SenseCAP Wireless Light Intensity Sensor - LoRaWAN US915

About SenseCAP

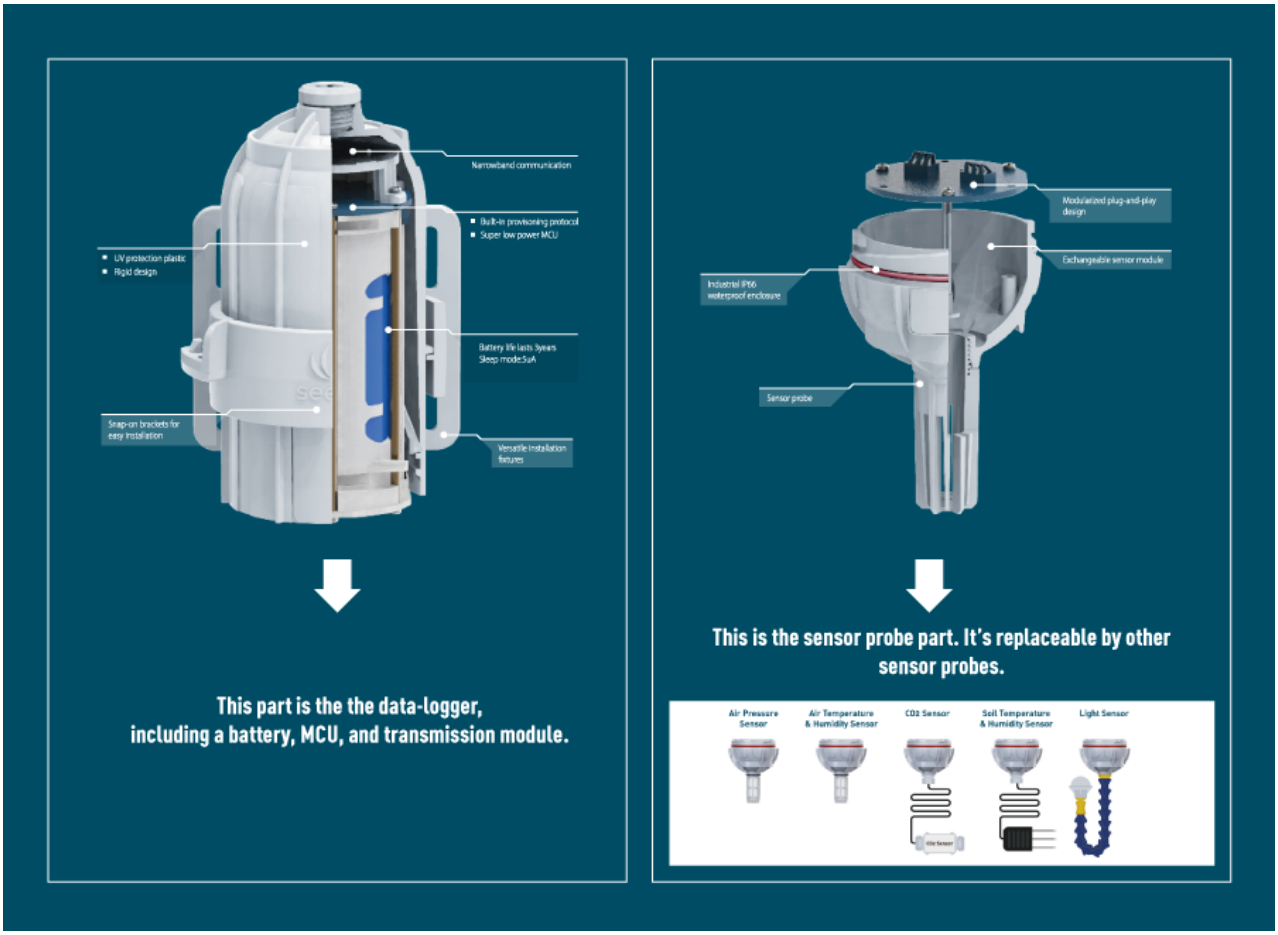
Among the first launch of Seeed industrial IoT (IIoT) product series, **SenseCAP** is focusing on wireless environmental sensing applications: smart agriculture, precision farming, and smart city, to name a few. It consists of hardware products (sensors, data-loggers & gateways, etc.), software services (SenseCAP portal, mobile App, open dashboard), and API for device & data management.

SenseCAP Wireless Light Intensity Sensor measures the intensity of light in lux from 0 - 188000 lux, which is designed for outdoor use.

This battery-powered device incorporates a built-in LoRa transmitter based on SX1276 for long-range transmission, a digital light sensor, and a custom battery. It is specifically designed and optimized for use cases powering end devices by batteries for years. To minimize the power consumption, the device wakes up, transmits the collected light data to the gateway, and then goes back to sleep.

