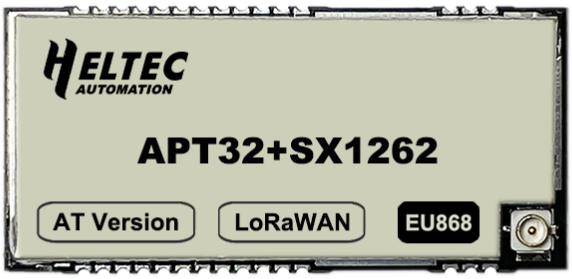

# HT-AT62

## LoRa module



## Document version

| Version | Time | Description | Remark |
|---|---|---|---|
| Rev. 1.0 | 2022-8-16 | Preliminary version | 肖鸿 |
| Rev. 1.1 | 2022-9-17 | Typographic modification | Aaron |

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# 1. Description

## 1.1 Overview

HT-AT62 is a cost-effective LoRa node module, it has the characteristics of long communication range, high receive sensitivity, low power consumption and low cost. The HT-AT62 is composed up of an MCU (32-bit T-Head Microsystems) and Semtech LoRa Transceivers (SX1262).

Regarding the software side, it already integrated LoRaWAN 1.0.2 protocol with AT command support. This means that when you use the module, you only need to simply send the corresponding information through the UART to achieve LoRaWAN-related configuration and communication. In addition, 10 GPIOs that can be controlled via AT commands to accomplish some simple functions such as HIGH/LOW reversal, input and output, delay inversion and so on.

It can be widely and easily used in smart cities, farms, homes, industrial controls, wireless meter reading, etc. fields.

HT-AT62 are available in two product variants:

Table 1.1: Product model list

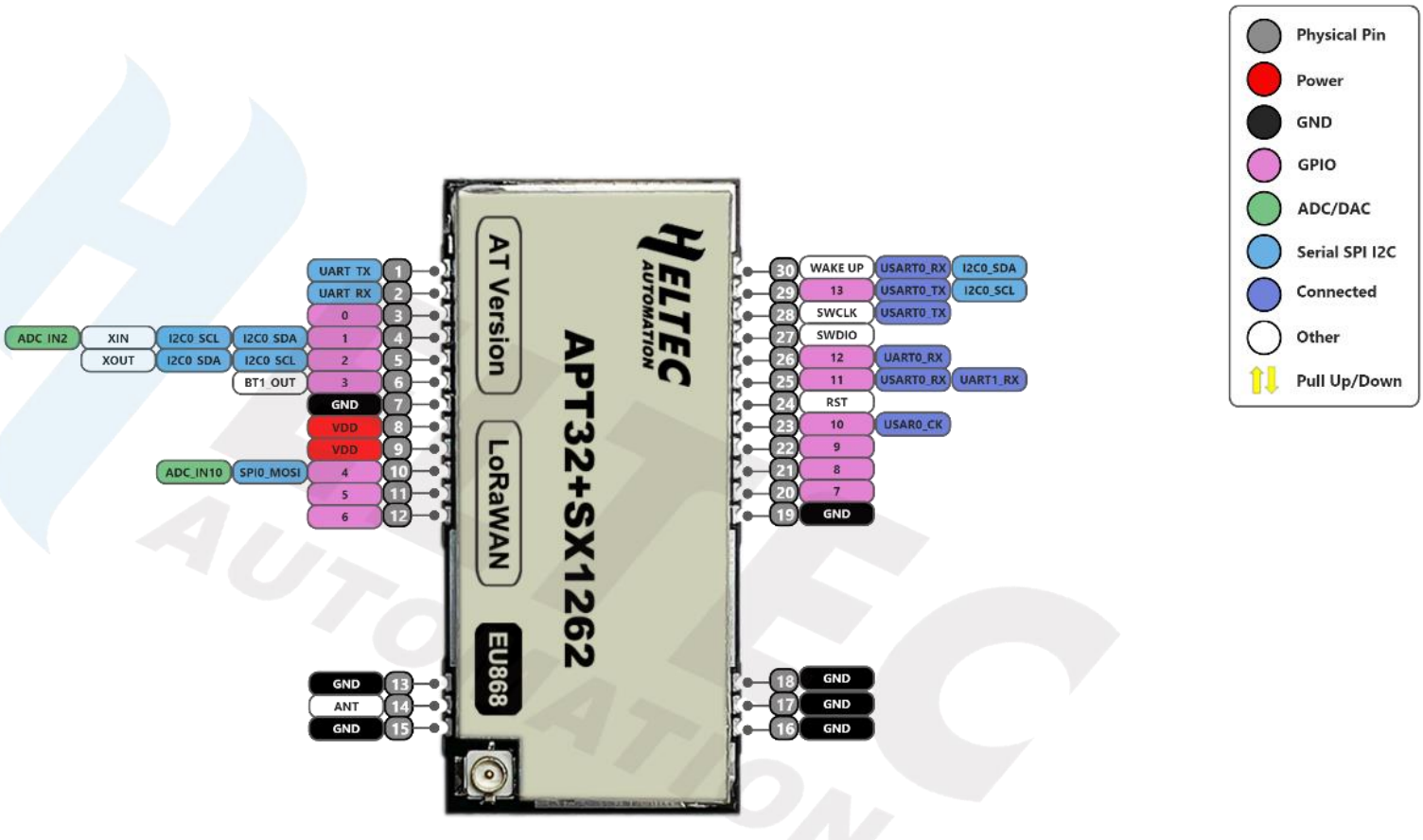
| No. | Model | Description |
|---|---|---|
| **1** | HT-AT62-LF | 470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band. |
| **2** | HT-AT62-HF | For EU868, IN865, US915, AU915, AS923, KR920 and other LPW networks with operating frequencies between 863~928MHz. |

