
Wireless Outdoor CO2/Temperature/Humidity Sensor with Solar Panel

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Wireless Sensor Network Based on LoRa Technology



R72615

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General Description

The R72615 is equipped with a temperature and humidity sensor that detects and transmits ambient temperature and humidity data. It is a wireless communication method that uses the SX1276 wireless communication module. The R72615 has a CO2 sensor that detects the concentration of CO2 in the air.

Working Principle

The R72615 has a built-in SHT30 temperature and humidity sensor. The air temperature and humidity sensor SHT-30 communicates with the module through I2C communication and has a built-in CO2 sensor. The CO2 sensor communicates with the module through the UART serial port.

Example Applications

- Smart Home
- Outdoor Air Detection
- Smart Farm and Others

Features of NETVOX Sensors

- LoRaWAN™ compatible
- Frequency Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Please refer to web: http://www.netvox.com.tw/electric/electric_calc.html
- At this website, users can find battery life time for varier models at different configurations.
- Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Over-the-air updates (future)
- Third-party online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email (optional)
- Available third-party platform: Actility/ThingPark, TTN, MyDevices/Cayenne
- Uses SX1276 wireless communication module

*1. Actual range may vary depending on environment.

*2. Battery life is determined by sensor reporting frequency and other variables

Rechargeable Lithium Battery Installation Instructions

R726X has a battery compartment inside, users can buy and install rechargeable 18650 lithium battery, a total of 3 sections, a single rechargeable lithium battery voltage 3.7V, capacity recommended 5000mah, the installation of rechargeable lithium battery steps are as follows:

- 1: Remove the four battery box screws and install three rechargeable lithium batteries.
- 2: Press the activation button on the battery box for the first time.
- 3: After activation, close the cover and lock the 4 box screws.



Fig. 1



Fig. 2



Fig. 3



Fig. 4

1. User removes the four screws of the battery holder. (Fig.1)
2. Insert the battery according to positive and negative poles. (Fig.2)

3. Press activation button after loading batteries. (Fig. 3)
4. After activation, close the holder with 4 screws. (Fig. 4)

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Electric

| | |
|-------------------------|--|
| Power Supply | 3 rechargeable lithium batteries in series (single-cell rechargeable lithium battery 3.7V, capacity recommended 5000mah) |
| Operating Voltage Range | 9VDC ~ 12.6VDC |
| Operating Current 1 | 15mA (Standby mode) |
| Operating Current 2 | 30mA (When the sensor is working.) |

Battery Electrical Characteristic

| | |
|---|---|
| Solar panel Specifications | 5W / 18VDC |
| Lithium battery specifications | 3 rechargeable lithium batteries in series (single-cell rechargeable lithium battery 3.7V, capacity recommended 5000mah) |
| Lithium battery charging current | About 250mA (guaranteed enough sunshine intensity) |
| Lithium battery charging time | Filled with about 6 days (guaranteed enough sunshine intensity, calculated with a rechargeable battery capacity of 5000mah) |
| How long does the device work when lithium batteries are fully charged once ? | About 360 hours (report data once every 15 minutes, with a rechargeable battery capacity of 5000mah) |

CO2 Sensor Characteristic

| | |
|-------------------|----------------------------|
| Operating Voltage | 4.5VDC-5.5VDC |
| Working Current | <85mA |
| CO2 Accuracy | +/- (100ppm+6% read value) |
| CO2 Range | 0-5000ppm |
| Preheat Time | 3min |
| Response Time | T<90s |
| Output Signal | UART |

SHT-30 Temperature and Humidity Sensor

| | |
|----------------------------------|--|
| Operating Voltage | +3.3VDC |
| Temperature Measurement Range | -20°C – 55°C |
| Temperature Measurement Accuracy | +/-0.5°C@25°C Max.+/-0.8°C@ -20°C – 55°C |
| Humidity Measurement Range | 0%RH-100%RH |
| Humidity Measurement Accuracy | +/-4%RH @25°C |

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Frequency

| | |
|---------------------|--|
| TX Power | 19dBm±1dBm |
| Rx Sensitivity | -136dBm (LoRa, Spreading Factor=12, Bit Rate=293bps) -121dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps) |
| Antenna Type | Build-in antenna |
| Communication Range | Up to 10 km, the actual transmission distance depends on the environment. |
| Data Transfer Rate | 0.3kbps ~ 50kbps |
| Spread Technique | LoRa/FSK |
| Available Frequency | EU863-870 , US902-928 , AU915-928 , KR920-923 , AS923 , CN470-510 Configured before shipment |

Physical

| | |
|-----------------------------|---|
| Dimension | Mask body: D220mm*H340mm, Solar panel size: 290mm*150mm*25mm |
| Operating Temperature Range | -20°C ~ 55°C |
| Operating Humidity Range | < 90%RH (no condensation) |
| Storage Temperature range | -40°C ~ 85°C |

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