Wireless 2-Gang Door/Window Sensor

R313CC

User Manual

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1. Introduction

R313CC is connected with two external reed switches which can be used for door and window switch state detection. The wireless alarm and other functions can be realized through the built-in wireless module. The device is compatible with LoRaWAN protocol.

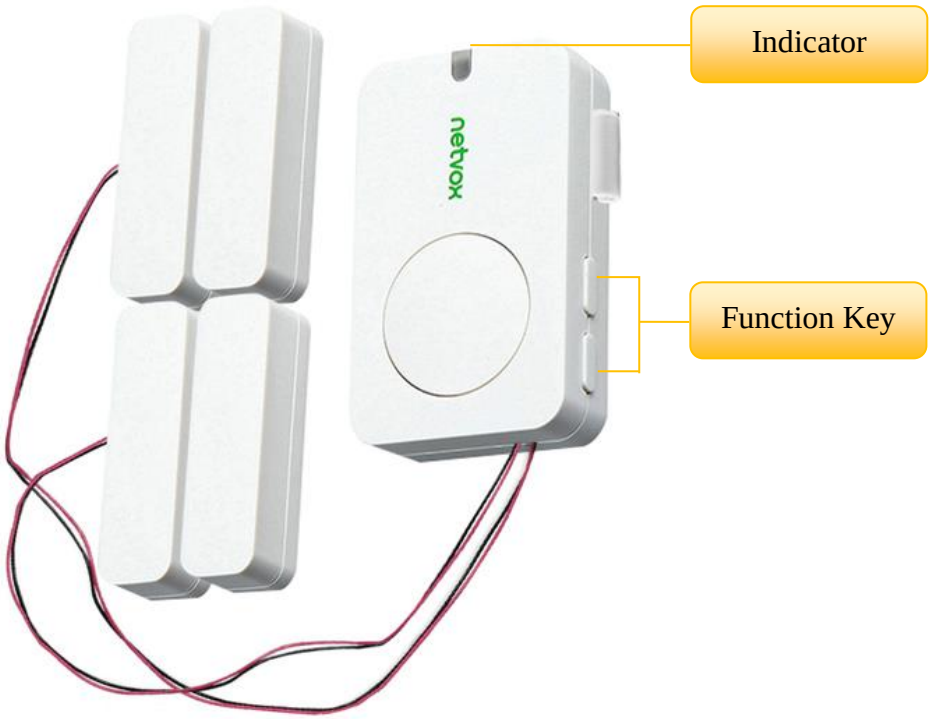
LoRa Wireless Technology:

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.

2. Appearance



3. Main Features

• Compatible with LoRaWAN protocol

• 2 sections of 3V CR2450 button batteries

• Adopt SX1276 wireless communication module

• 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 lifetime for varied models at different configurations.

4. Set up Instruction

On/Off

Power on	Insert batteries. (users may need a screwdriver to open) Insert two sections of 3V CR2450 button batteries and close the battery cover.
Turn on	Press any function key and the green and red indicator flashes 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:	1. Remove and insert the battery, the device memorizes previous on/off state by default. 2. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components. 3. Press any function key and insert batteries at the same time, it will enter engineer testing mode.

Network Joining

Never joined the network	Turn on the device to search the network. 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. The green indicator stays on for 5 seconds: success The green indicator remains off: fail

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: green indicator flashes once and sends a report The device is not in the network: 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

5. Data Report

The device will immediately send a version packet and the report data with the status and voltage.

Data will be reported by default setting before any configuration.

Default setting:

Max Interval: 3600s

Min Interval: 3600s (Detect the reed state every Min Interval by default setting)

Battery Change :0x01 (0.1V)

R313CC status:

When the R313CC status changes, it will send a report.

Window / Door sensor open: 1

Window / Door sensor close: 0

The reported data is decoded by the Netvox LoRaWAN Application Command document and

http://www.netvox.com.cn:8888/cmddoc

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	Cmd ID	Device Type	NetvoxPayLoadData			
Config ReportReq	R313CC	0x01	0x6C	MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	Battery Change (1byte Unit: 0.1v)	Reserved (4Bytes, Fixed 0x00)
Config ReportRsp		0x81		Status (0x00_success)		Reserved (8Bytes, Fixed 0x00)	
ReadConfig ReportReq		0x02		Reserved (9Bytes, Fixed 0x00)			
ReadConfig ReportRsp		0x82		MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	Battery Change (1byte Unit: 0.1v)	Reserved (4Bytes, Fixed 0x00)

(1) Command Configuration:

MinTime = 1min、MaxTime = 1min、BatteryChange = 0.1v

Downlink： 016C003C003C0100000000 003C($H_{ex)}$ = 60($D_{ec)}$

Response：

816C000000000000000000 (Configuration success)

816C010000000000000000 (Configuration failure)

(2) Read Configuration:

