netvox R311DB Wireless Vibration Sensor User Manual

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Introduction

R311DB is a wireless long-distance spring-type vibration device that is a Class A device based on the Lorawan™ protocol of NETVOX. It is compatible with the Lora WAN protocol.

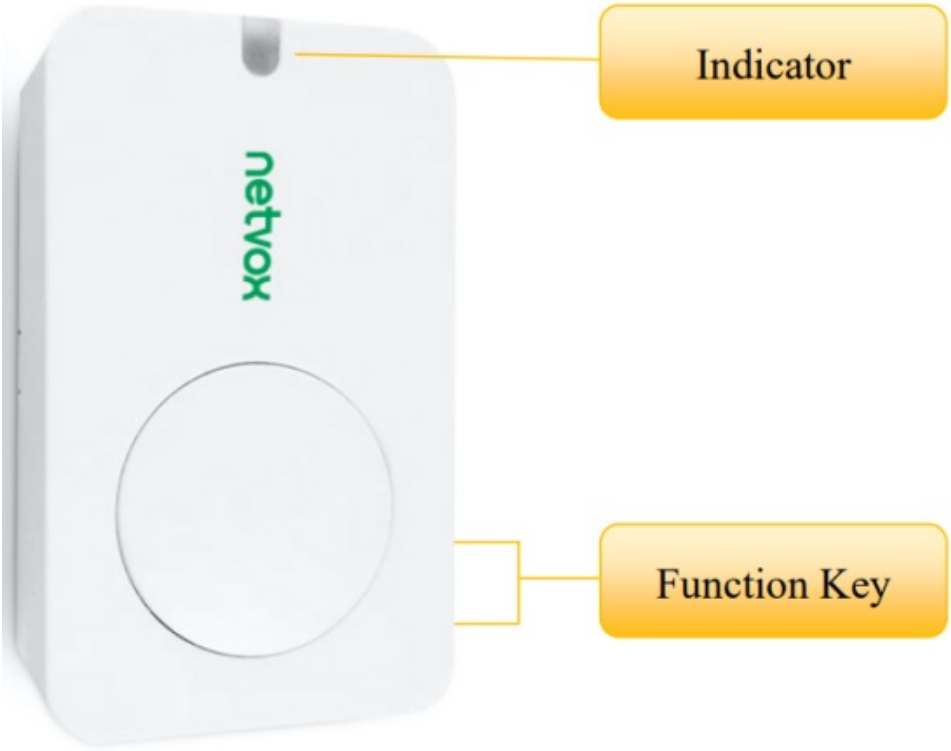
Lora Wireless Technology:

Lora is a wireless communication technology famous for its long-distance transmission and low power consumption. Compared with other communication methods, Lora spread spectrum modulation technique greatly extend the communication distance. It can be widely used in any use case that requires long-distance and low-data wireless communications. For example, automatic meter reading, building automation equipment, wireless security systems, industrial monitoring. It has features like small size, low power consumption, long transmission distance, strong anti-interference ability and so on.

Lora WAN:

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

Appearance



Main Features

- Compatible with LoRaWAN
- 2 sections of 3V CR2450 button battery power supply
- Voltage and device dumping status detection
- Simple operation and setting
- Protection level IP30
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum
- Configuration parameters can be configured via a third-party software platform, data can be read and alerts can be set via SMS text and email (optional)
- Applicable to third-party platforms: Actility/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

On this website, users can find battery life time for varied models at different configuration

Set up Instruction

On/Off	
Power on	Insert batteries (user may need a screwdriver to open) Insert 2 x 3V CR2450 button batteries into the battery slot in the correct direction and close the back cover. **Note:** Require 2 button batteries to supply power at the same time.
Turn on	Press any function key till the green and red indicator flashes once.
Turn off (Restore to factory setting)	Press and hold two function keys for 5 seconds and the green indicator flashes 20 times.
Power off	Remove Batteries.
Note:	1. Remove and reinsert the battery: the device will remember the previous on/off status by default. 2. After insert batteries and press the button at the same time, the device will be in engineering testing mode. 3. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.
Network Joining	
Never joined the network	Turn on the device to search 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.
Function Key	
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

Sleeping Mode	
The device is on and in the network	Sleeping period: Min Interval When the report change exceeds setting value or the state changes: send a data report according to Min Interval.
Low Voltage Warning	
Low Voltage	2.4V

Data Report

When the device is turned on, it will immediately send a version package and an attribute report data.

