HT-M02

Edge LoRa Gateway

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document version

Version	Time	Description
Rev. 1.0	2022-11-16	Preliminary version

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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 tough. 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 (4.19 Kernel, Debian Stretch 10). IP66 waterproofing, no fan or motor heat dissipation structure, ROCKCHIP Quad-core Cortex-A55 64-bit 1.8GHz processor, 2G DDR4 RAM, 32G eMMC 5.1 ROM, support Micro TF card expansion. Support DC power supply and PoE power supply, support 4G (Cat. 1\Cat. 4), Wi-Fi (2.4GHz). it is convenient for users to apply in different scenarios.

HT-M02_V2 are available in the following product variants:

The standard mode has the basic function of LoRa and ETH connection (12V DC adaptor included), the customized functions are available to select one or more features according to your needs.

Table 1.1 Product model list

No.	Model	Optional Features[①]	Description
1	HT-M02_V2-470-510	• **PoE IEEE802.3af** • **Wi-Fi (2.4G)** • **LTE (Cat. 1 / Cat. 4)**	433~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-M02_V2 -863-870		863~870MHz working LoRa frequency, used for EU868, IN865 LPW bands.
3	HT-M02_V2-902-923		902~923MHz working frequency, used for AS923, US915, AU915, KR920 LPW bands.

1.2 Product features

➢ CPU: ROCKCHIP Quad-core Cortex-A55 64-bit 1.8GHz processor processors.

◇ Standard 2G DDR4 RAM + 32G eMMC 5.1 ROM. Customizable RAM:2G/4G; ROM: 8G/16G/32G/64G/128G.

◇ Pre-loaded with Linux (4.19.219 Kernel, aarch 64) Debian 10 operating system.

◇ Pre-installed Docker makes TTS V3, ChripStack, etc. applications can be deployed very easy.

◇ LoRa: SX1303 + SX1250 chipsets.

➢ Ethernet: 10M/100M

➢ Optional Communication Functions

◼ LTE (4G Cat. 1/ Cat. 4)

◼ PoE

◼ Wi-Fi (2.4GHz)

[①] The standard mode has the basic function of LoRa and ETH connection, the customized functions are available to select one or more according to your needs.

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- ➢ Heat dissipation: adopting cooling fan and the motor structure, through unique thermal conductive device transfer heat to aluminum shell, strengthen heat dissipation, commissioning more stable.

- ➢ Waterproof and dustproof: IP66

- ➢ Working temperature: - 40 ~ 85 ° C.

- ➢ Size: 125 (+40) * 125 * 52 mm

- ➢ Encryption chip.

2. Specifications

2.1 General specification

<div align="right">Table 2.1 General specification</div>

Parameters	Description	
Master Chip	ROCKCHIP Quad-core Cortex-A55 64-bit 1.8GHz processors	
RAM	2G DDR4	
ROM	32G eMMC 5.1	
LoRa Chipset	SX1303+SX1250	
Frequency	433~510 MHz	
	863~870 MHz	
	902~928 MHz	
Optional Functions	PoE IEEE802.3af	48V
	Wi-Fi (2.4GHz)	IEEE 802.11 b/g/n
	LTE^{②}	Cat. 1/ Cat. 4
Max. TX Power	433~510 MHz	21±1dBm
	863~870 MHz	26±1dBm
	902~928 MHz	
Max. Receiving sensitivity	-139 dBm@SF12, 125KHz	
Wi-Fi/ Bluetooth (Optional)	802.11 b/g/n, 2.4GHz	
4G(Optional)	CAT. 1, CAT. 4	
Interface	4.5~17V DC interface	
	UART 2.54 * 3 Headers	
	ETH interface	
	SIM card slot	
	SMA antenna socket * 3 (LoRa, 4G, Wi-Fi)	
Protection Level	IP66	
Operating temperature	- 40 ~ 85 ° C	
Dimensions	125(+40) x 125 x 52 mm	

② We strongly recommend the Cat. 1 version rather than Cat. 4 due to its lower power consumption and cost effectiveness.

2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

Power supply mode	Minimum	Typical	Maximum	Company
DC powered (≥500mA)	4.5	12	17	V
PoE powered (≥500mA)	40	48	57	V

*Note: When PoE and DC interfaces are connected at the same time, DC power supply is preferred.

2.2.2 Power consumption

Table 2.3: Working current

Condition	Min.[③]	Typical	Max.[④]
8 Channel Listening (Receive mode)		160mA	
LoRa 14dB Output		200mA	
LoRa 17dB Output		210mA	
LoRa 22dB Output		215mA	
LoRa 27dB Output		220mA	

2.3 LoRa RF characteristics

2.3.1 Transmit power

Table2.3.1: Transmit power

Operating frequency band	Maximum power value/[dBm]
433~510	21 ± 1
867~870	26 ± 1
902~928	

2.3.2 Receiving sensitivity

The following table gives typically sensitivity level of the HT-M02_V2 LoRa gateway.

