Wireless Emergency Button

R312A
User Manual

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1. Introduction

The R312A is a long-range emergency button device for Netvox ClassA type devices based on the LoRaWAN open protocol and is compatible with the LoRaWAN protocol.

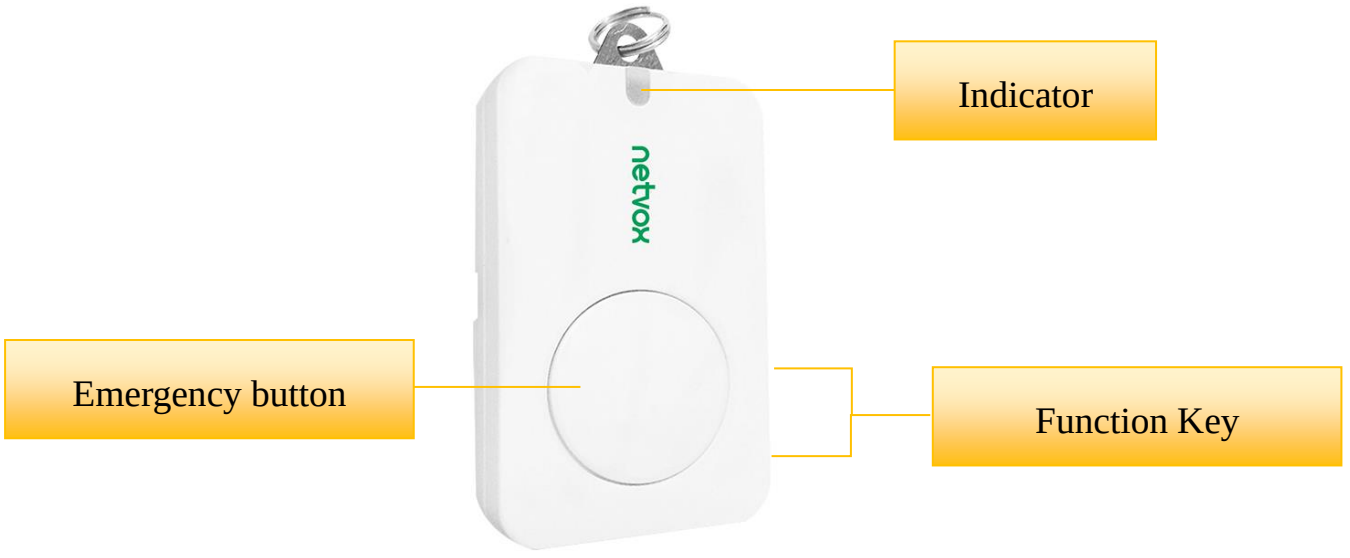
LoRa Wireless Technology:

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



3. Main Features

- Compatible with LoRaWAN
- 2 sections of 3V CR2450 button battery power supply
- Detectable voltage value and emergency button status
- Simple operation and setting
- Easy to fix and carry with key ring
- 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

Battery Life:

- Please refer to web: http://www.netvox.com.tw/electric/electric_calc.html
- At this website, users can find battery life time for varier models at different configurations.

4. Set up Instruction

On/Off

Power on	Insert batteries. (users may need a flat blade screwdriver to open); Insert two sections of 3V CR2450 button batteries and close the battery cover.)
Turn on	Press any function key till green and red indicator flashes once.
Turn off (Restore to factory setting)	Press and hold both function keys for 5 seconds till green indicator flashes for 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 and hold 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 to join. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Had joined the network (not at factory setting)	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)	It is suggested to check the device verification information on the gateway or consult your platform server provider when the device fails to join the network.

Function Key

Press and hold both keys on the side for 5 seconds	Restore to factory setting / Turn off The green indicator flashes for 20 times: success The green indicator remains off: fail
Press any key on the side 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
Emergency Button	Default: Press and hold the button for 3 seconds to send an alarm data Remark: Users can configure the button pressing time to send alarm by command

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 report along with an uplink packet including alarm status

The device sends data in the default configuration before any configuration is done.

Default setting:

Maximum time: Max Interval =1 hour

Minimum time: Min Interval=1 hour (the current voltage value is detected every Min Interval)

Battery Change: 0x01 (0.1V)

Alarm button trigger:

Alarm status: 1

Normal status: 0

Note:

(1) The actual data sending cycle of the device is subject to the programming configuration before shipment.