The device sends data according to the default configuration before any other configuring.

Default setting:

Maximum time: 3600s
Minimum time: 3600s (Default: Every Min Interval will detect the state of the dry contact one time)

Battery Change: 0x01 (0.1V)
(If there are special customized shipments, the settings will be changed according to customer's requirement.)

R311DB 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".

Note:
The interval between two reports must be the Meantime.

The reported data is decoded by the Netvox LoRaWAN Application Command document and
http://loraresolver.netvoxcloud.com:8888/page/index

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 Configure Cmd

FPort 0x07

Bytes	1	1	Var (Fix =9 Bytes)
	CmdID	DeviceTyp e	NetvoxPayLoadData

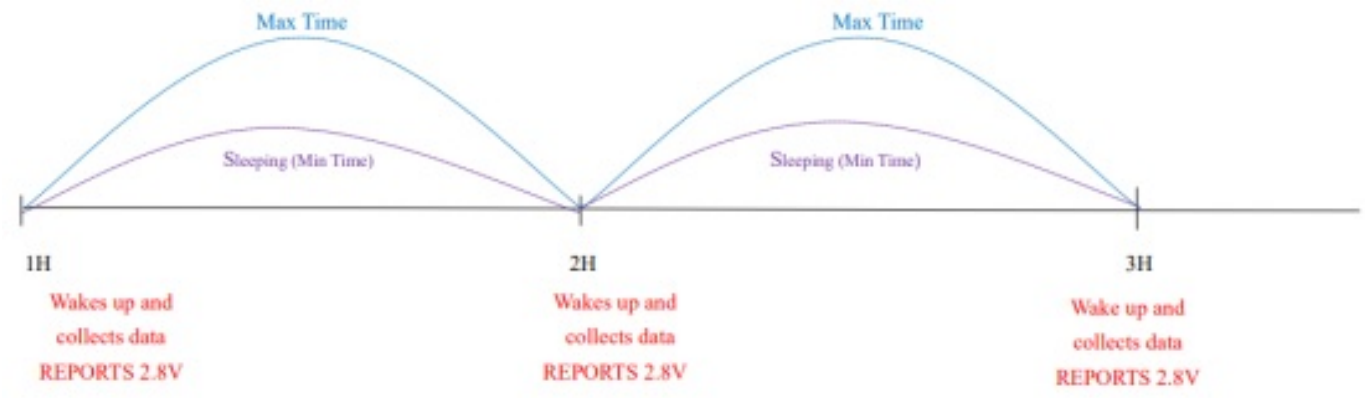
CmdID– 1 byte
DeviceType– 1 byte – Device Type of Device
NetvoxPayLoadData– var bytes (Max=9bytes)

Description	Device	Cmd ID	Device Type	Netvox Pay LoadData			
Config Repor t Rap	R311 D B	0x01	0xA9	MinTime (2bytes Unit: s)	Max Time (2bytes Unit: s)	BatteryChange(1byteUnit:0.1v)	Reserved (4Bytes, Fixe d 0x00)
Config Repor t Rap		0x81		Status (0x00_success)			Reserved (8Bytes, Fixed 0x00)
Read Config Report Raq		0x02		Reserved (9Bytes, Fixed 0x00)			

