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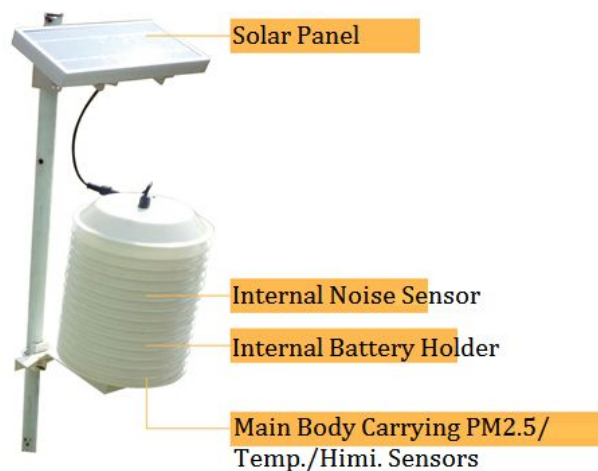
**Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)**

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# Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)

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Wireless Sensor Network Based on LoRa Technology



**R72623**

**Art.nr 20102156**

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## Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)

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### General Description

NETVOX Wireless Sensor R72623 is capable to measure PM2.5 / noise / temperature / humidity at outdoor environment.

- R72623 can be used in construction site / agricultural environment / airport surroundings / business environment data collection. Suitable as a data logger.

### Principle of Operation

NETVOX wireless PM2.5 / noise / temperature / humidity sensors output noise ratio in dBm, the ambient temperature in degrees Celsius and the humidity in percentage. It is programmed to sleep for a user-given time interval (heartbeat) and then wakeup. To stay within the abilities of the processor, data is computed off a data table provided by the manufacturer.

### Example Applications

- Outdoor Environmental Monitoring
- Smart City & Smart Building
- HVAC Operation & Testing
- Data Center Monitoring
- Smart Farming and Agriculture
- Airport surroundings
- Construction Site
- And many more...

### Features of NETVOX Sensors

- LoRaWAN™ Class A compatible
- Frequency Hopping Spread Spectrum (FHSS)
- 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:  
15 min heartbeats = 5 years  
(Conditions: ambient temperature 25 °C, txpower = 20dBm, LoRa spreading factor SF = 10)
- 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.

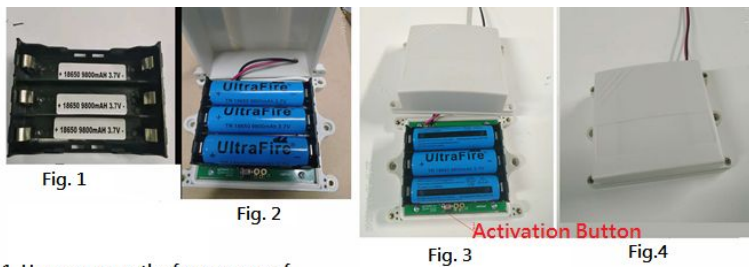
\*2. Battery life is determined by sensor reporting frequency and other variables

## Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)

### Rechargeable Lithium Battery Installation Instructions

R726X has a battery compartment inside, users can buy and install rechargeable 18650 lithium battery, a total of 3 sections, a single rechargeable lithium battery voltage 3.7V, capacity recommended 5000mah, the installation of rechargeable lithium battery steps are as follows:

- 1: Remove the four battery box screws and install three rechargeable lithium batteries.
- 2: Press the activation button on the battery box for the first time.
- 3: After activation, close the cover and lock the 4 box screws.



1. User removes the four screws of the battery holder. (Fig.1)
2. Insert the battery according to positive and negative poles. (Fig.2)
3. Press activation button after loading batteries. (Fig. 3)
4. After activation, close the holder with 4 screws.(Fig. 4)

### Electric

Power Supply	3 rechargeable lithium batteries in series (single-cell rechargeable lithium battery 3.7V, capacity recommended 5000mah)
Operating Voltage range	9VDC~12.6VDC
Operating Current 1	15mA (Standby mode)
Operating Current 2	60mA
Wireless idle mode Cycle	3 minutes

### Solar Panel Specifications

Solar panel Specifications	5W / 18VDC
Lithium battery specifications	3 rechargeable lithium batteries in series (single-cell rechargeable lithium battery 3.7V, capacity recommended 5000mah)
Lithium battery charging current	About 300mA (guaranteed enough sunshine intensity)
Lithium battery charging time	Filled with about 6 days (guaranteed enough sunshine intensity, calculated with a rechargeable battery capacity of 5000mah)
How long does the device work when lithium batteries are fully charged once ?	About 240 hours (report data once every 15 minutes, with a rechargeable battery capacity of 5000mah)

## **Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)**

### **PM2.5 Particle Concentration Sensor**

Operating voltage	5VDC
Operating Current	100mA (Typical)
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)	0~500 µg/m <sup>3</sup>
Particle mass concentration resolution	1ug/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	≤10s

### **Noise Sensor Specifications**

Operating Voltage	10VDC
Power Consumption	0.4W (Max.)
Measuring Range	30dB-130dB
Measurement Error	3% F.S
Resolution	0.1dB
Frequency Weighting Characteristics	A weighted
Frequency Response	35Hz-20kHz
Response Time	≤2 seconds
Output Interface	RS485 output

### **SHT-30 Temperature and Humidity Sensor Specifications**

Operating Voltage	+3.3VDC
Temperature Measurement Range	-20° C—55° C
Temperature Measurement Accuracy	+/-0.8° C
Humidity Measurement Range	10%RH-90%RH
Humidity Measurement Accuracy	+/-4%RH @25° C

## Wireless Outdoor PM2.5/Noise/Temperature/Humidity Sensor with Solar Panel (Solar-powered)

### 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 to10 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

### Physical

Dimension	Mask body: D220mm*H340mm, Solar panel size: 290mm*150mm*25mm
Weight	Partial weight of the mask body (with lithium battery inside the mask body, main body): About 2657g Solar panel weight (solar panel, solar panel bracket, anti bird pin): about 1355g
Mask Life Time	Cover material is ABS material, can be used outdoors for 3 years
Operating Temperature Range	-20℃ ~ 55℃
Operating Humidity Range	15%RH~90%RH (no condensation)
Storage Temperature range	-40℃ ~ 85℃