



# HT-HD01

## Wi-Fi HaLow Dongle

Ultra-long-range wireless network bridge





## Document version

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

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# 1.Introduction

## 1.1 Overview

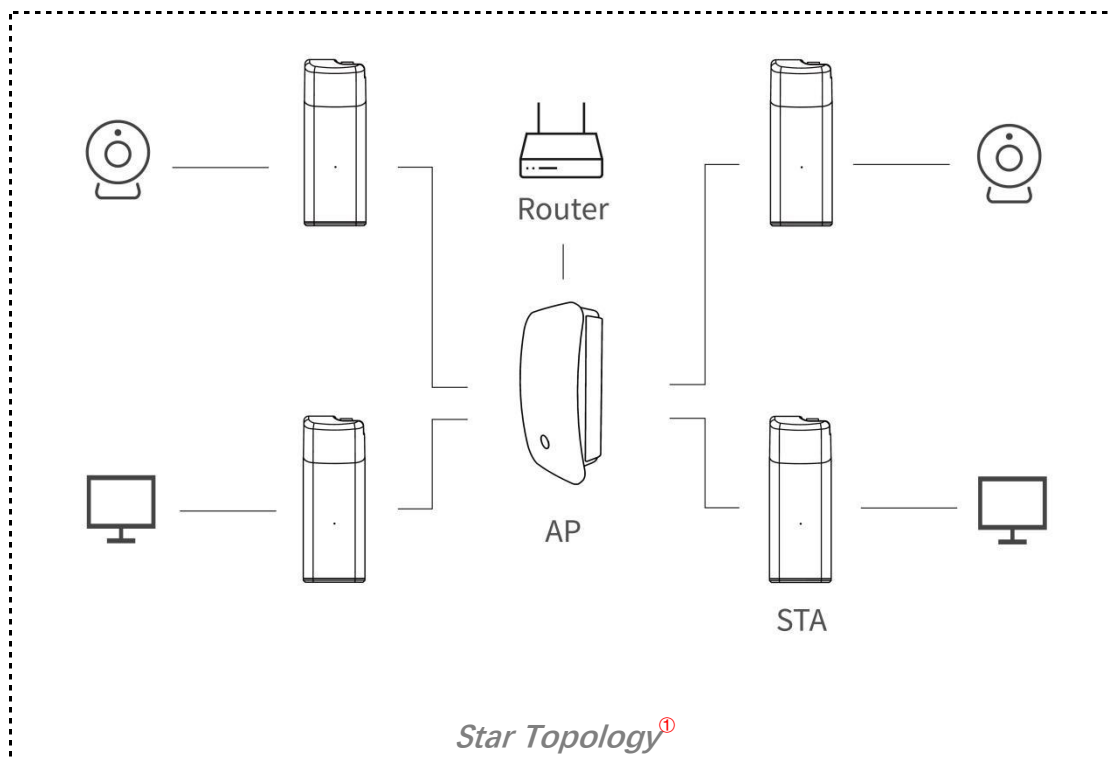
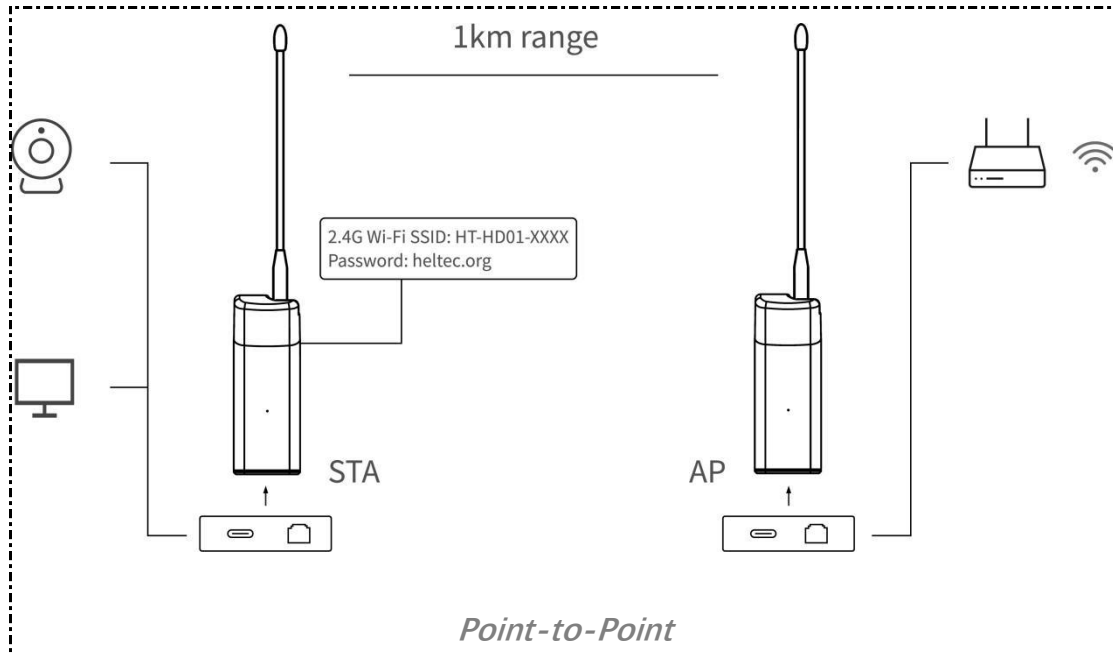
[HaLow Dongle\(HT-HD01\)](#) is a plug-and-play network bridge designed to significantly extend the transmission range of traditional networks, offering lower power consumption and improved penetration capabilities. You can think of it as a type of ultra-long-range Wi-Fi or Ethernet cable, and maintaining high transmission speeds even at extended distances.

