



***RaidoCore Series nRF52840 + SX1262***

**RC52-62**

***Datasheet-Rev1.0.0***



## Document version

| Version    | Time       | Description                | Remark  |
|------------|------------|----------------------------|---------|
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# 1. Overview

The RadioCore series is a quasi-system-level development platform, capable of flexibly adapting to various MCUs and RF modules in an ultra-compact form factor, suitable for a wide range of IoT application scenarios.

As one model of this series, the **RC52-62** is equipped with Nordic **nRF52840** MCU and **SX1262** RF chip. It supports **BLE** and **LoRa**, featuring long-and-short-range communication and **ultra-low power** consumption.

Featuring a custom pin layout with solder-free plug-and-play capability, the RC52 simplifies prototype assembly and module replacement to accelerate product development and iteration cycles.

It supports the official **Arduino framework** and is fully compatible with mainstream toolchains including PlatformIO and nRF Connect SDK. Developers can work within familiar environments to shorten project delivery cycles.

## Features

-  MCU: nRF52840 with integrated ultra-low-power Bluetooth
-  On-board LoRa RF module: supports long-range point-to-point & LoRaWAN networking
-  Open-source library: **HelTec nRF52 Framework**; PlatformIO compatible
-  Compatible with Meshtastic, MeshCore and other open-source projects
-  Compact size, solder-free pins for convenient system integration

## Application Scenario

- |                                                                                                                   |                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
|  Outdoor mesh networking       |  Smart agriculture sensing     |
|  Smart home gateway            |  Bluetooth indoor positioning  |
|  Environmental monitoring node |  Wireless repeater / relay     |
|  Wearable device prototyping   |  Maker education & experiments |
|  Industrial data acquisition   |  Edge computing node           |
|  Remote meter reading terminal |  Multi-protocol converter      |

## 2. Specifications

### 2.1 Generic Parameter

Table 2.1 General specification

| Parameters       | Description                                                        |
|------------------|--------------------------------------------------------------------|
| MCU              | nRF52840 (BLE)                                                     |
| LoRa Chip        | <a href="#">HT-RA62A</a> (SX1262)                                  |
| Transmit Power   | 21dBm; 28dBm <sup>①</sup>                                          |
| Interface        | TypeC USB; BTB ( <a href="#">Learn More</a> ); 2 x 10 Pin Headers  |
| Peripherals      | USB 2.0, 4 * SPI, 2 * TWI, 2 * UART, 4 * PWM, QPSI, 12S, PDM, QDEC |
| Memory           | 1MB Flash, 256KB SRAM                                              |
| Temperature      | -30~80℃ <sup>②</sup>                                               |
| Power Supply     | USB-C: 5V<br>Pin Header: 3V3 ; 5V ; Vbat(3.0-4.2V)                 |
| Button           | RST, USER                                                          |
| Screw Hole Specs | 1mm x 5mm                                                          |
| Shell Material   | ABS                                                                |
| Dimensions       | 40.10 x 23.82 x 12.54 mm                                           |
| Weight           | 8.5g                                                               |

① Transmit power is determined by the specifications of the fitted LoRa module.

② Plastic housing top and bottom cover rated for -30℃ ~ 65℃ operating temperature.

## 2.2 Power Consumption

Table2.2 Power consumption

| Mode    | Condition@3.7V-BAT | Max | Unit |
|---------|--------------------|-----|------|
| LoRa TX | 5 dBm              | 60  | mA   |
|         | 10 dBm             | 80  | mA   |
|         | 15 dBm             | 105 | mA   |
|         | 22 dBm             | 164 | mA   |
| LoRa RX |                    |     | mA   |
| BT TX   | 4 dBm              | 26  | mA   |
|         | 8 dBm              | 40  | mA   |
| BT RX   |                    | 2.6 | mA   |
| Sleep   |                    | 7   | μA   |

## 3. Pin Description

This section describes the functions of partial pins on the RC52 module. Refer to the [RC52 Schematic](#) for full details.

