HT-HD01 V2

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
Rev. 1.0	2025-6-05	V2, 28dBm	Richard

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Content

1.Introduction

1.1 Overview

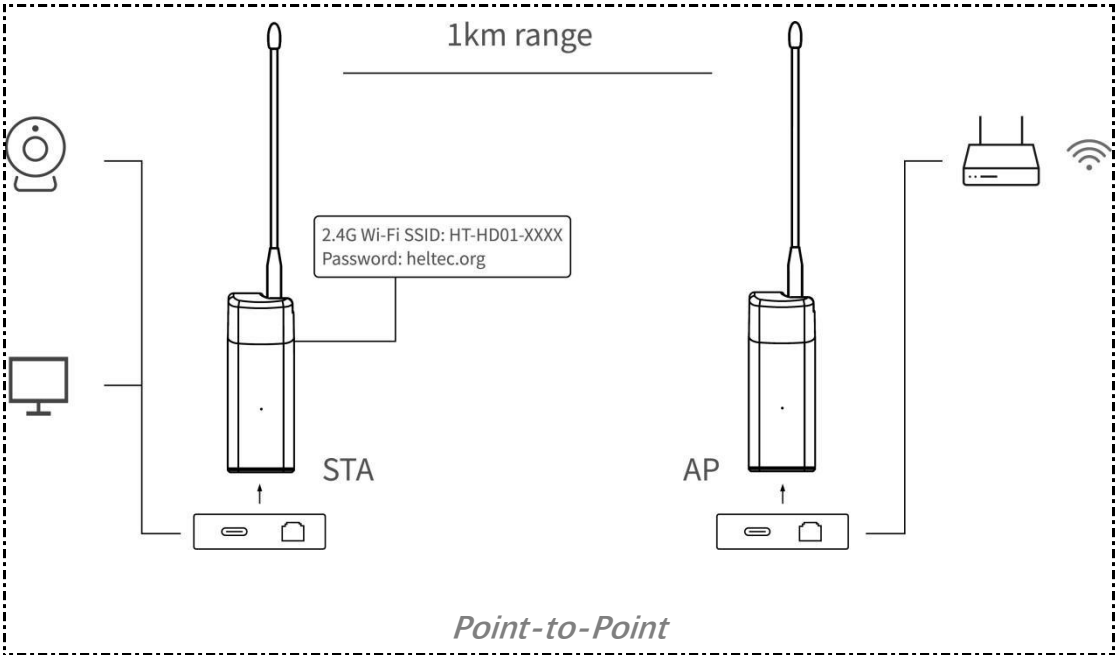
HaLow Dongle**(HT-HD01)** is a plug-and-play network bridge designed to significantly extend the transmission range of traditional networks, offering lower power consumption and improved penetration capabilities. You can think of it as a type of ultra-long-range Wi-Fi or Ethernet cable, and maintaining 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 27±1 dBm and data rates of up to 32.5 Mbps@8M.