[③] **Measured when connected to the Internet via Wi-Fi mode.**

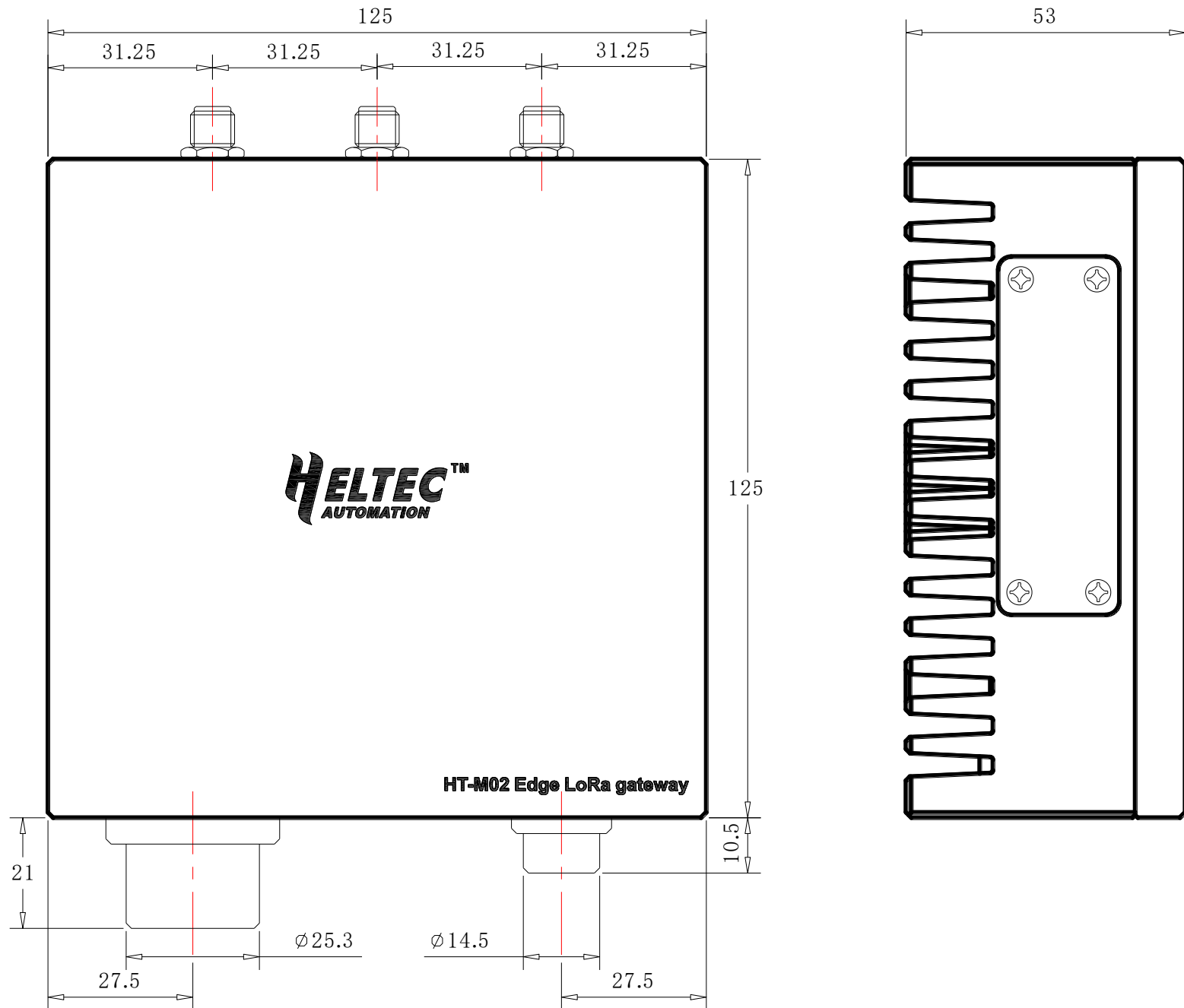[④] **Measured when connected to the Internet via ethernet mode.**

Table 2.3.2: LoRa RF characteristics

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-139
125	SF10	-130
125	SF7	-124

3. Typical hardware connections

3.1   Physical dimensions

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4. Resource

4.1 Relevant resource

● Downloadable Resource: https://resource.heltec.cn/download/HT-M02_V2

● User Manual Document: https://docs.heltec.org/en/gateway/ht-m02/index.html

4.2 Heltec Contact Information

Heltec Automation Technology Co., Ltd

Chengdu, Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

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