(2) The interval between two reports must be the minimum time

The data report can be decoded by the Netvox LoraWAN Application Command document and

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

Report configuration and sending cycle are as follows:

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	R312A	0x01	0x4D	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)			
ReadConfigReportRsp		0x82		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	BatteryChange (1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)

(1) Command Configuration:

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

Downlink：014D003C003C0100000000　　003C($H_{ex)}$ = 60($D_{ec)}$

Response：

814D000000000000000000（Configuration success）

814D010000000000000000（Configuration failure）

(2) Read Configuration:

Downlink：024D000000000000000000

Response：

824D003C003C0100000000（Current configuration）

Example of Config Button Press Time

FPort：0x0D

Default Press Time：0x03

Description	CmdID	PayLoad (Fix byte,1byte)
SetButtonPressTimeReq	0x01	PressTime (1byte, 0x00_QuickPush_Less then 1 Second, 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push, Other value is reserved)
SetButtonPressTimeRsp	0x81	Status (0x00_Success 0x01_Failure)
GetButtonPressTimeReq	0x02	
GetButtonPressTimeRsp	0x82	PressTime (1byte, 0x00_QuickPush_Less then 1 Second, 0x01_1 Second push, 0x02_2 Seconds push, 0x03_3 Seconds push, 0x04_4 Seconds push, 0x05_5 Seconds push, Other value is reserved)

(1) Command Configuration:

Trigger doorbell after press button 2 seconds

Downlink：0102 *Please notice port number is 0x0D (13) when downlink command

Response：8100 (Configuration success)

8101 (Configuration failure)

(1) Read Configuration:

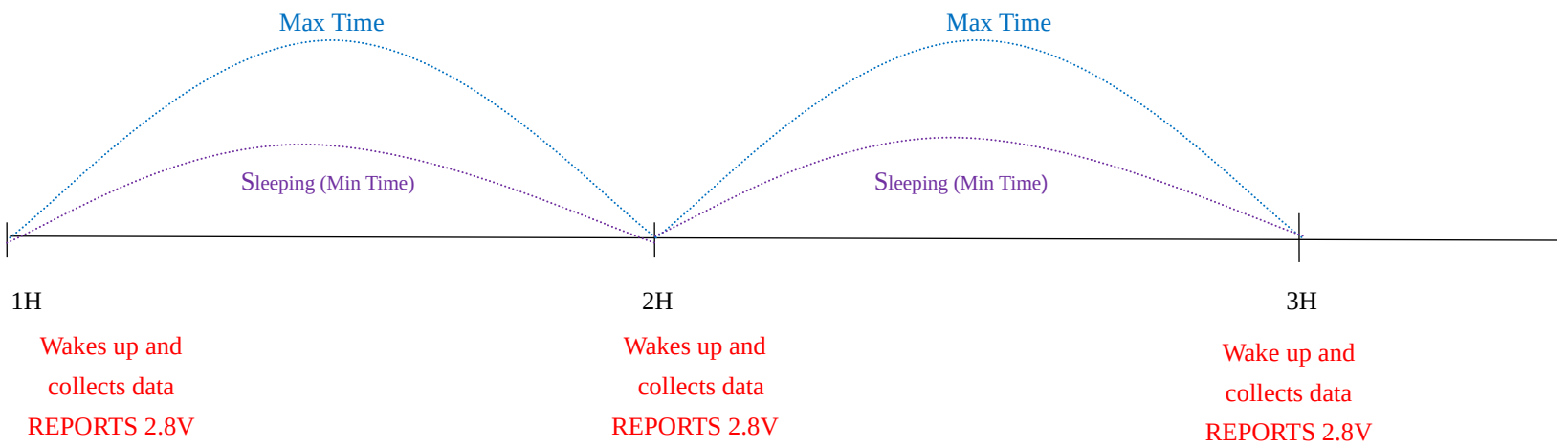
Downlink：02

Response：

8202（Current configuration）

Example for MinTime/MaxTime logic

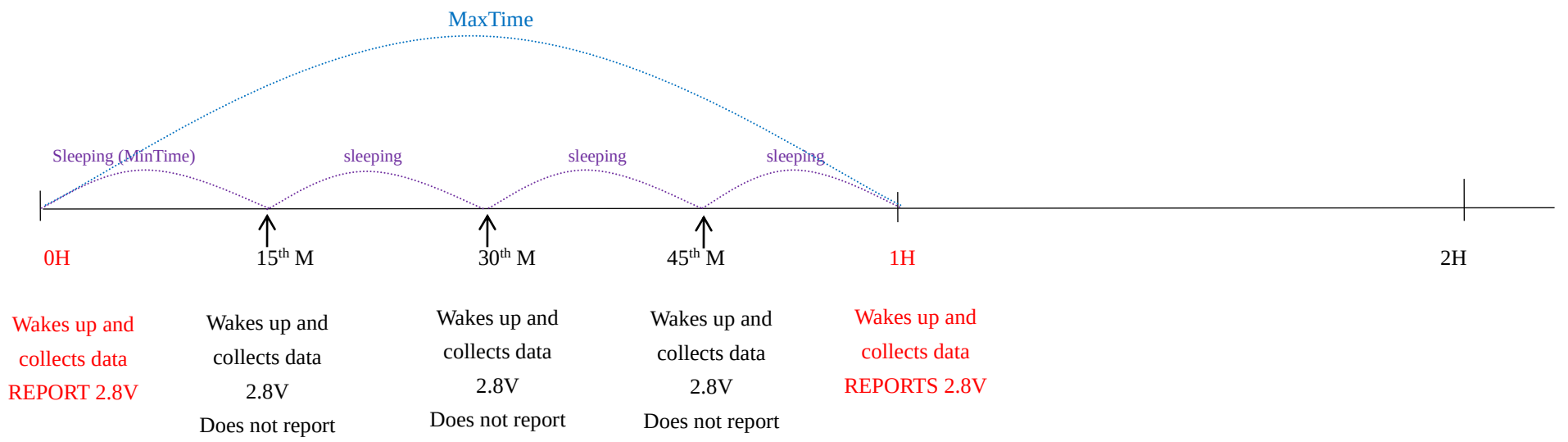
Example#1 based on MinTime = 1 Hour, MaxTime= 1 Hour, Reportable Change i.e. BatteryVoltageChange=0.1V



