



Mesh Node T114

Bluetooth And LoRa

1.14 TFT-LCD Display (Optional)



Document Version

Version	Time	Description	Remark
Rev. 1.0	2024-5-16	Preliminary version	Richard
Rev. 2.0	2024-10-18	V2	Richard

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1 Description

1.1 Overview

Mesh Node T114 is a development board based on nRF52840 and SX1262, supports LoRa communication and Bluetooth 5.0, and provides a variety of power interfaces (5V USB, lithium battery and solar panel), optional 1.14 inch TFT display and GPS module as accessories.

Mesh Node T114 has powerful long-distance communication capabilities, scalability, and low power design, which make it excellent in a wide range of application scenarios such as smart cities, agricultural monitoring, logistics tracking, etc. With Heltec nRF52 development environment and libraries , you can use it for LoRa/LoRaWAN development work, as well as to run some open source projects, such as Meshtastic.

Mesh Node T114 are available in 2 product variants^①:

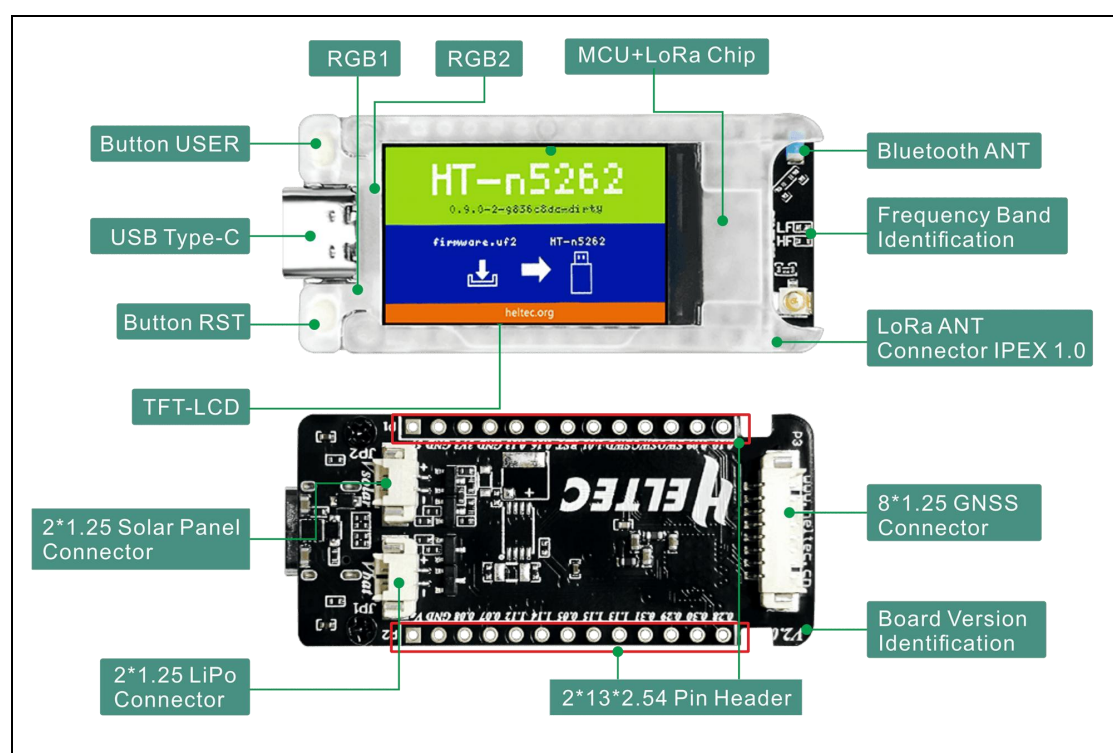
No.	Model	Description
1	HT-n5262-LF	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HT-n5262-HF	For EU868, IN865, US915, AU915, AS923, KR920 and other LPW networks with operating frequencies between 863~928MHz.

^① Display, shell, and other accessories version differences are not listed here.



1.2 Product Features

- MCU nRF52840 (Bluetooth), LoRa chipset SX1262.
- Low power consumption, 11 uA in deep sleep.
- Powerful display function (optional), onboard 1.14 inch TFT-LCD display contains 135(H)RGB x240(V) dots and can display up to 262k colors.
- Type-C USB interface with a complete voltage regulator, ESD protection, short circuit protection, RF shielding, and other protection measures.
- Various Interfaces (2*1.25mm LiPo connector, 2*1.25mm Solar panel connector, 8*1.25mm GNSS module connector) which greatly increase the extensibility of the board.
- Operation condition: -20 ~ 70°C, 90%RH(No condensing).
- Compatible with Arduino, and we provide Arduino [development frameworks and libraries](#).

