



### LoRaWAN CO2 Sensor



#### Features

- Support LoRaWAN™(\*) protocol Class A
- NDIR CO2 sensor technology
- Dual-channel detection for superior stability
- Ultra-wide-distance transmission: 10km in line of sight scene, 2 km in urban scene
- Battery life  $\geq 3$  years
- Rapid installation and deployment
- IP66 enclosure, suitable for outdoor applications

#### Applications

- Smart Agriculture
- Smart Building and Industrial Control
- Environmental Monitoring
- Other Wireless Sensing Applications

#### Introduction

With a built-in wireless LoRa module, this CO2 Sensor transmits the collected CO2 concentration data to the base station and then to the server. Based on NDIR technology, it can acquire high-precision measurement, applicable for industrial environmental sensing. The built-in independent battery can last for 3 years in ultra-low-power-consumption working mode. The enclosure is made from PC + PBT materials, protecting the device from UV radiation, rain and sunlight exposure, etc.

#### Specifications

| CO2                   |                                    |   |
|-----------------------|------------------------------------|---|
| Parameters            | Condition                          | Value                                   |
| Range                 | -                                  | 0 to 40000 ppm                          |
| Accuracy              | 400 to 10000ppm                    | $\pm(30 \text{ ppm} + 3 \% \text{MV})$  |
| Resolution            | -                                  | 1 ppm                                   |
| Temperature Stability | T = 0 to 50 °C<br>400 to 10000 ppm | $\pm 2.5 \text{ ppm} / ^\circ \text{C}$ |

| Parameters             |   |
|------------------------|---|
| Product Model          | LoRa-S-470/868/915-CO2-01   |
| Microcontroller        | Ultra-low-power MCU   |
| Support Protocol       | Based on LoRaWAN™ v1.0.2 protocol   |
| LoRa Channel Plan      | CN470 / EU868 / US915   |
| LoRa Power Output      | 16 dBm (EIRP)   |
| Sensitivity            | 470MHz: -140dBm(SF12, BW125KHz)<br>868MHz: -137.5dBm(SF12, BW125KHz)<br>915MHz: -136.5dBm(SF12, BW125KHz) |
| Current Consumption    | 5 $\mu$ A (sleep mode)<br>120 mA (active mode)  |
| Communication Distance | 2 to 10 km (depending on different antennas and environments)   |
| Battery Life           | $\geq 3$ year (upload data once per hour)   |
| Battery Voltage        | 3.6V  |
| Battery Capacity       | 19Ah (Non-rechargeable)   |
| IP Rating              | IP66  |

|                       |   |
|-----------------------|---|
| UV Resistance         | anti-aging (from rain/sun exposure):<br>UL746C F1 |
| Enclosure Material    | PC+PBT  |
| Operating Temperature | 0 °C to +50 °C                                    |
| Operating Humidity    | 0 to 95 %RH                                       |
| Device Weight         | 322g  |



The device is designed with a fixed LoRa channel, which can not be modified by users. The supported channels are as the follows. Please refer to the user manual for how to connect this device with a LoRaWAN™ gateway.

| CN470    |  |
|----------|--|
| Uplink   | Channels:[80,81,82,83,84,85,86,87]<br>Frequency(MHz): 486.3, 486.5, 486.7, 486.9, 487.1, 487.3, 487.5, 487.7 (SF7BW125 to SF12BW125)   |
| Downlink | Frequency(MHz): 506.7, 506.9, 507.1, 507.3, 507.5, 507.7, 507.9, 508.1 (SF7BW125 to SF12BW125)<br>505.3 -SF12BW125 (RX2 downlink only) |
| EU868    |  |
| Uplink   | Channels: [0,1,2,3,4,5,6,7]<br>Frequency(MHz): 868.1, 868.3, 868.5, 867.1, 867.3, 867.5, 867.7, 867.9 (SF7BW125 to SF12BW125)          |
| Downlink | Multiplexing the frequency points of the 8 uplink channels.<br>869.525MHz -SF9BW125 (RX2 downlink only)                                |

