

**Wireless Occupancy and Door Sensor
R718PQA
User Manual**

Table of Content

1. Introduction.....	2
2. Appearance.....	2
3. Main Features.....	2
4. Set up Instruction.....	3
5. Data Report.....	4
6. Disable time and Detection time.....	6
7. Installation.....	6
8. Important Maintenance Instruction.....	6

1. Introduction

R718PQA is a long-range wireless occupancy and door sensor for Netvox Class A type devices based on LoRaWAN open 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

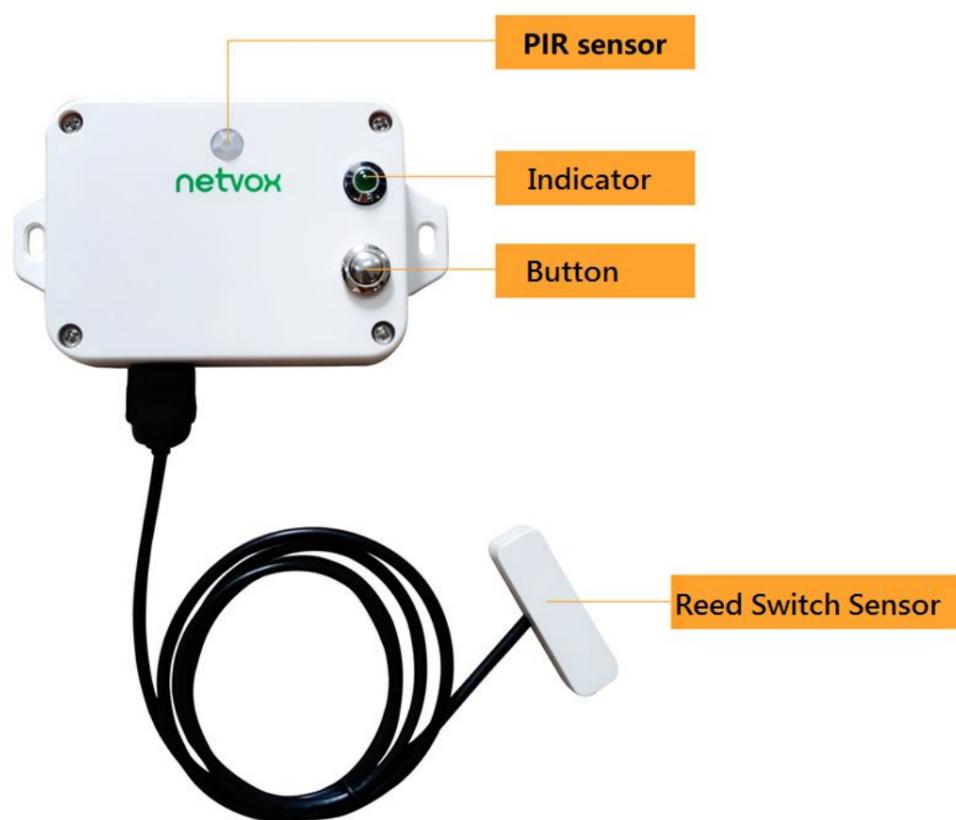


Fig.1 R718PQA Appearance

3. Main Features

- Compatible with LoRaWAN protocol
- 2 sections ER14505 3.6V Lithium AA battery
- Detect occupancy status
- Protection level IP65 / IP67 (optional)
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum technology
- Configuration parameters can be configured through third-party software platforms, data can be read and alarms can be set via SMS text and email (optional)
- Available third-party platform: 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.

4.Set up Instruction

On/Off

Power on	Insert batteries. (users may need a flat blade screwdriver to open)
Turn on	Press and hold the function key for 3 seconds till the green indicator flashes once.
Turn off (Restore to factory setting)	Press and hold the function key for 5 seconds till green indicator flashes for 20 times.
Power off	Remove Batteries.
Note:	<ol style="list-style-type: none"> 1. Remove and insert the battery; the device is at 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. At 1st -5th second after power on, the device will be in engineering test mode.