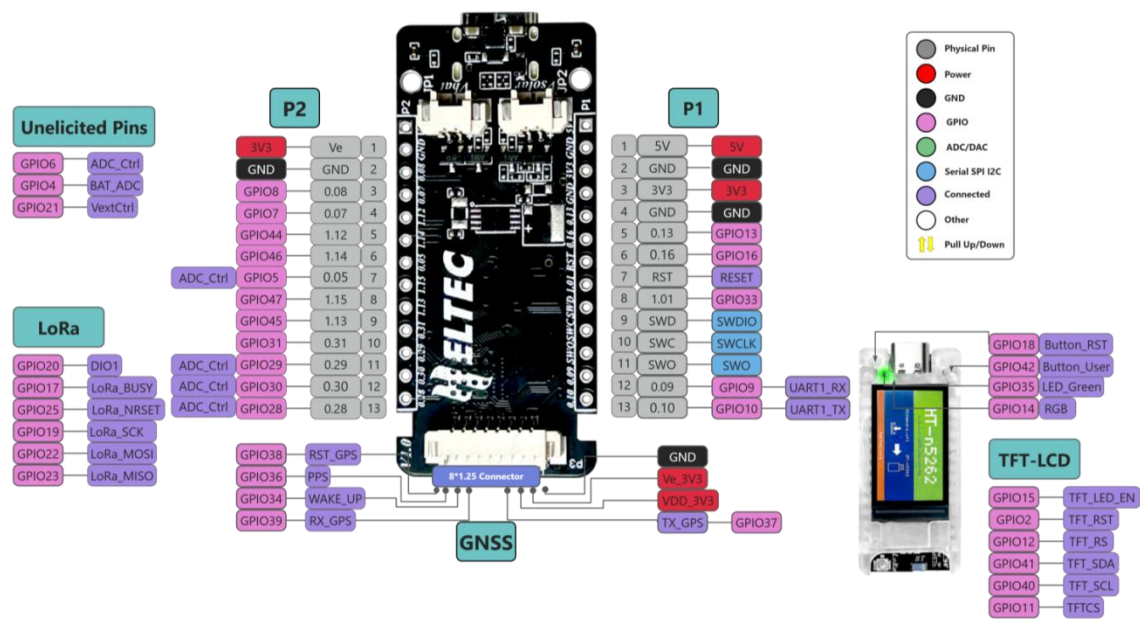


2 Pin Definition

About **SPI, I2C, UART, PWM, QPSI, I2S, PDM, QDEC**: Each IO pin is preconfigured with IO_MUX functionality, which means you can use any GPIO as peripheral pins. You just need to define these pins in your code.

However, it's important to note that once a pin is used, it may affect other functions associated with that pin. For information, please refer to the [Schemaic diagram](#).

2.1 Pin Map



Mesh Node T114 Rev. 2.0 Pin Map

2.2 Pin Definition

P1

P2

Name	Type	Description	Name	Type	Description
5V	P	5V Power.	Ve	P	3V3 power.
GND	P	Ground.	GND	P	Ground.
3V3	P	3.3V Power.	0.08	I/O	GPIO8.
GND	P	Ground.	0.07	I/O	GPIO7.
0.13	I/O	GPIO13.	1.12	I/O	GPIO44.



0.16	I/O	GPIO16.	1.14	I/O	GPIO46.
RST	I/O	RESET.	0.05	I/O	GPIO5.
1.01	I/O	GPIO33.	1.15	I/O	GPIO47.
SWD	I/O	SWDIO.	1.13	I/O	GPIO45.
SWC	I/O	SWCLK.	0.31	I/O	GPIO31.
SWO	I/O	SWO.	0.29	I/O	GPIO29.
0.09	I/O	GPIO9, UART1_RX.	0.30	I/O	GPIO30.
0.10	I/O	GPIO10, UART1_TX.	0.28	I/O	GPIO28.

