



Wireless Aggregator





Document version

| Version | Time | Description | Remark |
|----------|-----------|---------------------|---------|
| Rev. 1.0 | 2023-4-26 | Preliminary version | Richard |

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1. Description

1.1 Overview

Wireless Aggregator is a LoRaWAN converter belonging to **Wireless Aggregator** series, used to drive various third-party RS-485 sensors. We have equipped it with a junction box so that it can also drive 4 to 20mA sensors. Benefits from the IP66 protection provided by high-strength plastics, it can adapt to a variety of complex outdoor environments.

Wireless Aggregator has the characteristics of low power consumption and long transmission distance. Built-in large capacity rechargeable battery, which can be charged through the DC power and solar interface, ensures that it can work stably for a long time.

1.2 Product features

- IP66 protection grade, Lightning protection design, ESD protection and isolation.
- Ultra-low power consumption design.
- With special junction box, interface compatibility is strong.
- Built-in 2000mAh x4 rechargeable battery, can be charged by DC and solar energy.
- Wireless data transmission communication radius up to 5km.
- Working condition: -40~80°C, Working humidity: ≤90% (non-condensing).
- Power supply mode: built-in battery or external 5~24V DC power supply.
- APP scan QR code for registration, or configure via Wi-Fi, supports OTA update.



| Dev Info | |
|---------------|---|
| CLASS : | <input type="text" value="CLASS A"/> |
| OTAA/ABP : | <input type="text" value="OTAA"/> |
| ADR : | <input type="text" value="ADR OFF"/> |
| DR : | <input type="text" value="DR_1"/> |
| Confirm : | <input type="text" value="Confirmed"/> |
| DEVEUI : | <input type="text" value="2232330000111111"/> |
| APPEUI : | <input type="text" value="0000000000000000"/> |
| APPKEY : | <input type="text" value="88888888888888888888888888888888"/> |
| Channel : | <input type="text" value="80 83"/> |
| Interval : | <input type="text" value="30"/> |
| Retry : | <input type="text" value="0"/> |
| Power : | <input type="text" value="22"/> |
| Product : | <input type="text" value="SENSORHUB_OUTDOOR_SENSORHUB"/> |
| Firmware : | <input type="text" value="V1.01"/> |
| Battery : | <input type="text" value="4105"/> |
| Charge : | <input type="text" value="NOT CHARGING"/> |
| Temperature : | <input type="text" value="28.25"/> |
| Humidity : | <input type="text" value="52.64"/> |



2. Specifications

2.1 General specification

Table 2.1 General specification

| Parameters | Description |
|--|---|
| Temperature | -40 ~ 80 °C ¹ |
| Humidity | 0 ~ 90% RH (non condensing) |
| Microcontroller | Heltec Wireless Shell |
| Interface | Flange seat (see 3.2) |
| LoRa WAN Channel Plan | EU868/US915/AU915/ AS923/KR920/RU864/CN470 |
| External Power Supply and Charging Voltage | 7~24V, 7~48V ² |
| Power Out | 5V/9V/12V, 7~24V, 7~48V ³ |
| Max. Receiving sensitivity | -134dBm@SF12 BW=125KHz |
| Max. TX Power | 21± 1dBm |
| Signal Range | 5km (depending on gateway antenna and environments) |
| IP Rating | IP66 |
| Battery Capacity | 2000mAh x4 |

¹ PCB and battery operating temperature, more than 60 degrees will affect the life of the battery, and please pay attention to the working temperature of the sensor.

² 7~24V and 7~48V are different pin inputs, 7~24V input can charge the built-in battery, 7~48V does not.

³ The built-in battery output is 5/9/12V, set in the device configuration page, and the corresponding dial switch should be selected on the device in advance. When other voltage output modes are selected, the output voltage is equal to the input voltage.

2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

| Parameters | Battery | 7~24V Pin | | 7~48V Pin | |
|------------|----------|-----------|-------|-----------|-------|
| Input | 3.3~4.1V | 7~24V | | 7~48V | |
| Output | 5/9/12V | 5/9/12V | 7~24V | 5/9/12V | 7~48V |

2.2.2 Power consumption

Table 2.2.1: Working current

| Mode | Condition | Typical | Unit |
|------------------|-------------------------|---------|------|
| Active-Mode (TX) | TX power is 22dBm | 220 | mA |
| Active-Mode (RX) | TX disabled; RX enabled | 50 | mA |
| Deepsleep | | 28 | μA |

2.3 RF Characteristics

The following table gives typically sensitivity level of the HRI-363x .