Network Joining

Never joined the network	<p>Turn on the device to search the network to join.</p> <p>The green indicator stays on for 5 seconds: success</p> <p>The green indicator remains off: fail</p>
Had joined the network (not at factory setting)	<p>Turn on the device to search the previous network to join.</p> <p>The green indicator stays on for 5 seconds: success</p> <p>The green indicator remains off: fail</p>
Fail to join the network (when the device is on)	<p>First two mins: wake up every 15 seconds to send request.</p> <p>After two mins: enter sleeping mode and wake up every 15 minutes to send request.</p> <p>Note: Suggest to remove batteries if the device is not used to save power. Suggest to check the device verification information on the gateway or consult your platform server provider.</p>

Function Key

Press and hold for 5 seconds	<p>Restore to factory setting / Turn off</p> <p>The green indicator flashes for 20 times: success</p> <p>The green indicator remains off: fail</p>
Press once	<p>The device is in the network: green indicator flashes once and sends a report</p> <p>The device is not in the network: green indicator remains off</p>

Sleeping Mode

The device is on and in the network	<p>Sleeping period: Min Interval.</p> <p>When the reportchange exceeds setting value or the state changes: send a data report according to Min Interval.</p>
The device is on but not in the network	<p>First two mins: wake up every 15 seconds to send request.</p> <p>After two mins: enter sleeping mode and wake up every 15 minutes to send request.</p> <p>Note: Suggest to remove batteries if the device is not used. Suggest to check device verification on gateway.</p>

Low Voltage Warning

Low Voltage	3.2V
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5. Data Report

The device automatically sends a version package Report and a report data with the occupied status.
The device sends data in the default configuration before any configuration is done.

Maximum time: Max Interval

Minimum time: Min Interval (by default, the current voltage value is detected every Min Interval)

Default reportchange:

Battery --- 0x01 (0.1V)

Occupancy alarm:

(Requires door magnet and infrared to detect someone at the same time)

Occupy status = 1

Vacant status = 0

Note: The data transmission period of the device is subject to the programming configuration before shipment.

The interval between two reports must be the minimum time

R718PQA default Max Interval = 15min, Min Interval = 15min

(if there is special custom shipment, the setting is changed according to customer requirements)

The data parsing reported by the device is referenced by the Netvox LoraWAN Application Command document and <http://www.netvox.com.cn:8888/page/index>

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 Example:

Description	Device	CmdID	DeviceType	NetvoxPayloadData			
ConfigReportReq	R718PQA	0x01	0x97	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 device parameters MinTime = 1min, MaxTime = 1min, BatteryChange = 0.1v

Downlink: 0197003C003C0100000000

Device returns:

819700000000000000000000 (configuration succeeded)

819701000000000000000000 (configuration failed)

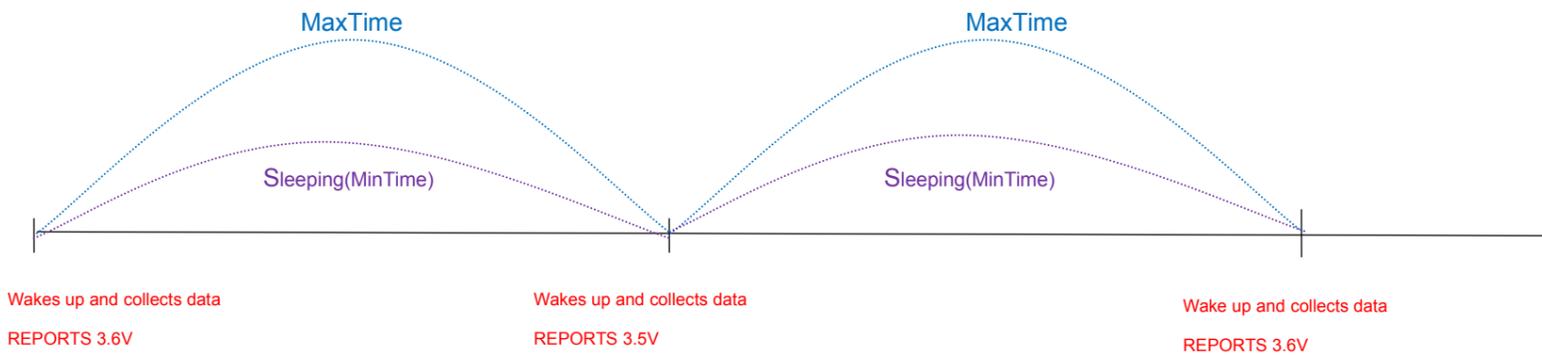
(2) Read device parameters

Downlink: 02970000000000000000

Device returns:

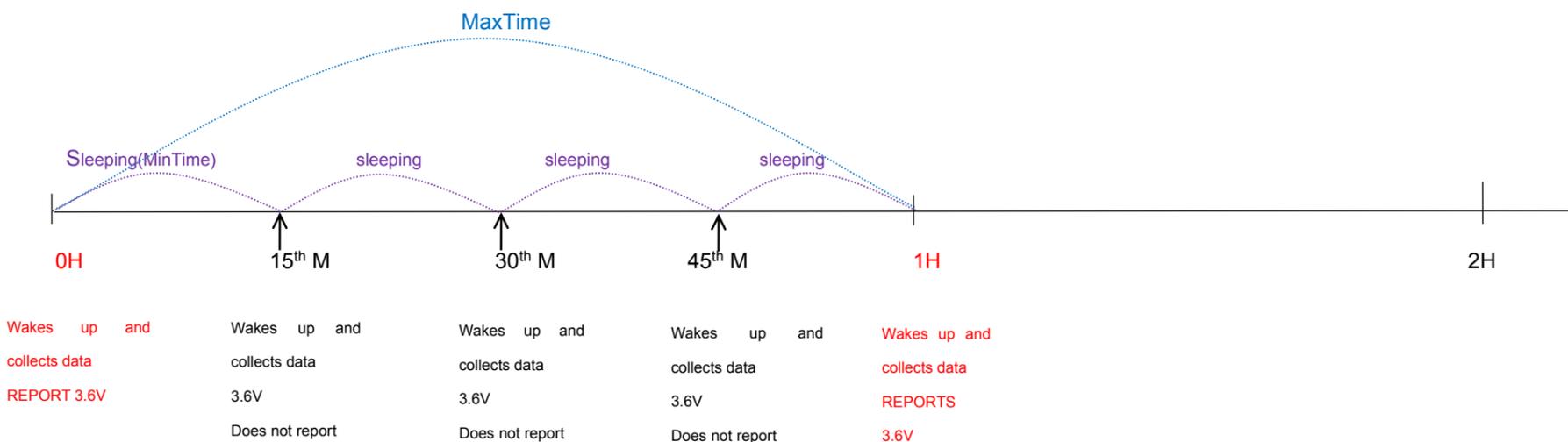
8297003C003C0100000000 (device current configuration parameter)