Read Config Report Rap		0x82		Min Time (2bytes Unit: s)	Max Time (2bytes Unit: s)	BatteryChange (1byteUnit:0.1v)	Reserve (4Bytes, Fixed 0x00)

Command Configuration:
MinTime = 1min MaxTime = 1min BatteryChange = 0.1v
Downlink: 01A9003C003C0100000000 // 003C(Hex) = 60(Dec)
Response:
81A9000000000000000000 (Configuration success)
81A9010000000000000000 (Configuration failure)
(2) Read Configuration:
Downlink: 02A9000000000000000000
Response: 82A9003C003C0100000000 (Current configuration)

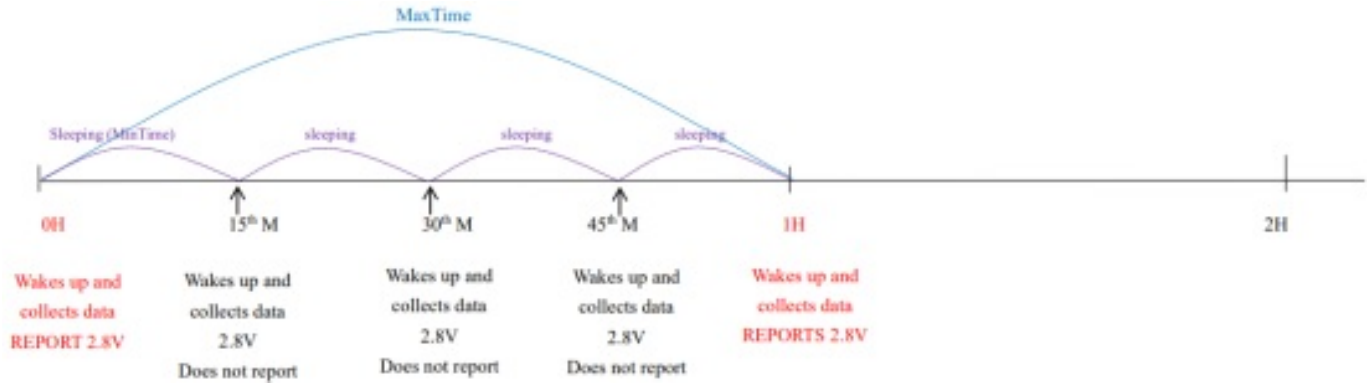
Example for MinTime/MaxTime logic:
Example#1 based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange=0.1V



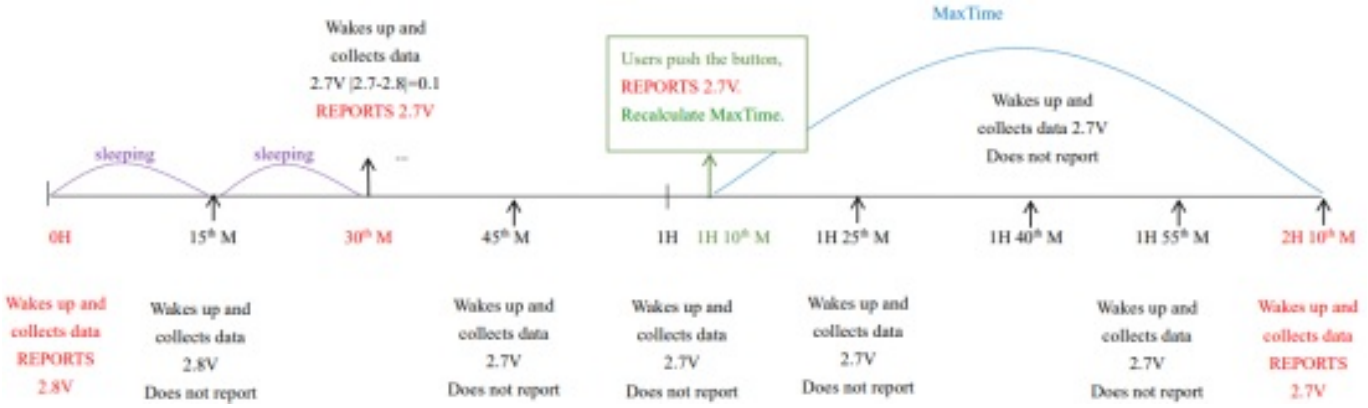
Note:

MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BatteryVoltageChange value.

