

# **Wireless 2-Input Push Button Interface**

## **R718T2**

## **User Manual**

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## 1. Introduction

Wireless 2-Input Push Button Interface allows a notification signal to be sent when connected push button is pushed. When someone is in danger and needs emergency assistance, press the emergency push button device; R718T2 immediately sends an alarm message to the gateway.

### 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



## 3. Main Features

- Compatible with LoRaWAN
- 2 ER14505 lithium batteries in parallel power supply (3.6V / section)
- IP Rating: IP65
- Push button interface
- Compatible with LoRaWAN™ Class A
- The base is attached with a magnet that can be attached to a ferromagnetic material object

- 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

Battery Life:

- Please refer to web: [http://www.netvox.com.tw/electric/electric\\_calc.html](http://www.netvox.com.tw/electric/electric_calc.html)
- At this website, users can find battery life time for variety models at different configurations.

## 4. Set up Instruction

### On/Off

Power on	Insert batteries (Users may need a screwdriver to open)
Turn on	Press and hold the function key for 3 seconds and the green indicator flash 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:	<ol style="list-style-type: none"> <li>1. Remove and insert the battery; the device is at off state by default.</li> <li>2. On/off interval is suggested to be about 10 seconds to avoid the interference of capacitor inductance and other energy storage components.</li> <li>3. For the first 5 second after powering on, the device will be in engineering test mode.</li> </ol>

### 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	<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)	Suggest to check the device verification information on the gateway or consult your platform server provider.

### Function Key

Press and hold for 5 seconds	<p>Restore to factory setting / Turn off</p> <p>The green indicator flashes 20 times: success</p> <p>The green indicator remains off: fail</p>
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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
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### 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.
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### Low Voltage Warning

Low Voltage	3.2V
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## 5. 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.

#### Default setting:

Maximum time: 3600s

Minimum time: 3600s (Detect the current voltage value every 3600s by default setting)

Battery Change: 0x01 (0.1V)

Note:

1. The device report interval will be programmed based on the default firmware which may vary.
2. The interval between two reports must be the minimum time.
3. Please refer Netvox LoRaWAN Application Command document and Netvox Lora Command Resolver

<http://cmddoc.netvoxcloud.com/cmddoc> to resolve uplink data.

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

### 5.1 Example of ReportDataCmd

**FPort: 0x06**

Bytes	1	1	1	Var(Fix=8 Bytes)
	Version	DeviceType	ReportType	NetvoxPayloadData

**Version**— 1 byte —0x01—the Version of NetvoxLoRaWAN Application Command Version

**DeviceType**– 1 byte – Device Type of Device

The devicetype is listed in Netvox LoRaWAN Application Devicetype doc

**ReportType** – 1 byte –the presentation of the NetvoxPayLoadData, according the devicetype

**NetvoxPayLoadData**– Fixed bytes (Fixed =8bytes)

Device	Device Type	Report Type	NetvoxPayLoadData			
R718T2	0x48	0x01	Battery (1Byte, unit:0.1V)	Alarm1 (1Byte) 0:noalarm 1:alarm	Alarm2 (1Byte) 0:noalarm 1:alarm	Reserved (5Bytes, fixed 0x00)

Uplink: 0148012401000000000000

1<sup>st</sup> byte (01): Version

2<sup>nd</sup> byte (48): Device Type 0x48 ,R718T2

3<sup>rd</sup> byte (01): ReportType

4<sup>th</sup> byte (24): Battery 3.6v , 24 Hex=36 Dec 36\*0.1v=3.6v

5<sup>th</sup> byte (01): Alarm1 - alarm

6<sup>th</sup> byte (00): Alarm2- no alarm

7<sup>th</sup> ~ 11<sup>th</sup> byte (0000000000): Reserved

## 5.2 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	CmdID	Device Type	NetvoxPayLoadData			
Config ReportReq	R718T2	0x01	0x48	MinTime (2bytes, Unit: s)	MaxTime (2bytes, Unit: s)	BatteryChange (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)	BatteryChange (1byte, Unit: 0.1v)	Reserved (4Bytes, Fixed 0x00)

(1) Configure device parameters MinTime = 1min, MaxTime = 1min, BatteryChange = 0.1v

Downlink: 0148003C003C0100000000 003C(H<sub>ex</sub>) = 60(D<sub>ec</sub>)

Device returns:

81480000000000000000 (configuration successful)

81480100000000000000 (configuration failed)