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

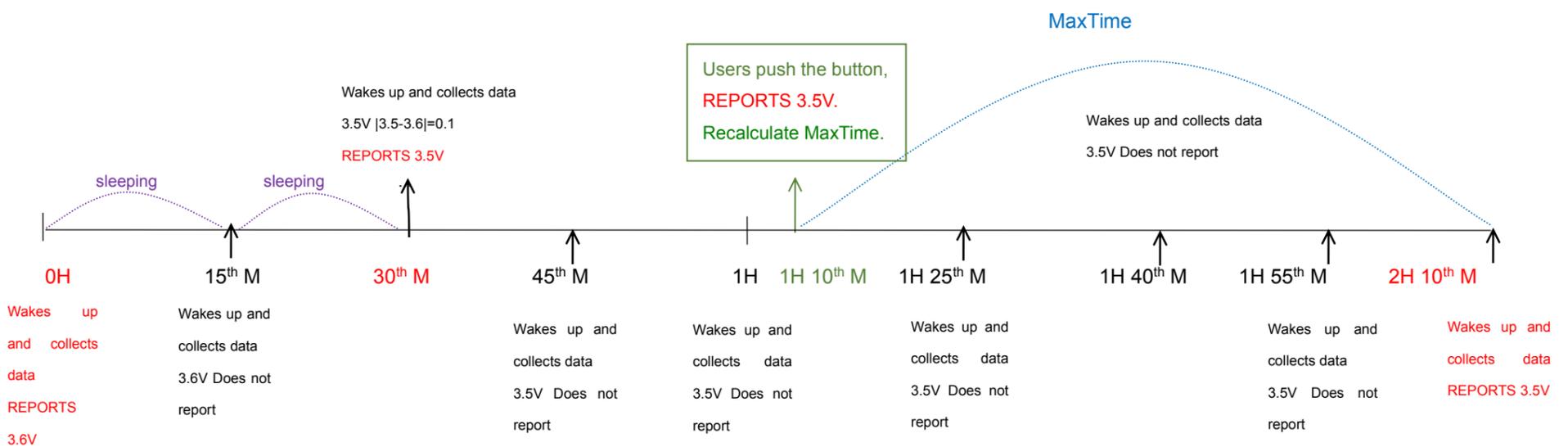


Note: MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BtteryVoltageChange value.

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.



- 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 variation 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. Disabletime and Detectiontime

IRDisableTime is the sampling period while IRDetectionTime is detecting period.

Both IRDisableTime and IRDetectionTime are 30 seconds in default.

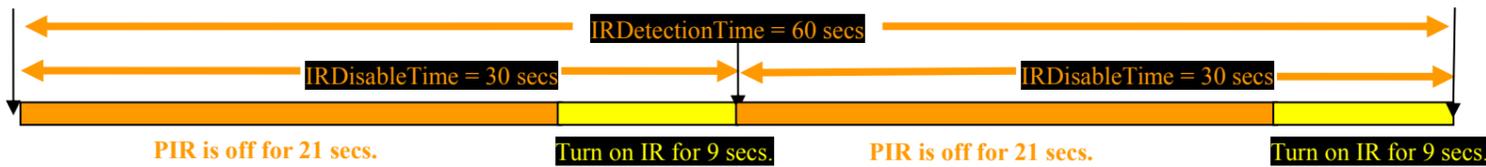
To save power, IR detection will be turned off for first 70% of IRDisableTime and turned on for rest 30% of IRDisableTime.

- If living creature is detected during the rest 30% of IRDisableTime, the IR delay time will be extended for another IRDetectionTime till no infrared signal is detected.
- If no living creature is detected during IRDetectionTime, RB11E will report un-occupy along with other sensor status, such as temperature, illumination, etc.

Example1:

While IRDetectionTime is 60 secs and IRDisableTime is 30 secs, no living creature is detected after triggered.

RB11E will report un-occupy after 60 secs(IRDetectTime).

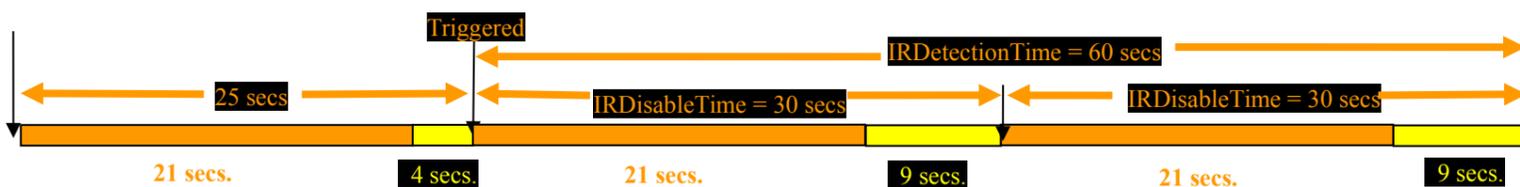


Example2:

While IRDetectionTime is 60 secs and IRDisableTime is 30 secs, living creature is detected during 25th sec.

RB11E will restart IR detect procedure(IRDetectionTime).

No living creature is detected during next IRDetectionTime and RB11E therefore report un-occupy.



Remarks:

Occupancy status (status =1) requires both door magnet and infrared to detect someone

7. Installation

This product comes with waterproof function. When using it, the back of it can be adsorbed on the iron surface, or the two ends can be fixed to the wall with screws.

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

8.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.