
Wireless PM2.5/Noise/Temperature&Humidity environment Sensor

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***Wireless PM2.5/Noise/Temperature&Humidity
environment Sensor User Manual***

Firmware:V1.3
Hardware:V0.4

The logo for DIREKTRONIK is displayed in a bold, italicized, red font with a white outline. The letters are slanted to the right, giving it a dynamic appearance. The logo is positioned on a yellow curved background that occupies the bottom right portion of the page.

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1. Introduction

RA0723_R72623_RA0723Y is a ClassA type device based on the LoRaWAN open protocol of Netvox and is compatible with the LoRaWAN protocol.

The RA0723_R72623_RA0723Y can be connected to the corresponding gateway by externally connecting the PM2.5, temperature and humidity, and noise detectors.

LoRa Wireless Technology:

LoRa is a wireless communication technology dedicated to long distance and low power consumption. Compared with other communication methods, LoRa spread spectrum modulation method greatly increases to expand the communication distance. Widely used in long-distance, low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, industrial monitoring. Main features include small size, low power consumption, transmission distance, anti-interference ability and so on.

LoRaWAN:

LoRaWAN uses LoRa technology to define end-to-end standard specifications to ensure interoperability between devices and gateways from different manufacturers.

2. Appearance



Figure 1
RA0723 internal dust and temperature and humidity sensor, external noise Sensor
(subject to the actual object)



Figure 2
R72623 shield is equipped with dust, temperature and humidity sensor and noise sensor (subject to the actual object), external solar power supply.

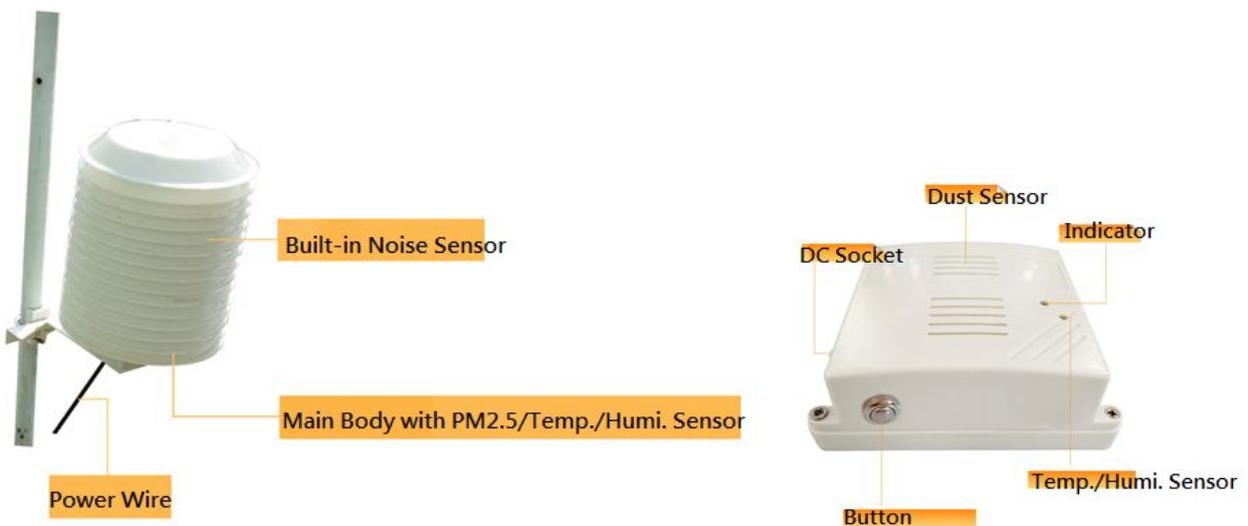


Figure 3
RA0723Y shield is equipped with dust, temperature and humidity sensor and noise sensor (subject to the actual object).

3. Main Features

- Compatible with LoRaWAN
- RA0723 and RA0723Y powered by DC 12V adapters
- R72623 powers solar and rechargeable lithium batteries
- Easy set up and installation

4.Set up Instruction

4.1 Join Into Lora Network

RA0723_R72623_RA0723Y can communicate with the gateway, and the device needs to be added to the gateway network first.

Operations are as follows:

- (1) After power-on, the un-networked device will automatically scan the network. After scanning the network that can be joined, the green indicator light of the device will be on for 5 seconds, and the network will succeed. Otherwise, the indicator light will not work.
- (2) For devices that have been added to the network, the green indicator light is on for 5 seconds after power-off and power-on, indicating that it is already in the network.

4.2 Function Key

- (1) Press the button to activate, the LED flashes slowly once; at the same time, the device takes 35 seconds to process sensor message and send it to the gateway.
- (2) Press the button for 5 seconds to restore to factory settings. After the factory reset is successful, the green LED flashes 20 times.

4.3 Activation

Press the button to activate the device; the activation is successful. LED flashes slowly once to show it is in the network.

