

# **Wireless 2-Gang Vibration Sensor, Rolling Ball Type**

**R718DA2  
User Manual**

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## 1. Introduction

R718DA2 is a ball-type two-way vibration sensors of Netvox ClassA type equipment based on LoRaWAN open protocol. The sensor is attached to the detected device with magnet. When the device vibrates, the sensor is triggered. R718DA2 immediately sends the trigger information to the gateway. R718DA2 is compatible with LoRaWAN protocol.

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



Fig.1 R718DA2 Appearance

### 3. Main Features

- Compatible with LoRa protocol.
- 2 x 3.6V ER14505 AA lithium batteries (3.6V/section)
- Trigger one of the two vibration sensors, the device will send trigger information
- Simple set up and installation

### 4. Set up Instruction

#### 4.1 Power on and Turn on / off

- (1) **Power on:** open the battery cover; insert two sections of 3.6V ER14505 AA lithium batteries and close the battery cover.
- (2) **Turn on:** the device (not in the network) is at off mode by default after inserting batteries. At this time, press and hold the function key (about 3 seconds) till the green light flashes once. The boot is successful.
- (3) **Turn off:** press and hold function key for 5 seconds till the green indicator flashes quickly and release. The green indicator will flash 20 times to show that the device is turned off.

Note:

1. The interval between shutting down twice or power off/on is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.
2. Do not press function key and insert batteries in the same time, otherwise, it will enter engineer testing mode.

#### 4.2 Join Into Lora Network

To join R718DA2 into LoRa network to communicate with LoRa gateway.

The network operation is as following:

- (1) If R718DA2 had never joined any network, turn on the device; it will search an available LoRa network to join. The green indicator will stay on for 5 seconds to show it joins into the network, otherwise, the green indicator will not work.
- (2) If R718DA2 had been joined into a LoRa network, remove and insert the batteries; it will repeat step (1).

#### 4.3 Function Key

- (1) 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.
- (2) Press function key to turn on the device which is in the network and the green indicator will flash once and the device will send a data report.
- (3) Trigger ball sensor: as long as the equipment detects vibration, the ball will shake and an alarm message will be issued.

#### 4.4 Data Report

A version package and an attribute report data are sent immediately after the device is powered on.

The device sends data in the default configuration before any configuration is done.

Maximum time: 3600s

Minimum time: 3600s

Default Reportchange: Battery --- 0x01 (0.1V)

Remarks:

1. The device data sending cycle depends on the burning configuration before shipment.
2. The interval between two reports must be the minimum time.

Data report configuration and sending period are as following:

Min Interval (Unit:second)	Max Interval (Unit:second)	Reportable Change	Current Change $\geq$ Reportable Change	Current Change $<$ Reportable Change
Any number between 1~65535	Any number between 1~65535	Can not be 0.	Report per Min Interval	Report per Max Interval

Remarks: Min Interval depends on the real order.

## 5. Restore to Factory Setting

R718DA2 saves data including network key information, configuration information, etc. To restore to factory setting, users need to execute below operations.

1. Press and hold function key for 5 seconds till the green indicator flashes and then release; LED flashes quickly 20 times.
2. R718DA2 will be at off mode by default setting after restoring to factory setting. Press function key to turn on R718DA2 and to join a new LoRa network.

Note: The device operation of turning off is the same as the device restore factory settings.

## 6. Sleeping Mode

R718DA2 is designed to enter sleeping mode for power-saving in some situations:

(A) While the device is in the network → the sleeping period is Min Interval. (During this period, if the report change is larger than setting value, it will wake up and send a data report).

(B) When it is not in the network → R718DA2 will enter sleeping mode and wake up every 15 seconds to search a network to join in the first two minutes. After two minutes, it will wake up every 15 minutes to request to join the network.

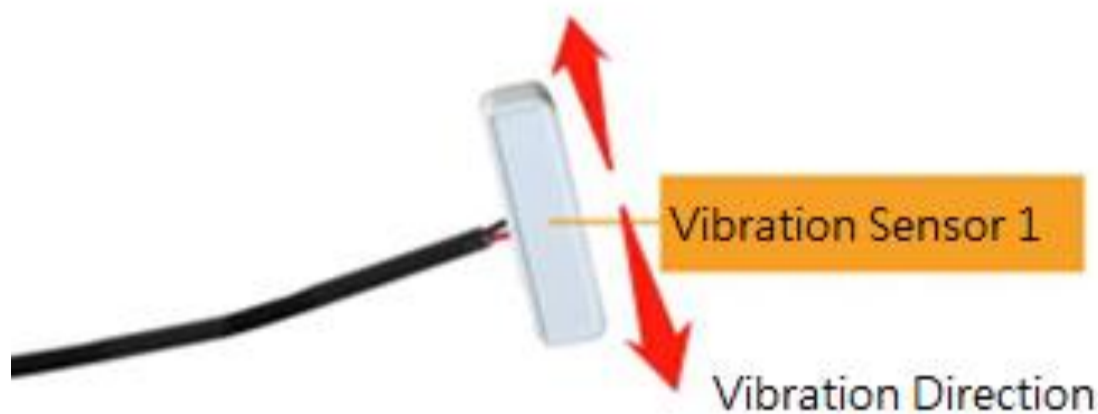
If it's at (B) status, to prevent this unwanted power consumption, we recommend that users remove the batteries to power off the device.

## 7. Low Voltage Alarming

The operating voltage threshold is 3.2V. If the voltage is lower than 3.2V, R718DA2 will send a low-power report to the Lora network.

## 8. Installation

When installing the vibration sensor, pay attention to the fact that the direction of the vibration and the long side of the sensor on the same as below figure.



This product comes with waterproof function. It can be attached to the iron surface, or the two ends can be fixed to the wall with screws.

Note: To install the battery, use a screwdriver or similar tool to assist in opening the battery cover.

## 9. Information about Battery Passivation

Many of Netvox devices are powered by 3.6V ER14505 Li-SOCl<sub>2</sub> (lithium-thionyl chloride) batteries that offer many advantages including low self-discharge rate and high energy density.

However, primary lithium batteries like Li-SOCl<sub>2</sub> batteries will form a passivation layer as a reaction between the lithium anode and thionyl chloride if they are in storage for a long time or if the storage temperature is too high. This lithium chloride layer prevents rapid self-discharge caused by continuous reaction between lithium and thionyl chloride, but battery passivation may also lead to voltage delay when the batteries are put into operation, and our devices may not work correctly in this situation.

As a result, please make sure to source batteries from reliable vendors, and it is suggested that if the storage period is more than one month from the date of battery production, all the batteries should be activated.

If encountering the situation of battery passivation, users can activate the battery to eliminate the battery hysteresis.

### ER14505 Battery Passivation:

#### 9.1 To determine whether a battery requires activation

Connect a new ER14505 battery to a resistor in parallel, and check the voltage of the circuit.

If the voltage is below 3.3V, it means the battery requires activation.

#### 9.2 How to activate the battery

- a. Connect a battery to a resistor in parallel
- b. Keep the connection for 5~8 minutes
- c. The voltage of the circuit should be  $\geq 3.3$ , indicating successful activation.

Brand	Load Resistance	Activation Time	Activation Current
NHTONE	165 $\Omega$	5 minutes	20mA
RAMWAY	67 $\Omega$	8 minutes	50mA
EVE	67 $\Omega$	8 minutes	50mA
SAFT	67 $\Omega$	8 minutes	50mA

Note:

If you buy batteries from other than the above four manufacturers, then the battery activation time, activation current, and required load resistance shall be mainly subject to the announcement of each manufacturer.

## 10. 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.