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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Content

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.

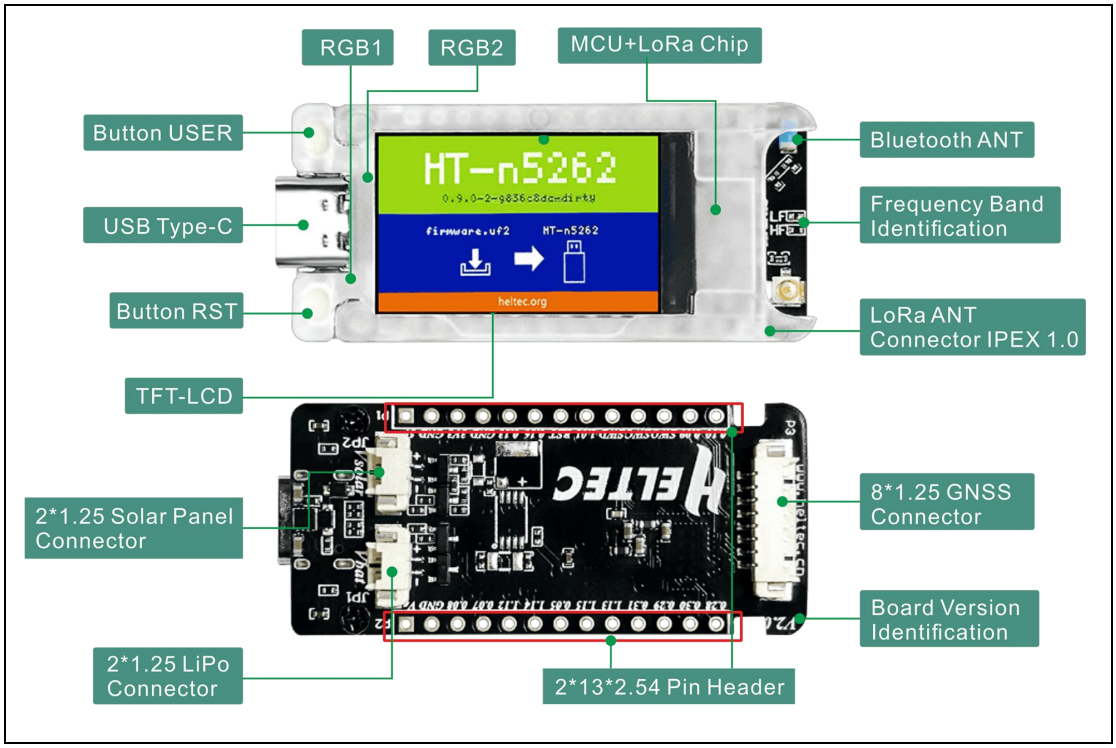
Mesh Node T114 are available in 2 product variants①:

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.

