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HELTEC HT-N5262 Mesh Node With Bluetooth And LoRa

HELTEC HT-N5262 Mesh Node With Bluetooth And LoRa Owner's Manual

Contents

HELTEC HT-N5262 Mesh Node With Bluetooth And LoRa

Product Information

Specifications

- **MCU:** nRF52840
- **LoRa Chipset:** SX1262
- **Memory:** 1M ROM; 256KB SRAM
- **Bluetooth:** Bluetooth 5, Bluetooth mesh, BLE
- **Storage Temperature:** -30°C to 80°C
- **Operating Temperature:** -20°C to 70°C
- **Operating Humidity:** 90% (Non-condensing)
- **Power Supply:** 3-5.5V (USB), 3-4.2V (Battery)
- **Display Module:** LH114T-IF03
- **Screen Size:** 1.14 Inch
- **Display Resolution:** 135RGB x 240
- **Display Colors:** 262K

Product Usage Instructions

Overview
The Mesh Node with Bluetooth and LoRa features a powerful display function (optional) and various interfaces for extensibility.

Product Features

- MCU: nRF52840 (Bluetooth), LoRa chipset SX1262
- Low power consumption: 11uA in deep sleep
- Type-C USB interface with complete protection measures
- Operating condition: -20°C to 70°C, 90%RH (Non-condensing)
- Compatible with Arduino, providing development frameworks and libraries

Pin Definitions
The product includes various pins for power, ground, GPIOs, and other interfaces. Refer to the manual for detailed pin mappings.

Frequently Asked Questions (FAQ)

1. **Q: Can the Mesh Node be powered by a battery?**

   A: Yes, the Mesh Node can be powered by a battery within the specified voltage range of 3-4.2V.

2. **Q: Is the display module mandatory for using the Mesh Node?**

   A: No, the display module is optional and can be omitted if not required for your application.

3. **Q: What is the recommended operating temperature for the Mesh Node?**

   A: The recommended operating temperature range for the Mesh Node is -20°C to 70°C.

Document Version

| Version	Time	Description	Remark
Rev. 1.0	2024-5-16	Preliminary version	Richard

Description

Overview

Mesh Node 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 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.

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.
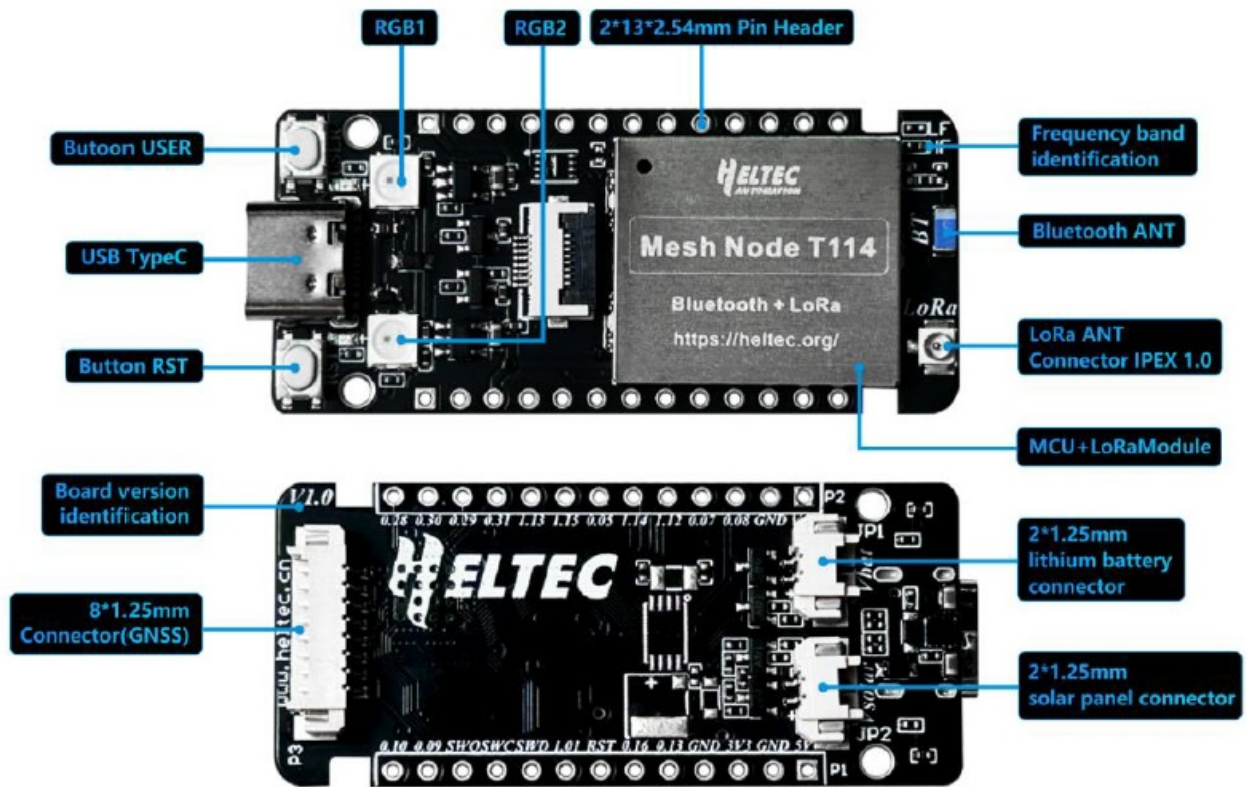
Pin Definition

