



HT-M01

LoRa Gateway





document version

Version	Time	Description
Rev. 1.0	2020-12-18	Preliminary version

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1. Description

1.1 Overview

HT-M01 is a picocell LoRa gateway based SX1308 baseband chip, it's must work with other operating systems (Windows® or Linux), when we designed it, we define this product positioning is convenient user authentication LoRa communication scheme.

HT-M01 support both SPI and USB interface can work with Windows® (7, 8, 10 or higher) or Linux (Raspberry Pi®). With well-designed structure, the great heat from SX1308 can be transfer to the Aluminum shell, makes HT-M01 works more stable than other products of the same type.

HT-M01 are available in three product variants:

Table 1.1 Product model list

No.	Model	Description
1	HT-M01-470T510	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-M01 -863T870	863~870MHz working LoRa frequency, used for EU868, IN865 LPW bands.
3	HT-M01-902T923	902~923MHz working frequency, used for AS923, US915, AU915, KR920 LPW bands.

1.2 Product features

- CE Certificate,



- SX1308 digital baseband chip,
- Size: 66(+10) x 30 x 15mm (can assemble with raspberry pi ZERO via a [special converter board](#)),
- Emulates 49x LoRa demodulators and 1x (G)FSK demodulator
- 10 programmable parallel demodulation paths
- Dynamic data-rate adaptation (ADR)
- Automatic adaptive spread spectrum factor, SF7 to SF12 for each channel is optional
- Maximum output: 20 ± 1dBm
- Up to -139dBm sensitivity with SX1257 or SX1255 Tx/Rx front-end
- Communication interface SPI or USB
- The power supply voltage:5V
- Support for LoRaWAN Class A, Class C protocols
- Through the unique heat conduction device to transfer heat to the aluminum housing, strengthen heat dissipation, make the operation more stable
- -20° C to 70° C maximum operating temperature range
- Frequency range:
 - Europe - 868MHz ISM band (863MHz to 870MHz range),
 - Europe - 433MHz ISM band,
 - USA/Australia - 915MHz ISM band (902MHz to 928MHz range),
 - China - 470MHz ISM band (470MHz to 510MHz range).



2. Specifications

2.1 General specification

Table 2.1 General specification

Parameters	Description
LoRa Chipset	SX1308
Interface	Micro USB x 1; SPI x 1; LoRaAntenna interface(SMA) x 1;
Frequency	863~870MHz, 902~928MHz, 470~510MHz
Max. Receiving sensitivity	-135dBm @ 300bps
Max. TX Power	20dB ± 1dB
USB to SPI Bridge Chip	STM32F401CEU6
Power consumption	Tx (Max) ≈ 550mA, Rx ≈ 120mA, standby 7.5mA
Operating temperature	-20 ~ 70 °C
Dimensions	66(+10) x 30 x 15 mm

2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

Condition	Min.	Typical	Max.	Unit
USB powered (≥500mA)	4.80	5.00	6.00	V
2.54x4x2 pin powered (≥500mA)	4.80	5.00	6.00	V



2.2.2 Power consumption

Table 2.3: Working current

Condition	Min. ^①	Typical	Max. ^②
8 Channel Listening (Receive mode)		312mA	
LoRa 10dB Output		254mA	
LoRa 12dB Output		258mA	
LoRa 15dB Output		259mA	
LoRa 20dB Output		284mA	

2.3 RF characteristics

The following table gives typically sensitivity level of the HT-M01 LoRa gateway.

Table 2.4: LoRa RF characteristics

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-135
125	SF10	-134
125	SF7	-125
125	SF5	-121
250	SF9	-124

2.4 Pins Description

Table 2.5: HT-M01 interact part description

Pin	Description
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① Measured when connected to the Internet via Wi-Fi mode.

② Measured when connected to the Internet via ethernet mode.



VCC	+5V power supply
GND	+5V GND
MOSI	SPI bus data for SX1308
MISO	SPI bus data for SX1308
SCK	SPI clock for SX1308
CS	Chip slect (LOW slect)
PRST	SX1308 reset pin (Keep this pin HIGH over 10ms, SX1308 reset)
NRST	USB-SPI converter IC disable pin (when working in SPI, Keep this pin LOW all the time)



3. Resource

3.1 Relevant resource

- Operation user manual:

https://resource.heltec.cn/download/HT-M01/ht-m01_user_manual.pdf

- Downloadable Resources: <https://resource.heltec.cn/download/HT-M01>

3.2 Heltec Contact Information

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