(2) Read device parameters

Downlink: 02480000000000000000

Device returns:

8248003C003C0100000000 (current device parameters)

### 5.3 Example of ButtonPressTime

FPort: 0x0D

Description	CmdID	PayLoad(Var bytes)
SetButton PressTimeReq	0x01	PressTime(1byte) 0x00_QuickPush_ Less than 1 Second, Other Value present the presstime such as 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push, and so on
SetButton PressTimeRsp	0x81	Status (0x00_Success 0x01_Failure)
GetButton PressTimeReq	0x02	Reserved (1Byte,Fixed 0x00)
GetButton PressTimeRsp	0x82	PressTime(1byte) Other Value present the presstime such as 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push,and so on Other value is reserved

(1) Configure device parameters ButtonPressTime=0x02

Downlink: 0102

Device returns:

8100 (configuration successful)

8101 (configuration failed)

(2) Read device parameters

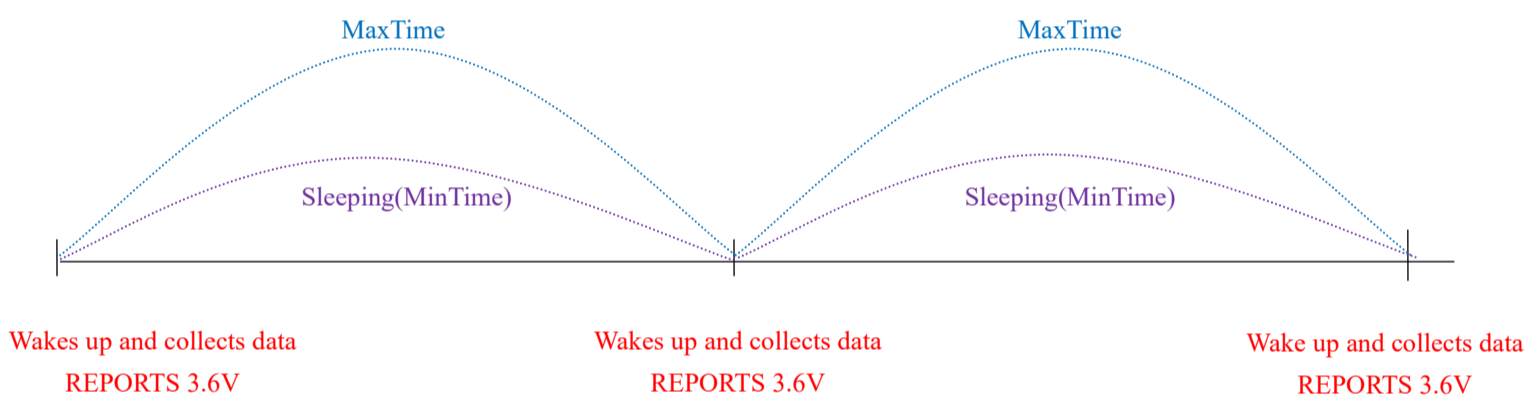
Downlink: 0200

Device returns:

8202 (current device parameters)

### 5.4 Example for MinTime/MaxTime logic

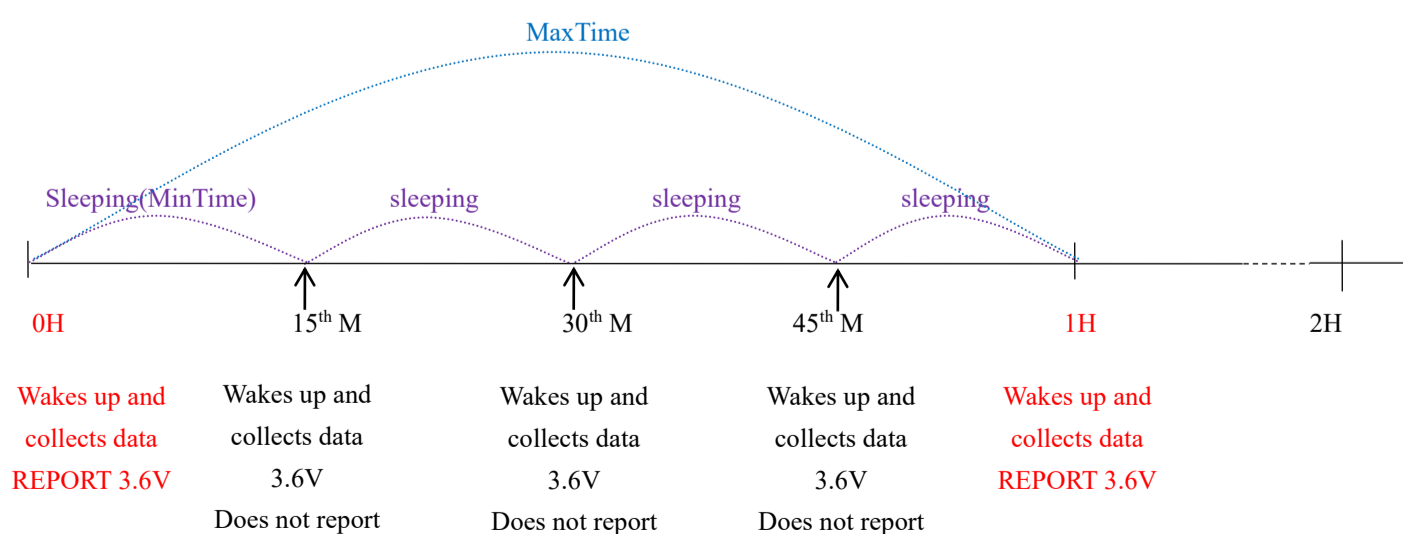
**Example#1** based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange=0.1V



