Wireless
PM2.5/Temperature/Humidity Sensor

Wireless Sensor Network Based on LoRa Technology

R72616A
Data Sheet

Introduction

R72616A has a temperature and humidity sensor which can detect and send the data of environmental temperature and humidity. It is a wireless communication method and conforms to the LoRa protocol standard. R72616A with PM2.5 dust sensor can be used to measure the concentration of suspended particles in the air per unit volume.

Operating Principle

R72616A has built-in air temperature and humidity sensor and dust sensor. The air temperature and humidity sensor, SHT-30, communicates with the module through I2C. The dust sensor communicates with the LoRa module through the UART serial port.

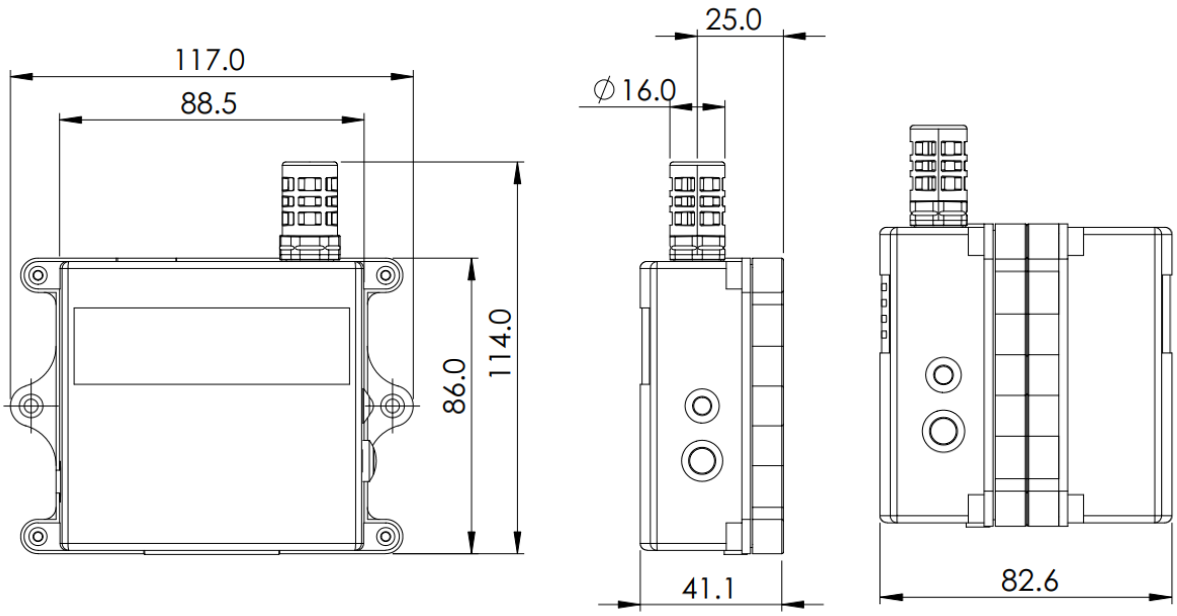
Main Characteristic

- Temperature and humidity detection
- Detecting particle concentration of the air (PM2.5)
- Adopt SX1276 wireless communication module
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through third-party software platforms, data can be read and alarms can be set via SMS text and email (optional)
- Applicable to the third-party platforms: Actility/ ThingPark, TTN, MyDevices/Cayenne

Application

- Smart home
- Atmosphere detection
- Temperature and humidity detection
- Other

Dimension



Electric

Power supply	8 sections of ER14505 lithium batteries (7.2V) * 4 sections of 3.6V ER14505 are connected in parallel to form a group, and the other 4 sections are connected in parallel to form another group. Then, the two groups of lithium batteries are connected in series).
Operating Voltage Range	6.8V to 7.3V
Low Battery Voltage Threshold	6.8V
Standby Current	250uA
Operating Current	60mA (When the sensor is operating.)
Module Wakeup Current	6.3mA @ 3.3V
RF Receiving Current	11mA @ 3.3V
RF Emission Current	120mA @ 3 .3 V
Battery Measurement Accuracy	± 0.1V

Temperature and Humidity Sensor

Temperature Measurement Range	-20℃ to 55℃
Temperature Measurement Accuracy	±1℃ @25℃
Humidity Measurement Range	0%RH to 100%RH
Humidity Measurement Range	±4%RH @25℃

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 PMS7003M 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	-121dBm (FSK, Frequency deviation=5kHz, Bit Rate=1.2kbps) -136dBm (LoRa，Spreading Factor=12, Bit Rate=293bps)
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 Method	LoRa / FSK (Note: choose one of them)
Supportable LoRaWAN Band	EU863-870, US902-928, AU915-928, KR920-923, AS923-1, AS923-2, AS923-3, IN865-867, CN470-510 (Note: The frequency band is optional and needs to be configured before shipment.)

Physical

Dimension	Host body: 117mm x 114mm x 82.6mm
Ambient Temperature Range	-20℃ ~ 55℃
Ambient Humidity Range	<90%RH (No condensation)
Storage Temperature Range	-40℃ ~ 85℃