



## [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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# 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, eCO<sub>2</sub>, 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, eCO<sub>2</sub>, temperature and humidity.
- Support OTA upgrade.
- Easy configuration via Web.

Table2.1: HRU-3601 configuration page

### HELTEC LoRaWAN Config

wifissid  
Heltec-RD

Submit

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

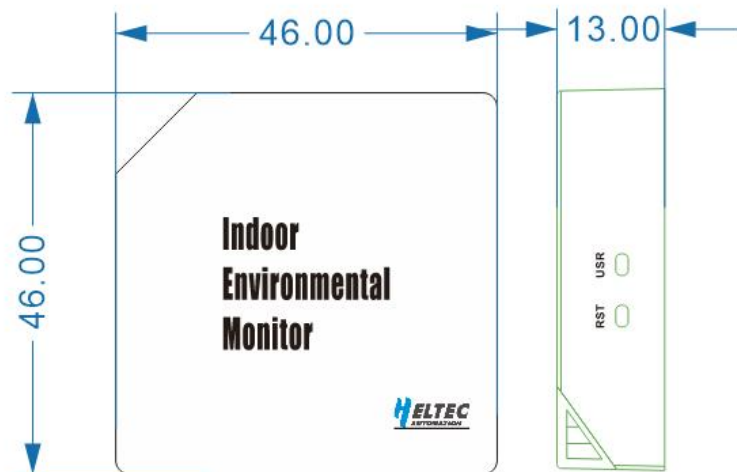
Table 2.5.3: Operation frequencies

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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