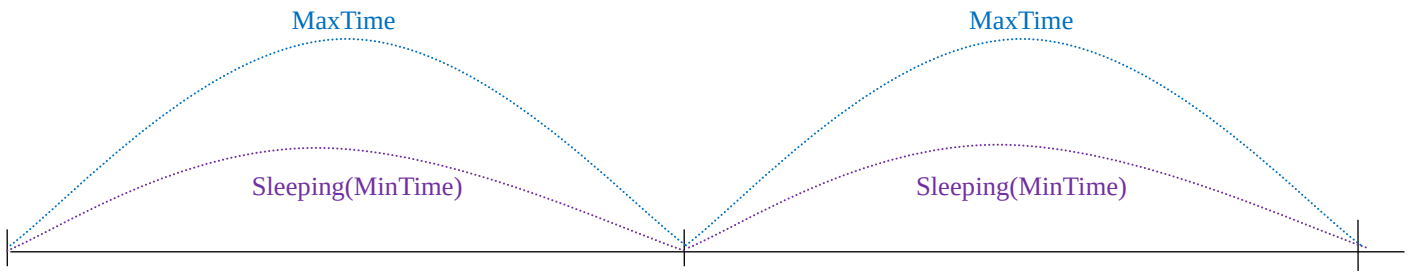
Downlink： 026C000000000000000000

Response： 826C003C003C0100000000（Current configuration）

Example for MinTime/MaxTime logic

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

i.e.BatteryVoltageChange=0.1V



Wakes up and collects data
REPORTS 2.8V

Wakes up and collects data
REPORTS 2.8V

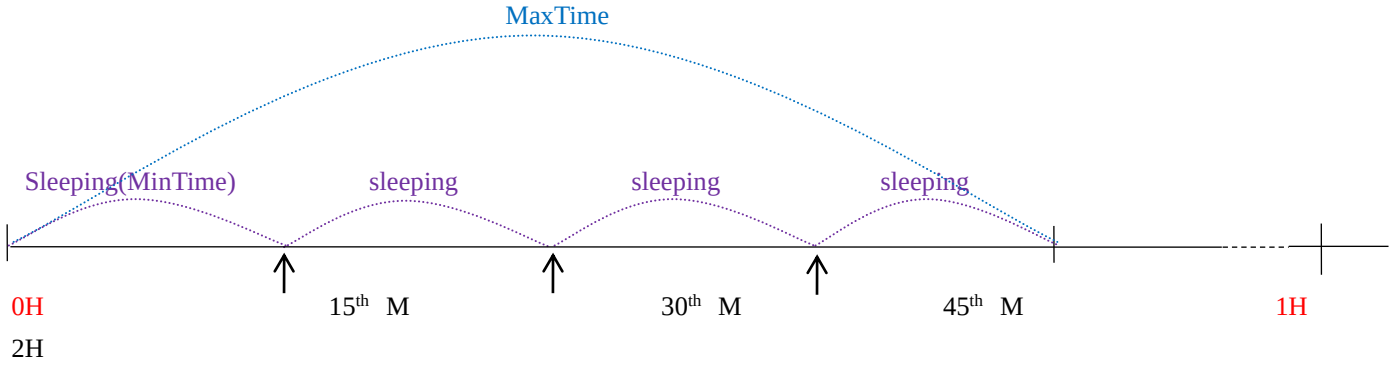
Wake up and collects data
REPORTS 2.8V

Note:

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

Example#2 based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change

i.e. BatteryVoltageChange= 0.1V.