Pin Map

Mesh Node T114 V1 Pin map
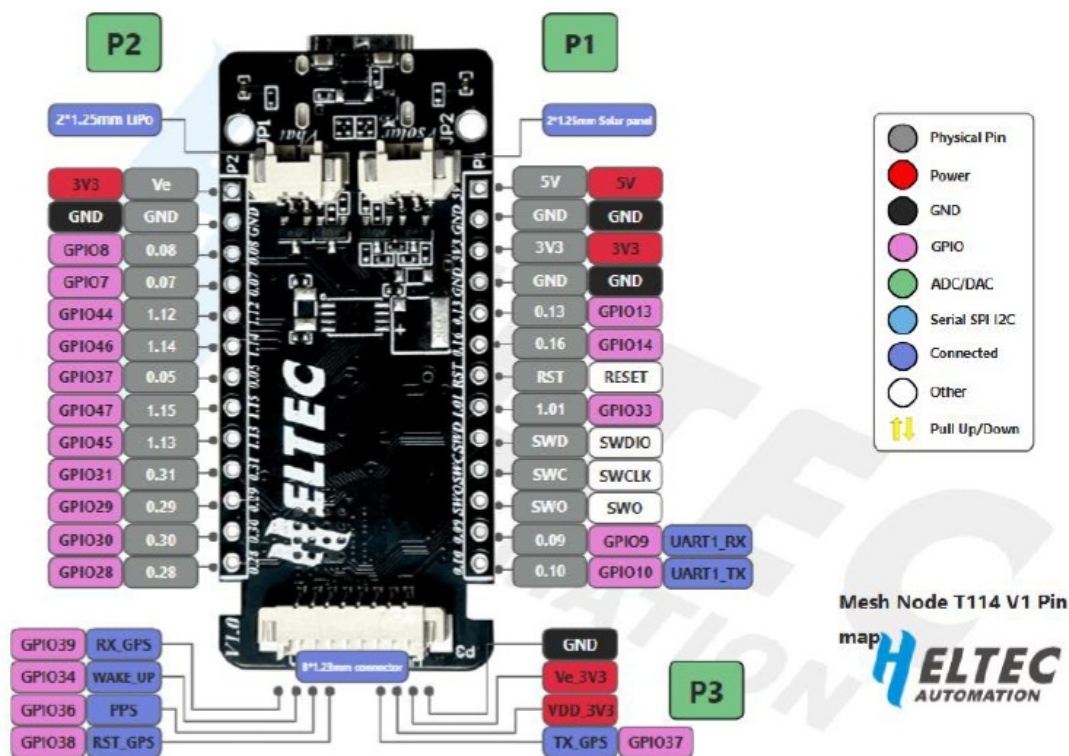
Pin Definition
P1

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	GPIO14.
RST	I/O	RESET.

Name	Type	Description
1.01	I/O	GPIO33.
SWD	I/O	SWDIO.
SWC	I/O	SWCLK.
SWO	I/O	SWO.
0.09	I/O	GPIO9, UART1_RX.
0.10	I/O	GPIO10, UART1_TX.

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	GPIO37.

Name	Type	Description
1.15	I/O	GPIO47.
1.13	I/O	GPIO45.
0.31	I/O	GPIO31.
0.29	I/O	GPIO29.
0.30	I/O	GPIO30.
0.28	I/O	GPIO28.