### 3.1 General Pins (Broken-out Pins)

#### 3.1.1 General Pins Layout

These pins are routed to the external pin headers of RadioCore. Their functions remain intact regardless of whether an external RF expansion module is soldered onto the board.

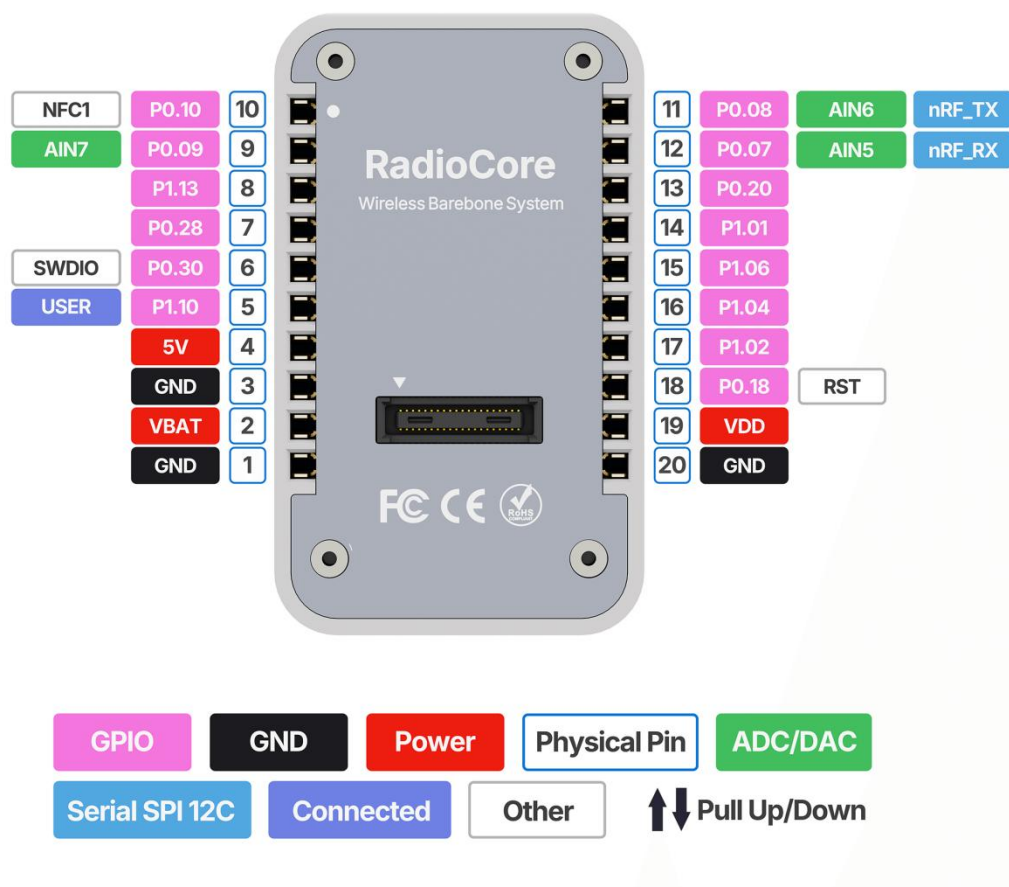
- **GPIO:** All pins marked GPIO are usable as general-purpose input/output pins.
- **Serial / SPI / I2C & Other Peripherals:** These peripherals follow the chip's default pin assignments. You may remap these functions to any available GPIO pins via software configuration in your code. SPI0 and SPI1 are used to drive the Flash. When a LoRa module is installed, SPI2 is utilized for connecting the LoRa module.

- **ADC / DAC**: These pins are the chip's dedicated analog input and analog output channels.