Under the best of circumstances, the battery is expected to last for 8 years, depending on the data transmission intervals. Please kindly note that the default interval is once per hour. If you'd like to change the data upload interval, please refer to this document.
To fit in adverse conditions, it is designed with industrial standards and equipped with an IP66 waterproof enclosure, supporting an extended operating temperature range, making it suitable for industrial applications in both indoor and outdoor severe environments.

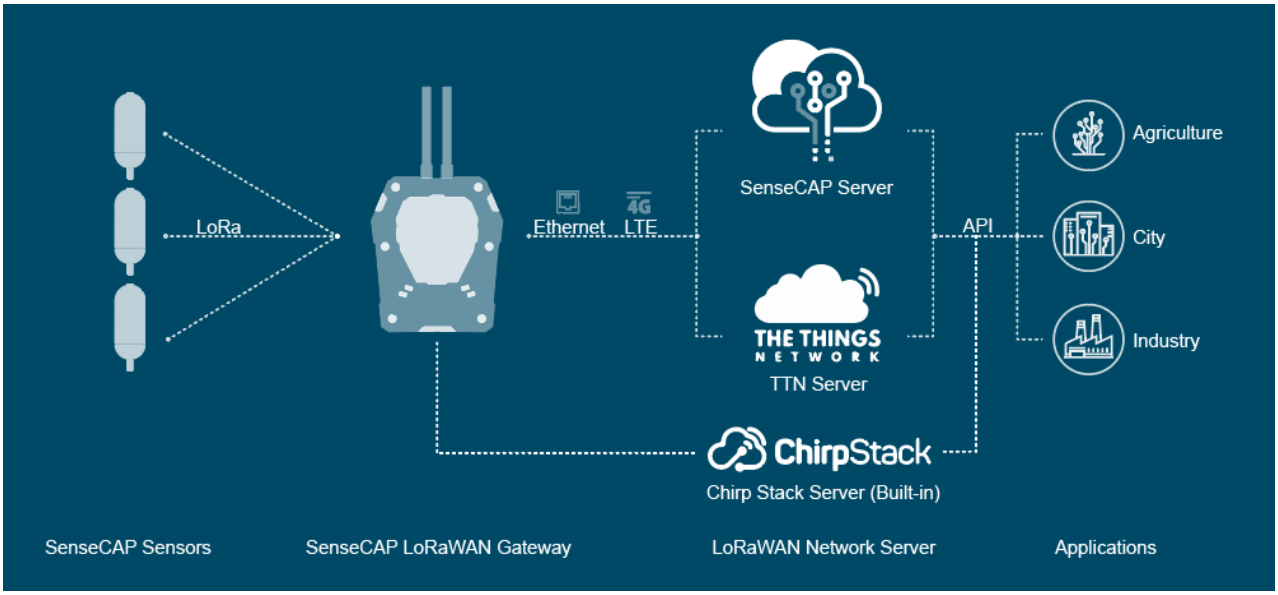
SenseCAP Sensor Node adopts a modular design, integrating the data logger with the sensor probe, which is replaceable by other SenseCAP sensor probes.



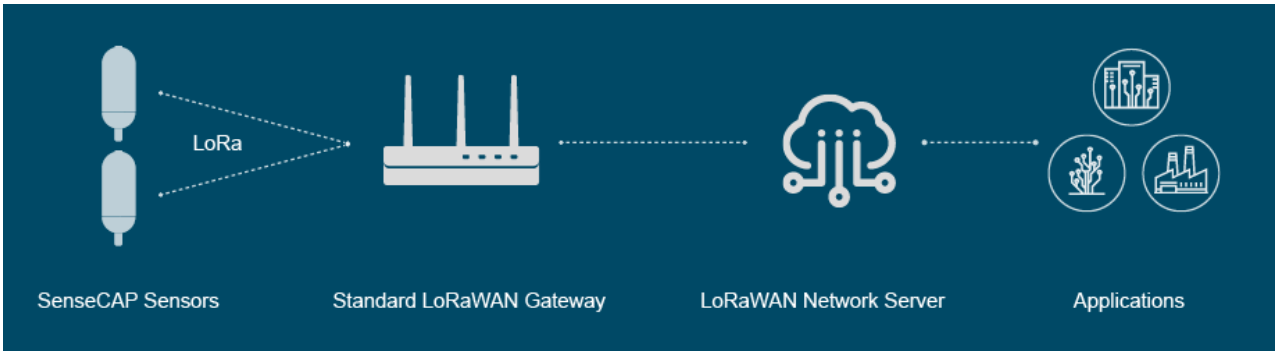
SenseCAP Sensor is fully compliant with LoRaWAN specifications and can be used with standard LoRaWAN gateways. Please choose the corresponding gateway according to the sensor frequency. Seeed also provides SenseCAP LoRaWAN Gateway for you to use with SenseCAP Sensors seamlessly without extra huge workload for provisioning.

