

**Outdoor Multifunction Environment Sensor  
R726  
User Manual**

Firmware:V1.1  
Hardware:V0.4

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## 1. Introduction

The R726 is a ClassA device based on the LoRaWAN Open Protocol for netvox, which is compatible with the LoRaWAN protocol.

R726 can work with RA07 with a variety of sensors, plus multi-layer mask, bracket, solar battery, should be required for a variety of sensor combinations, as PM2.5, temperature and humidity, CO, NO, water level and reported to the corresponding gateway.

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. R72615 sunshade renderings (subject to the actual product)

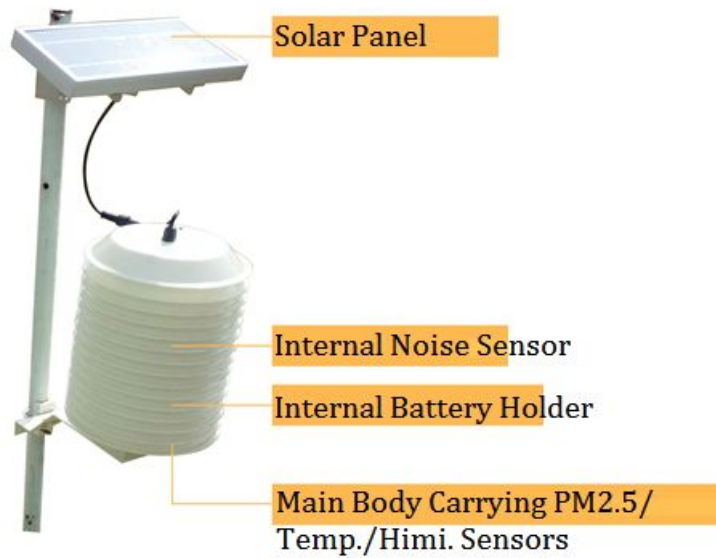


Figure 2. R72623 sunshade renderings (subject to the actual product)

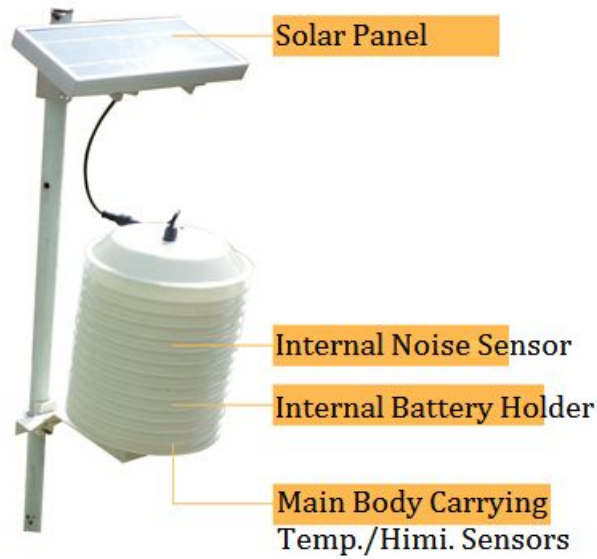


Figure 3. R72624 sunshade renderings (subject to the actual product)

### 3. Main Features

- Compatible with LoRaWAN
- Solar powered
- Simple operation and setting

### 4. Set up Instruction

#### 4.1 Join to Network

1. R726 is 12V rechargeable battery-powered with solar charging board, can communicate with the gateway, users need to join the R726 to first gateway network.

Operations to join network are as follows:

(1) After powering on, the device automatically scans the network. After scanning the network that can be added, the green indicator of the device is on for 5 seconds. Otherwise, the indicator is off.

(2) For devices that have been added to the network, the green indicator will be on for 5 seconds after the power is cut off, indicating that it is in the network.

## 4.2 Function Key

- (1) Press function key to turn on the device and the green indicator will flash once and the device will send a data report to the gateway. After pressing the button, it takes time to process the sensor information for a while, please wait.
- (2) Press and hold function key for 5 seconds to reset to factory setting. After restoring to factory setting successfully, the green indicator will flashes quickly 20 times.

## 4.3 Activate

Press shortly function key to start the device and it will flash once slowly to show it is activated and joined to the network.

## 4.4 Frequency Supported

The currently supported screening bands are: AS923, US915\_HYBRID, EU868, AU915, CN470 and KR920.

## 4.5 Data Report

After the device is powered on, a version packet will be sent immediately. The version packet is sent at 24 hours / time. The R726 device sends the power-on report at about 10 second after power-on. The default report configuration of the device is as follows:

ReportMaxTime: 180s;

ReportMinTime: 30s;

ReportChange: 0;

Remark: ReportMaxTime time can be programmed by CustomData with NLPP, specifying the default value of the factory ReportMaxTime (default factory setting is: 3min = 180s).

The R726 device does not support the ReportChange function, that is, the configuration is invalid.

The sent report data string is always sent according to the ReportMaxTime period.

The ReportMinTime means that the interval for R726 devices send the report data (because the R726 device needs to send multiple samples report data, it uses ReportMinTime to do the separation).