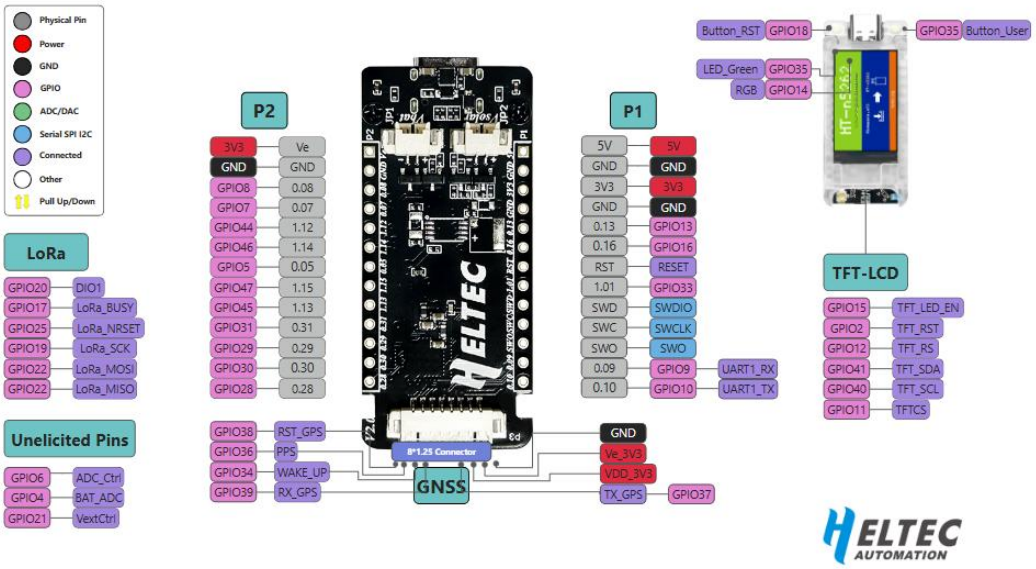
1.2 Product Features

- 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℃, 90%RH(No condensing).
- Compatible with Arduino,and we provide Arduino development frameworks and libraries.



2 Pin Definition

2.1 Pin Map



Mesh Node T114 Rev. 2.0 Pin Map

2.2 Pin Definition

P1

Name	Type	Description
5V	P	5V Power.
GND	P	Ground.
3V3	P	3.3V Power.
GND	P	Ground.
0.13	I/O	GPIO13.
0.16	I/O	GPIO16.
RST	I/O	RESET.

P2

Name	Type	Description
Ve	P	3V3 power.
GND	P	Ground.
0.08	I/O	GPIO8.
0.07	I/O	GPIO7.
1.12	I/O	GPIO44.
1.14	I/O	GPIO46.
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℃
Operating temperature	-20~70℃
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
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

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	2mA		
Sleep		11uA		

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

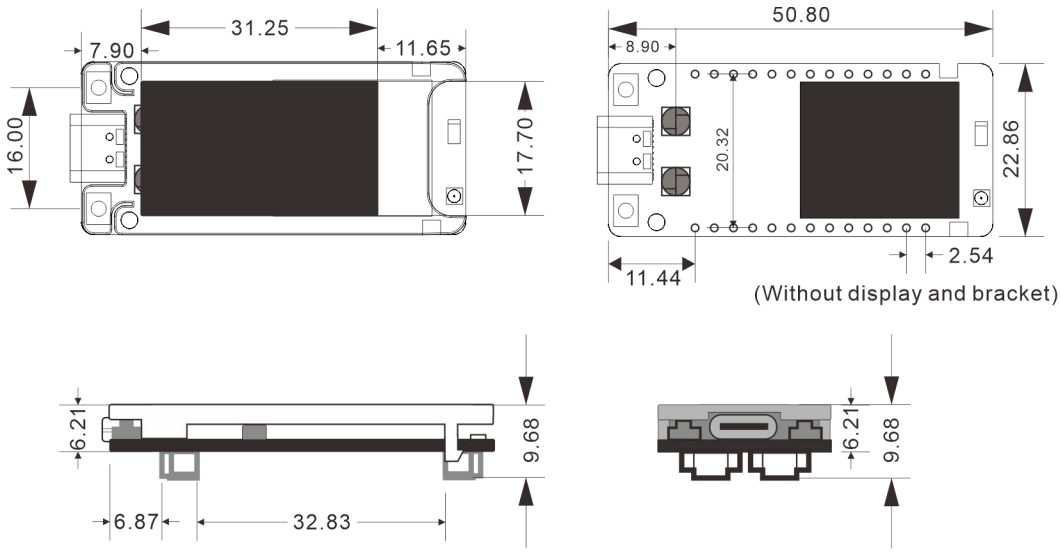
3.3.3 Operation Frequencies

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

- V1Schematic Diagram
- V2Schematic Diagram

5.5 Related Resource

- TFT-LCD Datasheet

6 Heltec Contact Information

Heltec Automation Technology Co., Ltd

https://heltec.org

Chengdu, Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

https://heltec.org