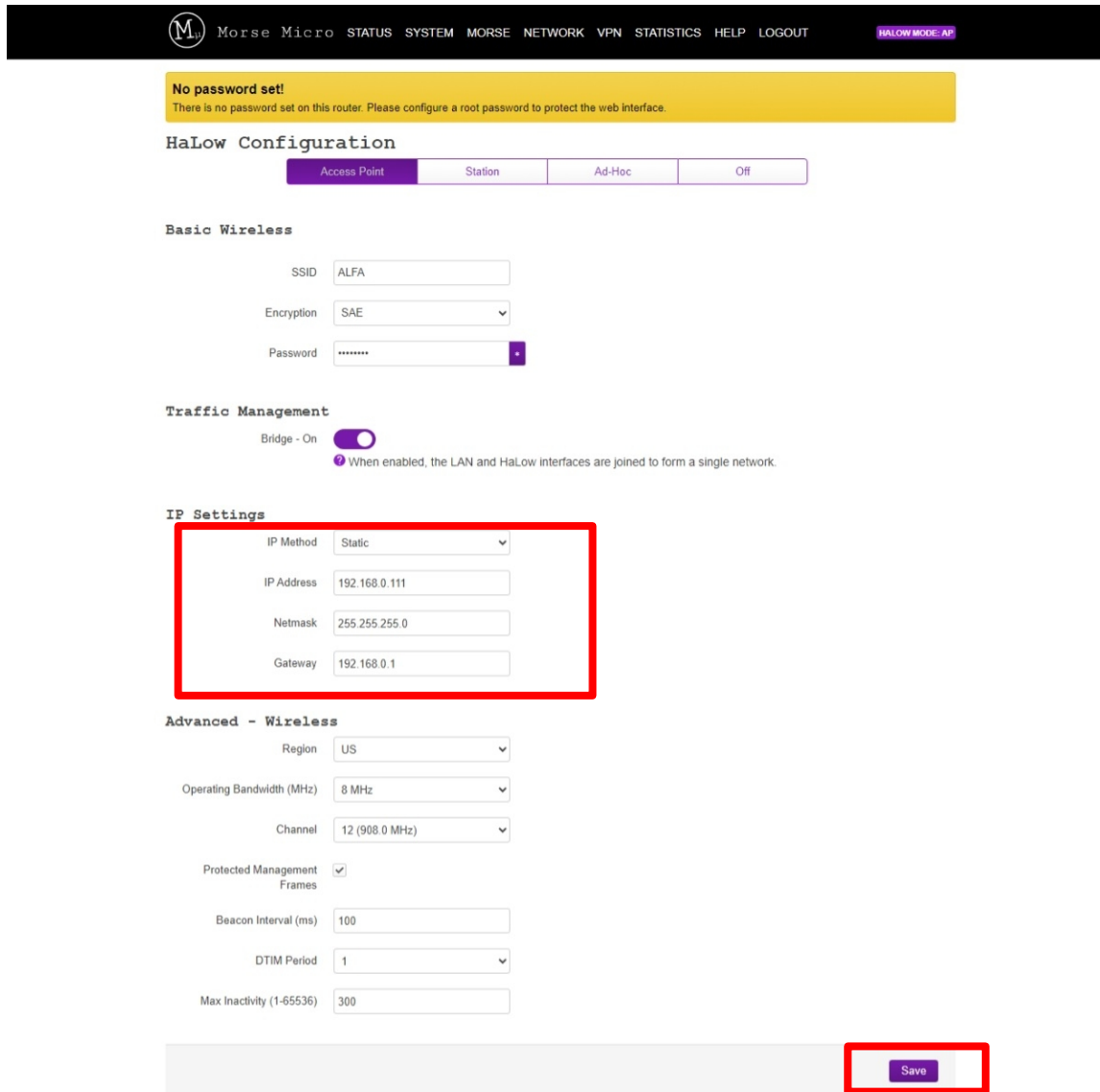
Please go to the “MORSE → HaLow Configuration” page modification settings examples are as follows:

For Tube-AHM AP

IP Address: 192.168.0.111

Gateway: 192.168.0.1

Please click the "SAVE" button.



Morse Micro STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT HALOWMODE-AP

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

HaLow Configuration

Access Point Station Ad-Hoc Off

Basic Wireless

SSID: ALFA
Encryption: SAE
Password:

Traffic Management

Bridge - On
When enabled, the LAN and HaLow interfaces are joined to form a single network.

IP Settings

IP Method: Static
IP Address: 192.168.0.111
Netmask: 255.255.255.0
Gateway: 192.168.0.1

Advanced - Wireless

Region: US
Operating Bandwidth (MHz): 8 MHz
Channel: 12 (908.0 MHz)
Protected Management Frames:
Beacon Interval (ms): 100
DTIM Period: 1
Max Inactivity (1-65536): 300

Save

How to Setup with the Router

For Tube-AHM Client

IP Address: 192.168.0.112

Gateway: 192.168.0.1

Please click the "SAVE" button.

Morse Micro STATUS SYSTEM MORSE NETWORK VPN STATISTICS HELP LOGOUT **HALLOW MODE: STA**

No password set!
There is no password set on this router. Please configure a root password to protect the web interface.

HaLow Configuration

Access Point Station Ad-Hoc Off

Basic Wireless

SSID: ALFA

Encryption: OWE

Traffic Management

Bridge - On

When enabled, the LAN and HaLow interfaces are joined to form a single network.

