HT-CT62

LoRa module

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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

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 impendence matching and long communication distance.

- ➢ Integrated WiFi, network connection, onboard Wi-Fi, dedicated IPEX socket.

2. Pin Definition

2.1   Pin assignment
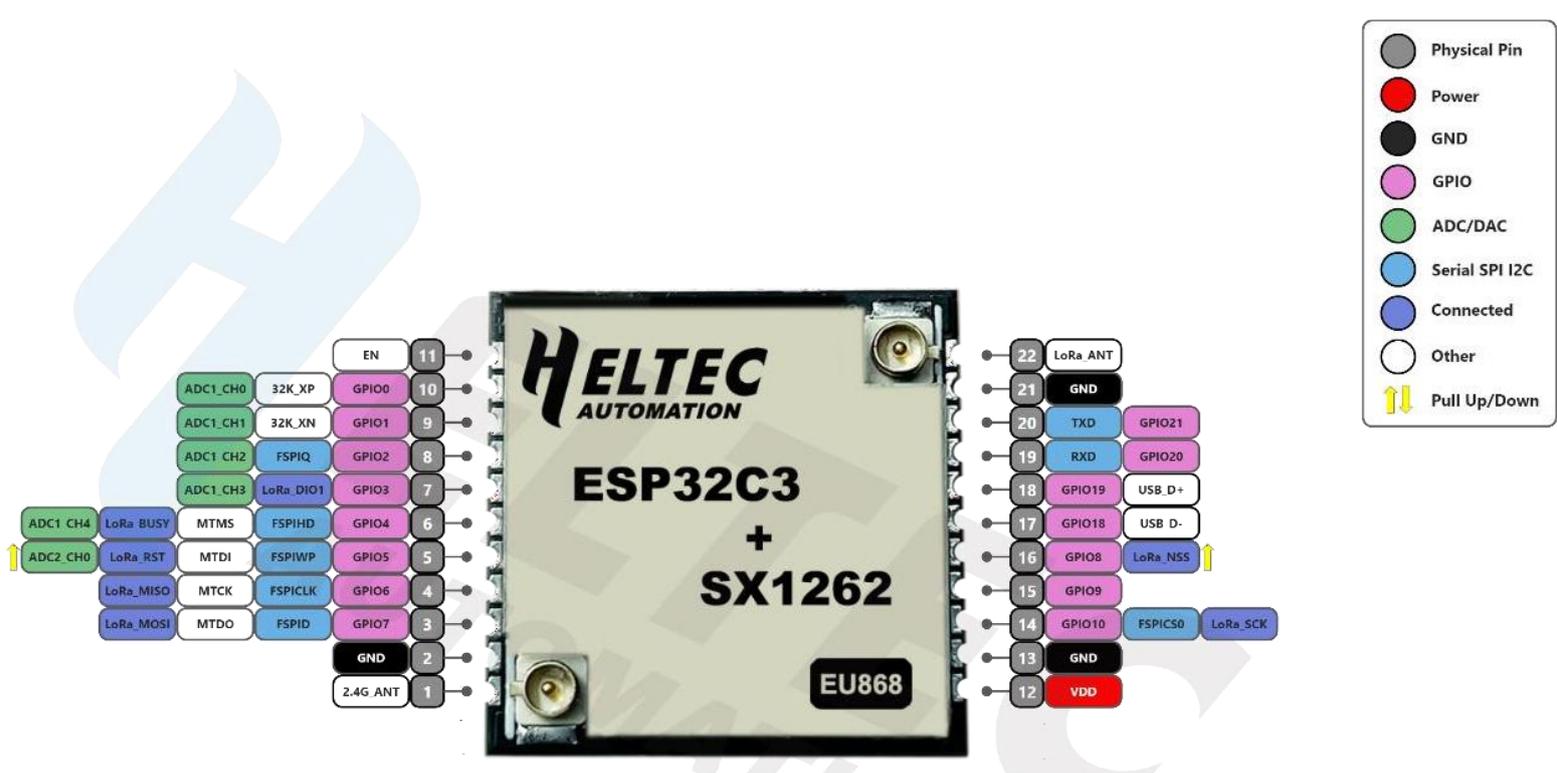
HT-CT62_V1 Pin map

2.2   Pin description

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, FSPICLK, 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
Master Chip	ESP32-C3FN4(32-bit@RISC-V architecture)
WiFi	802.11 b/g/n, up to 150Mbps
LoRa Chipset	SX1262
Frequency	470~510MHz, 863~928MHz
Max. TX Power	21±1dBm
Max. Receiving sensitivity	-134dBm
Hardware Resource	5*ADC1+1*ADC2; 2*UART; 1*I2C; 3*SPI; 15*GPIO; etc.
Memory	384KB ROM; 400KB SRAM; 8KB RTC SRAM; 4MB SiP Flash
Interface	2.4G ANT (IPEX1.0); LoRa ANT(IPEX1.0); 2*11*1.27 spacing Stamp hole
Power consumption	Deep Sleep 10uA

