HT-H7608

Wi-Fi HaLow Router

Document version

Version	Time	Description	Remark
Rev. 1.0	2024-9-16	Preliminary version	Richard

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Content

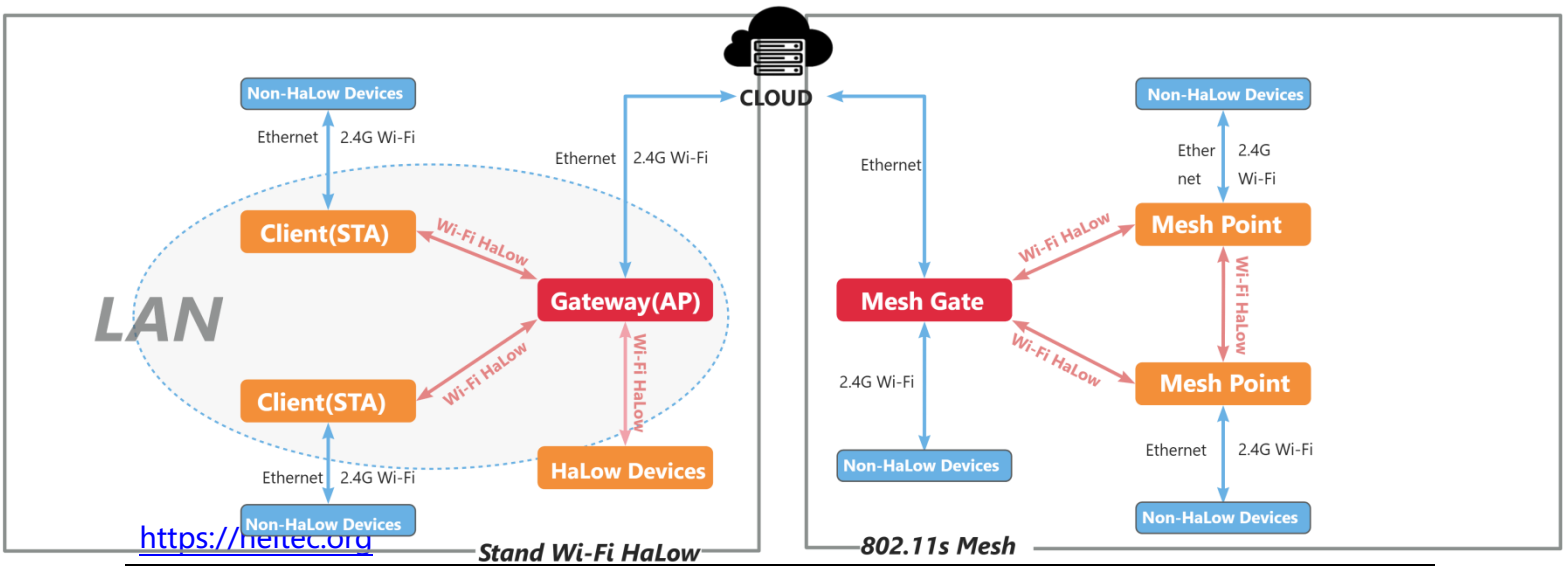
1. Description

1.1 Overview

HT-H7608 is an innovative WiFi HaLow gateway from Heltec Automation designed to meet the needs of **long-distance/high-speed** data transmission for IoT applications. The gateway uses WiFi HaLow(IEEE 802.11ah) technology that operates in the sub-1 GHz unlicensed band, which has stronger penetration and larger coverage compared with the traditional WiFi standard.

