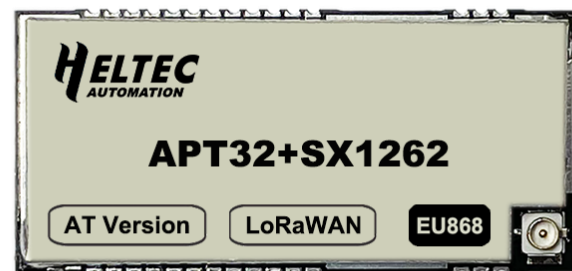




HT-AT62

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.

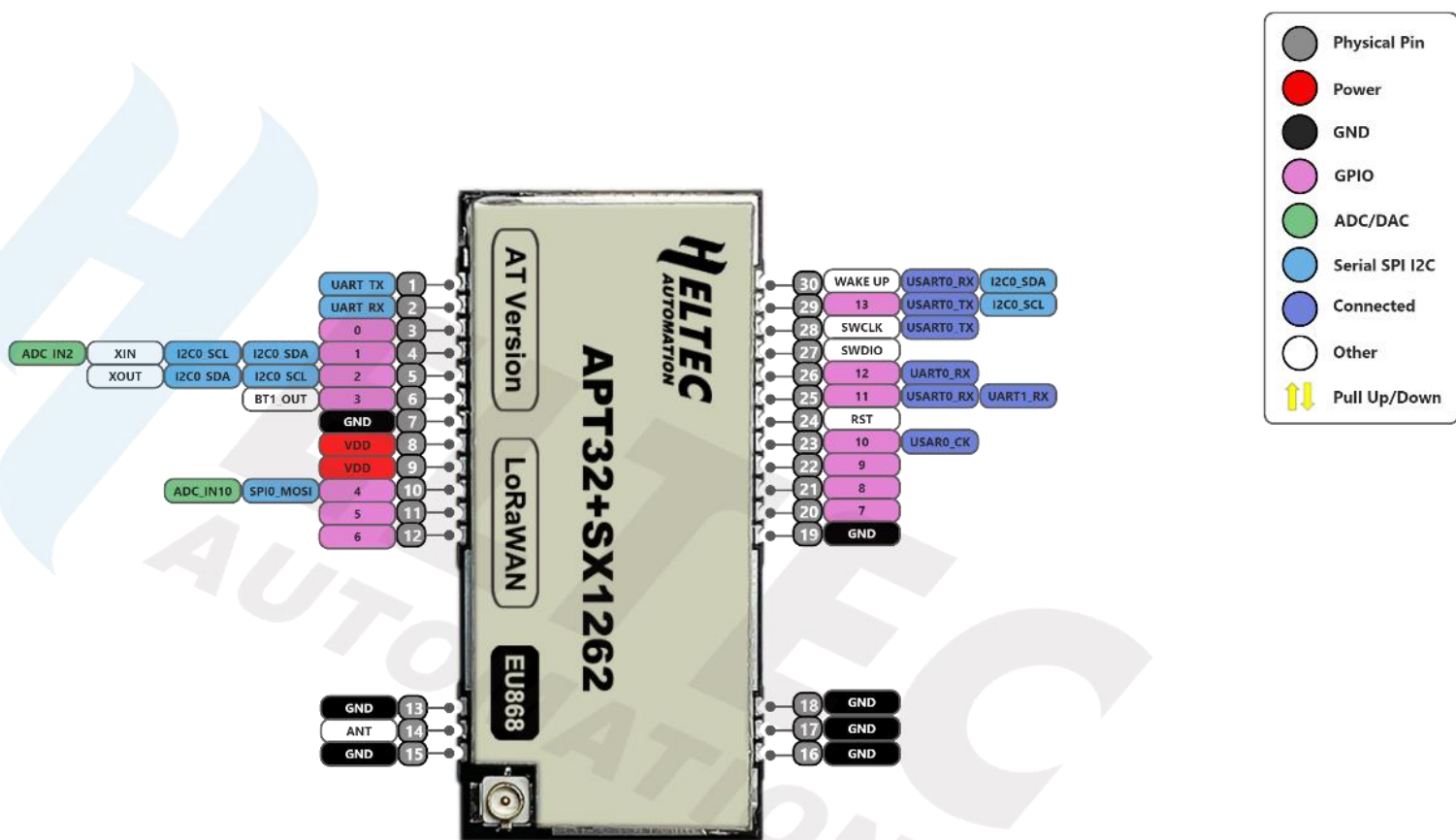


1.2 Product features

- 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 impedance 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/O	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 °C
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



3.3 RF characteristics

3.3.1 Transmit power

Table3.3.1: Transmit power

Operating frequency band (MHz)	Maximum power value/[dBm]
470~510	21 ± 1
863~870	21 ± 1
902~928	21 ± 1

3.3.2 Receiving sensitivity

The following table gives typically sensitivity level of the HT-AT62.

