



HT-M01S (Rev. 2.0)

Indoor LoRa Gateway





Document version

Version	Time	Description	Remark
Rev. 1.0	2022-9-16	Preliminary version	Aaron
Rev. 1.1	2023-2-22	Information correction	Aaron

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1. Description

1.1 Overview

The biggest feature of HT-M01S (Rev. 2.0) is that it is a standard LoRaWAN gateway based on **ESP32 MCU**, without running Linux operating system on high-performance CPU, which can greatly reduce the cost of a standard LoRaWAN gateway.

It also acts as an assist device for the Helium Hotspot. When you are participating in the Helium project, you may have the following needs:

- You may need a device that can detect the number of nearby Beacons, help you find the best deployment location, and get as much profit as possible.
- When your Helium hotspot is deployed, you will find that the long antenna feeder will cause signal attenuation and affect your choice of antenna placement.

Generally speaking, HT-M01S (Rev. 2.0) has the following three features:

- Can be used as a regular LoRaWAN gateway.
- Can be used as Helium Beacon Sniffer.
- Can be used as an external transfer of Heltec Indoor Hotspot, HT-1303 LoRaWAN.

HT-M01S (Rev. 2.0) are available in three product variants:

Table 1.1 Product model list

No.	Model	Description
1	HT-M01S-470T510	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-M01S -863T870	863~870MHz working LoRa frequency, used for EU868, IN865 LPW bands.



3	HT-M01S-902T923	902~923MHz working frequency, used for AS923, US915, AU915, KR920 LPW bands.
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1.2 Product features

- 3 In 1 function:
 - Helium Beacon Sniffer,
 - LoRa External Transceiver (Only for the Helium hotspot made by Heltec),
 - Ready to use Normal LoRaWAN Gateway.
- ESP32 MCU,
- Wi-Fi and Ethernet supported,
- Based on Heltec HT1303 LoRaWAN Concentrator Module,
- Maximum output: 27 ± 2 dBm
- The power supply voltage: 5V
- Support for **LoRaWAN Class A, and Class C** protocols,
- -20°C to 70°C maximum operating temperature range,
- Working bands: Full band coverage corresponds to the working frequency option.



2. Specifications

2.1 General specification

Table 2.1 General specification

Parameters	Description
MCU	ESP32-D0WDQ6
LoRa Chipset	SX1303 + SX1250
Multi-channel	Eight (8) uplink, one (1) downlink.
Frequency	863~870MHz, 902~928MHz, 470~510MHz
Max. Receiving sensitivity	-139dBm
Max. TX Power	+27 ± 2 dBm ^①
Wi-Fi	802.11 b/g/n
Ethernet	100M RJ45
Supply voltage	+5V
Power consumption	Tx (Max) ≈ 550mA, Rx ≈ 120mA, standby 7.5mA
Operating temperature	-20 ~ 70 °C
Operating humidity	10%~90%, no-condensing
Dimensions	70(+11) x 70 x 23 mm
Shell material	Aluminum housing, tempered glass panel.


^① The HT-M01S -470T510 version used in mainland China has a maximum output of 22 ± 2 dBm.



2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

Symbol	Parameter	Min.	Typical	Max.	Unit
	Device operating input voltage	4.80	5.00	6.00	V

2.2.2 Power consumption

Table 2.3: Working current

Mode	Condition	Min. ^②	Max. ^③
Active-Mode (TX)	TX power is 27dBm @ 5V supply.	380mA	440mA
Active-Mode (RX)	TX disabled; RX enabled.	113mA	175mA

2.3 RF characteristics

The following table gives typically sensitivity level of the HT-M01S (Rev. 2.0) Indoor LoRa gateway.

Table 2.4: LoRa RF characteristics

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-139
125	SF10	-134
125	SF7	-125
125	SF5	-121
250	SF9	-124



^② Measured when connected to the Internet via Wi-Fi mode.

^③ Measured when connected to the Internet via ethernet mode.