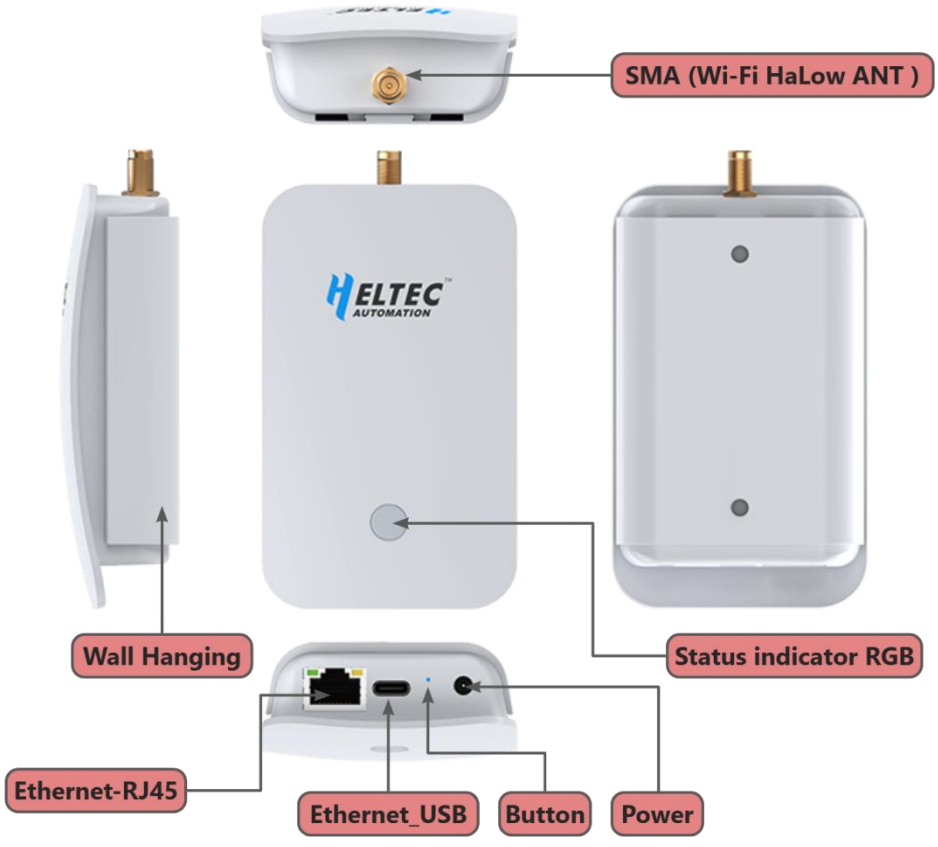
H7608 is equipped with powerful hardware including advanced RF capabilities, high-performance MCU, and flexible interfaces for seamless integration with existing networks. It can be easily configured and OTA upgraded through web UI, and supports the simultaneous connection of a large number of devices, which making it a great solution for intelligent manufacturing, intelligent agriculture and smart city, etc.

Wi-Fi HaLow Working Mode



1.2 Product Features

- Wi-Fi and Ethernet supported, WiFi HaLow and 2.4GHz dual-band design.
- Long-range transmission capability, the range can reach 1km and further within the visual distance.
- Supports access to a large number of devices, more than 4 times that of traditional Wi-Fi access points.
- High transmission speed, it maintains 150Kbps at the limit distance and 32Mbps at close distances.
- Flexible networking methods, including AP, STA, Mesh, etc.
- Easy setup and OTA upgrade via the Web UI.
- Light and stylish wall-mounted, simple to install.
- -20°C to 70°C maximum operating temperature range.



1.3 Application

Wi-Fi HaLow technology is suitable for most IoT scenarios, especially those that require high-speed transmission. Here are some common application scenarios. If you have any questions or customization requirements, please feel free to contact us.

