



CO2 Sensor



Features

- Support LoRaWANTM(*) 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 ≥ 3 years
- Rapid installation and deployment
- IP66 enclosure, suitable for outdoor applications

Applications

- Smart Agricultural
- 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 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 TM v1.0.2 protocol
LoRa Channel Plan	CN470 / EU868 / US915
LoRa Power Output	16 dBm (EIRP)
Sensitivity	470MHz: -140dBm(SF12, BW125KHz) 868MHz: -137.5dBm(SF12, BW125KHz) 915MHz: -136.5dBm(SF12, BW125KHz)
Current Consumption	5 μ A (sleep mode) 120 mA (active mode)
Communication Distance	2 to 10 km (depending on different antenna and environment)
Battery Life	≥ 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): 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 LoRaWANTM gateway.

CN470	
Uplink	Channels:[80,81,82,83,84,85,86,87] 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) 505.3 -SF12BW125 (RX2 downlink only)
EU868	
Uplink	Channels: [0,1,2,3,4,5,6,7] 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. 869.525MHz -SF9BW125 (RX2 downlink only)

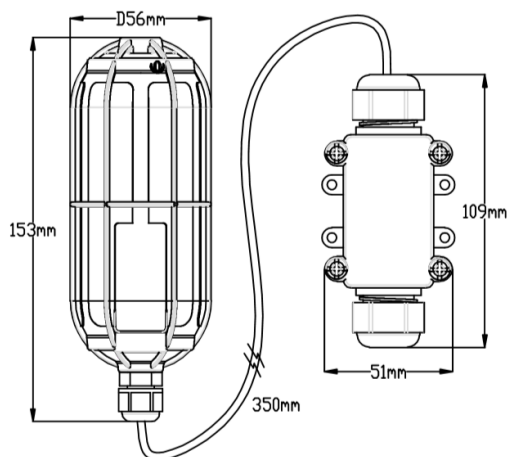
CO2 Sensor

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)

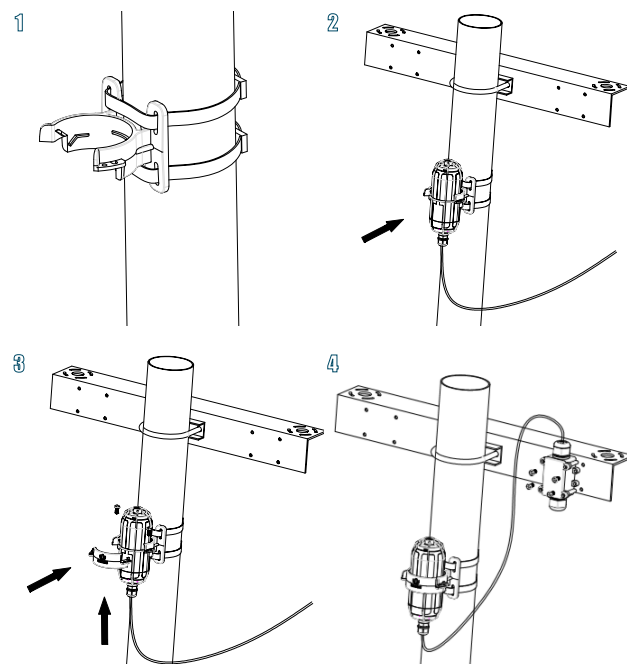
Downlink Frequency(MHz): 923.3, 923.9, 924.5, 925.1, 925.7,
926.3, 926.9, 927.5 (SF7BW500 to SF12BW500)

Device Dimensions



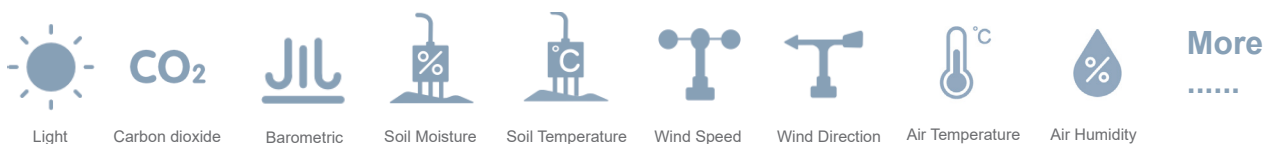
Installation

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
- 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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