



# netvox R718DB Wireless Vibration Sensor User Manual

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## Introduction

R718DB is identified as a LoRaWAN ClassA device with a spring-loaded vibration sensor and compatible with LoRaWAN protocol.

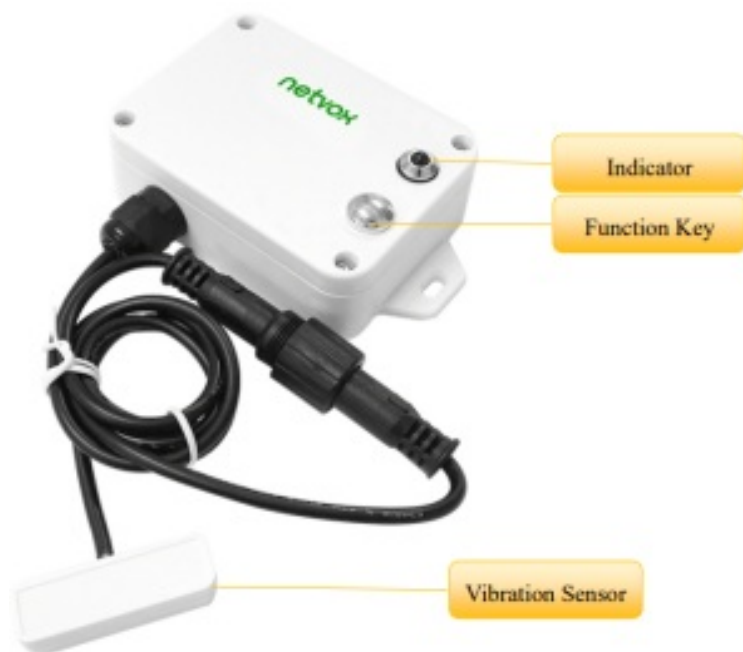
### LoRa Wireless Technology:

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.

## Appearance



## Main Features

- Adopt SX1276 wireless communication module
- 2 x 3.6V ER14505 AA lithium batteries
- Trigger the vibration sensor, the device will send trigger information
- The base is equipped with a magnet that can be attached to the magnetic substance
- IP Ratings: Main part- IP65/IP67 (Optional), Sensor-/IP67
- Compatible with LoRaWANTM Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through third-party software platforms
- Data can be read and alerts can be set via SMS text and email (optional)
- Applicable to third-party platforms: Activity / 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 various types of battery life time in different configurations.

**Set up Instruction****On/Off**

Power on	Insert batteries (Users may need a screwdriver to open)
Turn on	Press and hold the function key for 3 seconds and the green indicator flash once.
Turn off (Restore to factory setting)	Press and hold the function key for 5 seconds and the green indicator flashes 20 times.
Power off	Remove Batteries.
Note:	<ol style="list-style-type: none"><li>1. Remove and insert the battery; the device is at off state by default.</li><li>2. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.</li><li>3. For the first 5 second after powering on, the device will be in engineering test mode.</li></ol>
<b>Network Joining</b>	
Never joined the network	Turn on the device to search the network to join. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Had joined the network	Turn on the device to search the previous network to join. The green indicator stays on for 5 seconds: success The green indicator remains off: fail

Fail to join the network (when the device is on)	Suggest to check the device verification information on the gateway or consult your platform server provider.
<b>Function Key</b>	
Press and hold for 5 seconds	Restore to factory setting / Turn off The green indicator flashes 20 times: success The green indicator remains off: fail
Press once	The device is in the network: the green indicator flashes once and sends a report. The device is not in the network: the green indicator remains off
<b>Sleeping Mode</b>	
The device is on and in the network	Sleeping period: Min Interval. When the reportchange exceeds setting value or the state changes: send a data report according to Min Interval.

### Low Voltage Warning

Low Voltage	3.2V
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### Data Report

The device will immediately send a version packet report and the vibration report data

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

#### Default setting:

- MaxTime: Max Interval = 60 min = 3600s
- MinTime: Min Interval = 60 min = 3600s
- BatteryVoltageChange: 0x01 (0.1V)

#### R718DB trigger:

When any way of the sensor senses the vibration and the spring deforms, an alarm message will be reported.

The vibration is “1”.

No vibration is “0”.

### The vibration Restore Configuration:

The Restore function is used to send the final static status of the device. (Please refer to the configuration command format below.)

Restore = 0, no data will be sent when the device is rest. The data is sent with the next report.

Restore = 1, the data will be sent with a vibration bit– 0 after the device is rest for 5 seconds.

### Note

The device report interval will be programmed based on the default firmware which may vary.

The interval between two reports must be the minimum time.

Please refer Netvox LoRaWAN Application Command document and Netvox Lora Command Resolver

<http://loraresolver.netvoxcloud.com:8888/page/index> to resolve uplink data.