- Remote camera monitoring
- Industrial automation control
- Asset management and tracking
- Old device Information upgrade
- Smart Home
- Smart City
- Wi-Fi/Ethernet/Wi-Fi_HaLow extension and bridging
- WiFi-HaLow Gateway
- Proximity sensors
- Rural internet access
- LAN construction
- Network blind spot coverage

2. Specifications

2.1 Generic Parameter

Table 2.1 General specification

Parameters	Description	
Wi-Fi chip	MT7628NN	
Wi-Fi HaLow chip	MM6108IQ	
Wi-Fi HaLow	IEEE 802.11ah	
Wi-Fi	IEEE 802.11 b/g/n	
Flash	32M	
RAM	128M	
Power Supply	5V DC	
Power Consumption	Table 2.3	
Operating temperature	-20 ~ 70℃	
Operating humidity	10% ~ 90%, no-condensing	
Interface	USB Type-C	Power/Ethernet
	DC-031A	Power Supply
	RJ45	Ethernet
Dimensions	109*66*30.50 mm	
Weight	65g(excluding antenna)	

2.2 Wi-Fi HaLow parameters

Table 2.2 Wi-Fi HaLow Parameters

Parameter	Description
Chip	MM6108IQ
Wi-Fi Standard	IEEE 802.11ah
Frequency	902-928 MHz
Max. output power	19±1dBm
Channel Bandwidth	1/2/4/8 MHz(see table2.5)
Data Rate	32.5 Mbps @ 8 MHz or 15 Mbps @ 4 MHz
Antenna connector	SMA

2.3 Power consumption

Table2.3 Power consumption

Mode		Min	Typical	Max	Units
Configuration			295		mA
AP	NONE		296		mA
	Ethernet		225		mA
	2.4G Wi-Fi		230		mA
STA			205		mA
Mesh Point			302		mA
Mesh Gate			264		mA

2.4 RF Specifications

2.4.1 Receiver sensitivities

Table2.4.1 Receiver sensitivities

Minimum Receive sensitivity (dBm) per BW			
1 MHz	2 MHz	4 MHz	8 MHz
-105	-103	-101	-97
-102	-100	-97	-93
-99	-97	-95	-91
-96	-94	-91	-88
-93	-90	-88	-85
-89	-87	-84	-80
-88	-85	-83	-79
-87	-84	-81	-77
-107	N/A		

2.4.2 Transmitter power

Table2.4.2 Transmitter power

TX output power(1,2MHz BW)	Min(dBm)	Typical(dBm)	Max(dBm)
MCS 0	18	19	20
MCS 7	16	17	18.5

TX output power(4MHz BW)	Min(dBm)	Typical(dBm)	Max(dBm)
MCS 0	15	16	17
MCS 7	13	14	15

TX output power(8MHz BW)	Min(dBm)	Typical(dBm)	Max(dBm)
MCS 0	17	18	19
MCS 7	15	16	17

2.5 Channel&Bandwidth

Table2.5 Channel&Bandwidth

Bandwidth(MHz)	Channel&Frequency(MHz)
1	3(903.5), 5(904.5), 7(905.5), 9(906.5), 11(907.5), 13(908.5), 15(909.5), 17(910.5), 19(911.5), 21(912.5), 23(913.5), 25(914.5), 27(915.5), 29(916.5), 31(917.5), 33(918.5), 35(919.5), 37(920.5), 39(921.5), 41(922.5), 43(923.5), 45(924.5), 47(925.5), 49(926.5)
2	6(905), 10(907), 14(909), 18(911), 22(913), 26(915), 30(917), 34(919), 38(921), 42(923), 46(925)
4	8(906), 16(910), 24(914), 32(918), 40(922)
8	12(908), 28(916), 44(924)

2.6 RGB status indicator description

Table2.6 RGB Status Indicator Description

Color	Status	Description
Red	Always on/Blinking	System booting
Green	Blinking	Getting IP address（AP/Mesh-gateway，@RJ45） HaLow connecting(STA/Mesh-Point, @RJ45)

	Always on①	Geted IP address（AP/Mesh-gateway , @ RJ45） Halow connected(STA/Mesh-Point, @RJ45)
Blue	Blinking	Getting IP address （ AP/Mesh-gateway , @USB） HaLow connecting(STA/Mesh-Point, @USB)
	Always on②	Geted IP address（AP/Mesh-gateway , @ USB） Halow connected(STA/Mesh-Point, @USB)
Yellow	Light up and release	Enter Configuration mode
White	Light up and release	Factory reset
Yellow-Green	Alternate flicker	Configuration mode
Yellow-Blue	Alternate flicker	Configuration mode
Purple	Blinking	Button pressed

2.7 Button description

When the button is successfully pressed, the device indicator will appear a purple light, and then the corresponding status indicator will appear.