2.4 Interact

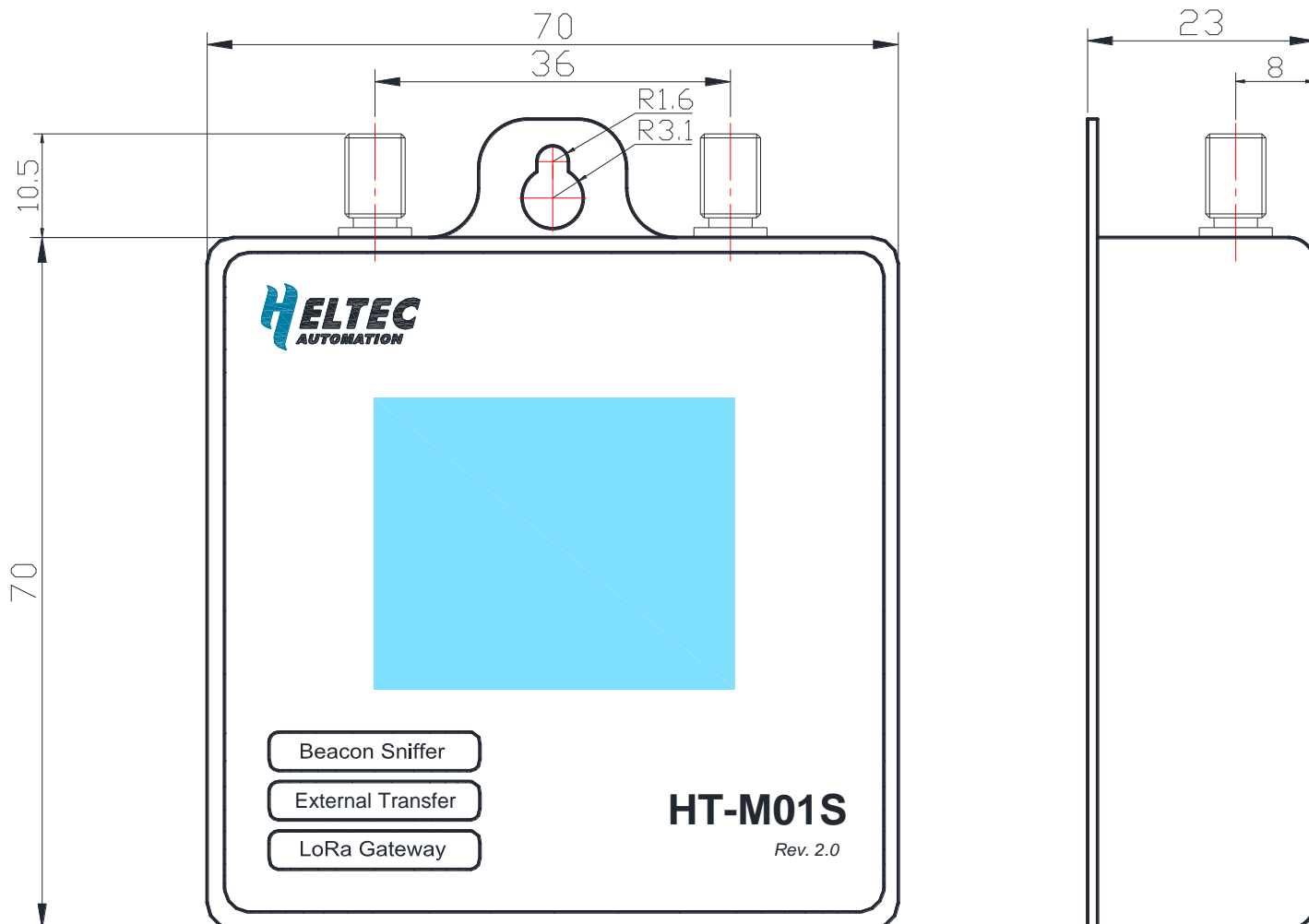
Table 2.5: HT-M01S (Rev. 2.0) interact part description

Symbol/Name	Type	Function
+	Key	System config.
-	Key	System config.
RST	Key	System reset.
	Socket	<ul style="list-style-type: none">● System log output.● Firmware upgrade.● +5V DC power input.
	Socket	RJ45 ethernet cable socket
WiFi	Socket	SMA socket for Wi-Fi antenna.
LoRa	Socket	SMA socket for LoRa antenna.
Front panel	Display	System information display.



3. Typical hardware connections

3.1 Physical dimensions





4. Resource

4.1 Relevant resource

- Operation user manual: <https://docs.heltec.org/en/gateway/ht-m01s/>
- Heltec LoRaWAN test server based on TTS V3: <https://lora.heltec.org/>
- Downloadable Resources: https://resource.heltec.cn/download/HT-M01S_V2

4.2 Heltec Contact Information

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