HT-M02

LoRa Gateway

document version

Version	Time	Description
Rev. 1.0	2019-12-21	Preliminary version
Rev. 1.0	2021-02-25	Document structure update

Copyright Notice

Disclaimer

Chengdu Heltec Automation Technology Co., Ltd. reserves the right to change, modify or improve the document and product described herein. Its contents are subject to change without notice. These instructions are intended for you use.

Content

1. Description

1.1 Overview

In practice, the working environment of the equipment may not be as good as expected, on the contrary, it may be very bad… For example, in the industrial environment, the site may have tremendous vibration, noise, dust, high temperature, and other issues. In the city environment, sunshine and rain, low temperature in winter and high temperature in summer are always unavoidable……

HT-M02 considers and solves all the above problems and design strictly with industrial standards, Integrated Linux Operating System (4.14 Kernel, Debian Stretch 9.8). IP65 waterproofing, no fan or motor heat dissipation structure, 1-GHz Sitara™ ARM® Cortex®-A8 32 - Bit RISC Processor, 512MB DDR3, 4G eMMC. PoE power supply or 110 / 220V AC power supply (110 / 220V AC power supply version use 4G upload LoRa data).

HT-M02 are available in three product variants:

Table 1.1 Product model list

No.	Model	Description
1	HT-M02-470T510	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-M02 -863T870	863~870MHz working LoRa frequency, used for EU868, IN865 LPW bands.
3	HT-M02-902T923	902~923MHz working frequency, used for AS923, US915,

		AU915, KR920 LPW bands.

1.2 Product features

- CE & FCC Certificate
- Integrated Linux Operating System (4.14 Kernel, Debian Stretch 9.8);
- IP65 waterproofing;
- No fan or motor heat dissipation structure;
- 1-GHz Sitara™ ARM® Cortex®-A8 32 - Bit RISC Processor, 512MB DDR3, 4G eMMC;
- PoE power supply or 110 / 220V AC power supply (110 / 220V AC power supply version use 4G upload LoRa data).
- SX1301 digital baseband chip
- Size: 125(+40) x 125 x 52 mm;
- Emulates 49 LoRa demodulators and 1 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
- 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
- Working bands: Full band coverage corresponding to the working frequency option.

2. Specifications

2.1 General specification

Table 2.1 General specification

Item Group	Item	Parameter	
		LTE/4G	PoE
System Features	CPU	AM335x Sitara™ ARM® Cortex®-A8 32- Bit RISC Processor	
	CPU Frequency	1-GHz	
	RAM	512M Byte DDR3	
	Disk	4G Byte eMMC	
Interface	Internet Features	LTE/4G	10M/100M Ethernet
	Power supply	110V/220V AC	PoE
	SIM Card Slot	√	×
	Micro TF Card Slot	√	
	Antenna Socket	LoRa, GPS, LTE/4G	LoRa
LoRa Features	LoRa Baseband Chip	SX1301	
	Analog Front End Chip	SX1255	EU433
			CN470
		SX1257	IN865
			EU868
			US915
			AU915
			KR920

			AS923
	LoRa Maximum Output Power	20dB ± 1dB	
	Receiving Sensitivity	-135dBm @ 300bps	
	Internal LoRa Server	×	√
Other Features	Size	125(+33) x 125 x 52 mm	
	Working Temperature	-20 ~ 70 ℃	
	Protection Level	IP65	

2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

Condition	Min.	Typical	Max.	Unit
220V/110V powered (≥500mA)		220/110		V
PoE powered (≥500mA)		51		V

2.2.2 Power consumption

Table 2.3: Working current

Condition	Min.①	Typical	Max.②

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

② Measured when connected to the Internet via ethernet mode.