IP Settings

IP Method: Static

IP Address: 192.168.0.112

Netmask: 255.255.255.0

Gateway: 192.168.0.1

Advanced - Wireless

Region: US

Protected Management Frames

All rights reserved.

How to Setup with the Router

After the setting is completed, it will be shown as follows

For Tube-AHM AP

The screenshot shows the router's status page for the radio0 interface. The mode is set to Master. The SSID is ALFA, and the BSSID is 00:C0:CA:B4:79:DF. The encryption is None, and there is 1 association. The wireless is disabled.

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
Master "ALFA" (wlan0)	00:C0:CA:B3:DA:55	?	-79 dBm	26.3 Mbit/s, 8 MHz, MCS 6 32.5 Mbit/s, 8 MHz, MCS 7, Short GI

For Tube-AHM Client

The screenshot shows the router's status page for the radio0 interface. The mode is set to Client. The SSID is ALFA, and the BSSID is 00:C0:CA:B4:79:DF. The encryption is None, and there is 1 association. The wireless is disabled.

Network	MAC address	Host	Signal / Noise	RX Rate / TX Rate
Client "ALFA" (wlan0)	00:C0:CA:B4:79:DF	?	-74/-110 dBm	32.5 Mbit/s, 8 MHz, MCS 7, Short GI 26.3 Mbit/s, 8 MHz, MCS 6



Note: When you reload the web page, please note whether you have changed the device IP!

How to Reset Default and Upload Firmware

Please go to the “SYSTEM → Backup / Flash Firmware” page.

The screenshot shows the web interface of an ALFA Network device. At the top, there is a navigation bar with the Morse Micro logo and menu items: MORSE, MICRO, STATUS, SYSTEM, MORSE, NETWORK, VPN, STATISTICS, HELP, LOGOUT. A purple button labeled 'HALLOW MODE: AP' is on the right. Below the navigation bar is a yellow warning box: 'No password set! There is no password set on this router. Please configure a root password to protect the web interface.'

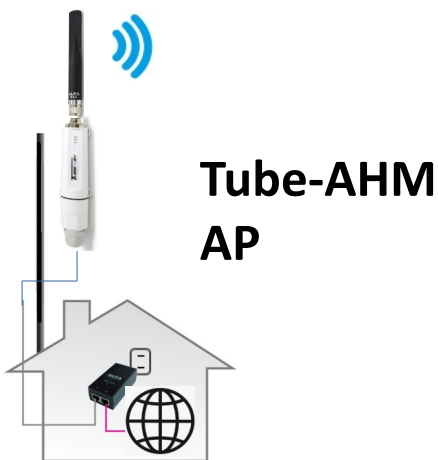
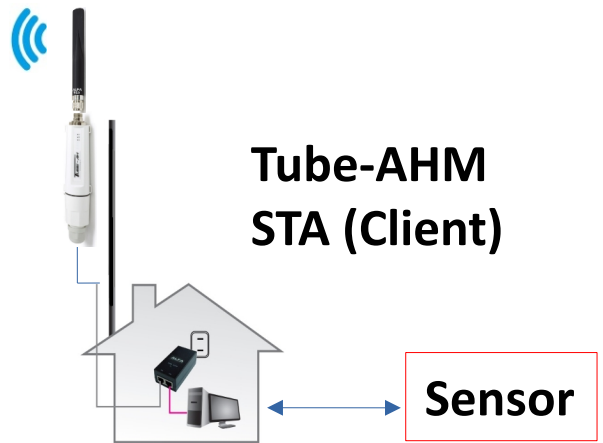
The main content area is titled 'Flash operations' and has two tabs: 'Actions' (selected) and 'Configuration'. Under 'Flash operations', there are four sections:

- Backup**: 'Click "Generate archive" to download a tar archive of the current configuration files.' It includes a 'Download backup' link and a purple 'Generate archive' button.
- Reset Defaults**: 'To reset the firmware to its initial state, click "Perform reset" (only possible with squashfs images).' It includes a 'Reset to defaults' link and a red 'Perform reset' button. A red arrow points from the text 'Reset Default' to this button.
- Restore**: 'To restore configuration files, you can upload a previously generated backup archive here.' It includes a 'Restore backup' link and a purple 'Upload archive...' button. A note below says: 'Custom files (certificates, scripts) may remain on the system. To prevent this, perform a factory-reset first.'
- Save mtblock contents**: 'Click "Save mtblock" to download specified mtblock file. (NOTE: THIS FEATURE IS FOR PROFESSIONALS!)' It includes a 'Choose mtblock' dropdown menu (set to 'u-boot') and a purple 'Save mtblock' button.

At the bottom, there is a section titled 'Flash new firmware image' with the instruction: 'Upload a sysupgrade-compatible image here to replace the running firmware.' It includes an 'Image' label and a purple 'Flash image...' button. A red arrow points from the text 'Upload Firmware' to this button.

The footer of the page is a purple bar with the text 'All rights reserved.'

Application Scenario



Troubleshooting

LED indicators shown abnormally

Please check to see if all cable connectors (PoE adapter and Ethernet cable) are connected to your device properly.

Please use the PoE adapter, which is included in the package content.

Client disconnected after changing settings

After the device settings are completed, if you change the settings in the WEB UI of the AP, "Save & Apply" the changes may cause the Client to disconnect!

Solution: Please go to NETWORK --> Wireless page to turn off encryption (None Encryption), Client will restore the connection.