netvox R313DB Wireless Vibration Sensor User Manual

R313DB Wireless Vibration Sensor
User Manual

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Introduction

R313DB 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 LoRaWAN 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.

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

- Compatible with LoRaWAN
- 2 sections of 3V CR2450 button battery power supply
- Vibration 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 configurations.

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 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.

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 reportchange 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) BatteryChange:
0x01 (0.1V)
(If there are special customized shipments, the settings will be changed according to customer's requirement.)
R313DB 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 MinTime.
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 ConfigureCmd
FPort 0x07

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

CmdID – 1 byte
DeviceType – 1 byte – Device Type of Device
Netvox Pay Load Data – var bytes (Max=9bytes)

| Description	Device	Cmd ID	Device Type	Netvox Pay Load Data			
ConfigReport Req		0x01		MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	Battery Change (1byte Unit: 0.1v)	Reserved (4Bytes, Fixed 0x00)
ConfigReport Rsp		0x81		Status (0x00_success)		Reserved (8Bytes, Fixed 0x00)	
ReadConfig ReportReq	R313 DB	0x02	0xA9	Reserved (9Bytes, Fixed 0x00)			
ReadConfig ReportRsp		0x82		Min Time (2bytes Unit: s)	Max Time (2bytes Unit: s)	Battery Change (1byte Unit: 0.1v)	Reserved (4Bytes, Fixed 0x00)

Command Configuration:

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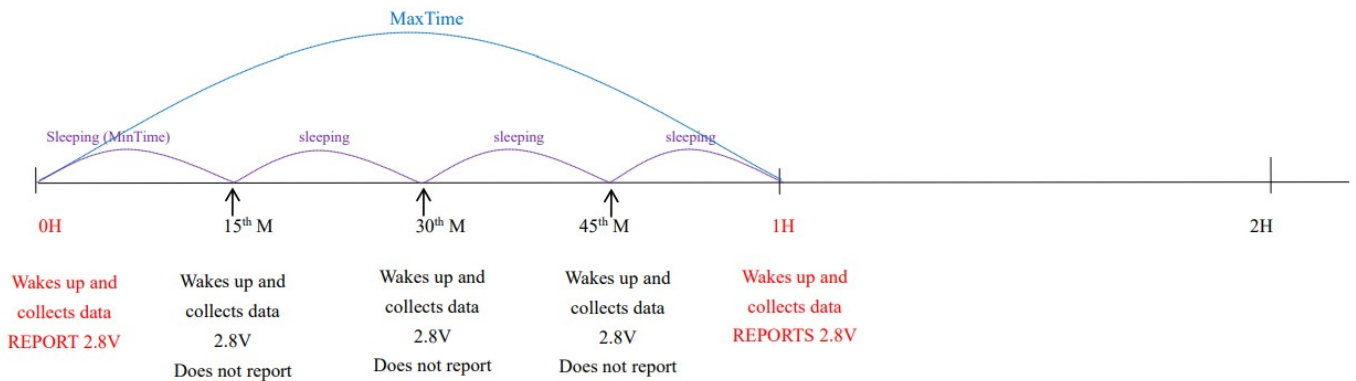
Example for MinTime/MaxTime logic:
Example#1 based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. **BatteryVoltageChange=0.1V**
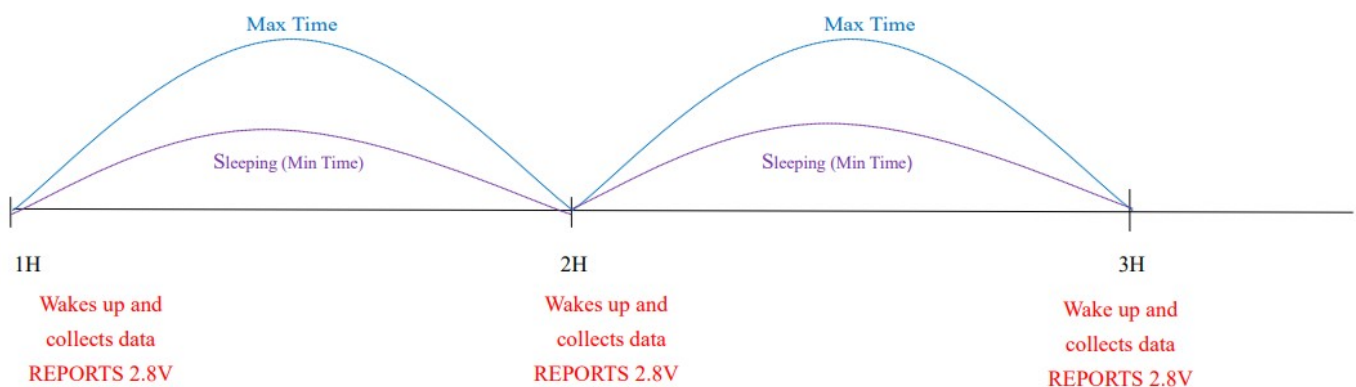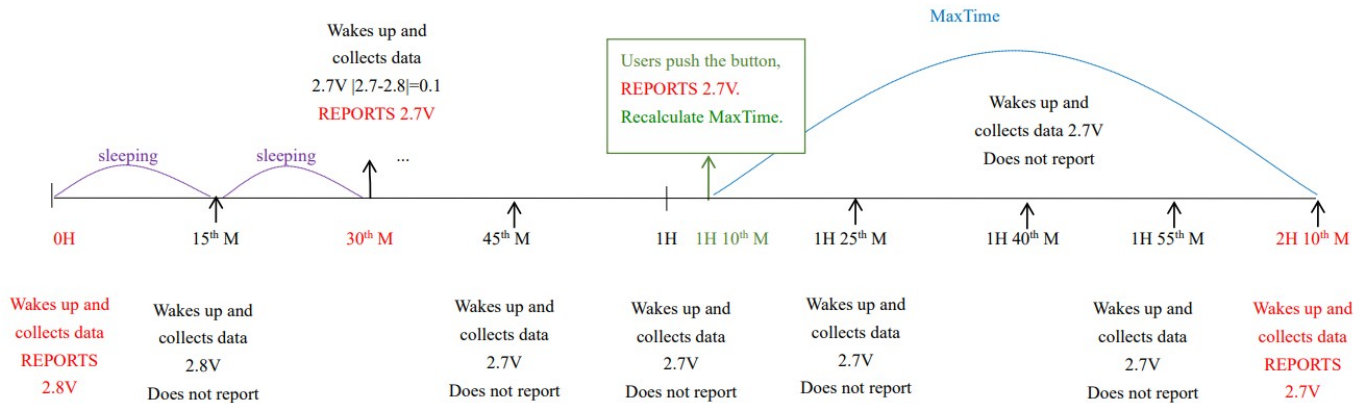