4.4 Supported Frequency

The currently supported network bands are: AS923, US915_HYBRID, US915, EU868, AU915, CN470, IN865 and KR920.

4.5 Data Report

After the device is powered on, it will send a version package immediately. The version packet sending frequency is 24 hours/time. RA0723_R72623_RA0723Y device will send a power-on report after 45 seconds after powering on (PM2.5, noise value and air temperature and humidity value).

The default report configuration of the device is as follows:

ReportMaxTime: RA0723_RA0723Y : 180 seconds, R72623: 900 seconds

(subject to factory settings)

ReportMinTime: 30s;

ReportChange: 0;

RA0723_R72623_RA0723Y do not support the ReportChange function, that is, the configuration is invalid. The sent report data string is always sent according to the ReportMaxTime cycle. The ReportMinTime is the interval between the report data strings (since RA0723_R72623_RA0723Y need to send multiple samples at a time. Report data, so it uses ReportMinTime to do the separation).

The data of the device Report is: air temperature and humidity, dust (PM2.5) and noise, ReportType count = 3.

Note:

1. The value of ReportMaxTime is greater than (ReportType count * ReportMinTime + 10 units: second).
2. Since the dust sensor/CO2 (MH-14) works stably, it requires about 45 seconds after powering on. Therefore, the device model that uses the dust sensor/CO2 (MH-14) will send report data after 45 seconds after powering on.
3. The device also supports Cayenne's TxPeriod cycle configuration instructions. Therefore, the device can also perform a report according to the cycle time of the TxPeriod value; and at a certain time, whether the report period is ReportMaxTime or TxPeriod, depending on which cycle time is configured last time.
4. After pressing the button, the device needs to process the sensor information for a while, please be patient.
5. The average trouble-free time of PM dust sensor are 3 years. When the concentration is more than 300ug/m³ for more than 50% of time of the year, or the concentration exceeds 500ug/m³ for more than 20% of time of the year, the consistency of the sensor will decrease, and the data may be very high caused due to internal dust accumulation.

5. Restore to Factory Setting

RA0723_R72623_RA0723Y has a power-down save network information memory function. This feature is turned off by default. That is, it will be re-joined to the network every time when it is powered back on.

To enable it by using the ResumeNetOnOff command, each time the power is rewritten, the last joining information will be recorded (including saving the network address information assigned to it, etc., if users want to join a new network, you need to perform a factory reset first. The set operation) will not be re-joined.

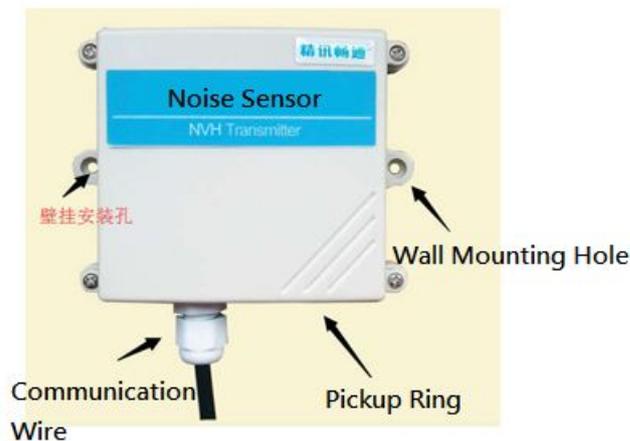
Operation method:

1. Press and hold the binding button for 5 seconds to release (the binding button is released when the LED flashes), and the LED flashes 20 times;
2. RA07 automatically restarts to start re-joining to the network.

Note: Restore factory settings, ACK is off by default; ADR is enabled by default.

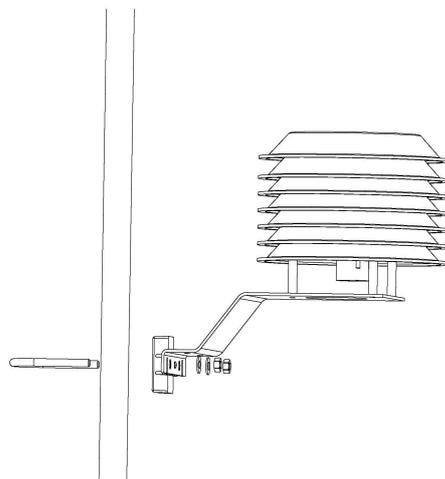
6. Installation

1. RA0723 does not have a waterproof function. After the network joining is completed, please place it indoor. Please pay attention to the direction when installing the sensor, keep the pickup ring facing down.



