



## HT-CT62

### 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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# Content

HT-CT62.....	1
Document version.....	2
Copyright Notice.....	2
Disclaimer.....	2
Content.....	3
1. Description.....	4
1.1 Overview.....	4
1.2 Product features.....	4
2. Pin Definition.....	5
2.1 Pin assignment.....	5
2.2 Pin description.....	6
3. Specifications.....	7
3.1 General specifications.....	7
3.2 Electrical characteristics.....	8
3.2.1 Power supply.....	8
3.2.2 Power characteristics.....	8
3.3 RF characteristics.....	9
3.3.1 Transmit power.....	9
3.3.2 Receiving sensitivity.....	9
3.4 Operation frequencies.....	9
4. Specifications.....	11
4.1 Physical dimensions.....	11
5. Resource.....	12
5.1 Relevant Resource.....	12
5.2 Contact Information.....	12



# 1. Description

## 1.1 Overview

HT-CT62 is a LoRa/LoRaWAN node module with a long communication range, low power consumption, high sensitivity, and low cost. The module is composed up of ESP32-C3FN4(32-bit microprocessor based on RISC-V architecture) and Semtech LoRa Transceivers (SX1262). The module integrating 2.4 GHz Wi-Fi, LoRa modes wireless communication. HT-CT62 is a small volume, stamp hole package module, it's the best choice for smart cities, smart farms, smart home, and IoT makers.

HT-CT62 are available in two product variants:

Table 1.1: Product model list

No.	Model	Description
1	HT-CT62-LF	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-CT62-HF	For EU868, IN865, US915, AU915, AS923, KR920 and other LPW networks with operating frequencies between 863~928MHz.

## 1.2 Product features

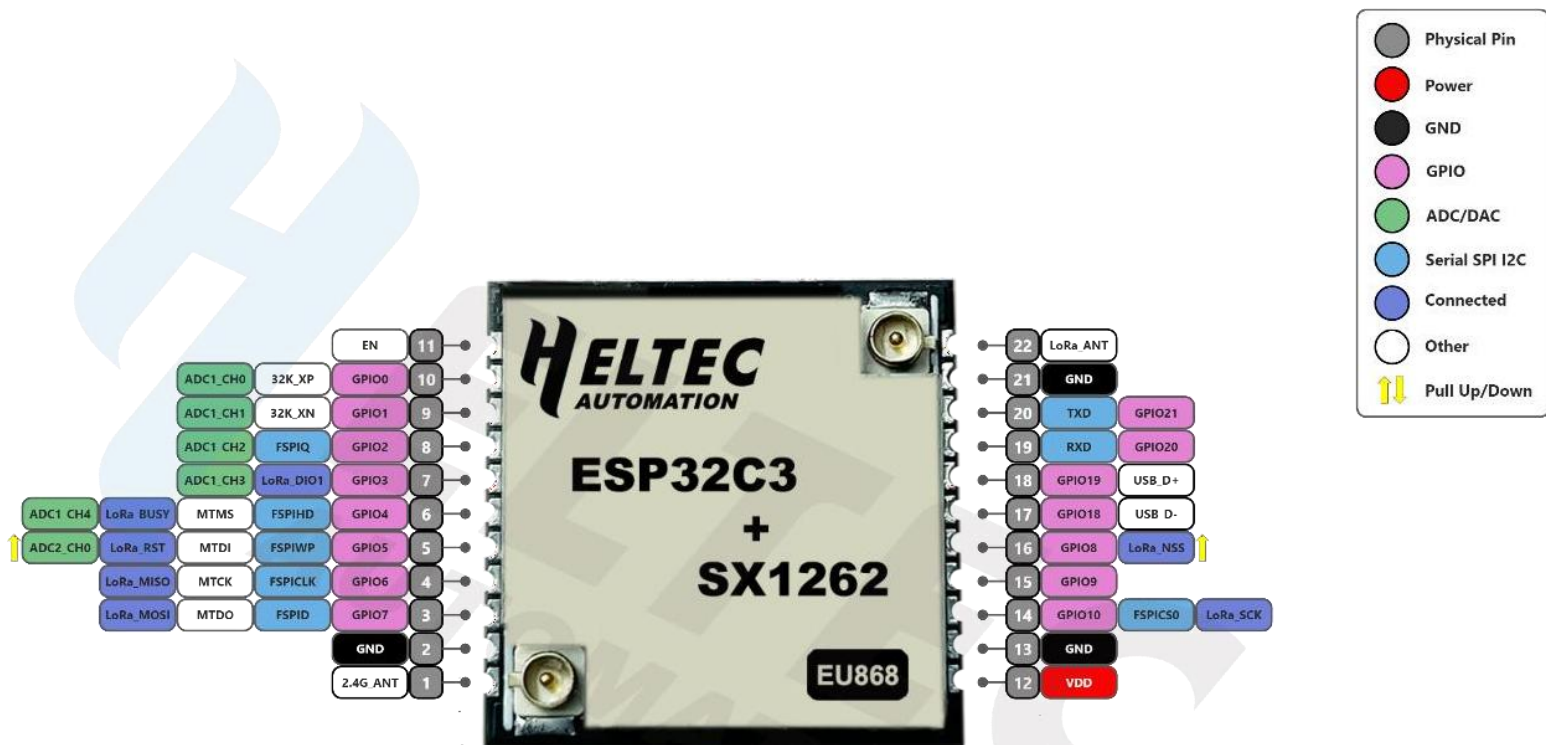
- Microprocessor: ESP32-C3FN4 (RISC-V architecture 32-bit, main frequency up to 160 MHz)