## 1.2 Product features

- LoRaWAN 1.0.2 protocol with AT command supports,
- 32-bit high-performance and low-cost microcontroller and SX1262,
- Low power design, 12uA in deep sleep mode,
- 1.27 stamp edge design, friendly for batch SMT producing,
- Good impendence matching and long communication distance,
- GPIO HIGH/LOW control via AT commands.

# 2. Pin Definition

## 2.1 Pin assignment




HT-AT62_V1 Pin map

## 2.2 Pin description

Table 2.2: Pin description

| No. | Name | Type | Function |
|---|---|---|---|
| **1** | UART_TX | I/O | UART_TX |
| **2** | UART_RX | I/O | UART_RX |
| **3** | 0 | I/O | GPIO0; I2C0_SDA; I2C0_SCL; XIN |
| **4** | 1 | I/O | GPIO1; I2C0_SCL; I2C0_SDA; XOUT; ADC_IN2 |
| **5** | 2 | I/O | GPIO2 |
| **6** | 3 | I/O | GPIO3 |
| **7** | GND | P | Ground |
| **8** | VDD | P | 3.3V Power Supply |
| **9** | VDD | P | 3.3V Power Supply |
| **10** | 4 | I/O | GPIO4; SPI0_MOSI; ADC_IN10 |
| **11** | 5 | I/O | GPIO5 |
| **12** | 6 | I/O | GPIO6 |
| **13** | GND | P | Ground |
| **14** | ANT | O | LoRa ANT |
| **15** | GND | P | Ground |
| **16** | GND | P | Ground |
| **17** | GND | P | Ground |
| **18** | GND | P | Ground |
| **19** | GND | P | Ground |

| | | | |
|---|---|---|---|
| **20** | 7 | I/0 | GPIO7 |
| **21** | 8 | I/O | GPIO8 |
| **22** | 9 | I/O | GPIO9 |
| **23** | 10 | I/O | GPIO10 |
| **24** | RST | I | RESET (Pull down enable) |
| **25** | 11 | I/O | GPIO11; USART0_RX; UART1_RX |
| **26** | 12 | I/O | GPIO12; UART0_RX |
| **27** | SWD | I/O | SWDIO |
| **28** | SWC | I/O | SWCLK; USART0_TX |
| **29** | 13 | I/O | GPIO13; USART0_TX; I2C0_SCL |
| **30** | WAKE | I | WAKE UP (Pull up enable); USART0_RX; I2C0_SDA |

# 3. Specifications

## 3.1 General specifications

Table 3.1: General specifications

| **Parameters** | **Description** |
|---|---|
| **Master Chip** | 48 MHz 32-bit T-Head Microsystems |
| **LoRa Node Chip** | SX1262 |
| **Frequency** | 470~510 MHz, 863~928 MHz |
| **Max. TX Power** | 21 ± 1 dBm |
| **Max. Receiving sensitivity** | -134 dBm |
| **Hardware Resource** | 1 * UART (AT command), 10 * GPIO |
| **Memory** | 64KBytes program flash; 2Kbytes data flash; 8KBytes |

| | |
|---|---|
| | SRAM; 256Bytes no power down (SRAM) |
| **Interface** | LoRa ANT (IPEX 1.0); 1.27 spacing Stamp hole |
| **Power consumption** | 12uA (deep sleep mode) |
| **Operating temperature** | -40 ~ 85 ℃ |
| **Dimensions** | 36 * 17* 3 mm |
| **Package** | Tape & Reel Packaging |

## 3.2 Electrical characteristics

### 3.2.1 Power supply

Table 3.2.1: Power supply

| Power supply mode | Minimum | Typical | Maximum | Company |
|---|---|---|---|---|
| **3V3 pin (≥150mA)** | 2.7 | 3.3 | 3.5 | V |