### Data report configuration and sending period are as following:

Min Interval (Unit:second)	Max Interval (Unit:second)	Reportable Change	Current Change≥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

### Example of ConfigureCmd

#### FPort 0x07

Bytes	1	1	Var (Fix =9 Bytes)
	CmdID	DeviceType	NetvoxPayloadData

CmdID– 1 byte

DeviceType– 1 byte – Device Type of Device

NetvoxPayloadData– var bytes (Max=9bytes)

Description	Device	Cmdl D	Devic e Type	NetvoxPayLoadData				
Config Rep ortReq	R718DB	0x01	0x1B	MinTime (2byte s Unit: s)	MaxTime (2byt es Unit: s)	B at te ry C h a n g e (1 b y t e U n i t: 0. 1 v)	Reserved (4Bytes, Fixed 0x 00)	
Config Rep ortRsp		0x81		Status (0x00_success)		Reserved (8Bytes, Fixed 0x00 )		
ReadConfig ReportReq		0x02		Reserved (9Bytes, Fixed 0x00)				
ReadConfig ReportRsp		0x82		MinTime (2byte s Unit: s)	MaxTime (2byt es Unit: s)	B at te ry C h a n g e (1 b y t e U n i t: 0. 1 v)	Reserved (4Bytes, Fixed 0x 00)	

#### 1. Configure device parameters

MinTime = 1 min,

MaxTime = 1 min,

BatteryChange = 0.1v

**Downlink:** 011B003C003C0100000000 003C(Hex) = 60(Dec)

**Response:**

811B00000000000000000000 (Configuration success)

811B01000000000000000000 (Configuration failure)

**2. Read device configuration parameters****Downlink:** 021B00000000000000000000**Response:**

821B003C003C0100000000 (Current configuration)

**Restore configuration:**

Descriptio n	Device	Cmdl D	DeviceType	NetvoxPayLoadData	
SetRestor e ReportR eq	R718D B	0x03	0x1B	RestoreReportSet (1byte) 0x00_DO N OT report when sensor restore  0x01_DO report when sensor restore	Reserved (8Bytes ,Fixed 0x00)
SetRestor e ReportRsp		0x83		Status (0x00_success)	Reserved (8Bytes , Fixed 0x00)
GetRestor e ReportR eq		0x04		Reserved (9Bytes, Fixed 0x00)	
GetRestor e ReportR sp		0x84		RestoreReportSet (1byte) 0x00_DO N OT report when sensor restore 0x01_D O report when sensor restore	Reserved (8Bytes ,Fixed 0x00)

**3. Do report after sensor stops vibrating****Downlink** 031B01000000000000000000 (0x01\_DO report when sensor restore)**Response**

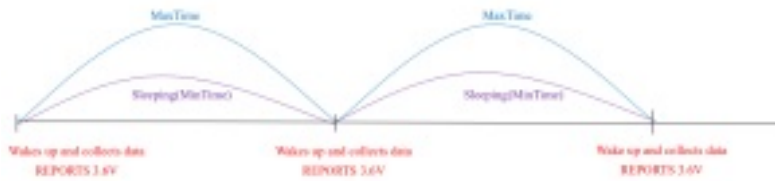
831B00000000000000000000 (Configuration success)

831B01000000000000000000 (Configuration failure)

**4. Read restore function:****Downlink** 041B00000000000000000000**Response** 841B01000000000000000000 (Current configuration) (report when sensor restore)**Example for MinTime/MaxTime logic:**

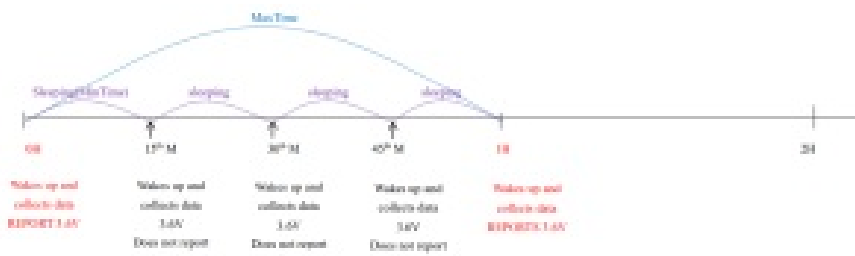
Example#1 based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e.

BatteryVoltageChange=0.1V



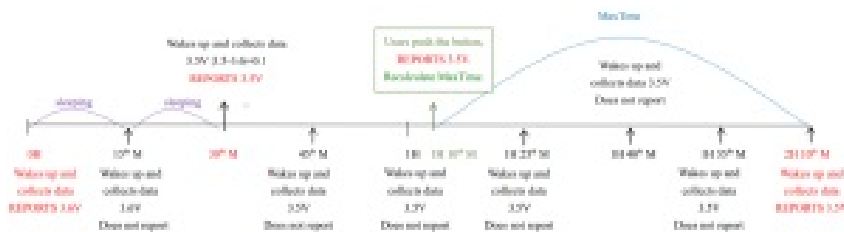
**Note:** MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless Battery Voltage Change value.