- Support the [Arduino development environment](#);
- LoRaWAN 1.0.2 support;
- Ultra low power design, 10uA in deep sleep;
- 1.27 stamp edge design for SMT;
- Good impedance matching and long communication distance.
- Integrated WiFi, network connection, onboard Wi-Fi, dedicated IPEX socket.

## 2. Pin Definition

### 2.1 Pin assignment



HT-CT62\_V1 Pin map





## 2.2 Pin description

Table 2.2: Pin description

No.	Name	Type	Function
1	2.4G ANT	O	2.4G ANT Output
2	GND	P	Ground
3	7	I/O	GPIO7, FSPID, MTDO, connected to SX1262_MOSI
4	6	I/O	GPIO6, FSPICK, MTCK, connected to SX1262_MISO
5	5	I/O	GPIO5, ADC2_CH0, FSPIWP MTDI, connected to SX1262_RST
6	4	I/O	GPIO4, ADC1_CH4, FSPIHD, MTMS, connected to SX1262_BUSY
7	3	I/O	GPIO3, ADC1_CH3, connected to SX1262_DIO1
8	2	I/O	GPIO2, ADC1_CH2, FSPIQ
9	1	I/O	GPIO1, ADC1_CH1, 32K_XN
10	0	I/O	GPIO0, ADC1_CH0, 32K_XP
11	EN	I	CHIP_EN
12	VDD	P	3.3V Power Supply
13	GND	P	Ground
14	10	I/O	GPIO10, FSPICS0, connected to SX1262_SCK
15	9	I/O	GPIO9
16	8	I/O	GPIO8, connected to SX1262_NSS
17	18	I/O	GPIO18, USB_D-
18	19	I/O	GPIO19, USB_D+
19	RXD	I/O	U0RXD, GPIO20



20	TXD	I/O	U0TXD, GPIO21
21	GND	P	Ground
22	LoRa ANT	O	LoRa ANT Output.

### 3. Specifications

#### 3.1 General specifications

Table 3.1: General specifications

Parameters	Description
<b>Master Chip</b>	ESP32-C3FN4(32-bit@RISC-V architecture)
<b>WiFi</b>	802.11 b/g/n, up to 150Mbps
<b>LoRa Chipset</b>	SX1262
<b>Frequency</b>	470~510MHz, 863~928MHz
<b>Max. TX Power</b>	21±1dBm
<b>Max. Receiving sensitivity</b>	-139dBm
<b>Hardware Resource</b>	5*ADC1+1*ADC2; 2*UART; 1*I2C; 3*SPI; 15*GPIO; etc.
<b>Memory</b>	384KB ROM; 400KB SRAM; 8KB RTC SRAM; 4MB SiP Flash
<b>Interface</b>	2.4G ANT (IPEX1.0); LoRa ANT(IPEX1.0); 2*11*1.27 spacing Stamp hole
<b>Power consumption</b>	Deep Sleep 10uA



<b>Operating temperature</b>	-40~85 °C
<b>Dimensions</b>	17.78 * 17.78* 2.8mm
<b>Package</b>	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 ( $\geq 150\text{mA}$ )	2.7	3.3	3.5	V

### 3.2.2 Power characteristics

Table3.2.2: Power characteristics

Mode	Condition	Min.	Typical	Max.	Company
WiFi Scan	3.3V Powered		80		mA
WiFi AP	3.3V Powered		120		mA
TX	470MHz, 3.3V Powered, 14dBm		120		mA
	470MHz, 3.3V Powered, 17dBm		140		mA
	470MHz, 3.3V Powered, 22dBm		170		mA
RX	470MHz, 3.3V Powered		40		mA
Sleep	3.3V powered		10		$\mu\text{A}$





### 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-CT62.

Table3.3.2 Receiving sensitivity

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

### 3.4 Operation frequencies

HT-CT62 supports LoRaWAN frequency channels and models corresponding table.

