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*Wireless 2-Input Dry Contact Interface*

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**Wireless 2-Input Dry Contact  
Interface**

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## 1. Introduction

R718J2 is a ClassA type external 2-way dry contact device based on LoRaWAN open protocol of Netvox. It can externally connect various switches, buttons, relays and reed switch output. It can detect the closing or disconnecting signal of dry contact and is compatible with LoRaWAN protocol.

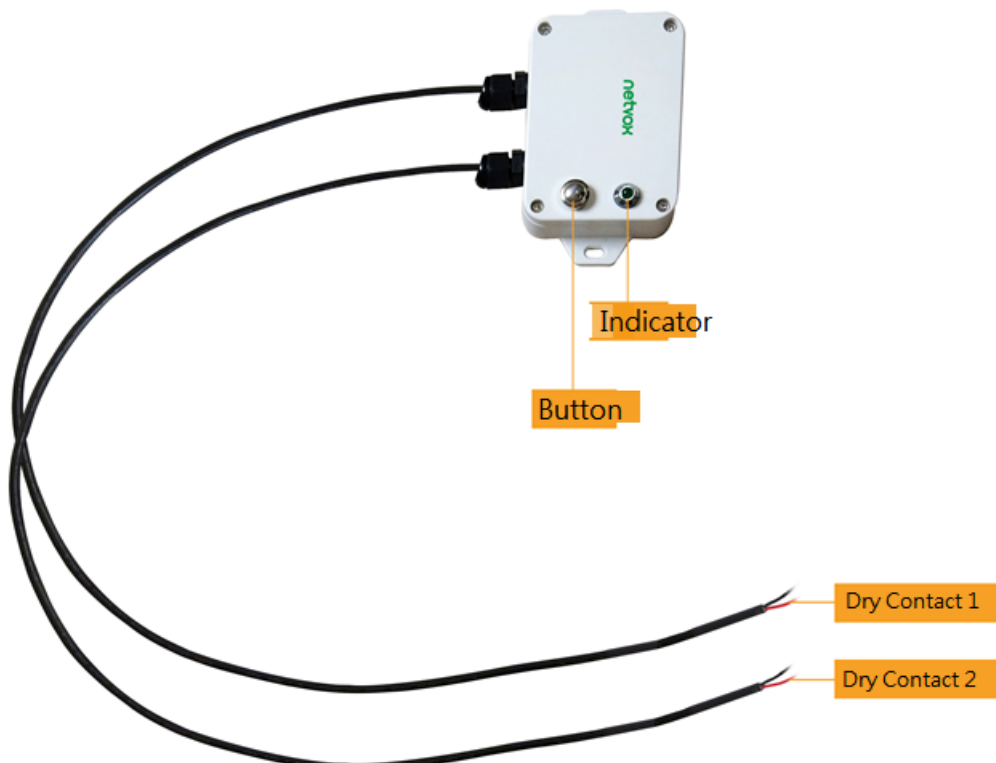
LoRa wireless technology:

LoRa is a wireless communication technology dedicated to long-distance low-power consumption. Its spread-spectrum modulation method greatly increases the communication distance compared with other communication methods, and can be widely used in long-distance low-rate IoT wireless communication fields in various occasions. Such as automatic meter reading, building automation equipment, wireless security systems, industrial monitoring and control. It has the characteristics of small size, low power consumption, long transmission distance and strong anti-interference ability.

LoRaWAN:

LoRaWAN defines an end-to-end standard specification using LoRa technology to ensure interoperability between devices and gateways from different vendors.

## 2. Appearance



### 3. Product Property

- Compatible with LoRaWAN
- 2 ER14505 lithium batteries (3.6V / section) parallel power supply
- 2-way dry contact detection
- Simple operation and setting

### 4. Set up Instruction

#### 4.1 Power on and Turn on / off

- (1) **Power on:** Insert batteries: open the battery cover; insert two sections of 3.6V ER14505 AA 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 and hold function key for 3 seconds till the green indicator flashes once and release to turn on device.
- (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 the device is turned off.