8 Channel Listening (Receive mode)		360mA	
LoRa 10dB Output		254mA	
LoRa 12dB Output		258mA	
LoRa 15dB Output		259mA	
LoRa 20dB Output		284mA	

2.3 RF characteriLoRa 20dB Outputstics

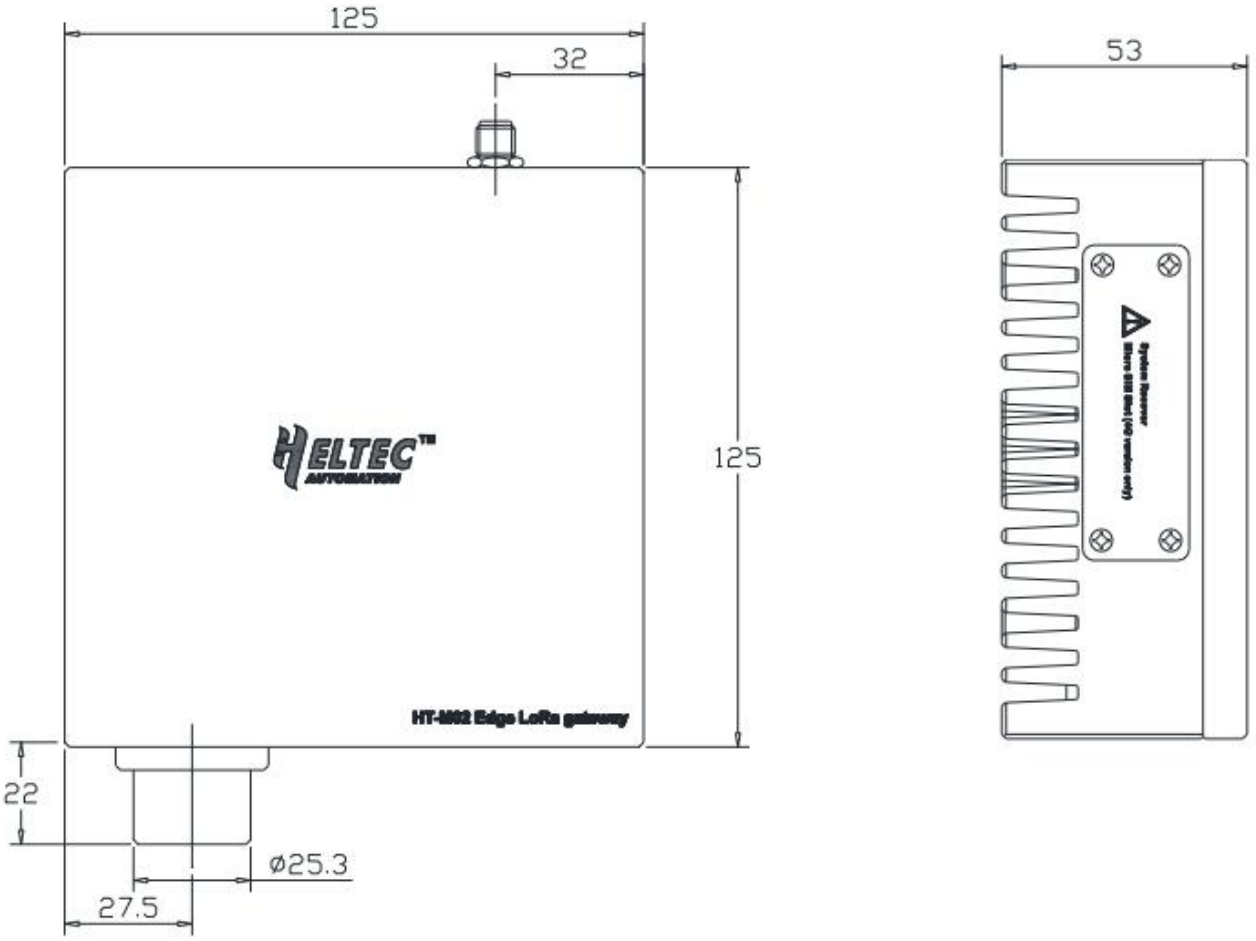
The following table gives typically sensitivity level of the HT-M02 LoRa gateway.

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

3. Typical hardware connections

3.1 Physical dimensions



4. Resource

4.1 Relevant resource

- Operation user manual: https://resource.heltec.cn/download/HT-M02/ht-m02-edge_lora_gateway_user_manual_poe_version.pdf
- Downloadable Resources: https://resource.heltec.cn/download/HT-M02

4.2 Heltec Contact Information

Heltec Automation Technology Co., Ltd

Chengdu, Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

https://heltec.org