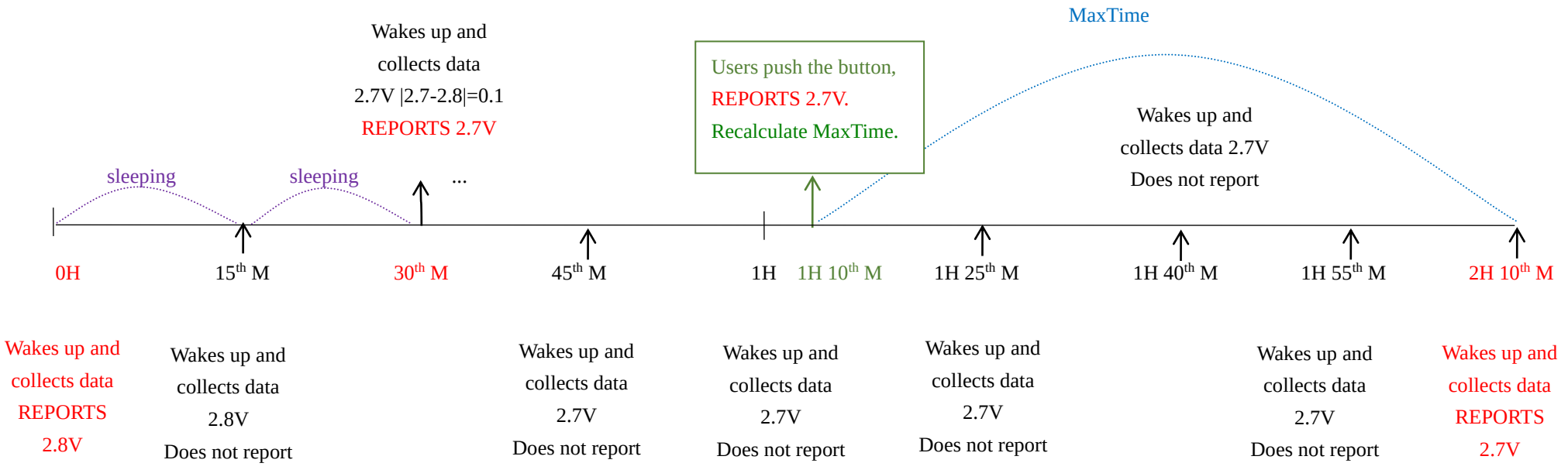
Note:

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.



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



Note:

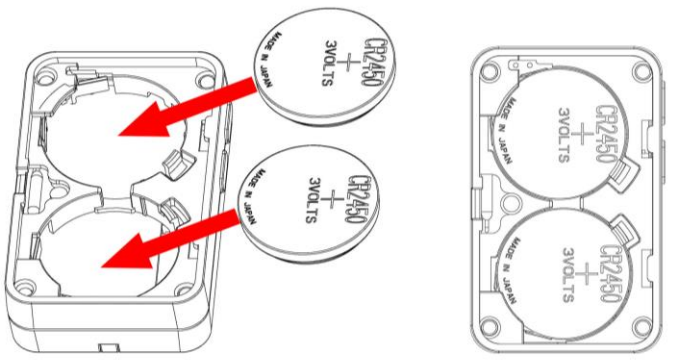
1) The device only wakes up and performs data sampling according to MinTime Interval. When it is sleeping, it does not collect data.
2) The data collected is compared with the last data reported. If the data change value is greater than the ReportableChange value, the device reports according to MinTime 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.

6. Installation

(1) This product does not have a waterproof function. After the screening is completed, please place it indoors.

(2) The dust at the equipment installation position needs to be wiped clean and then pasted.

(3) The battery installation method is as shown below (the battery has a "+" side facing outward)



1. The key ring of the portable wireless emergency Button (R312A) can be snapped onto the backpack, the keychain around the waist, or hangs around the neck with a lanyard.

Note:

Do not install the device in a metal shielded box or other electrical equipment around it to avoid affecting the wireless transmission of the device.

2. Press and hole the emergency button for 3 seconds, the "alarm" message is generated.

When the device reports data periodically, it restores the "normal" status and sends "normal" status information.

Note:

When alarming, the data alarm bit is “1”;

When it returns to normal, the data alarm bit is “0”.

The emergency button (R312A) can be applied to the following scenarios:

- Nursing home
- Family (bathroom)
- School
- Hospital
- Bank
- Wisdom site
- Wait for scenes where there is a possibility of an emergency.

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.