



[HRU-3601](#)

LoRa Indoor Environment Monitor





Document version

Version	Time	Description	Remark
Rev. 1.0	2023-5-20	Preliminary version	Richard

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Content

HRU-3601	1
Document version	2
Copyright Notice	2
Disclaimer	2
Content	3
1. Description	4
1.1 Overview	4
1.2 Product features	5
2 Specifications	6
2.1 General specification	6
2.2 Power consumption	6
2.3 RGB status Description	7
2.4 Interaction	7
2.5 RF characteristics	7
3 Typical hardware connections (mm)	9
4 Resource	9
4.1 Relevant resource	9
4.2 Heltec Contact Information	9



1. Description

1.1 Overview

HRU-3601 is a low cost indoor environment monitor, the recorded data is uploaded to the cloud server wirelessly, thus realize the remote monitoring of the environment.

HRU-3601 employs LoRaWAN communication, and utilizes Web for easy configuration via WiFi. The parameters that can monitor include: TVOC, eCO₂, temperature and humidity. It has powerful function, light appearance, easy installation, suitable for home life, industrial production and other indoor occasions.

HRU-3601 are available in two product variants:

Table 1.1 Product model list

No.	Model	Description
1	HRU-3601-LF	470~510MHz working LoRa frequency, used for China mainland (CN470) LPW band
2	HRU-3601-HF	For EU868, IN865, US915, AU915, AS923, KR920 and other LPW networks with operating frequencies between 863~928MHz



1.2 Product features

- ESP32-C3FN4 + SX1262.
- Support Wi-Fi, LoRa/LoRaWAN.
- The power supply voltage: USB Type-C 5V.
- Small size, exquisite appearance.
- High sensitivity, High precision, Low power consumption.
- -40°C to 60°C maximum operating temperature range.
- Remote monitoring can be realized, available on the server.
- Monitorable data TVOC, eCO₂, temperature and humidity.
- Support OTA upgrade.
- Easy configuration via Web.

Table2.1: HRU-3601 configuration page

HELTEC LoRaWAN Config

wifissid
Heltec-RD

network access mode
OTAA

devEui
2232330000888801

appEui
0000000000000000

appKey
8888888888888888888888888888886601

appTxDutyCycle unit:S
30

appPort
2

channel_start
0

channel_end
7

loraWanClass
CLASS_A

isTxConfirmed
true

adr
true



2 Specifications

2.1 General specification

Table 2.1 General specification

Parameters	Description
MCU	ESP32-C3FN4
LoRa Chipset	SX1262
Sensor module	SHT3x + SGP30
Wi-Fi	802.11 b/g/n, up to 150Mbps
Frequency	470~510MHz, 863~928MHz
Storage Temperature	-40~85°C
Operating Temperature	-20~50°C
Push interval	2 Minutes(min)
Supply voltage	USB-TypeC 5V
Operating humidity	90%RH(Non Condensing)
Signal output	Wi-Fi, LoRa
Shell material	Aluminum housing

2.2 Power consumption

Table 2.2: Working current

Mode	Consumption	Unit
LoRa TX	36	mA
LoRa RX	21	mA
WiFi AP	86	mA



2.3 RGB status Description

Table 3.3: RGB Status Description

RGB	Status	Description
Green	Blink	TX
Blue	On	Configuration Page

2.4 Interaction

Table 2.5.1: Transmit power

Status	Sign	Description
Power	Null	USB Type-C 5V
RST	RST	Starting up
USER	USER	Long press to enter debugging

2.5 RF characteristics

2.5.1 Transmit power

Table 2.5.1: Transmit power

Operating frequency band (MHz)	Maximum power value/[dBm]g
470~510	21 ± 1
863~870	21 ± 1
902~928	21 ± 1



2.5.2 Receiving sensitivity

Table 2.5.2: Receiving sensitivity

Signal Bandwidth/[KHz]	Spreading Factor	Sensitivity/[dBm]
125	SF12	- 134
125	SF10	- 130
125	SF7	- 122

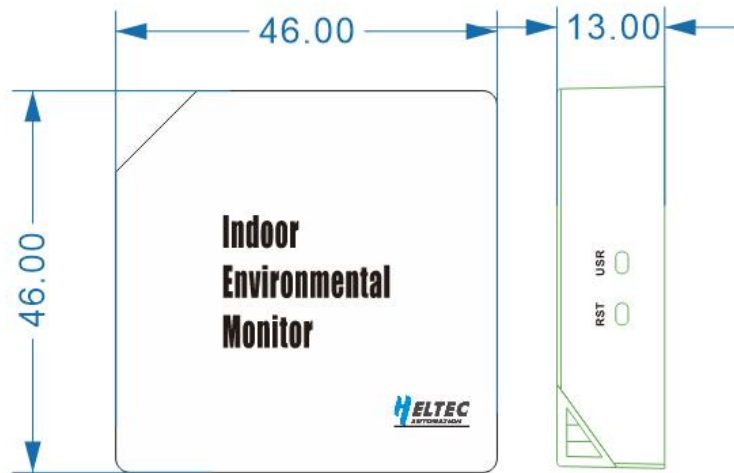
2.5.3 Operation frequencies

Table 2.5.3: Operation frequencies

Region	Frequency (MHz)	Model
EU433	433.175~434.665	
CN470	470~510	
IN868	865~867	
EU868	863~870	
US915	902~928	
AU915	915~928	
KR920	920~923	
AS923	920~925	



3 Typical hardware connections (mm)



4 Resource

4.1 Relevant resource

- Operation user manual:
<https://docs.heltec.org/en/ready2use/hru-3601/index.html>
- Heltec LoRaWAN test server based on TTS V3: <https://lora.heltec.org/>
- Downloadable Resources: <https://resource.heltec.cn/download/HRU-3601>

4.2 Heltec Contact Information

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