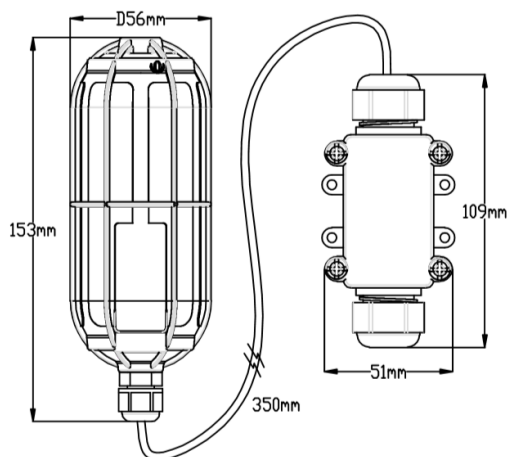
# LoRaWAN CO2 Sensor

US915

Uplink Channels:[8,9,10,11,12,13,14,15]  
Frequency(MHz): 903.9, 904.1, 904.3, 904.5, 904.7, 904.9, 905.1, 905.3 (SF7BW125 to SF10BW125)

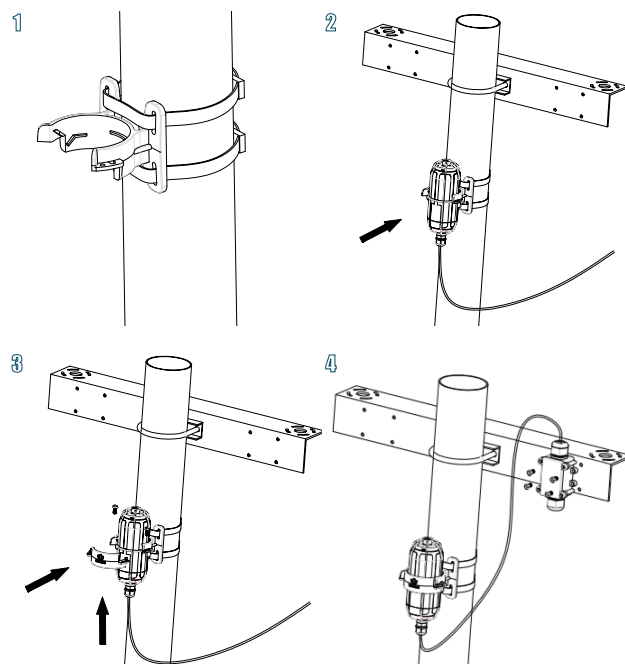
Downlink Frequency(MHz): 923.3, 923.9, 924.5, 925.1, 925.7, 926.3, 926.9, 927.5 (SF7BW500 to SF12BW500)

## Device Dimensions



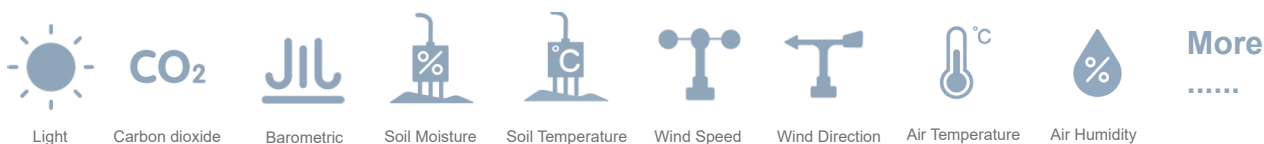
## Installation

Please refer to the user manual for more details.



## SenseCAP Series

SenseCAP is an industrial wireless sensor network that integrates easy-to-deploy hardware and data API services, enabling low-power, long-distance environmental data collection. Currently SenseCAP consists of two versions: LoRaWAN™ and NB-IoT. SenseCAP LoRaWAN™ version products include LoRaWAN™ Gateways and Sensor Nodes. NB-IoT version products include Sensor Nodes. They can collect various physical data:



If you'd like to purchase or get more info about SenseCAP, please visit website:

- Website: [solution.seeed.cc](http://solution.seeed.cc)
- Purchase: <https://solution.seeed.cc/product/sensecap>

You can also contact Seeed sales representatives in your local district. The following is the contact information:

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