Table3.4: Operation frequencies

Region	Frequency (MHz)	Model
EU433	433.175~434.665	HT-CT62-LF
CN470	470~510	HT-CT62-LF

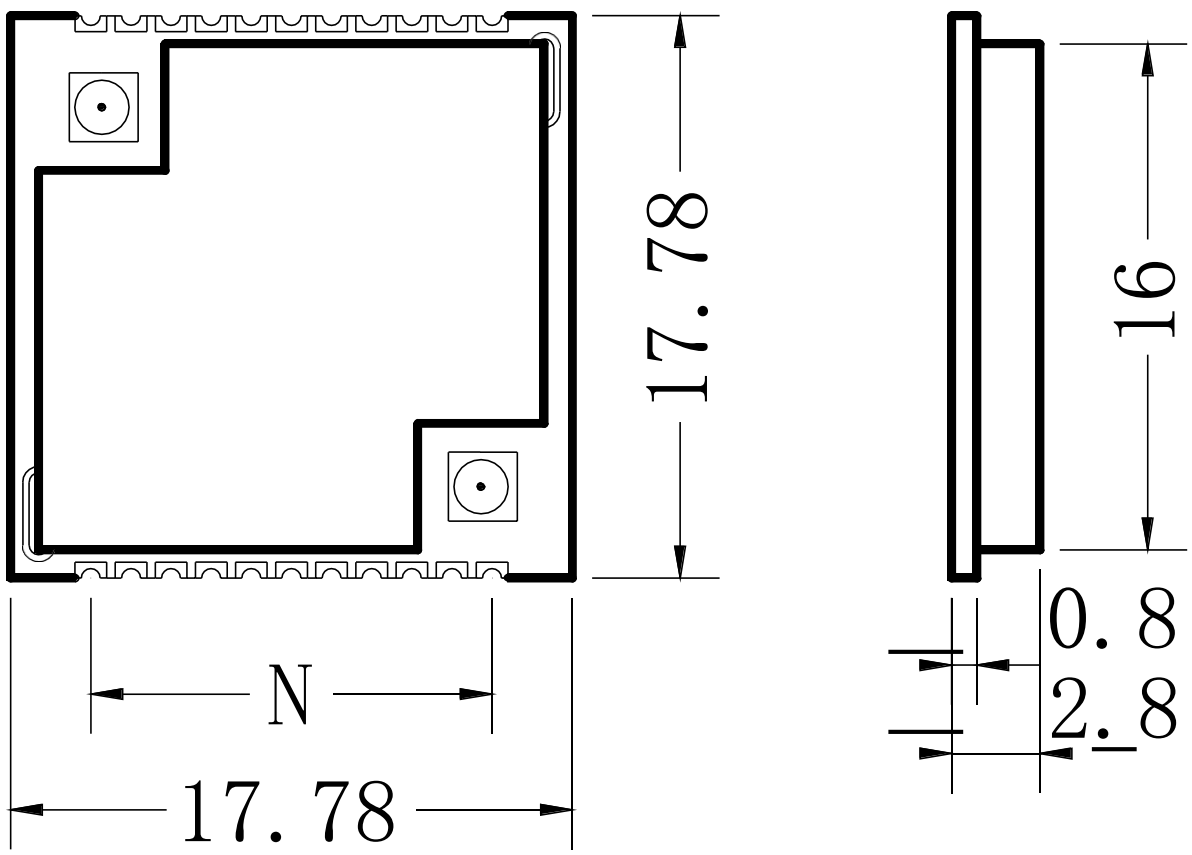


<b>IN868</b>	865~867	HT-CT62-HF
<b>EU868</b>	863~870	HT-CT62-HF
<b>US915</b>	902~928	HT-CT62-HF
<b>AU915</b>	915~928	HT-CT62-HF
<b>KR920</b>	920~923	HT-CT62-HF
<b>AS923</b>	920~925	HT-CT62-HF



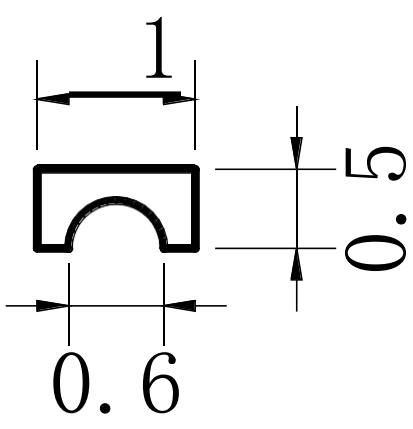
## 4. Specifications

### 4.1 Physical dimensions



$$N=10*1.27$$

# PAD





## 5. Resource

### 5.1 Relevant Resource

- [Recommend hardware design](#)
- [Pin map](#)
- [Downloadable resource](#)
- [Footprint](#)

### 5.2 Contact Information

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