

Wireless PM2.5 / Temperature / Humidity Sensor

Wireless Sensor Network Based on LoRa Technology



RA0716 Data Sheet

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Wireless PM2.5/ Temperature/ Humidity Sensor

Introduction

RA0716 is equipped with the external temperature and humidity sensor which can detect and send the data of the ambient temperature and humidity. It adopts the wireless communication method and conforms to the LoRa protocol standard. RA0716 is equipped with the PM2.5 dust sensor which can be used to detect the concentration of suspended particles in the air per unit volume.

The device has passed the LoRa Alliance certification and is allowed to use the following logo on the product:



Main Feature

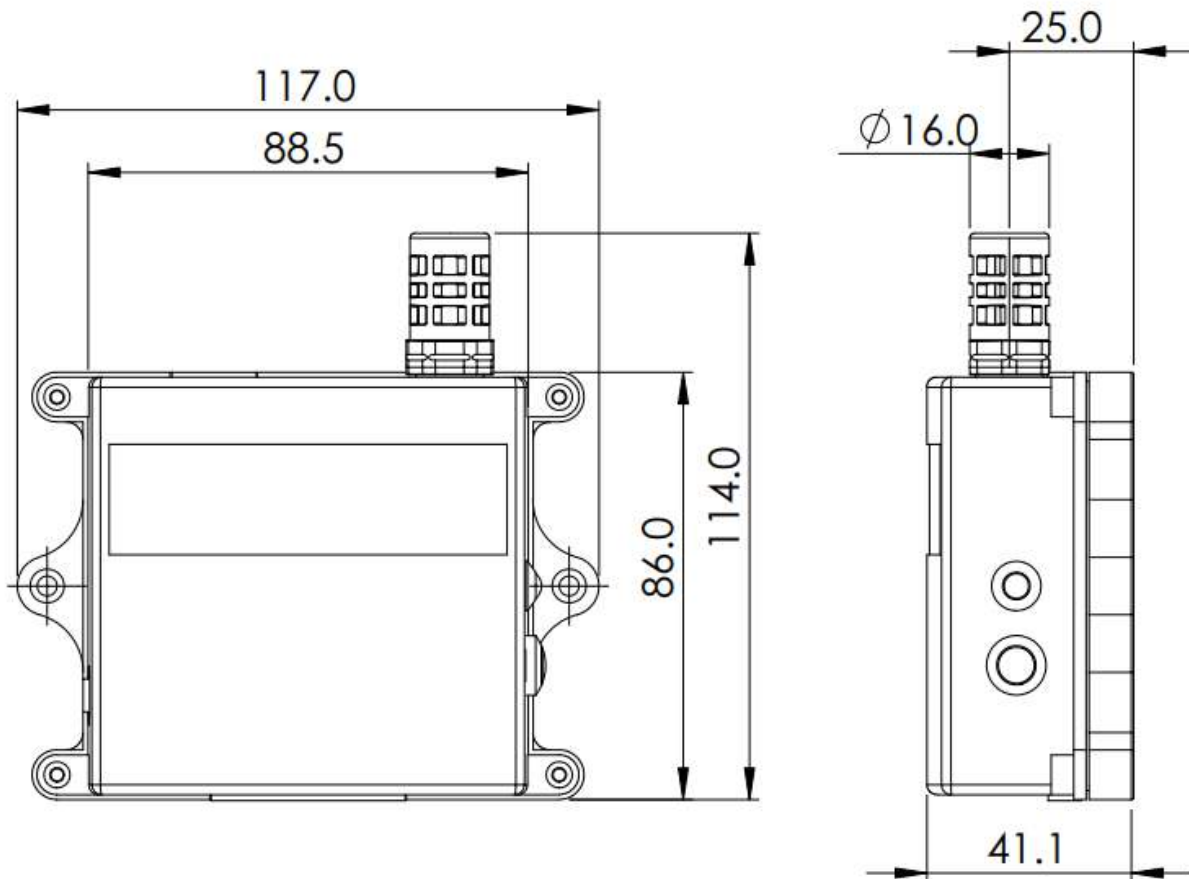
- Temperature and humidity detection
(The accuracy of the temperature and humidity takes 30 minutes to stabilize)
- Air particulate matter concentration detection (PM2.5)
- LoRa Alliance Certification
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum
- Configuration parameters can be configured via a third-party software platform, data can be read and alerts can be set via SMS text and email (optional)
- Applicable to the third-party platforms: Actility/ThingPark, TTN, MyDevices/Cayenne

Application

- Smart home
- PM 2.5 detection
- Temperature and humidity detection

Wireless PM2.5/ Temperature/ Humidity Sensor

Dimension



Electric

Input power	DC 12V /1A
Operating Current 1	40mA (No RF signal emission)
Operating Current 2	80mA (RF signal emission)

Temperature and Humidity Sensor

Temperature Range	-20°C ~ 55°C
Temperature Accuracy	±0.8°C
Humidity Range	0%RH-100%RH
Humidity Accuracy	±4%RH @ 25°C

Wireless PM2.5/ Temperature/ Humidity Sensor**PM2.5 Particle Concentration Sensor**

Operating Current	100mA (typical value)
Particle Measurement Range	0.3 ~ 1.0 ; 1.0 ~ 2.5um
Particle Counting Efficiency	50% @ 0.3um, 98% @ ≥ 0.5um
Particle Mass Concentration Effective Range (PM2.5 standard value)	0~500µg/m ³
Particle Mass Concentration Resolution	1µg/m ³
Particle Mass Concentration Consistency (PM2.5 standard value)	±10% @ 100-500ug/m ³ ±10ug/m ³ @ 0-100ug/m ³
Comprehensive Response Time	≤10 seconds
Lifetime and Product Consistency	The average time that PM2.5 particle concentration sensor has no faults is 3 years. If the concentration is greater than 300 ug/m ³ for more than 50% of the year, or the concentration exceeds 500ug/m ³ for more than 20% of the year, the consistency of the sensor will decrease. The data may be high because of internal dust accumulation.

Frequency

Frequency Range	863MHz-928MHz 470MHz-510MHz
TX Power	US915 20dbm AS923 16dbm AU915 20dbm CN470 19.15dbm EU868 16dbm KR920 14dbm IN865 20dbm
Receive Sensitivity	-136dBm (LoRa, Spreading Factor=12, Bit Rate=293bps) -121dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps)
Antenna Type	Built-in antenna
Communication Distance	10km(visible linear obstacle-free transmission distance, actual transmission distance depending on the environment)
Data Transfer Rate	LoRa: 0.3kbps~50kbps FSK: 1.2kbps~300kbps
Modulation	LoRa/FSK (Note: choose one of them)
Supportable LoRaWAN Band	EU863-870, US902-928, AU915-928, KR920-923, AS923-1, AS923-2, AS923-3, IN865, CN470-510 (Note: The frequency band is optional and needs to be configured before shipment)

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Physical

Dimension	L 117mm* W 114mm* H 41mm
Ambient Temperature Range	-20°C ~ 55°C
Ambient Humidity Range	<90%RH (No condensation)
Storage Temperature Range	-40°C ~ 85°C