Note:

1. The interval between shutting down twice or power 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.
3. Turn off operation is same with “Restore to Factory Setting” operation.
4. Each time the battery is removed, it will be installed in the default “turn off” state, and users can turn on.

#### 4.2 Join into the Network

To join the device into LoRa network to communicate with LoRa gateway.

The network operation is as following:

- (1) If the device had never joined any network, 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 will be off.
- (2) If the device had been joined into a LoRa network, remove and insert the batteries; it will repeat step (1).

### 4.3 Function of Keys

- (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 to turn on the device which is in the network and 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)

Note:

The device send data cycle depends on real burning configuration.

The interval between two reports must be the minimum interval.

Dry contact detection trigger:

The dry contact detects a change in state and immediately issues a report. Closed: 0, pulled open: 1.

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

## Report Configuration

ConfigReportReq	R718J2	0x01	0x43	MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	BatteryChange (1byte Unit:0.1v)	Reserved (4Bytes, Fixed 0x00)	
ConfigReportRsp		0x81		Status (0x00_success)	Reserved (8Bytes, Fixed 0x00)			
ReadConfigReportReq		0x02		Reserved (9Bytes, Fixed 0x00)				
ReadConfigReportRsp		0x82		MinTime (2bytes Unit: s)	MaxTime (2bytes Unit: s)	BatteryChange (1byte Unit:0.1v)	Reserved (4Bytes, Fixed 0x00)	

(1) Configure R718PJ2 device parameter MinTime = 1min、MaxTime = 1min、BatteryChange = 0.1v

Downlink: 0143003C003C0100000000

Device Return:

814300000000000000000000 (configuration success)

814301000000000000000000 (configuration failure)

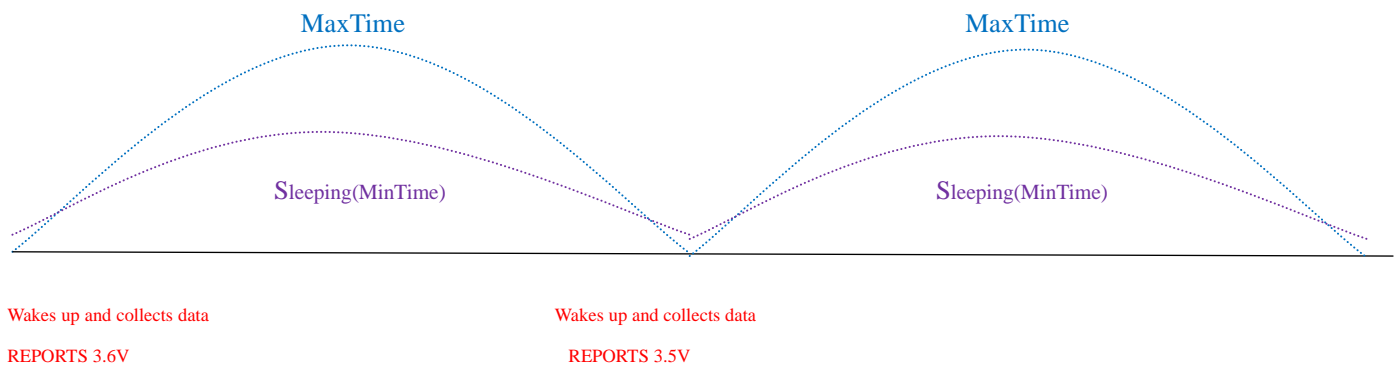
(2) Read R718J2 device parameter

Downlink: 024300000000000000000000

Device Return:

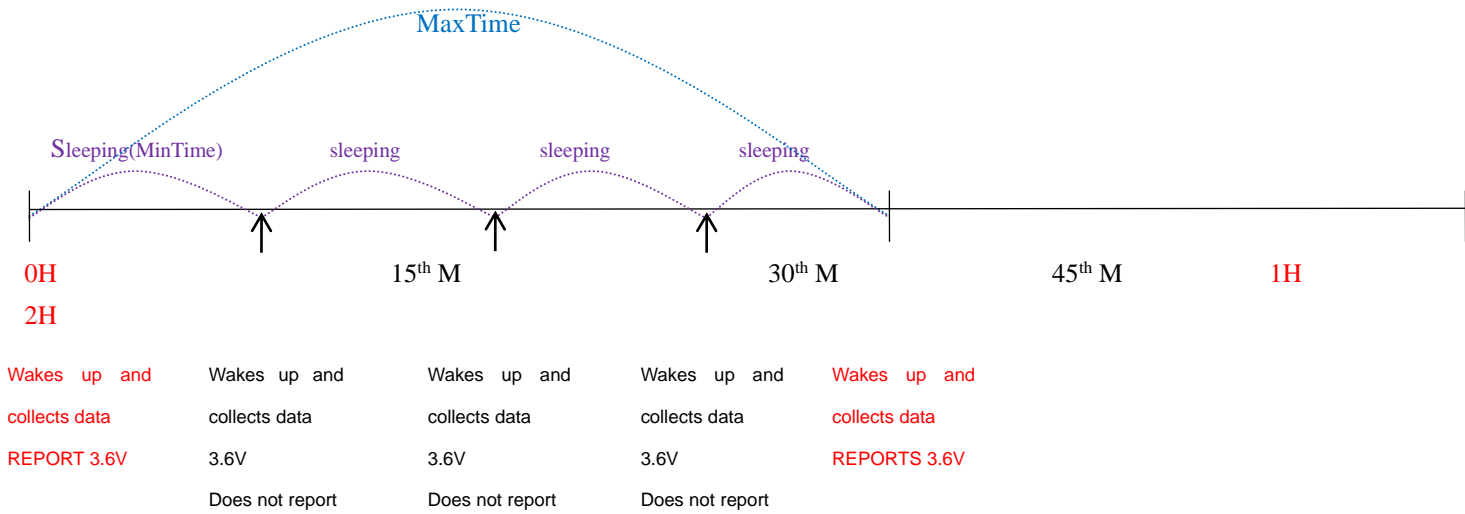
8243003C003C0100000000 (device current parameter)