Table3.3.2: Receiving sensitivity

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-134
125	SF10	-130
125	SF7	-122

3.4 Operation frequencies

HT-AT62 supports LoRaWAN frequency channels and models corresponding table.

Table3.4: Operation frequencies

Region	Frequency (MHz)	Model
EU433	433.175~434.665	HT-AT62-LF
CN470	470~510	HT-AT62-LF

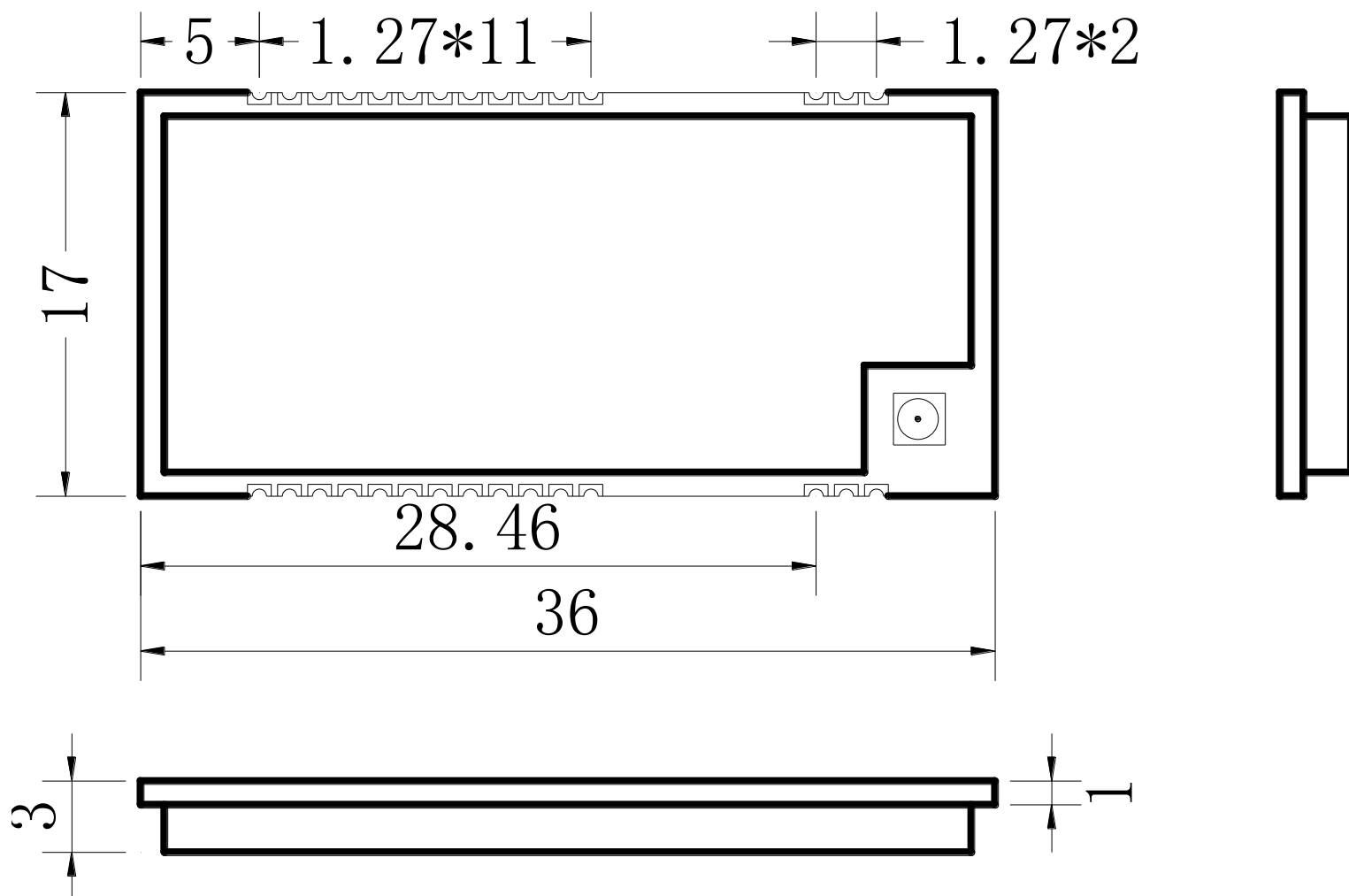


IN868	865~867	HT-AT62-HF
EU868	863~870	HT-AT62-HF
US915	902~928	HT-AT62-HF
AU915	915~928	HT-AT62-HF
KR920	920~923	HT-AT62-HF
AS923	920~925	HT-AT62-HF

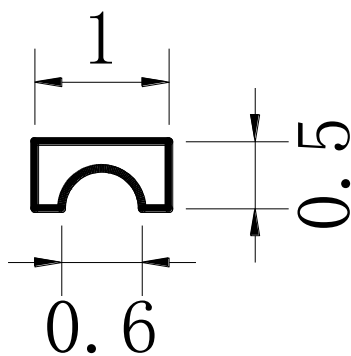


4. Hardware resource

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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