## RC52

### Other Pins

|       |              |
|-------|--------------|
| P0.26 | FEM_EN       |
| P0.04 | ADC_Ctrl     |
| P0.05 |              |
| P0.07 | nRF_RX       |
| P0.08 | nRF_TX       |
| P1.09 |              |
| P0.11 | DIO1         |
| P0.12 |              |
| P0.13 | LORA_NSS     |
| P0.14 | LORA_MISO    |
| P0.15 |              |
| P0.16 | VFEM_CTRL    |
| P0.18 | nRF_RST      |
| P0.20 |              |
| P0.22 | LORA_MOSI    |
| P0.23 |              |
| P0.24 | LORA_BUSY    |
| P0.25 | LORA_SCK     |
| P1.00 | LORA_NRSET   |
| P1.01 |              |
| P1.02 |              |
| P1.04 |              |
| P1.06 |              |
| P1.07 | FEM_LNA_CTRL |
| P0.09 |              |
| P0.10 |              |
| P1.10 | User         |
| P1.11 |              |
| P1.13 |              |
| P1.15 |              |
| P0.02 |              |
| P0.28 |              |
| P0.30 |              |
| P0.31 | ADC_IN       |



### 3.1.2 Exposed Description

Table3.1.2: General Pins Description

| NO. | Name | Function     |
|-----|------|--------------|
| 1   | GND  | GND          |
| 2   | VBAT | VBAT         |
| 3   | GND  | GND          |
| 4   | 5V   | 5V           |
| 5   | USER | P1.10; USER  |
| 6   | 0.30 | P0.30; SWDIO |
| 7   | 0.28 | P0.28        |
| 8   | 1.13 | P1.13        |

|    |      |                     |
|----|------|---------------------|
| 9  | 0.09 | P0.09;AIN7          |
| 10 | 0.10 | P0.10;NFC1          |
| 11 | 0.08 | P0.08; AIN6; nRF_TX |
| 12 | 0.07 | P0.07; AIN5; nRF_RX |
| 13 | 0.20 | P0.20               |
| 14 | 1.01 | P1.01               |
| 15 | 1.06 | P1.06               |
| 16 | 1.04 | P1.04               |
| 17 | 1.02 | P1.02               |
| 18 | RST  | P0.18; Reset        |
| 19 | 3V3  | 3.3V VDD            |
| 20 | GND  | Ground              |