3 Specifications

3.1 General Specification

Table3.1: General specification

Parameters	Description
MCU	nRF52840
LoRa Chipset	SX1262
Memory	1M ROM; 256KB SRAM
Bluetooth	Bluetooth 5, Bluetooth mesh, BLE.
Storage temperature	-30~80°C
Operating temperature	-20~70°C
Operating Humidity	90%(No condensing)
Power Supply	3~5.5V (USB), 3~4.2(Battery)
Display Module	LH114T-IF03
Screen Size	1.14 Inch
Display Resolution	135RGB x 240

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Active Area	22.7 mm(H) × 42.72(V) mm
Display Colors	262K
Hardware Resource	USB 2.0, 2*RGB, 2*Button, 4*SPI, 2*TWI, 2*UART, 4*PWM, QPSI, I2S, PDM, QDEC Etc.
Interface	Type-C USB, 2*1.25 lithium battery connector, 2*1.25 solar panel connector, LoRa ANT (IPEX1.0), 8*1.25 GPS module connector, 2*13*2.54 Header Pin
Dimensions	50.80mm x 22.86mm
Operating Current	1A

3.2 Power Consumption

Table 3.2: Working current

Mode	Condition	Consumption(Battry@3.7V)		
		470MHz	868MHz	915MHz
LoRa_TX	5dBm		83mA	93mA
	10dBm		108mA	122mA
	15dBm		136mA	151mA
	20dBm		157mA	164mA
BT	UART	93mA		
	Scan	132mA		
Sleep		11uA		
Operating Current		1A		

3.3 LoRa RF Characteristics

3.3.1 Transmit Power

Table3.3.1: Transmit power

Operating frequency band	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.

Table3.3.2: Receiving sensitivity

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-135
125	SF10	-130
125	SF7	-124

3.3.3 Operation Frequencies

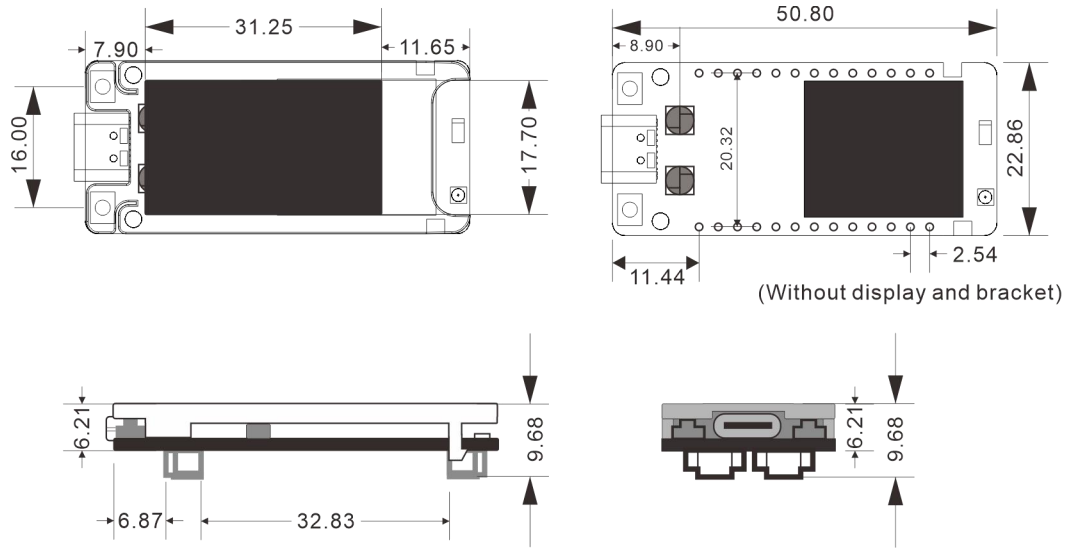
Mesh Node T114 supports LoRaWAN frequency channels and models corresponding table.

Table3.3.3: Operation Frequencies

Region	Frequency (MHz)	Model
EU433	433.175~434.665	HT-n5262-LF
CN470	470~510	HT-n5262-LF
IN868	865~867	HT-n5262-HF
EU868	863~870	HT-n5262-HF
US915	902~928	HT-n5262-HF
AU915	915~928	HT-n5262-HF
KR920	920~923	HT-n5262-HF
AS923	920~925	HT-n5262-HF



4 Physical Dimensions



5 Resource

5.1 Develop framework and lib

- [Heltec nRF52 framework and Lib](#)

5.2 Recommendation server

- [Heltec LoRaWAN test server based on TTS V3](#)
- [SnapEmu IoT Platform](#)

5.3 Documents

- [Mesh Node T114 Manual Document](#)

5.4 Schematic Diagram

- V1 [Schematic Diagram](#)
- V2 [Schematic Diagram](#)

5.5 Related Resource

- [TFT-LCD Datasheet](#)

6 Heltec Contact Information

Heltec Automation Technology Co., Ltd



Chengdu, Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

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