Note:

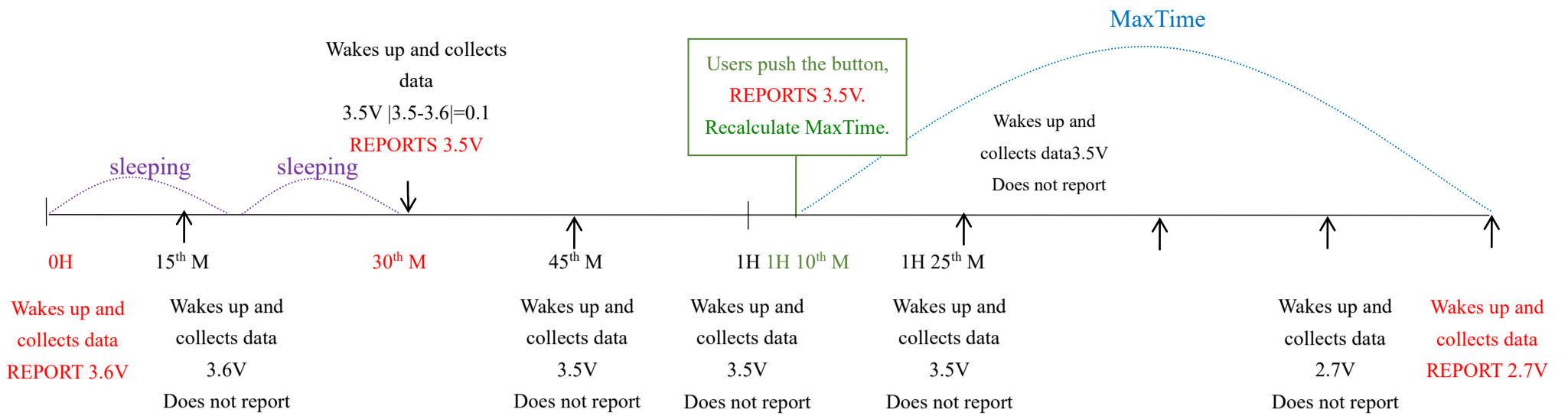
MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BtteryVoltageChange value.

**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 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.

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. 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 it is suggested that if the storage period is more than one month from the date of battery production, all the batteries should be activated.

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

### ER14505 Battery Passivation:

#### 6.1 To determine whether a battery requires activation

Connect a new ER14505 battery to a resistor in parallel, and check the voltage of the circuit.

If the voltage is below 3.3V, it means the battery requires activation.

#### 6.2 How to activate the battery

- a. Connect a battery to a resistor in parallel
- b. Keep the connection for 5~8 minutes
- c. The voltage of the circuit should be  $\geq 3.3$ , indicating successful activation.

Brand	Load Resistance	Activation Time	Activation Current
NHTONE	165 $\Omega$	5 minutes	20mA
RAMWAY	67 $\Omega$	8 minutes	50mA
EVE	67 $\Omega$	8 minutes	50mA
SAFT	67 $\Omega$	8 minutes	50mA

Note:

If you buy batteries from other than the above four manufacturers, then the battery activation time, activation current, and required load resistance shall be mainly subject to the announcement of each manufacturer.

## 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.