SENSECAP

An Industrial Wireless Sensor Network Solution

LoRaWAN PAR Sensor

Features

- Support LoRaWAN™(*) protocol Class A
- High reliability and 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
- Next generation sensor head design, self-powered and amplified models

Applications

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

Introduction

With a built-in wireless LoRa module, this PAR (Photosynthetically Active Radiation) collects and transmits PAR data to the base station and then to the server. This sensor features high sensitivity and high accuracy, making it suitable for industrial environmental application scenarios such as greenhouse. The built-in independent battery can last for 3 years in ultra-low-power-consumption working mode. The sensor probe head adopts a dome-shape design, which helps reduce error in reading and enables it to work in all-weather environments.

Specifications

Photosynthetically Active Radiation	
Range	0 to 2000 μmol m^{-2} s^{-1} (410 to 655 nm)
Sensitivity	0.2 mV/μmol m^{-2} s^{-1}
Resolution	1 μmol m^{-2} s^{-1}
Non-stability (Long-term Drift)	< 2% / year
Measurement Repeatability	< 1 %
Field of View	180°

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	-40 ℃ to +70 ℃
Operating Humidity	0 to 100 %RH
Device Weight	326g

Parameters	
Product Model	LoRa-S-470/868/915-PAR-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) 868MHz: -137.5dBm(SF12, BW125KHz) 915MHz: -136.5dBm(SF12, BW125KHz)
Current Consumption	5 μA (sleep mode) 120 mA (active mode)
Communication Distance	2 to 10 km (depending on different antennas and environments)

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] 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)

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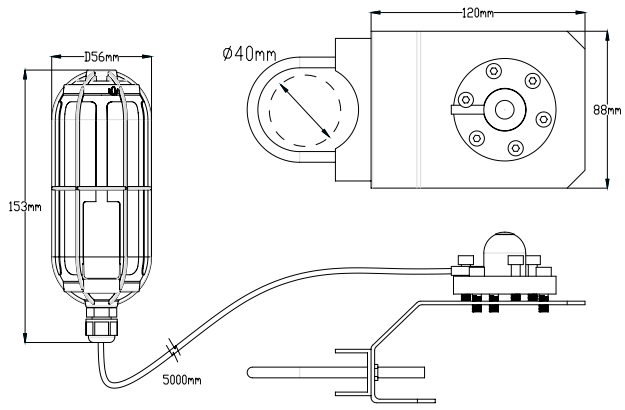
EU868	
Uplink	Channels: [0,1,2,3,4,5,6,7] Frequency(MHz): 868.1, 868.3, 868.5, 867.1, 867.3, 867.5, 867.7, 867.9 (SF7BW125 to SF12BW125)
Downlink	Multiplexing the frequency points of the 8 uplink channels. 869.525MHz -SF9BW125 (RX2 downlink only)

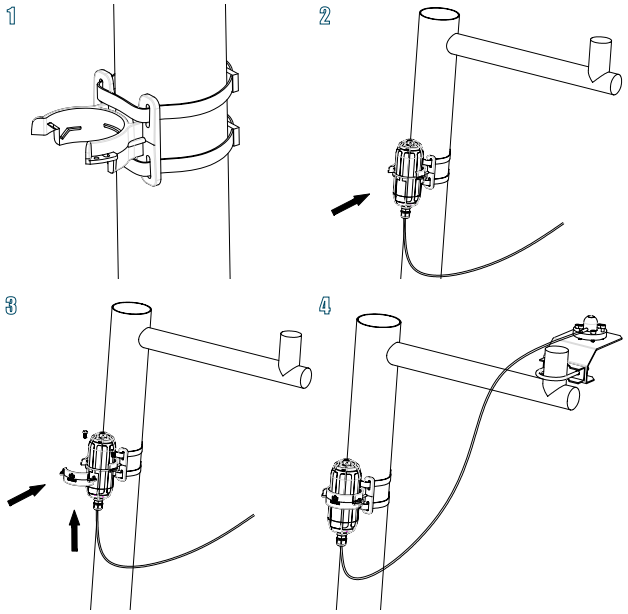
US915	
Uplink	Channels:[8,9,10,11,12,13,14,15] Frequency(MHz): 903.9, 904.1, 904.3, 904.5, 904.7, 904.9, 905.1, 905.3 (SF7BW125 to SF10BW125)
Downlink	Frequency(MHz): 923.3, 923.9, 924.5, 925.1, 925.7, 926.3, 926.9, 927.5 (SF7BW500 to SF12BW500)

Device Dimensions



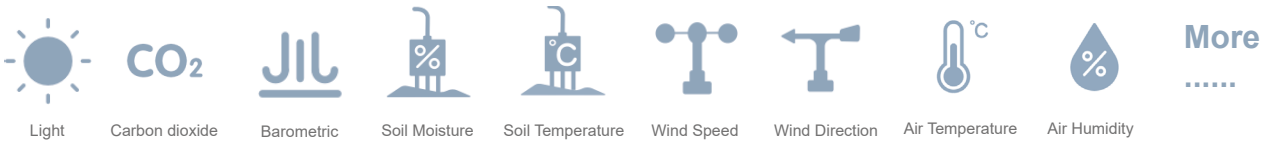
Installation

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:



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- 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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