Specifications

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, Q DEC Etc.
Interface	Type-C USB, 2*1.25 lithium battery connector, 2*1.25 solar panel connector, Lo Ra ANT (IPEX1.0), 8*1.25 GPS module connector, 2*13*2.54 Header Pin
Dimensions	50.80mm x 22.86mm

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		

LoRa RF Characteristics

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

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

Operation Frequencies
Mesh Node 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

Physical Dimensions
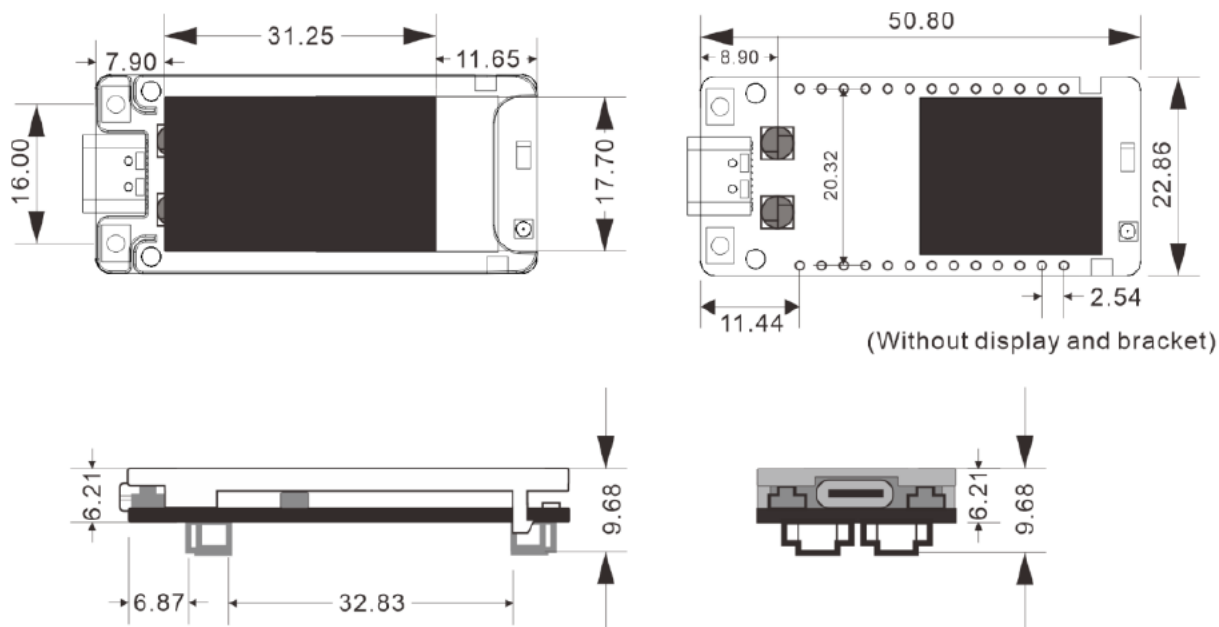
Resource

Develop framework and lib

- Heltec nRF52 framework and Lib

Recommendation server

- Heltec LoRaWAN test server based on TTS V3
- SnapEmu IoT Platform

Documents

- Mesh Node Manual Document

Schematic Diagram

- Schematic Diagram

Related Resource

- TFT-LCD Datasheet

Heltec Contact Information
Heltec Automation Technology Co., Ltd Chengdu, Sichuan, China
https://heltec.org

- Email: **support@heltec.cn**
- Phone: +86-028-62374838
- **https://heltec.org**

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party. Responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

This equipment complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Radiation Exposure Statement:
The equipment complies with FCC Radiation exposure limits set forth for uncontrolled enviroment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Documents / Resources

HELTEC HT-N5262 Mesh Node With Bluetooth And LoRa [pdf] Owner's Manual
2A2GJ-HT-N5262, 2A2GJHTN5262, HT-N5262 Mesh Node With Bluetooth And LoRa, HT-N5262, Mesh Node With Bluetooth And LoRa, Node With Bluetooth And LoRa, Bluetooth And LoRa, LoRa

References

- **GitHub - HelTecAutomation/Heltec_nRF52: Arduino source codes and tool chain for nRF52 series made by Heltec Automation.**
- **Heltec Automation –**
- **Heltec Automation –**
- **The Things Stack for LoRaWAN Console**
- **snapemu**
- **User Manual**