Wakes up and collects data REPORT 2.8V

Wakes up and collects data 2.8V Does not report

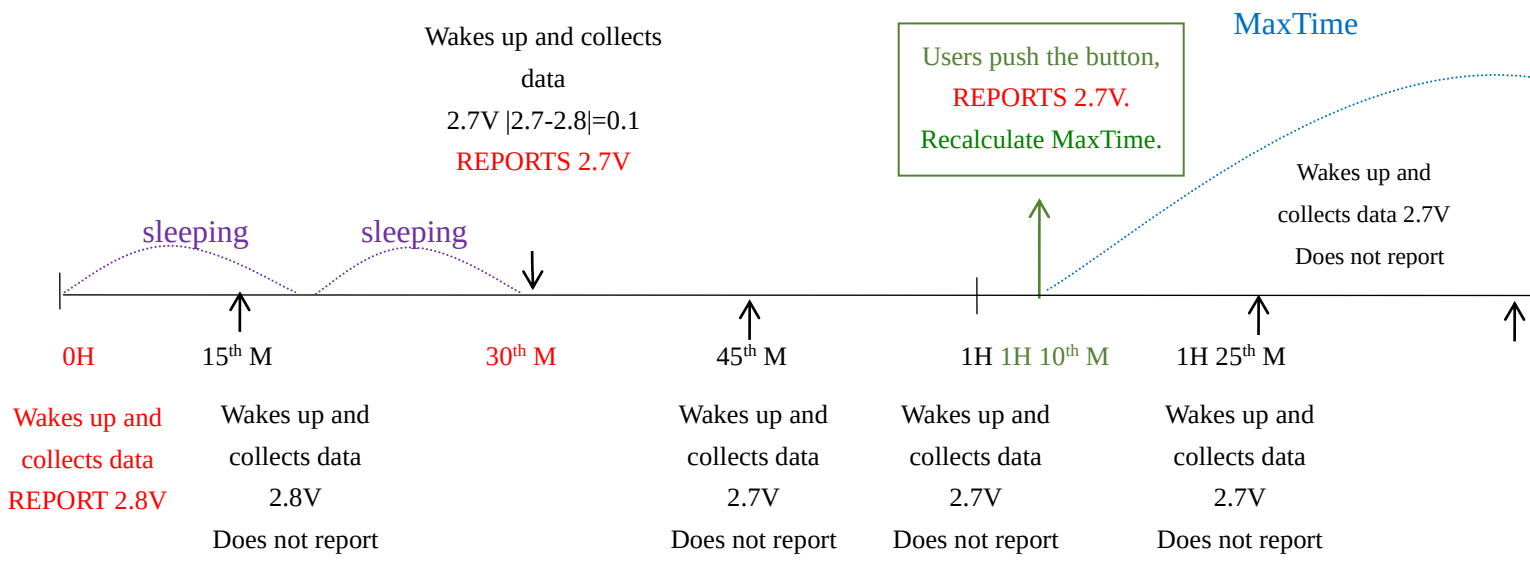
Wakes up and collects data 2.8V Does not report

Wakes up and collects data 2.8V Does not report

Wakes up and collects data REPORT 2.8V

Example#3 based on MinTime = 15 Minutes, MaxTime= 1 Hour, Reportable Change

i.e. BatteryVoltageChange= 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 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.

6. Installation

1. Tear off the 3M sticker on the back of the R313CC, and stick the body to a smooth wall. (Please do not stick it on a rough wall to avoid the device from falling off after a long time of use).

Note:

- Please wipe the wall clean before installation to avoid dust on the wall which may affect the installation of the device.
- 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. Tear off the 3M sticker at the bottom of the reed switch and the magnet (as the red frame in the figure above).

Then, stick the reed switch and the magnet to the door or window in parallel (as the figure on the right).

Note:

The installation distance between the reed switch and the magnet should be <u>less than 2cm.</u>

3. When the door or window is opened, the reed switch is separated from the magnet, and the device reports the data immediately.
4. If it detects that the battery voltage exceeds the variation during Min Time, the data will be reported immediately.
5. Whether the state of the reed switch status changes, the data will be reported regularly when the Max Time.

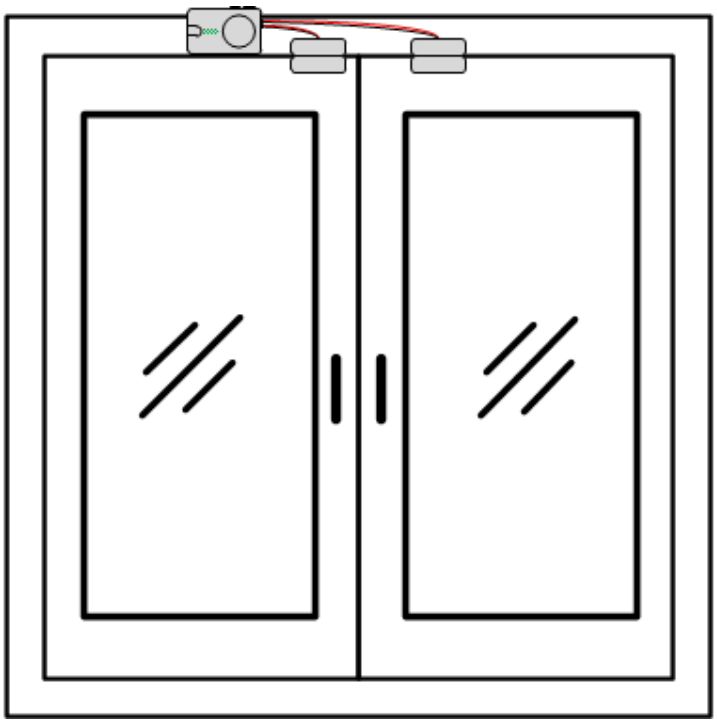
Note:

When the reed switch is closed, the status is “0”.
When the reed switch is opened, the status is “1”.

R313CC is suitable below scenarios:

- Door, window
- Drawer
- Archives
- Closet
- Refrigerators and freezers
- Cargo ship hatch

The place needs to detect the opening and closing status.



Installation Diagram of R313CC

7. 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.