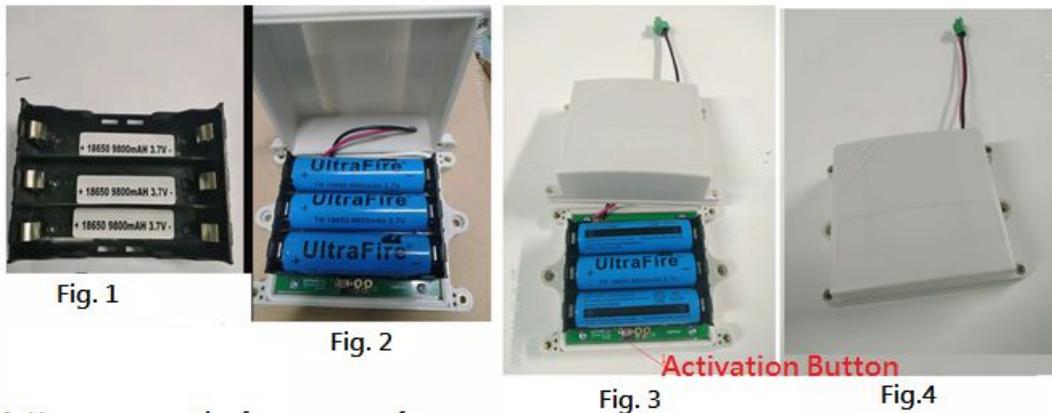
2. The R72623 product is waterproof. After the network-joining is completed, please leave it outdoors.

- (1) In the position to be installed, loosen the U-shaped screw of the bottom of the R72623 and the mating washer nut, and fix the U-shaped screw through the appropriate size cylinder on the R72623 fixed strut piece. Install the washer nut in order, lock the nut till R72623 body is stable and does not shake.
- (2) At the upper side of the fixed position of R72623, loosen the two U-shaped screws on the side of the solar panel and the mating washer nut. Fix the U-shaped screw through the appropriate size cylinder on the main bracket of the solar panel, and install the gasket in sequence. Lock nut till the solar panel is stable and does not shake.
- (3) Adjust the angle of the solar panel. After the adjustment is completed, lock the nut.
- (4) Connect the R72623 top waterproof cable to the solar panel wiring and lock it tight.



(5) 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.

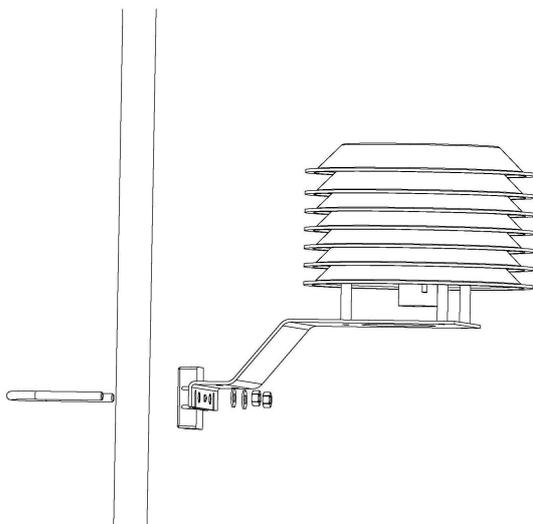


1. User removes the four screws of the battery holder. (Fig.1)
2. Insert the battery according to positive and negative poles. (Fig.2)
3. Press activation button after loading batteries. (Fig. 3)
4. After activation, close the holder with 4 screws.(Fig. 4)

Rechargeable lithium battery installation instructions.

3. The RA0723Y product is waterproof and can be placed outdoors after the network-joining is completed.

- (1) In the position to be installed, loosen the bottom U-shaped screw of the RA0723Y and the mating washer nut, and fix the U-shaped screw through the appropriate size cylinder on the RA0723Y fixed strut piece. Install the washer nut in order, lock the nut till RA0723Y body is stable and does not shake.
- (2) Loosen the M5 nut at the bottom of the 727 matte and take the matte together with the screw.
- (3) Insert the power DC plug from the center through hole of the RA0723Y bottom cover, insert it into the RA0723Y DC socket, and then return the mating screw to the original position and lock the N5 nut tight.



7. Important Maintenance Instruction

Your device is a product of superior design and craftsmanship and should be used with care. The following suggestions will help you use the warranty service effectively.

- Keep the equipment dry. Rain, moisture, and various liquids or moisture may contain minerals that can corrode electronic circuits. In case the device is wet, please dry it completely.
- Do not use or store in dusty or dirty areas. This can damage its detachable parts and electronic components.
- Do not store in excessive heat. High temperatures can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store in a cold place. Otherwise, when the temperature rises to normal temperature, moisture will form inside, which will destroy the board.
- Do not throw, knock or shake the device. Rough handling of equipment can destroy internal circuit boards and delicate structures.
- Do not wash with strong chemicals, detergents or strong detergents.
- Do not apply with paint. Smudges can block debris in detachable parts and affect normal operation.
- Do not throw the battery into a fire to prevent the battery from exploding. Damaged batteries may also explode.

All of the above suggestions apply equally to your device, battery and accessories. If any device is not working properly.

Please take it to the nearest authorized service facility for repair.