



Wireless Activity Event Counter

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User Manual

Table of Content

1. Introduction.....	2
2. Appearance.....	3
3. Main Features.....	4
4.Set up Instruction.....	4
4.1 Power on and Turn on / off.....	4
4.2 Join Into Lora Network.....	4
4.3 Function Key.....	5
4.4 Data Report.....	5
5. Restore to Factory Setting.....	6
6. Sleeping Mode.....	6
7. Low Voltage Alarming.....	6
8. Installation.....	6
9. Important Maintenance Instruction.....	7

1. Introduction

R311FB is a vibration alarm device for Netvox ClassA type equipment based on LoRaWAN open protocol. It can count the number of movements or vibrations of the device and is compatible with LoRaWAN protocol.

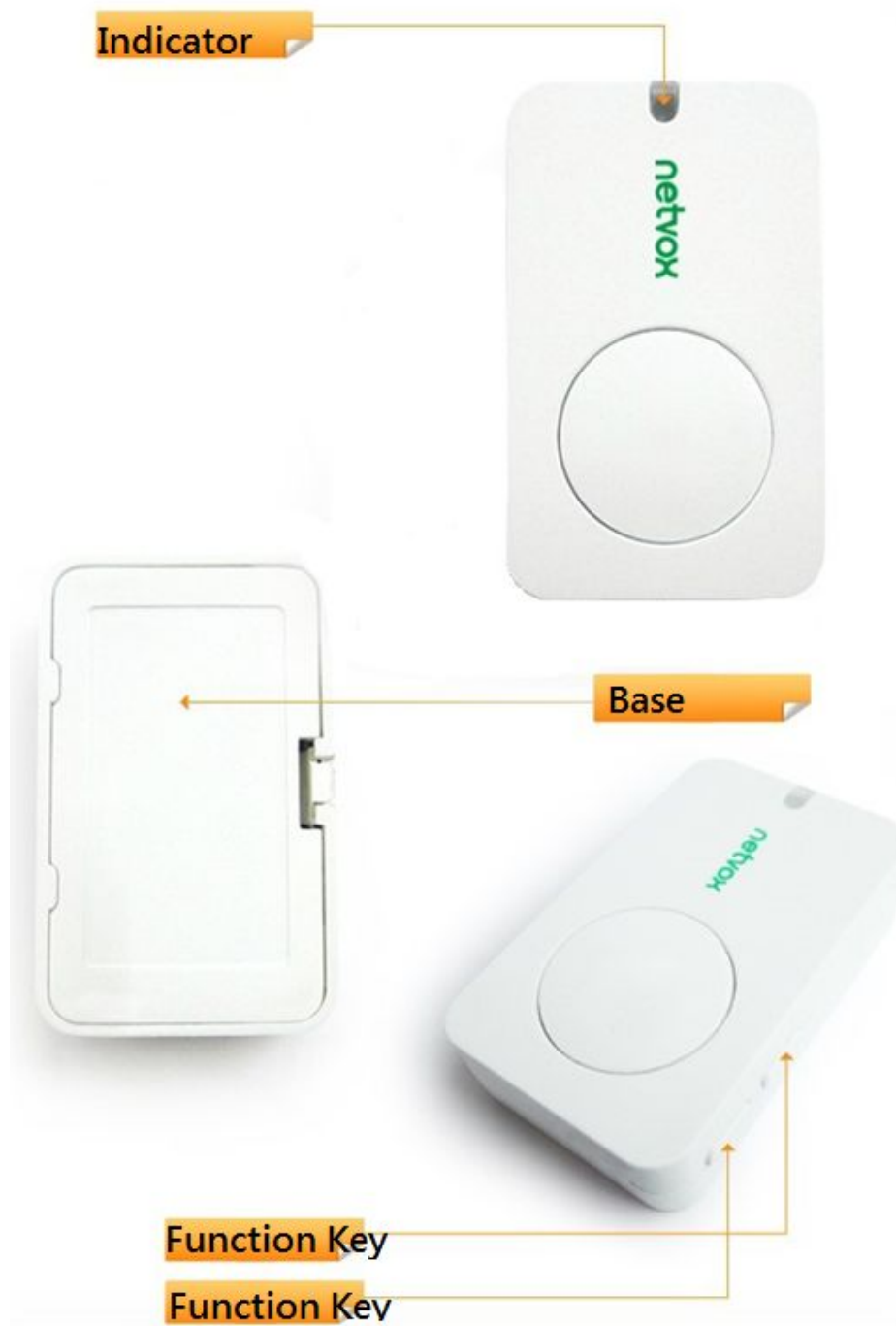
LoRa Wireless Technology:

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



3. Main Features

- Compatible with LoRaWAN
- 2 section 3V CR2450 button battery powered
- Report voltage status, device movement status
- Easy set up and installation

4. Set up Instruction

4.1 Power on and Turn on / off

- (1) **Power on.** Open the battery cover (users may need a flat blade screwdriver to open); insert two sections of 3V CR2450 button batteries and close the battery cover.
- (2) **Turn on.** If the device had never joined in any network or at factory setting mode, after powering on, the device is at off mode by default setting. Press function key and release to turn on the device. The green and red indicator will flash once to show that R311FB is turned on.
- (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 R311FB is turned off.
- (4) Remove batteries (power off) when R311FB is on. Wait till 10 seconds after the capacitance discharging. Insert batteries again, R311FB will be setted to be on mode by default. There is not need to press function key to turn on the device. The red and green indicators will both flash and then light off.

Note:

1. The interval between turning on/off or powering 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 R311FB into LoRa network to communicate with LoRa gateway.

The network operation is as following:

- (1) If R311FB had never joined any network or at factory setting mode, 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 does not work.
- (2) If R311FB had been joined into a LoRa network, remove and insert the batteries; the green indicator will stay on for 5 seconds to show it joins into the network.

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 flash quickly 20 times.
- (2) Press function key; the green indicator will flash once and the device will send a data report.

4.4 Data Report

When the device is turned on, it will immediately send a version package.

Data will be reported once per hour by default setting.

Maximum time: 3600s

Minimum time: 3600s (Detect the current voltage value every 3600s by default setting)

Default reportchange:

Battery ---- 0x01 (0.1V)

Remarks:

1. The device periodically sends data according to the maximum time. The data content is:
R311FB current device status;
2. R311FB device will only report according to the minimum time when the battery voltage changes.

- R311FB vibration alarm:

The device detects sudden movement or vibration, and the quiescent state changes. The device waits for a certain period of time (DeactiveTime) to enter the quiescent state and counts the cumulative number, sends a report of the number of vibrations, and restarts the preparation for the next detection. If the vibration continues to occur, the timing restarts until it reaches a standstill. The count data is not saved when it is powered off.

- Can be changed by the gateway to change the device type, active vibration threshold and DeactiveTime.

The Active vibration threshold range is 0x0003-0x00FF (default is 0x0003);

DeactiveTime is 0x01-0xFF (default is 0x05);

R311F DeviceType(1Bytes,0x01_ **R311FA**,0x02_ **R311FB**,0x03_ **R311FC**), the default value is the programming value.

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

5. Restore to Factory Setting

R311FB 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. R311FB will be turned off mode after restoring to factory setting.

6. Sleeping Mode

R311FB 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 reportchange is larger than setting value, it will wake up and send a data report).
- (B) When it is not in the network → R311FB 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.

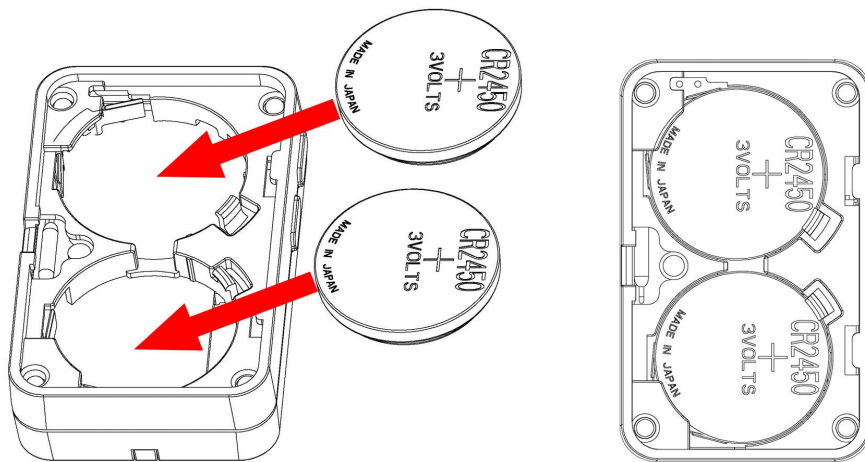
If it's at (B) status, to prevent this unwanted power consumption, we recommend that users remove the batteries to power off the device.

7. Low Voltage Alarming

The operating voltage threshold is 2.4V. If the voltage is lower than 2.4V, R311FB will send a low-power report to the Lora network.

8. Installation

- (1) This product does not have a waterproof function. After the screening is completed, please place it indoors.
- (2) The dust in the installation position of the equipment needs to be wiped clean and then affixed to the equipment.
- (3) The battery installation method is shown in the figure below (battery with "+" facing outward).



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

9. 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.