The data type of each series Report:

R72601: The Report data for this device is: CO Gas, ReportType count = 1;

R72611: The Report data for this device is: Liquid Height, ReportType count = 1;

R72613: The Report data for this device is: soil temperature, soil moisture and soil conductivity, ReportType count = 1;

R72615: The Report data for this device is: Air temperature and humidity and CO2 (MH-14),

ReportType count = 2;

R72616: The device Report data is: air temperature and humidity and dust (PM2.5), ReportType count = 1

(integrated into one);

R72623: Data for this 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: seconds)
2. Since the dust sensor / CO2 (MH-14) is stable and requires about 60 seconds after power on, the device type of the dust sensor / CO2 (MH-14) will not be reported at 60 seconds after power-on.
3. Soil moisture sampling supports calibration function, which can be calibrated by the gateway issuing commands; the sampled soil types support minerals, potting soil and rock wool.
4. The R726 device also supports the Cayenne TxPeriod cycle configuration instructions. So R726 can also report according to the TxPeriod value of the cycle time; and at a specific time report cycle is ReportMaxTime or TxPeriod, which depends on the last configured cycle time.
5. After pressing the button, it takes some time to process the sensor information, please be patient.

## 5. Restore to Factory Setting

R726 has the function of saving data (this function is enabled by default, it can also be closed by the ResumeNetOnOff command, and this time can be realized, each rewrite power, will re-join), including the preservation of its assigned network address information. To join a new network, users need to perform the operation of restoring the factory settings.

Operation method:

1. Press and hold function key for 5seconds and release (release button when the LED flashes), LED flash 20 times.
2. R726 restart automatically to start re-joining.

Note: The factory default settings, ACK default is off; ADR is turned on by default setting.

## 6. Installation

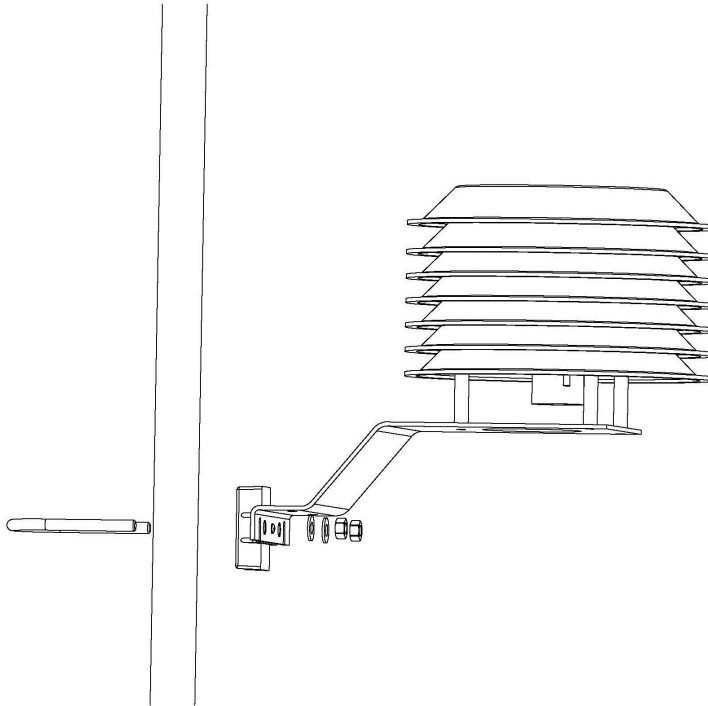
This product has a waterproof function. After the network joining configuration is completed, please place it outdoors.

1. In the installation position, loosen the R726 bottom U-shaped screw and the mating washer nut, and fix the U-shaped screw through the appropriate size cylinder to the R726 fixed strut piece. Install the spacer nut in order, and lock the nut to the R726 main body till it does not shake.
2. On the upper side of the fixed position of R726, 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 nut in order, and lock the nut till solar panel is stable and does not shake

3. Adjust the angle of the solar panel. After the adjustment, lock the nut.

4. Connect the 726 top waterproof cable to the solar panel wiring and lock it.



PM 2.5 Sensor has an average time between failures of 3 years, a concentration of more than 300  $\mu\text{g}/\text{m}^3$  for more than 50% of the year, or a concentration of more than 500  $\mu\text{g}/\text{m}^3$  for more than 20%. The consistency of the sensor may decrease, possibly due to internal dust accumulation. The data is too high.

## **7. 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.





Fig. 1



Fig. 2



Fig. 3



Fig. 4

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.

## 8. 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 excessive 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.

## 9. FCC certification statement

The OEM integrator has to be aware of not to providing information to end users regarding how to install or remove this RF module in the user manual of the end product. The user manual which is provided by OEM integrators for end users must

Include the following information in a prominent location.

“ To comply with FCC RF exposure compliance requirement, the antenna user for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter .”

Label for the end product must include “Contains FCC ID :NRH-ZB-Z100B”or “A RF transmitter inside,FCC ID :NRH-ZB-Z100B”.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is to the following two conditions:(1)this device may not cause harmful interference and (2)this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement:

1 This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.