Table2.6 Button description

Status	Description
Single press	Switch network connection mode. The switch is green when

① In AP mode, after the connection network successfully. In STA mode, after obtaining the IP (regardless of whether the network is successfully connected).

② In AP mode, after the connection network successfully. In STA mode, after obtaining the IP (regardless of whether the network is successfully connected).

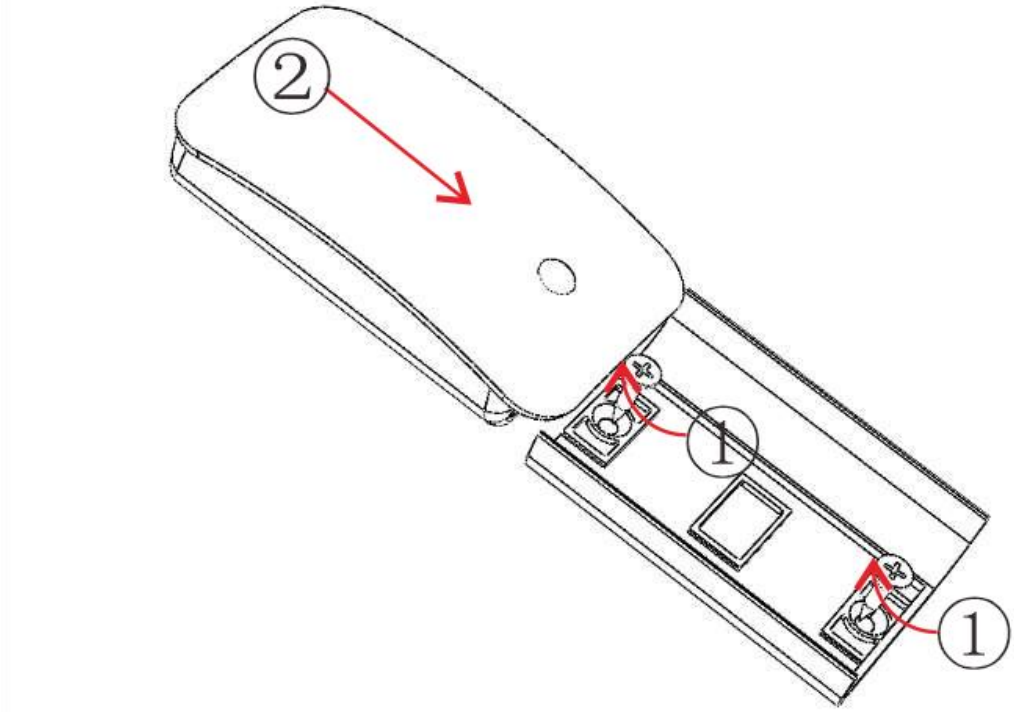
	connected to RJ45, blue when connected to USB
Long press 3 seconds	Yellow light is on, the device enters configuration mode
Long press 10 seconds	White light is on, factory reset

3. Get Started

3.1 Installation bracket

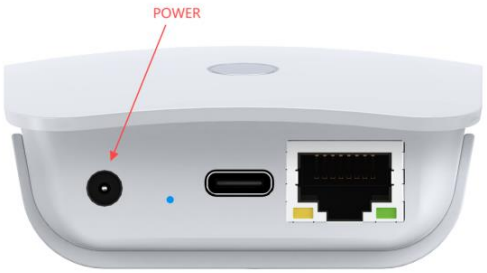
① **Tighten the bracket with screws**

② **Insert gateway into bracket from top to bottom**



3.2 Hardware Connection

Plug in the power adapter, at this time the device RGB light is red. Power adapter Specifications:5V/1A

