



HRU-1000

Wireless ThermoProbe





Document version

Version	Time	Description	Remark
Rev. 1.0	2023-11-10	Preliminary version	Richard

Copyright Notice

All contents in the files are protected by copyright law, and all copyrights are reserved by Chengdu Heltec Automation Technology Co., Ltd. (hereinafter referred to as Heltec). Without written permission, all commercial use of the files from Heltec are forbidden, such as copy, distribute, reproduce the files, etc., but non-commercial purpose, downloaded or printed by individual are welcome.

Disclaimer

Chengdu Heltec Automation Technology Co., Ltd. reserves the right to change, modify or improve the document and product described herein. Its contents are subject to change without notice. These instructions are intended for you use.



Content

<i>Document version</i>	2
<i>Copyright Notice</i>	2
<i>Disclaimer</i>	2
<i>1. Description</i>	4
<i>1.1 Overview</i>	4
<i>1.2 Product features</i>	5
<i>2. Specifications</i>	6
<i>2.1 General specification</i>	6
<i>2.2 Operating conditions</i>	7
<i>2.2.1 Power supply range</i>	7
<i>2.2.2 Power consumption</i>	7
<i>2.3 RF characteristics</i>	7
<i>2.4 LoRaWAN Frequency</i>	8
<i>3. Physical dimensions</i>	8
<i>4. Resource</i>	9
<i>4.1 Relevant resource</i>	9
<i>4.2 Heltec Contact Information</i>	9



1. Description

1.1 Overview

HRU-1000 is a wireless temperature probe, which collect the temperature data to display on the built-in screen or upload it to the LoRaWAN network. It has the characteristics of high precision, long transmission distance and low power consumption, and easy configuration via Bluetooth.

HRU-1000 is integrated with 800mAh rechargeable battery. Benefits from the IP65 protection provided by high-strength plastics and stainless steel, it is stable and excellent in various industrial scenarios.

HRU-1000 are available in 2 product variants:

N o.	Model	Description
1	HRI-1000-LF	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band.
2	HRI-1000-HF	For EU868, IN865, US915, AU915, AS923, KR920 and other LPW networks with operating frequencies between 863~928MHz.



1.2 Product features

- Temperature range $-40\sim 200^{\circ}\text{C}$, optimal accuracy $\pm 1^{\circ}\text{C}$ ①.
- Support LoRaWAN, configure via BLE.
- Recommended Working humidity: $\leq 90\%$ (non-condensing).
- Wireless data transmission communication radius up to 1.5~3km (no occlusion).
- Built-in 800mAh rechargeable lithium battery, charging voltage 5V DC, long endurance.
- Pen-shaped structure, easy to carry.
- Stainless steel probe and high strength plastic for a variety of scenarios.

① The best is achieved between -10 and 40°C . For best results, let the probe stay in the test target for at least 30 seconds



2. Specifications

2.1 General specification

Table 2.1 General specification

Parameters	Description
Measuring range	-40 ~ 200 °C
Accuracy	±0.5°C ^②
Display	0.96inch LCD
LoRaWAN channel plan	EU868/US915/AU915/ AS923/KR920/RU864/CN470
Max. Receiving sensitivity	-135dBm@SF12 BW=125KHz
Max. TX Power	20 ± 2 dBm
Signal Range	3km (depending on gateway antenna and environments)
IP Rating	IP65
Dimension	Shell: L95,φ28; Probe: L240, φ4.5
Operating Condition	-40~85°C, 10% ~ 100%RH(no-condensing)
Battery Capacity	800mAh
Charging Voltage	2.5mm-2P Magnetic to USB 5V

^② Depending on the temperature, the error is smaller between -20~40°C



2.2 Operating conditions

2.2.1 Power supply range

Table 2.2: Power supply range

Parameter	Min.	Typical	Max.	Unit
Device operating input voltage	2.7	3.7	5	V

2.2.2 Power consumption @3.7V

Table 2.2.1: Working current

Mode	Condition	Typical	Unit
Active-Mode	Display	80	mA
Active-Mode	NO Display	45	mA
Deepsleep	NO Display	20	μA

2.3 RF characteristics

The following table gives typically sensitivity level of the HRU-1000.

Table 2.4: LoRa RF characteristics

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	-135
125	SF10	-133
125	SF7	-125
125	SF5	-121
250	SF9	-124

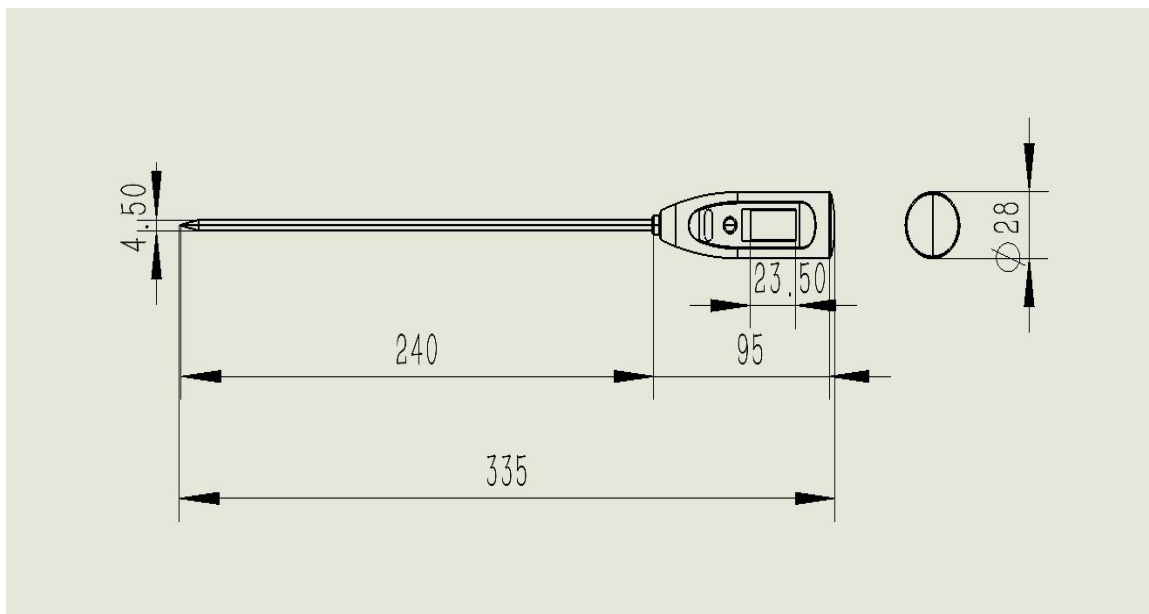


2.4 LoRaWAN Frequency

Note: **No Frequency limitation.** Except CN470, the sensor can be switched to other frequency plans at any time.

Frequency Plan	Common Name	Sub-band
EU863-870	EU868	--
US902-928	US915	Sub-band from 1 to 8
AU915-928	AU915	Sub-band from 1 to 8
AS923	AS923	AS923_1, AS923_2, AS923_3, AS923_4
KR920-923	KR920	--
RU864-867	RU864	--
CN470-510	CN470	--

3. Physical dimensions (mm)





4.Resource

4.1 Relevant resource

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

4.2 Heltec Contact Information

Heltec Automation Technology Co., Ltd Chengdu,

Sichuan, China

Email: support@heltec.cn

Phone: +86-028-62374838

<https://heltec.org>