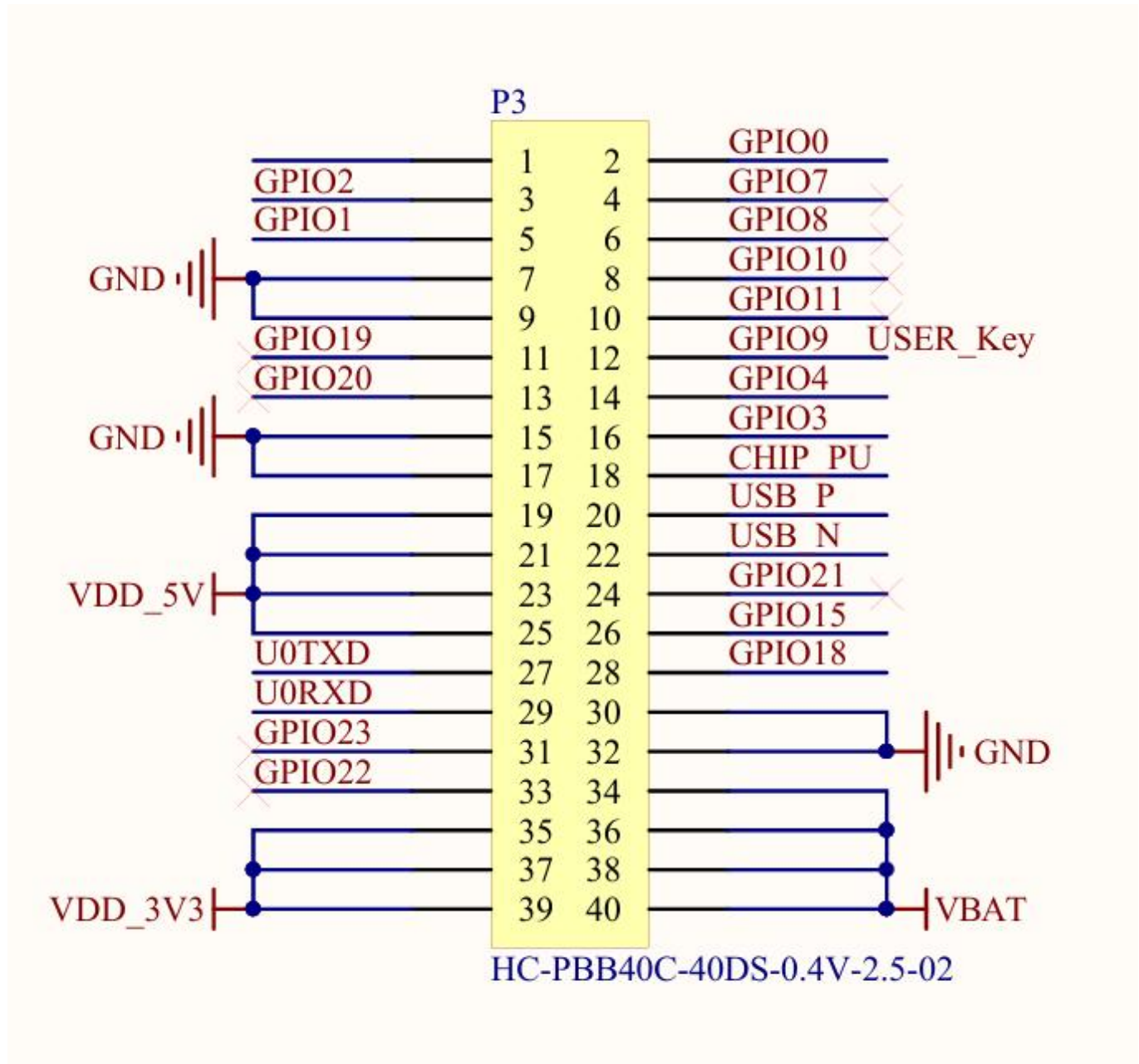
## 3.2 Function Pins

| IO    | LoRa Function |
|-------|---------------|
| P0.26 | FEM_EN        |
| P0.04 | ADC_CTRL      |
| P0.11 | DIO1          |
| P0.13 | LoRa_NSS      |
| P0.14 | LoRa_MISO     |
| P0.16 | FEM_CTRL      |
| P0.22 | LoRa_MOSI     |
| P0.24 | LoRa_BUSY     |
| P0.25 | LoRa_SCK      |
| P1.00 | LoRa_NRET     |

|       |              |
|-------|--------------|
| P1.07 | FEM_LNA_Ctrl |
| P0.31 | ADC          |