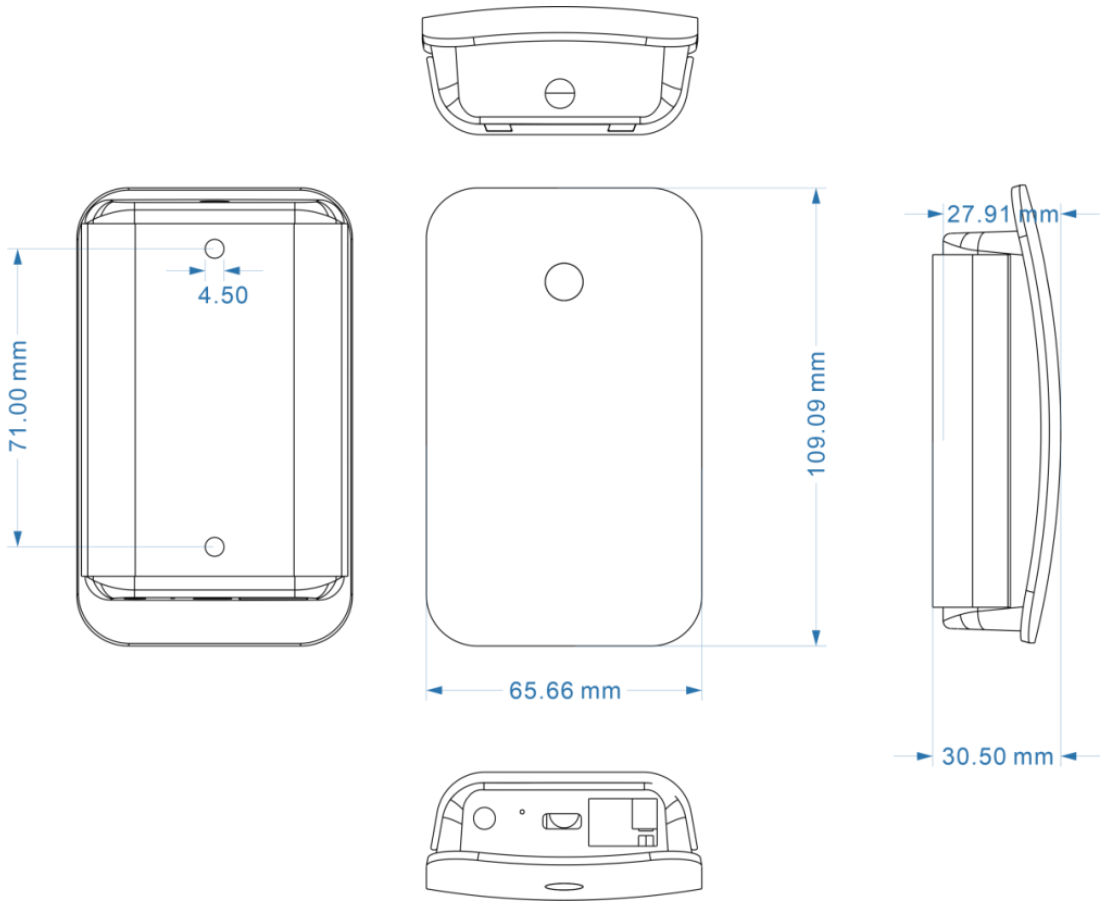


Connect the Antenna. The interface specification: SMA.

3.3 Setup guide

Please refer to the [Heltec documentation page] for detailed configuration methods.

4. Hardware Dimensions



5. Resource

- Documents Page: Heltec Products Operation Documention
- Resource station: resource.heltec.cn

6. Heltec Contact Information

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https://heltec.org

7. FCC Statement

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.

To assure continued compliance, any changes or modifications not expressly approved by the party.

Responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:

The equipment complies with FCC Radiation exposure limits set forth for uncontrolled enviroment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.