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Operating temperature	-40~85 ℃
Dimensions	17.78 * 17.78* 2.8mm
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
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		μA

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	-134
125	SF10	-130
125	SF7	-122

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

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

4. Specifications

4.1   Physical dimensions

17.78

16

N

17.78

0.8
2.8

N=10*1.27

PAD

1

0.5

0.6
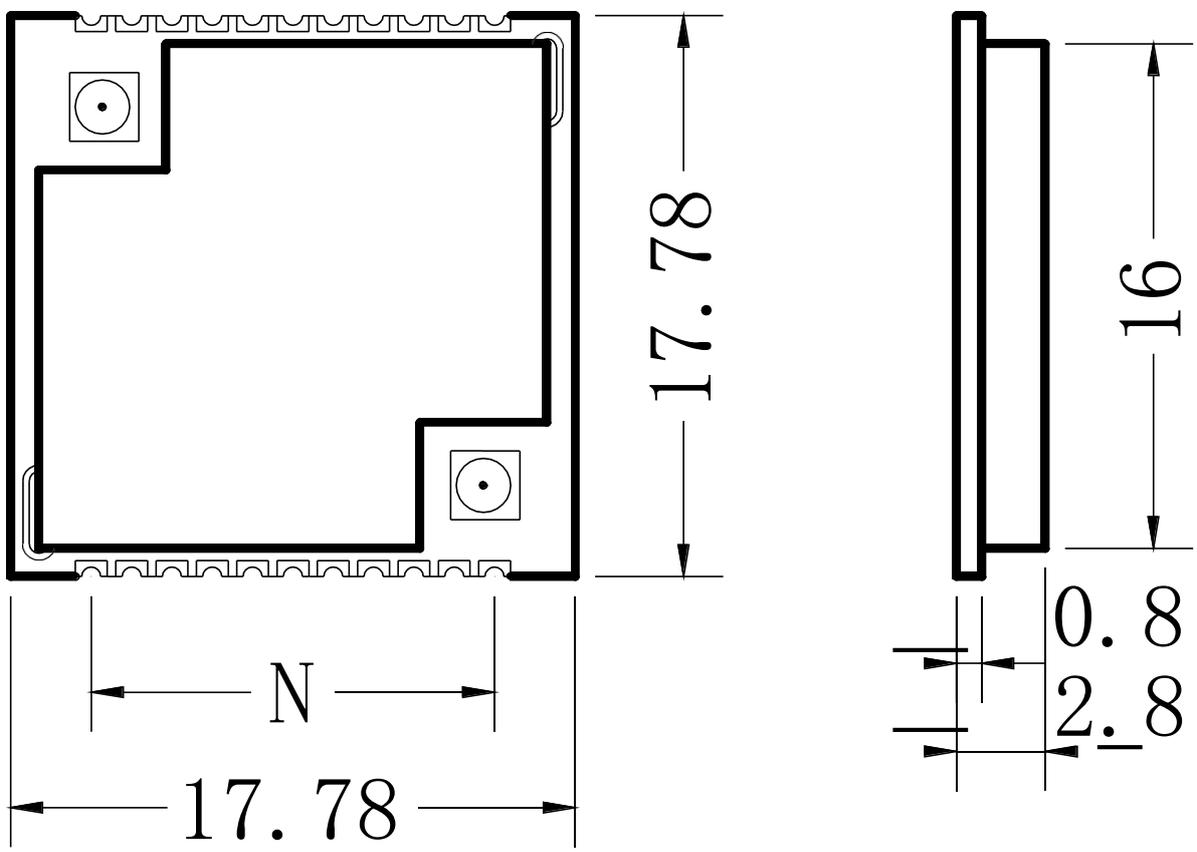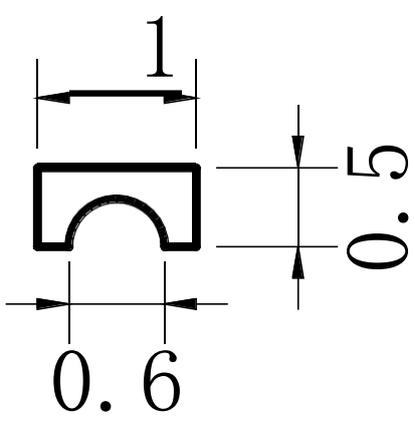
5. Resource

5.1 Relevant Resource

- [Recommend hardware design](#)

- [Pin map](#)

- [Downloadable resource](#)

- [Footprint](#)

5.2 Contact Information

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