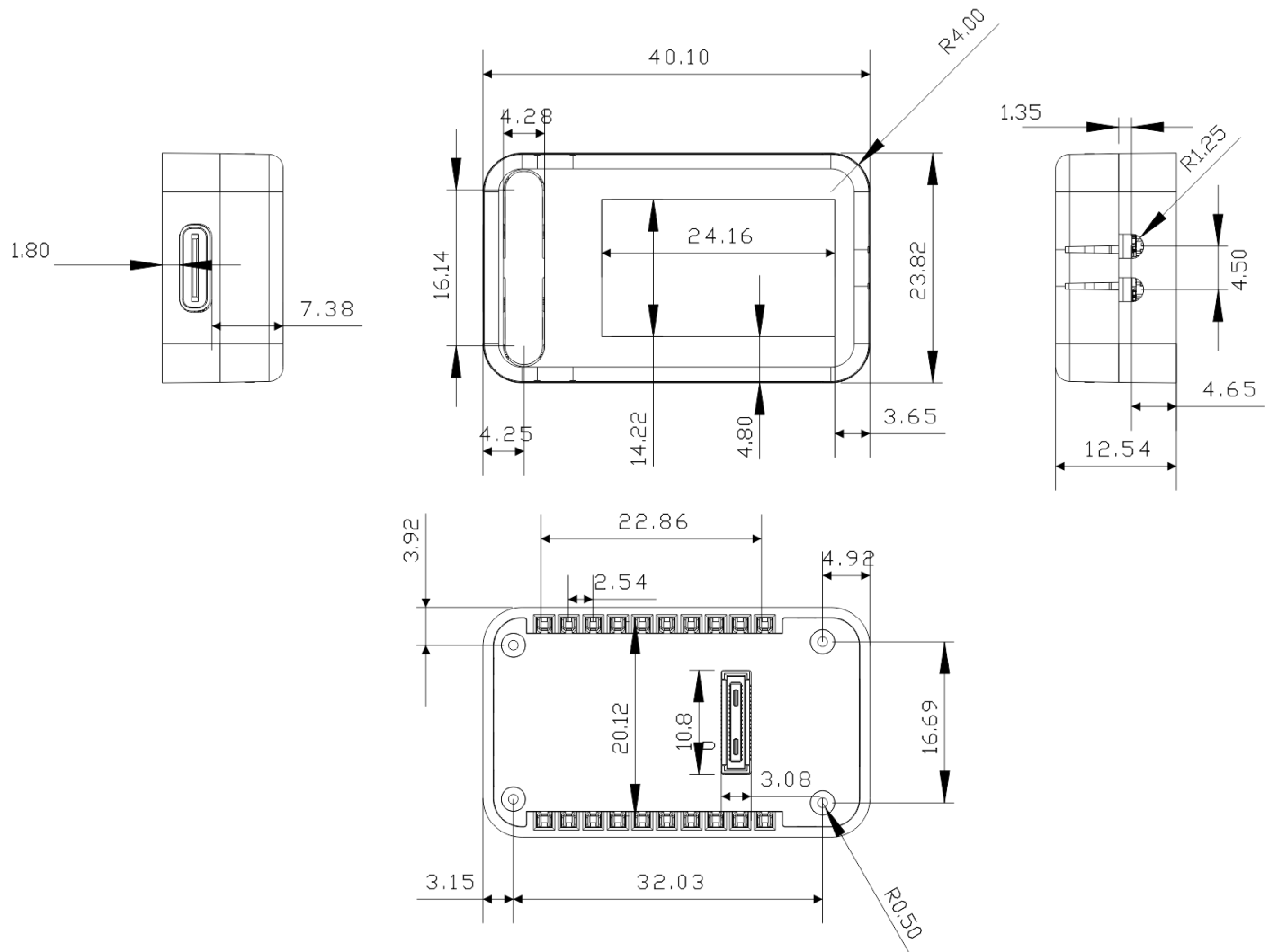
### 3.3 B2B Interface Pin Definition

[BTB Connector Datasheet]



## 4. Dimensions

Main device dimensions are listed below; see [outline drawing](#) for full data.



## 5. Schematic Diagram

This section contains only the main-board schematic. For the schematic including the RF module, please refer to the link: [RadioCore Schematic Diagram](#)

## 6. SDK

### 6.1 Arduino Development Framework

Core Libraries & Board Manager:

[HelTecAutomation/Heltec\\_nRF52: Arduino source codes and tool chain for nRF52 series](#)

### 6.2 RadioCore Expansion Library

RadioCore-Series Dedicated Expansion Example Library:

[HelTecAutomation/RadioCore\\_Library: Arduino library for RadioCore series hardware](#)

## 7. Docs and Resource

- [USER Manual \(Wiki\)](#)
- [Resource Download Center](#)
- [Official Product Link](#)

## 8. Heltec Contact Information

Heltec Automation Technology Co., Ltd

Chengdu, Sichuan, China

Email: [support@heltec.cn](mailto:support@heltec.cn)

Phone: +86-028-62374838

<https://heltec.org>