**Example#2** based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange= 0.1V.



**Note:** MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless Battery Voltage Change value

**Example#3** based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. Battery Voltage Change= 0.1V.



## Notes

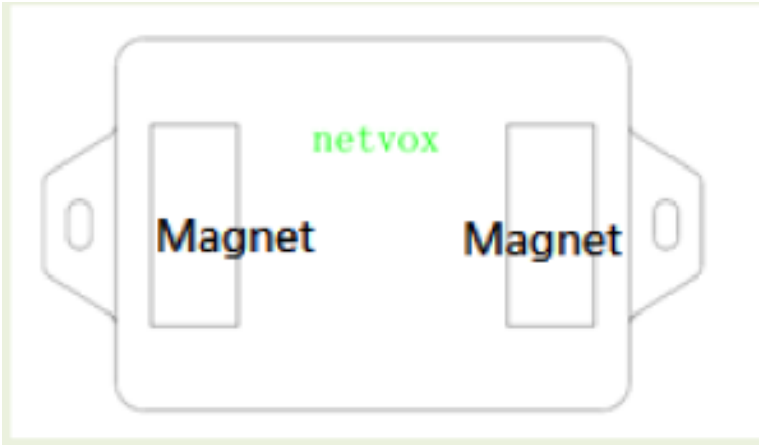
1. The device only wakes up and performs data sampling according to MinTime Interval. When it is sleeping, it does not collect data.
2. The data collected is compared with the last data reported. If the data variation is greater than the Reportable Change value, the device reports according to MinTime interval. If the data variation is not greater than the last data reported, the device reports according to MaxTime interval.
3. We do not recommend to set the MinTime Interval value too low. If the MinTime Interval is too low, the device wakes up frequently and the battery will be drained soon.
4. Whenever the device sends a report, no matter resulting from data variation, button pushed or MaxTime interval, another cycle of MinTime/MaxTime calculation is started.

## Installation



1. The device has a built-in magnet.

When installed, it can be attached to the surface of an object with iron which is convenient and quick.



To make the installation more secure, use screws (purchased) to secure the unit to a wall or other surface



**Note:**

Do not install the device in a metal shielded box or in an environment with other electrical equipment around it to avoid affecting the wireless transmission of the device.

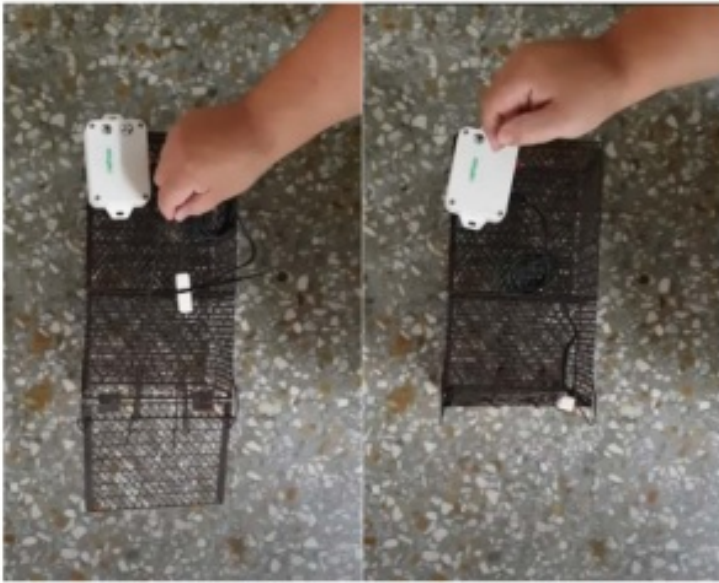
2. Fix the vibration sensor of the vibration sensor on the object that needs to be detected whether it is vibrating (here, take the mousetrap as a picture.)

**Video link:** [Mouse trap](#)

3. The figure shows the vibration sensor (R718DB) applied to the scene of the mousetrap in the restaurant. It can also be applied to the following scenarios:
  - Restaurant (rat)
  - Shopping mall supermarket (rat)
  - Engine room (rat)

When it is necessary to detect whether the object is vibrating or moved.

4. When the vibration sensor detects a vibration, it immediately sends an “alarm” message. When the device reports data periodically, it restores the “normal” status and sends “normal” status information. Moreover, enable the Restore function and the “normal” status will be sent after the device stops for 5 seconds.



**Note:**

The shaking alarm bit is “1”.

The static and non-shaking alarm bit is “0”.

## **Important Maintenance Instruction**

Kindly pay attention to the following in order to achieve the best maintenance of the product:

- Keep the device dry. Rain, moisture, or any liquid, might contain minerals and thus corrode electronic circuits. If the device gets wet, please dry it completely.
- Do not use or store the device in dusty or dirty environment. It might damage its detachable parts and electronic components.
- Do not store the device under excessive heat condition. High temperature can shorten the life of electronic devices, destroy batteries, and deform or melt some plastic parts.
- Do not store the device in places that are too cold. 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 clean the device with strong chemicals, detergents or strong detergents.
- Do not apply the device with paint. Smudges might block in the device and affect the operation.
- Do not throw the battery into the fire, or the battery will explode. Damaged batteries may also explode. All of the above applies to your device, battery and accessories. If any device is not working properly, please take it to the nearest authorized service facility for repair.

## **Documents / Resources**