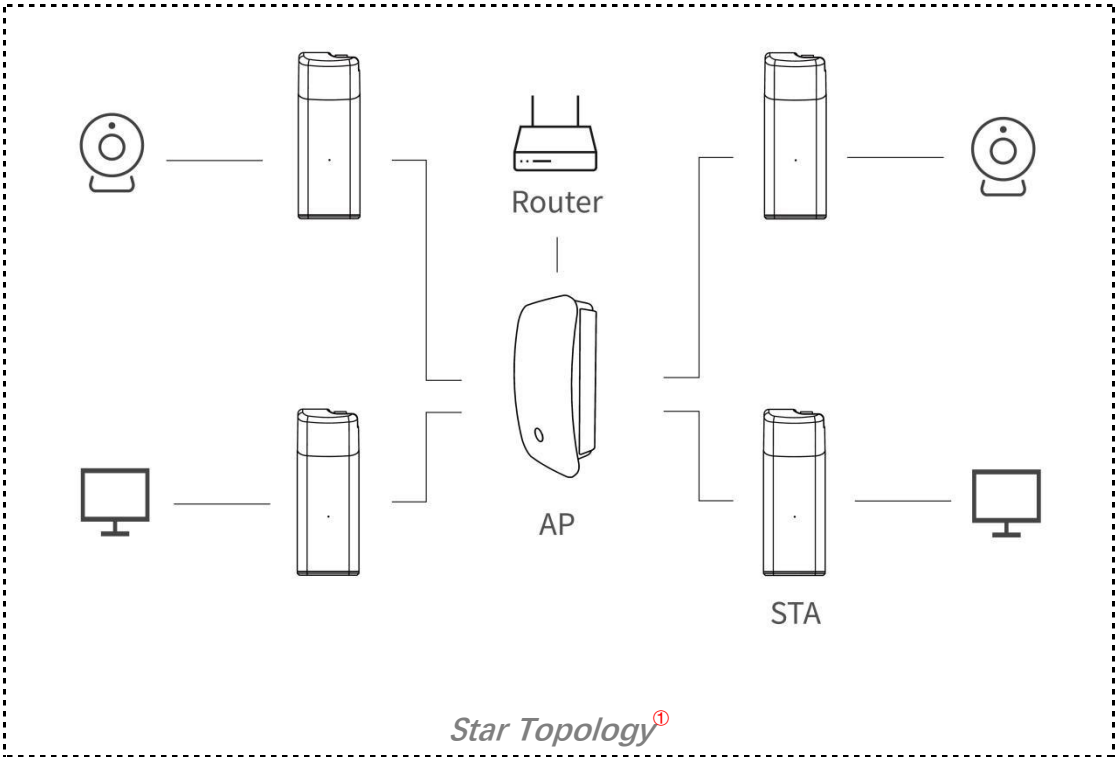
HT-HD01 seamlessly integrates with traditional Wi-Fi networks and is designed for ease of deployment. Its lightweight form factor, simple configuration process, and versatile operating modes make it an excellent choice for a wide range of applications. Whether for home use or IoT development, this device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



Point-to-Point



Star Topology[①]

① 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
MCU	MT7628
Wi-Fi	IEEE 802.11 b/g/n
Ethernet	RJ45(10/100M), USB-C
Wi-Fi HaLow	Standard: IEEE 802.11 ah Frequency: 902-928MHz Max. TX power: 28±1dBm Bandwidth: 1/2/4/8 MHz(See table2.5) Max Data Rate: 32.5Mbps @ 8 MHz
ANT Interface	SMA female socket
Operating Condition	Temperature: -20 ~ +70℃ Humidity: 10% ~ 90%(no-condensing)
Power	USB-C, 5V
Consumption	300mA(Typical)
Ingress Protection	Without waterproof features
Shell material	Aluminum Alloy, Plastic
Weight	53.5g (Antenna included),40g(Antenna excluded)
Dimensions	87.5[②]*32.5*20m3(Antenna excluded)

② 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

LED Indicator	Description
🔴 **Red (blinking)**	Device is booting
🔴 **Red (steady on)**	Button pressed
🟡 **Yellow (steady on, 3s hold)**	Enter configuration mode
⚪ **White (steady on, 7s hold)**	Restore factory settings
🟢🟡 **Green & Yellow alternating**	Configuration mode (WiFi + Ethernet)
🔵🟡 **Blue & Yellow alternating**	Configuration mode (WiFi + USB)
🟢 **Green (blinking)**	STA mode using Ethernet, HaLow not connected
🟢 **Green (steady on)**	STA mode using Ethernet, HaLow connected successfully
🔵 **Blue (blinking)**	STA mode using USB, HaLow not connected
🔵 **Blue (steady on)**	STA mode using USB, HaLow connected successfully
🔷 **Cyan (blinking)**	AP mode using Ethernet, network input not connected
🔷 **Cyan (steady on)**	AP (Ethernet) — Network connected
🟣 **Purple (blinking)**	AP mode using USB, network input not connected
🟣 **Purple (steady on)**	AP mode using USB, network input connected successfully

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.