Utilizing Wi-Fi HaLow technology and adhering to the IEEE 802.11ah standard, HT-HD01 operates in the unlicensed SUB-1G frequency band (902–928 MHz). It offers four bandwidth modes (1/2/4/8 MHz), with a maximum transmit power of  $21\pm 1$  dBm and data rates of up to 32.5 Mbps@8M.

HT-HD01 seamlessly integrates with traditional Wi-Fi networks and is designed for ease of deployment. Its lightweight form factor, simple configuration process, and versatile operating modes make it an excellent choice for a wide range of applications. Whether for home use or IoT development, this device can drastically reduce wiring costs while enhancing networking flexibility.

## 1.2 Network Topology

The two common usage modes of HaLow Dongle, P2P and Star topology, are shown in the following diagram:



<sup>①</sup> The HaLow Ap here is **HT-H7608**: <https://heltec.org/project/ht-h7608/>



### 1.3 Features

- Long transmission range, up to 1 km.
- IEEE 802.11ah standard.
- Wi-Fi and Ethernet supported, WiFi HaLow and 2.4GHz dual-band design.
- Large capacity allows access to a large number of devices simultaneously.
- High transmission rate, Max 32.5Mbps@8MHz.
- Support Sub-1 GHz frequency bands, frequency range: 902~928 MHz.
- Seamlessly connected to traditional networks.
- Offers four bandwidth modes: 1/2/4/8MHz.
- Plug and play, simple configuration.
- Light weight and easy to deploy.
- Rich in modes and strong in extensibility.

### 1.4 Application

- Home Networking and Smart Home Applications
- Bridge for Ethernet and Wi-Fi
- Industrial IoT (IIoT) and Factory Automation
- Smart Agriculture and Precision Farming
- Remote Surveillance and Security Systems
- Remote Locations and Outdoor Connectivity
- Smart City Infrastructure
- Healthcare and Remote Patient Monitoring
- Rural and Remote Community Connectivity
- Marine and Outdoor Expeditions