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



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



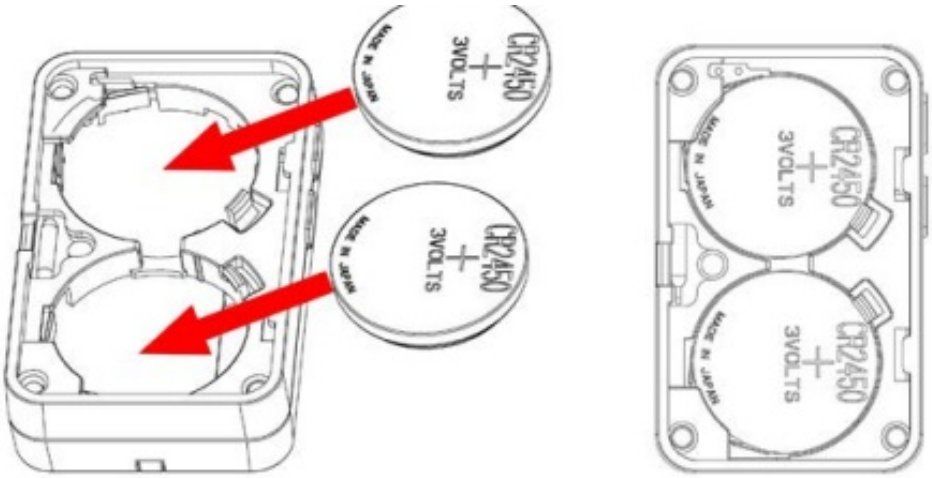
Note:

1. The device only wakes up and performs data sampling according to Meantime Interval. When it is sleeping, it does not collect data.
2. The data collected is compared with the last data **reported.** If the data change value is greater than the Reportable Change value, the device reports according to Meantime interval. If the data variation is not greater than the last data reported, the device reports according to Maxima interval.
3. We do not recommend to set the Meantime Interval value too low. If the Min Time 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 Max Time interval, another cycle of Min Time / Max Time calculation is started.

Installation

1. The device does not have a waterproof function. After the configuration of joining the network is completed, please place it indoors.
2. The dust at the installation location should be wiped clean before paste the device.

3. The battery installation method is as the figure below. (the battery with the “+” side facing up)



Note: The user may need a screwdriver to open the cover.

Important Maintenance Instruction

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

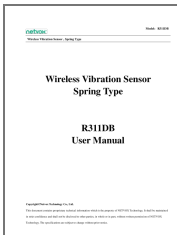
- Keep the equipment dry. Rain, moisture and various liquids or water may contain minerals that can corrode electronic circuits. In case the device is wet, please dry it completely.
- Do not use or store in dusty or dirty areas. This way can damage its detachable parts and electronic components.
- Do not store in excessive heat place. 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. Treating equipment roughly can destroy internal circuit boards and delicate structures.
- Do not wash with strong chemicals, detergents or strong detergents.
- Do not paint the device. Smudges can make debris block detachable parts up and affect normal operation.
- Do not throw the battery into the fire to prevent the battery from exploding. Damaged batteries may also explode.

All the above suggestions apply equally to your device, batteries and accessories.

If any device is not operating properly.

Please take it to the nearest authorized service facility for repairing

Documents / Resources

	**netvox R311DB Wireless Vibration Sensor** [pdf] User Manual R311DB, Wireless Vibration Sensor, R311DB Wireless Vibration Sensor, Vibration Sensor, Sensor

References

- Netvox Command Resolver
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