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

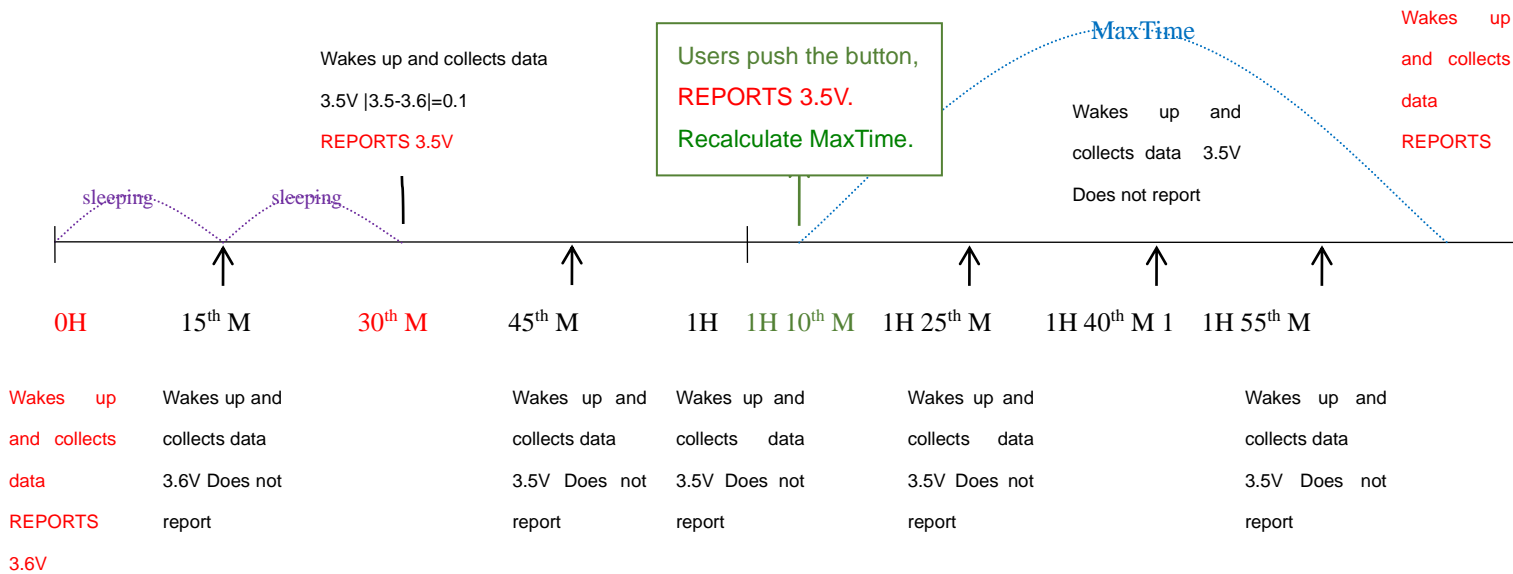


Note: MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BtteryVoltageChange value.

**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.



## 5. Restore to Factory Setting

R718J2 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. R718J2 is at off mode by default setting after restoring to factory setting.

Note: The device operation of turning off is the same as the “Restore Factory Settings” operation.

## 6. Sleeping Mode

The device 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 → R718J2 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

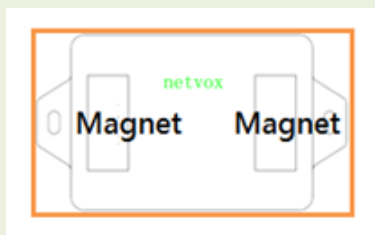
The operating voltage threshold is 3.2V. If the battery voltage is lower than 3.2V, the device will send a low-power warning to the LoRa network.



## 8. Installation

1. The dry contact sensor (R718J2) has a built-in magnet (as Figure 1 below), which can be attached to the surface of an iron object during installation, which is convenient and quick. In order to make the installation firmer, please use screws (purchased separately) to fix the device to the wall or other surface. (as Figure 2 below)

Note: Do not install the device in a metal shielded box or in an environment surrounded by other electrical equipment to avoid affecting the wireless transmission of the device.



2. After the dry contact sensor detects the change of the dry contact state, it will report the data immediately.

3. If the battery voltage is detected that exceeds the change value during Min Time, the data will be reported immediately.

4. Whether the state of the dry contact is change, a piece of data will be reported regularly when the MaxTime comes.

Note:

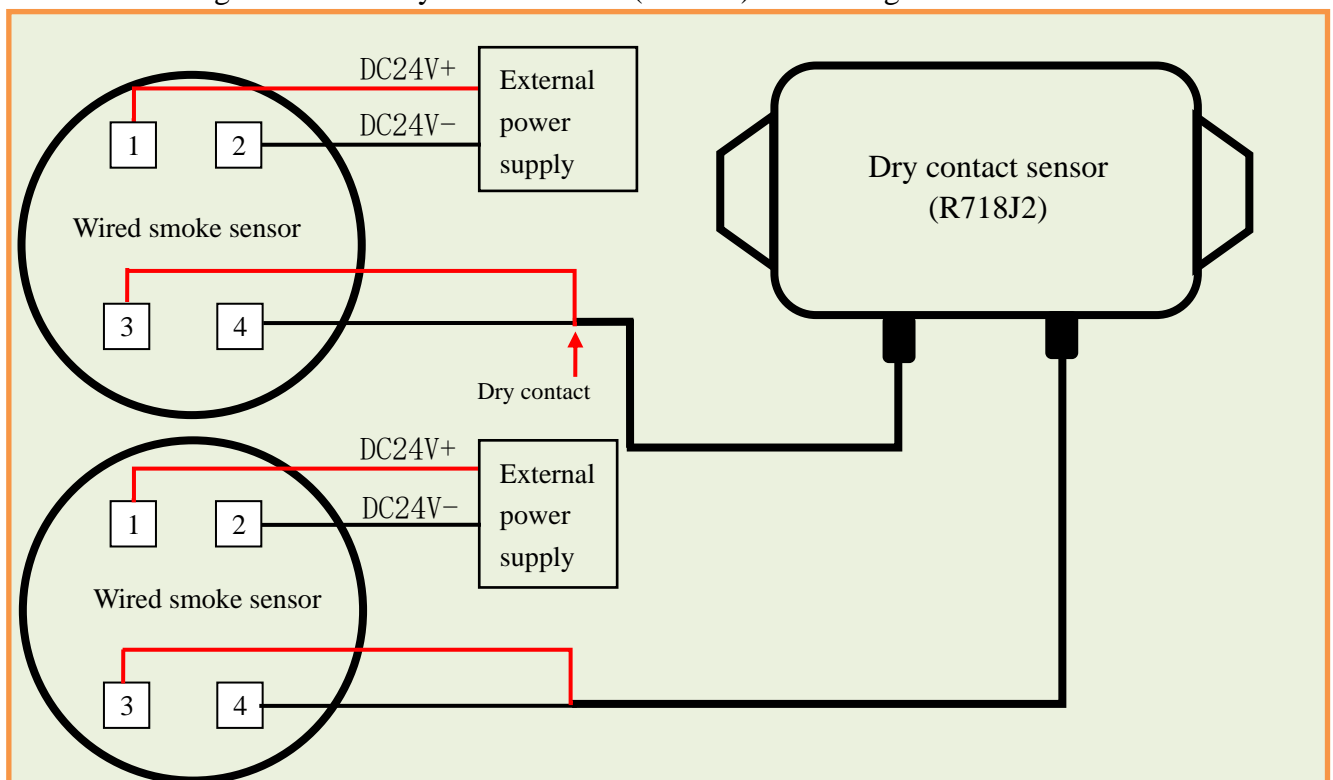
When the dry contact is connected, the data status bit is "1". When the dry contact is disconnected, the data status bit is "0".

Dry contact sensor (R718J2) can be used in the following scenarios:

- Various switches and buttons
- Dry contact output of sensor
- The operating status of the equipment
- State monitoring of doors and windows in home or business

The occasion is necessary to judge the state of the sensor through the dry contact signal.

A diagram that the dry contact sensor (R718J2) connecting to two wired smoke sensors.



### **\*Information about Battery Passivation**

Many of Netvox devices are powered by 3.6V ER14505 Li-SOCl<sub>2</sub> (lithium-thionyl chloride) batteries that offer many advantages including low self-discharge rate and high energy density.

However, primary lithium batteries like Li-SOCl<sub>2</sub> batteries will form a passivation layer as a reaction between the lithium anode and thionyl chloride if they are in storage for a long time or if the storage temperature is too high. This lithium chloride layer prevents rapid self-discharge caused by continuous reaction between lithium and thionyl chloride, but battery passivation may also lead to voltage delay when the batteries are put into operation, and our devices may not work correctly in this situation.

As a result, please make sure to source batteries from reliable vendors, and the batteries should be produced within the last three months.

If encountering the situation of battery passivation, users can activate the battery to eliminate the battery hysteresis.

### **\*To determine whether a battery requires activation**

Connect a new ER14505 battery to a 68ohm resistor in parallel, and check the voltage of the circuit. If the voltage is below 3.3V, it means the battery requires activation.

### **\*How to activate the battery**

- 1) Connect a battery to a 68ohm resistor in parallel
- 2) Keep the connection for 6~8 minutes
- 3) The voltage of the circuit should be  $\geq 3.3V$

Note:

Please do not disassemble the device unless it is required to replace the batteries.

Do not touch the waterproof gasket, LED indicator light, function keys when replacing the batteries.

Please use suitable screwdriver to tighten the screws (if using an electric screwdriver, it is recommended to set the torque as 4kgf) to ensure the device is impermeable.

## 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 a 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.