## 2. Specifications

### 2.1 Generic Parameter

Table 2.1 General specification

Parameters	Description
<b>MCU</b>	MT7628
<b>Wi-Fi HaLow module</b>	HT-HC01
<b>Wi-Fi</b>	IEEE 802.11 b/g/n
<b>Ethernet</b>	RJ45(10/100M), USB-C
<b>Wi-Fi HaLow</b>	Standard: IEEE 802.11 ah Frequency: 902-928MHz Max. TX power: 21±1dBm Bandwidth: 1/2/4/8 MHz(See table2.5) Max Data Rate: 32.5Mbps @ 8 MHz
<b>ANT Interface</b>	SMA female socket
<b>Operating Condition</b>	Temperature: -20 ~ +70°C Humidity: 10% ~ 90%( no-condensing)
<b>Power</b>	USB-C, 5V
<b>Consumption</b>	300mA(Typical)
<b>Ingress Protection</b>	Without waterproof features
<b>Shell material</b>	Aluminum Alloy, Plastic
<b>Weight</b>	53.5g (Antenna included),40g(Antenna excluded)
<b>Dimensions</b>	87.5 <sup>②</sup> *32.5*20m3(Antenna excluded)

<sup>②</sup> With the antenna included, it is 250mm.



## 2.2 Electrical Characteristics

### 2.2.1 Power supply

Table2.2.1 Power supply

Parameter	Min	Typical	MAX	Units
Voltage	4.5	5	5.5	V

### 2.2.2 Power consumption

Table2.2.2 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





## 2.3 RF Specifications

### 2.3.1 Receiver Sensitivities (dBm)

Table2.3.1 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		

### 2.3.2 Transmitter Power (dBm)

Table2.3.2 Transmitter power

TX output power(1,2MHz BW)	Min	Typical	Max
MCS 0	20	21	22
MCS 7	16	17	18.5

TX output power(4MHz BW)	Min	Typical	Max
MCS 0	20.5	21	22
MCS 7	16	17	18



TX output power(8MHz BW)	Min	Typical	Max
MCS 0	20.5	21	21.5
MCS 7	15.5	17	17.5

## 2.4 Channel&Bandwidth

Table2.4 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), 51(927.5)
2	6(905), 10(907), 14(909), 18(911), 22(913), 26(915), 30(917), 34(919), 38(921), 42(923), 46(925), 50(927)
4	8(906), 16(910), 24(914), 32(918), 40(922), 48(926)
8	12(908), 28(916), 44(924)

## 2.5 RGB Status Description

Table2.5 RGB Status Indicator Description

Color	Status	Description
Red	Always on/Blinking	System booting
Green	Blinking	Getting IP address (AP, @RJ45) HaLow connecting(STA, @RJ45)
	Always on <sup>③</sup>	Geted IP address (AP, @ RJ45) HaLow connected(STA, @RJ45)
Blue	Blinking	Getting IP address (AP, @USB) HaLow connecting(STA, @USB)
	Always on <sup>④</sup>	Geted IP address (AP, @ USB) HaLow connected(STA, @USB)
Yellow	Light up and release	Enter configuration mode
White	Light up and release	Factory reset
Yellow-Green	Alternate flicker	In configuration mode
Yellow-Blue	Alternate flicker	In configuration mode
Purple	Blinking	Button press successful

<sup>③</sup> In AP mode, after the connection network successfully. In STA mode, after obtaining the IP (regardless of whether the network is successfully connected).

<sup>④</sup> In AP mode, after the connection network successfully. In STA mode, after obtaining the IP (regardless of whether the network is successfully connected).



## 2.6 Button Description

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

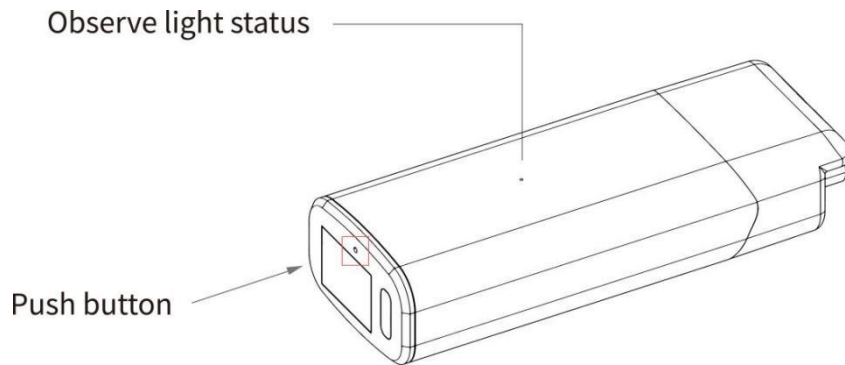


Table2.6 Button description

Status	Description
Single press	Switches the network connection mode. When connecting an RJ45 Ethernet cable, the light should turn green; when connecting a USB cable, the light should turn blue.
Long press 3 seconds	Yellow light is on, the device enters configuration mode
Long press 10 seconds	White light is on, factory reset