Table 2.4: LoRa RF characteristics

| Signal Bandwidth/[KHz] | Spreading Factor | Sensitivity/[dBm] |
|------------------------|------------------|-------------------|
| 125 | SF12 | -134 |
| 125 | SF11 | -132 |
| 125 | SF10 | -130 |
| 125 | SF9 | -127 |
| 125 | SF8 | -124 |
| 125 | SF7 | -122 |



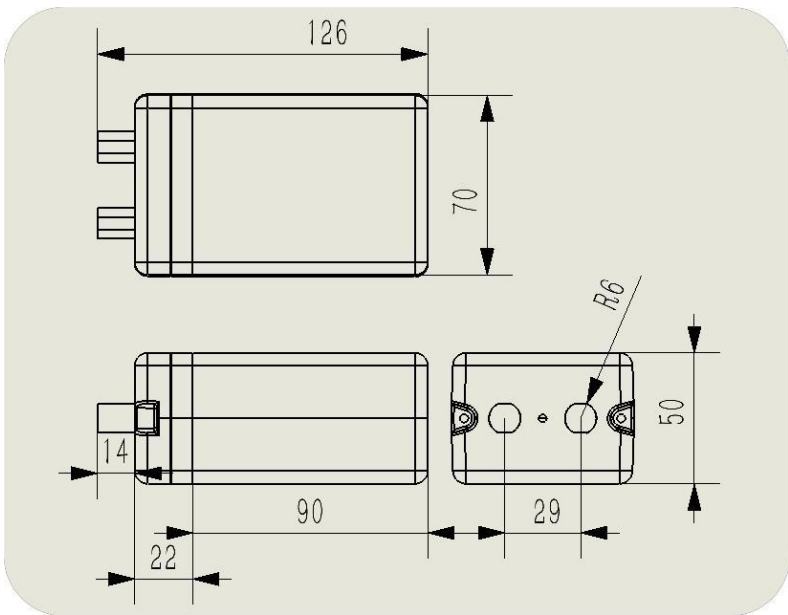
2.4 LoRaWAN Frequency

Note: **No Frequency limitation.** EU868 can be switched to RU864, US915 can be switched to AU915/AS923/KR920.

| NO | Frequency band | Common band |
|----|----------------|-------------|
| 1 | EU863-870 | EU868 |
| 2 | US902-928 | US915 |
| 3 | AU915-928 | AU915 |
| 4 | AS923_1 | As923 |
| 5 | AS923_2 | As923 |
| 6 | KR920-923 | KR920 |
| 7 | RU864-867 | RU864 |
| 8 | CN470-510 | CN470 |

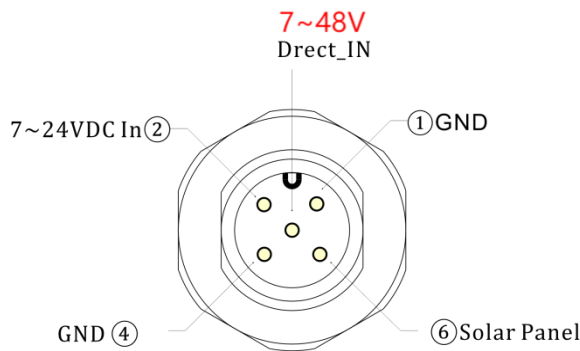
3. Hardware Resources

3.1 Physical dimensions (Unit:mm)

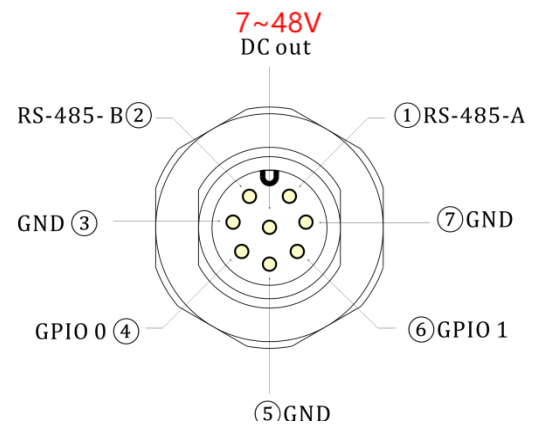


3.2 Interface Definition

Flange seat A-DC



Flange seat B-Sensor



4.Resource

4.1Relevant resource

- [User's manual](#)
- [Related Downloads](#)
- Heltec LoRaWAN test server based on TTS V3: <https://lora.heltec.org/>

4.2Heltec Contact Information

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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 environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.