



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 |

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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 | x | √ |
| Other Features | Size | 125(+33) x 125 x 52 mm | |
| | Working Temperature | -20 ~ 70 °C | |
| | 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 characteristics

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

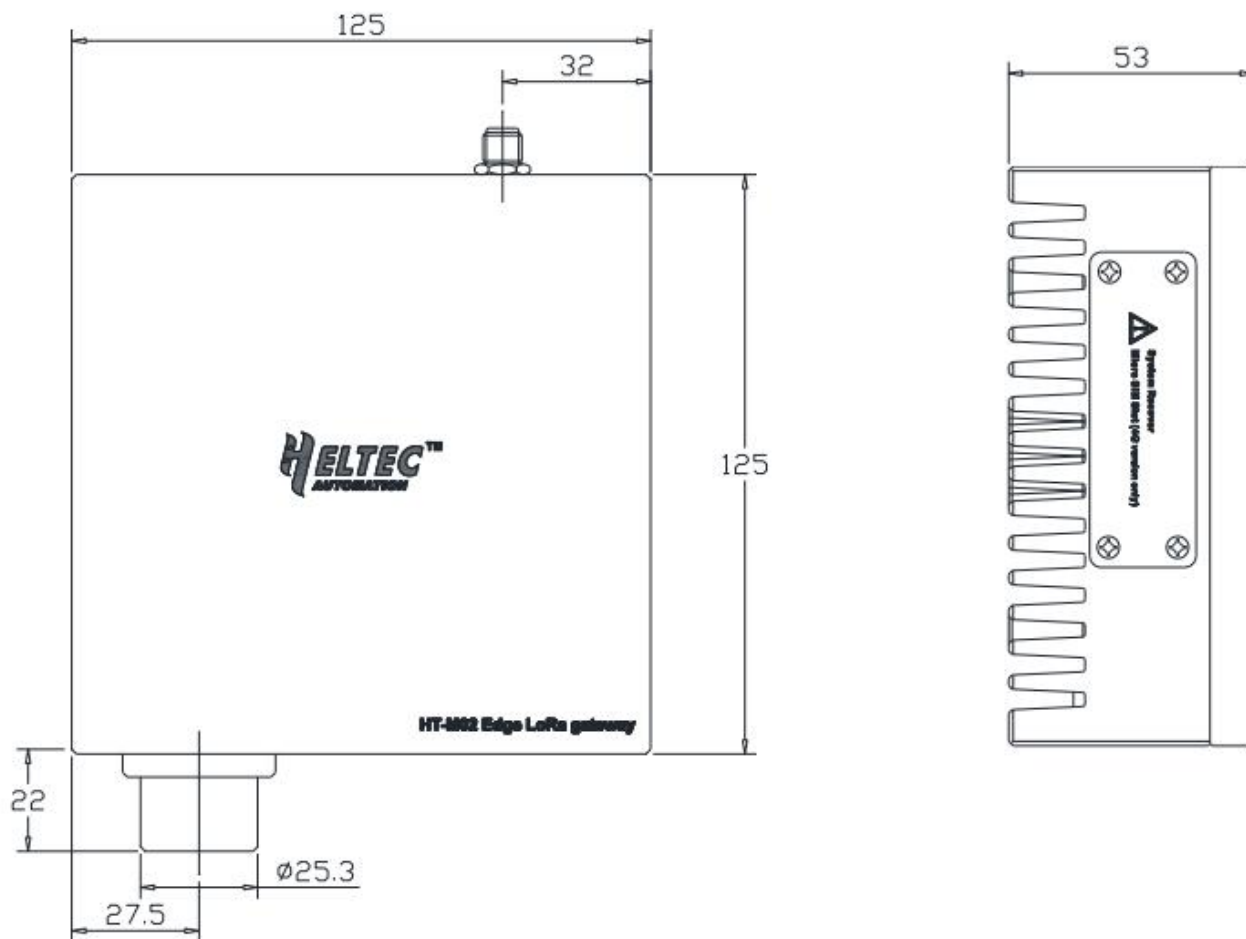
Table 2.4: LoRa RF characteristics

| 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

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