### 3.2.2 Power characteristics

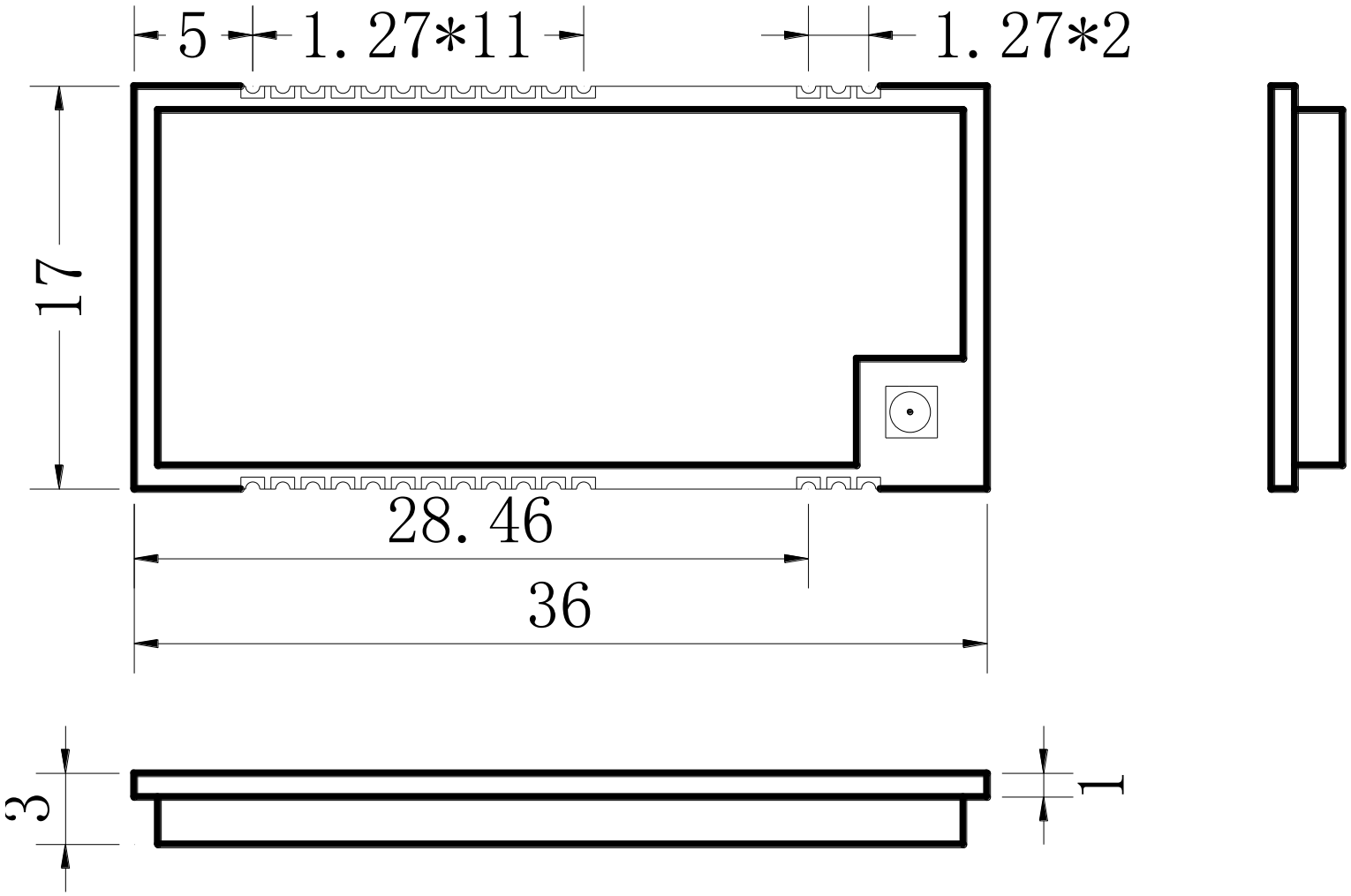
Table3.2.2: Power characteristics

| Mode | Condition | Min. | Typical | Max. | Company |
|---|---|---|---|---|---|
| **TX** | 470MHz, 3.3V powered, 14dBm | | 55 | | mA |
| | 470MHz, 3.3V powered, 17dBm | | 65 | | mA |
| | 470MHz, 3.3V powered, 22dBm | | 100 | | mA |
| **RX** | 470MHz, 3.3V powered | | 10 | | mA |
| **Sleep** | 3.3V powered | | 12 | | uA |

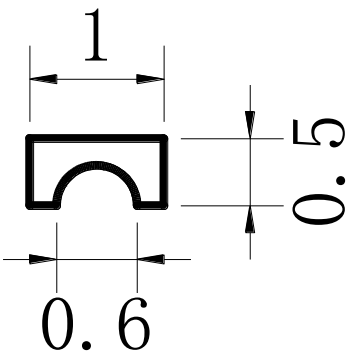
| | | |
|---|---|---|
| **IN868** | 865~867 | HT-AT62-HF |
| **EU868** | 863~870 | HT-AT62-HF |
| **US915** | 902~928 | HT-AT62-HF |
| **AU915** | 915~928 | HT-AT62-HF |
| **KR920** | 920~923 | HT-AT62-HF |
| **AS923** | 920~925 | HT-AT62-HF |

# 4. Hardware resource

## 4.1 Physical dimensions




PAD



# 5. Resource

## 5.1 Relevant Resource

- Recommend hardware design
- Pin map
- Downloadable resource
- Footprint

## 5.2 Contact Information

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