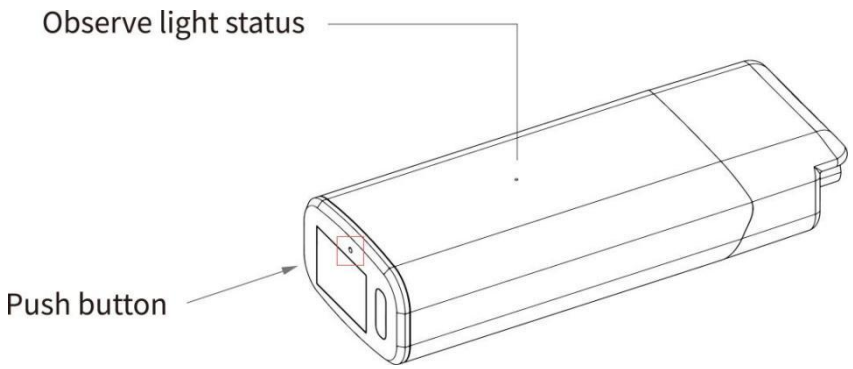


Table2.6 Button description

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

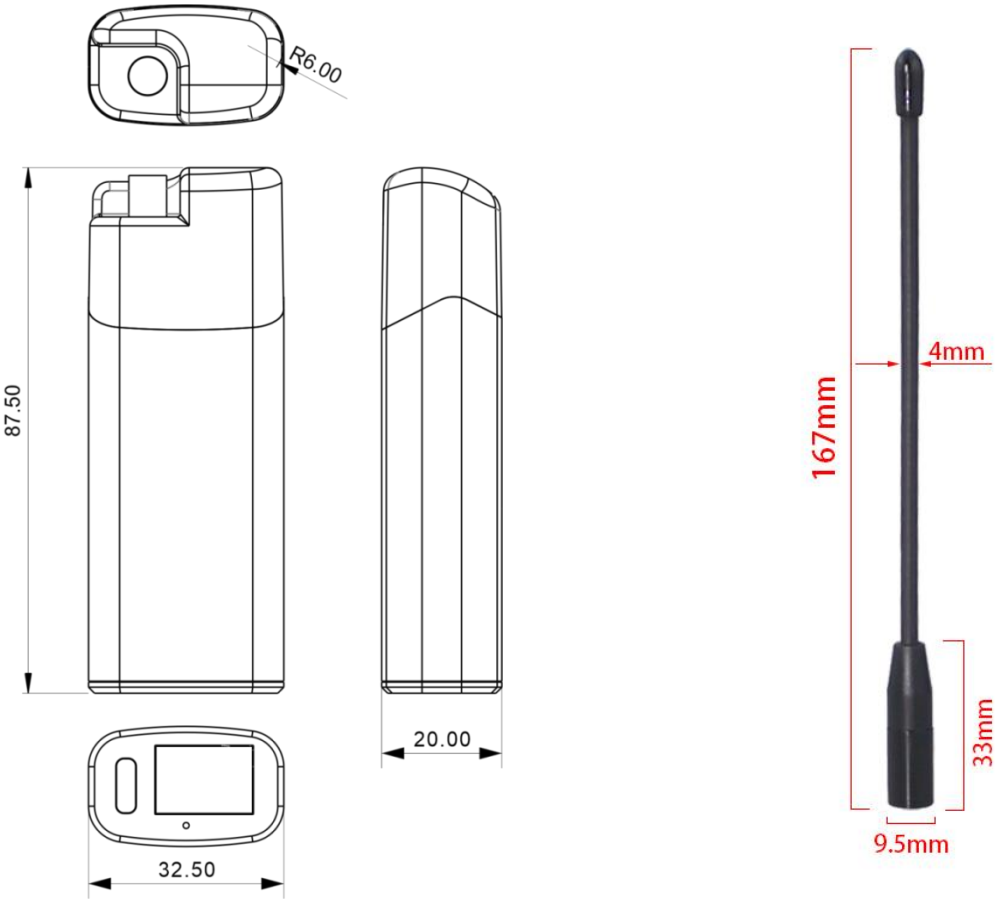
3. Application Guide

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

5.1Relevant Resource

- User guide: Heltec Products Operation Documention
- Resource station: resource.heltec.cn

5.2 Heltec Contact Information

Heltec Automation Technology Co., Ltd

Chengdu, Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

https://heltec.org