Note:
MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BatteryVoltageChange value.
Example#2 based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange= 0.1V.

MaxTime

Sleeping (MinTime)   sleeping   sleeping   sleeping

0H   15th M   30th M   45th M   1H   2H

Wakes up and collects data REPORT 2.8V

Wakes up and collects data 2.8V Does not report

Wakes up and collects data 2.8V Does not report

Wakes up and collects data 2.8V Does not report

Wakes up and collects data REPORTS 2.8V

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

Wakes up and collects data 2.7V |2.7-2.8|=0.1 REPORTS 2.7V

Users push the button, REPORTS 2.7V. Recalculate MaxTime.

MaxTime

Wakes up and collects data 2.7V Does not report

sleeping   sleeping   ...

0H   15th M   30th M   45th M   1H   1H 10th M   1H 25th M   1H 40th M   1H 55th M   2H 10th M

Wakes up and collects data REPORTS 2.8V

Wakes up and collects data 2.8V Does not report

Wakes up and collects data 2.7V Does not report

Wakes up and collects data 2.7V Does not report

Wakes up and collects data 2.7V Does not report

Wakes up and collects data 2.7V Does not report

Wakes up and collects data REPORTS 2.7V

Note:

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 change value is greater than the ReportableChange 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 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)
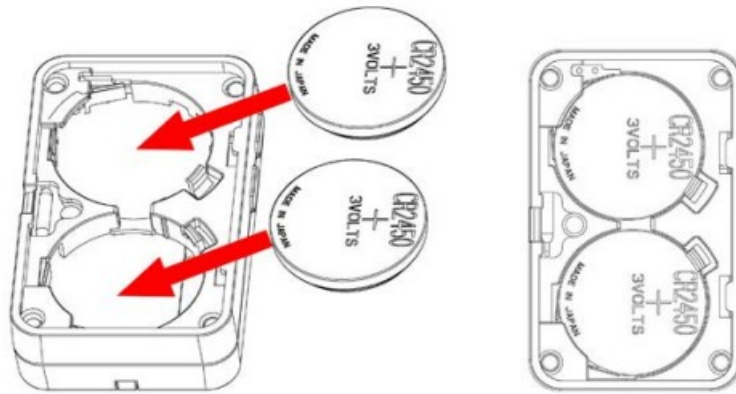
Note: The user may need a screwdriver to open the cover.

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 R313DB Wireless Vibration Sensor [pdf] User Manual
R313DB Wireless Vibration Sensor, R313DB, Wireless Vibration Sensor, Vibration Sensor, Sensor

References

- 🌐 **Netvox Command Resolver**
- 🌐 **ÉÔºò¡£¡£¡£**