System Architecture

SenseCAP Architecture



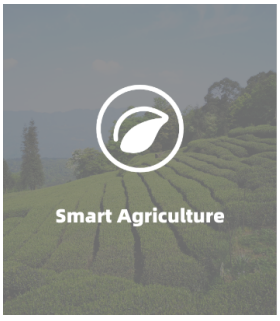
SenseCAP Sensor + Other LoRaWAN Gateway Architecture

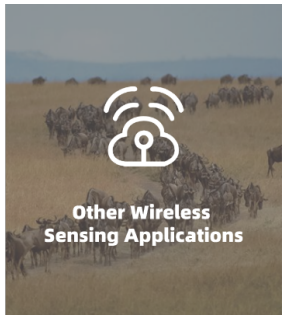


Features

- Support LoRaWAN protocol Class A
- High reliability and stability
- An ultra-wide 22-bit dynamic range
- Ultra-wide-distance transmission: 10km in line of sight scene, 2 km in urban scenes
- Transmission Interval: every 1 hour
- Battery life ≥ 8 years
- Rapid installation and deployment (see the video below)

Applications





- Smart Agriculture
- Smart Building
- Environmental Monitoring
- Other Wireless Sensing Applications

Specifications

Light Intensity	
Range	0 to 188000 Lux
Sensitivity	0.045 Lux/LSB
Resolution	0.045 Lux
General Parameters	
Product Model	LoRa-S-915-Light Intensity-01
Microcontroller	Ultra-low-power MCU
Support Protocol	Based on LoRaWAN v1.0.2 protocol
LoRa Channel Plan	US915
LoRa Power Output	16 dBm (EIRP)
Sensitivity	-136.5dBm(SF12, BW125KHz)
Current Consumption	5 μA (sleep mode) 120 mA max(active mode)
Communication Distance	2 to 10 km (depending on different antennas and environments)
IP Rating	IP66
UV Resistance	anti-aging (from rain/sun exposure): UL746C F1
Enclosure Material	PC
Operating Temperature	-40 ℃ to +85 ℃
Operating Humidity	0 to 100 %RH (non-condensing)
Device Weight	288g
Certification	CE, FCC, RoHS
Battery (Contained in equipment)	
Battery Life	≥ 3 year (upload data once per hour)
Battery Voltage	3.6V
Battery Capacity	19Ah (non-rechargeable)

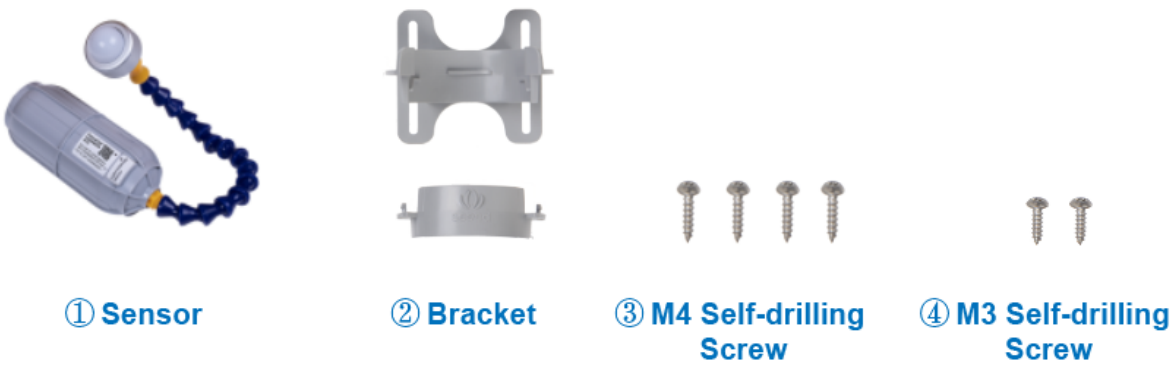
LoRa Frequency

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

LoRa Channel Plan

Uplink (MHz)	903.9 - SF7BW125 to SF10BW125 904.1 - SF7BW125 to SF10BW125 904.3 - SF7BW125 to SF10BW125 904.5 - SF7BW125 to SF10BW125 904.7 - SF7BW125 to SF10BW125 904.9 - SF7BW125 to SF10BW125 905.1 - SF7BW125 to SF10BW125 905.3 - SF7BW125 to SF10BW125
Downlink (MHz)	923.3 - SF7BW500 to SF12BW500 923.9 - SF7BW500 to SF12BW500 924.5 - SF7BW500 to SF12BW500 925.1 - SF7BW500 to SF12BW500 925.7 - SF7BW500 to SF12BW500 926.3 - SF7BW500 to SF12BW500 926.9 - SF7BW500 to SF12BW500 927.5 - SF7BW500 to SF12BW500

Part List



① Sensor ② Bracket ③ M4 Self-drilling Screw ④ M3 Self-drilling Screw

Part List

1	Sensor	x1
2	Bracket	x1
3	M4 Self-drilling Screw	x4
4	M3 Self-drilling Screw	x2