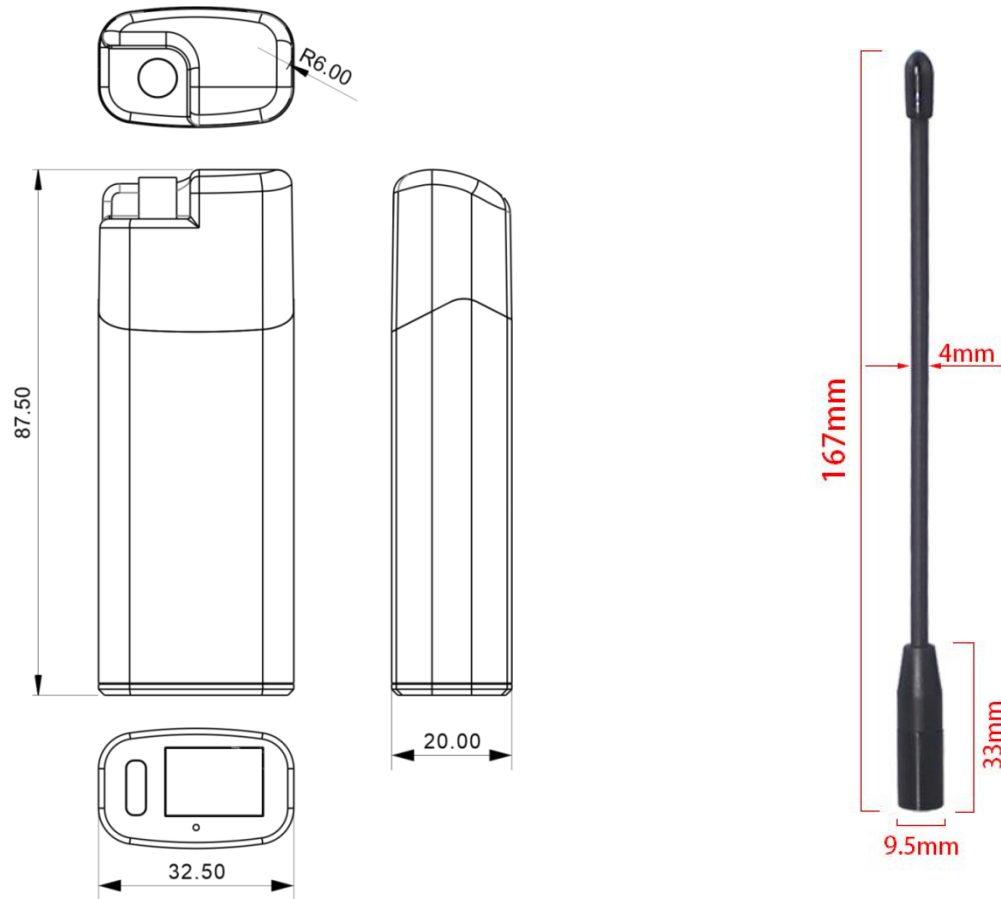
## 3. Application Guide

When you purchase, HaLow Dongles will be paired by default. We provide a plug-and-play, quick-start solution.

Please refer to the paper manual or [Web user manual](#) for the guide and more detail.

## 4. Hardware Dimensions (mm)

### 4.1 Physical Dimensions



### 4.2 Components





## 5. Resource

### 5.1 Relevant Resource

- User guide: [Heltec Products Operation Documention](#)
- Resource station: [resource.heltec.cn](http://resource.heltec.cn)

### 5.2 Heltec Contact Information

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<https://heltec.org>