
Wireless PM2.5/Temperature/Humidity Sensor

Wireless PM2.5/Temperature/Humidity Sensor R72616A Data Sheet

Wireless Sensor Network Based on LoRa Technology



R72616A

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Wireless PM2.5/Temperature/Humidity Sensor

General Description

R72616A with temperature and humidity sensor can detect and send the temperature and humidity data of the environment. The device is in line with the LoRa protocol standard. R72616A with PM2.5 dust sensor can be used to obtain the concentration of suspended particulates in air per unit volume.

Principle of Operation

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

Example Applications

- Smart home
- Atmospheric detection (PM2.5)
- Other

Features of NETVOX Sensors

- Improved interference immunity
- Improved power management for longer battery life
- Encrypt-RF™ Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Battery Life*2:
 - Please refer to web: http://www.netvox.com.tw/electric/electric_calc.html
 - At this website, users can find battery life time for varier models at different configurations.
- Over-the-air updates (future)
- Third-Party online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email (optional)
- Available third-party platform: Actility/ThingPark, TTN, MyDevices/Cayenne

*1. Actual range may vary depending on environment.

*2. Battery life is determined by sensor reporting frequency and other variables.

Wireless PM2.5/Temperature/Humidity Sensor

Technical Specifications

Electric

Power Supply Mode	Apply 8 sections of ER14505 lithium batteries, lithium battery power supply voltage 7.2v, total capacity 9600mah, (single-section lithium battery: 3.6V 2400mAH).
Battery Life Time	The battery life is about 1 year (condition: ambient temperature 25 ° C, 150 min report once, txpower = 20 dBm, LoRa spread factor SF = 10)); the actual measurement shall prevail.
Operating Voltage Range	6.4VDC ~ 7.2VDC
Sleep Current	250uA
Working Current	60mA (when the sensor is working)
Module Wake-up Current	6.3mA@3.3V
RF Receiving Current (RX)	11mA @3.3V
RF Emission Current (TX)	120mA @3.3V
Battery Measurement Accuracy	±0.1V

Frequency

TX Power	19dBm±1dBm
Rx Sensitivity	-136dBm (LoRa, Spreading Factor=12, Bit Rate=293bps) -121dBm (FSK,Frequency deviation=5kHz, Bit Rate=1.2kbps)
Antenna Type	Build-in antenna
Communication Range	Up to 10 km, the actual transmission distance depends on the environment.
Data Transfer Rate	0.3kbps ~ 50kbps
Spread Technique	LoRa/FSK
Available Frequency	EU863-870, US902-928, AU915-928, KR920-923, AS923, CN470-510 Configured before shipment

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

Working Voltage	5VDC
Operating Current	100mA (typical)
Particle Measurement Range	0.3~1.0; 1.0~2.5um
Particle Count Efficiency	50%@0.3um, 98%@≥0.5um
Particle Mass Concentration Effective Range (PM2.5 Standard Value)	0~500 µg/m ³
Particle Mass Concentration Resolution	1ug/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	≤10s
Service Life and Product Consistency	The average fault-free time of the PMS7003M PM2.5 particle concentration sensor are 3 years. The annual concentration is more than 50ug/m ³ for more than 50% of the year, or the concentration is over 500ug/m ³ for more than 20% of the year. The consistency of the sensor will decrease, and the data may be high due to internal ash.

SHT-30 Temperature and Humidity Sensor

Working Voltage	+3.3VDC
Temperature Measurement Range	-20°C-55°C
Temperature Measurement Accuracy	+/-1°C @25°C
Humidity Measurement Range	0%RH-100%RH
Humidity Measurement Accuracy	+/-4%RH @25°C

Physical

Dimension	Main Body: 111mm*86mm*41mm Battery Case: 111mm*86mm*41mm
Weight	280g
Working Temperature	-20° C ~ +55° C
Storage Temperature	-40°C ~ +85°C
Humidity Detecting Range	< 90%RH

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