

# Wireless Outdoor PM2.5/Temperature/Humidity Sensor with Solar Panel R72616 Datasheet

Wireless Sensor Network Based on LoRa Technology



**Copyright©Netvox Technology Co., Ltd.**

This document contains proprietary technical information which is the property of NETVOX Technology. It shall be maintained in strict confidence and shall not be disclosed to other parties, in whole or in part, without written permission of NETVOX Technology. The specifications are subject to change without prior notice.

## Introduction

The R72616 is equipped with a temperature and humidity sensor that detects and transmits ambient temperature and humidity data. It is a wireless communication method that uses the SX1276 wireless communication module. The R72616 has a PM2.5 sensor that detects the concentration of PM2.5 in the air.

## Main Characteristic

- Temperature and humidity detection
- Detecting particle concentration of the air (PM2.5)
- Adopt SX1276 wireless communication module
- With solar panel charging function
- Built-in lithium battery pack power supply
- 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
- Low power consumption and long battery life
- Note:
- Battery life is determined by the sensor reporting frequency and other variables, please refer to [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html)  
On this website, users can find battery life of various models in different configurations.

## Application

- Smart home
- Atmosphere detection
- Other

## Dimension

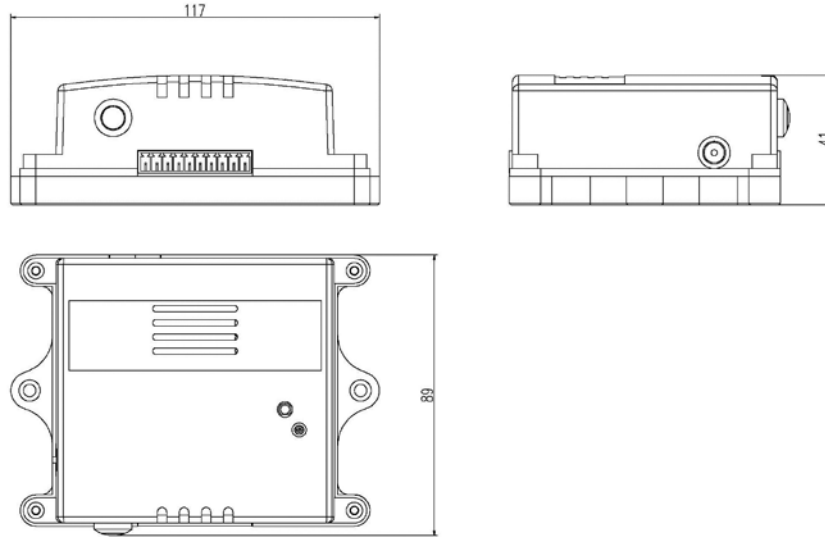


Fig. Host Body Dimension (Unit: mm)

## Electric

Power Supply	3 pcs rechargeable lithium batteries in series (single rechargeable lithium battery 3.7V)
Operating Voltage Range	9.8VDC ~ 12.6VDC
Low Voltage Threshold	10.5V
Operating Current 1	25mA (Standby mode)
Operating Current 2	40mA (When the sensor is working.)

## Battery Electrical Characteristic

Solar panel Specifications	5W / 18VDC
Lithium Battery Pack Specifications	3 pcs rechargeable lithium batteries in series (single rechargeable lithium battery 3.7V)
Lithium Battery Pack Charging Current	About 300mA (guaranteeing sufficient sunshine intensity)
Lithium Battery Pack Charging Time is Full for	About 4 days (guaranteeing sufficient sunshine intensity, calculated with a rechargeable battery capacity of 3200mah)
Lithium Battery Pack Battery is Fully Charged and Used for	About 437 hours (report data once every 30 minutes, calculated with a rechargeable battery capacity of 3200mah)

## Temperature and Humidity Sensor

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

## 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 <sup>3</sup>
Particle Mass Concentration Resolution	1µg/m <sup>3</sup>
Particle Mass Concentration Consistency (PM2.5 standard value)	±10%@100-500ug/m <sup>3</sup> ±10ug/m <sup>3</sup> @0-100ug/m <sup>3</sup>
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 <sup>3</sup> for more than 50% of the year, or the concentration exceeds 500ug/m <sup>3</sup> 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	Mask part: D220mm*H340mm, Solar panel size: 290mm*150mm*25mm
Ambient Temperature Range	-20°C ~ 55°C
Ambient Humidity Range	<90%RH (No condensation)
Storage Temperature Range	-40°C ~ 85°C