Wireless Emergency Push Button

RB02I

User Manual

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1. Introduction

The RB02I is a wireless emergency push button. It is a Class A device following the standard LoRaWAN protocol.

Press the RB02I emergency button when there is an emergency, it will immediately send out the alarm to the gateway.

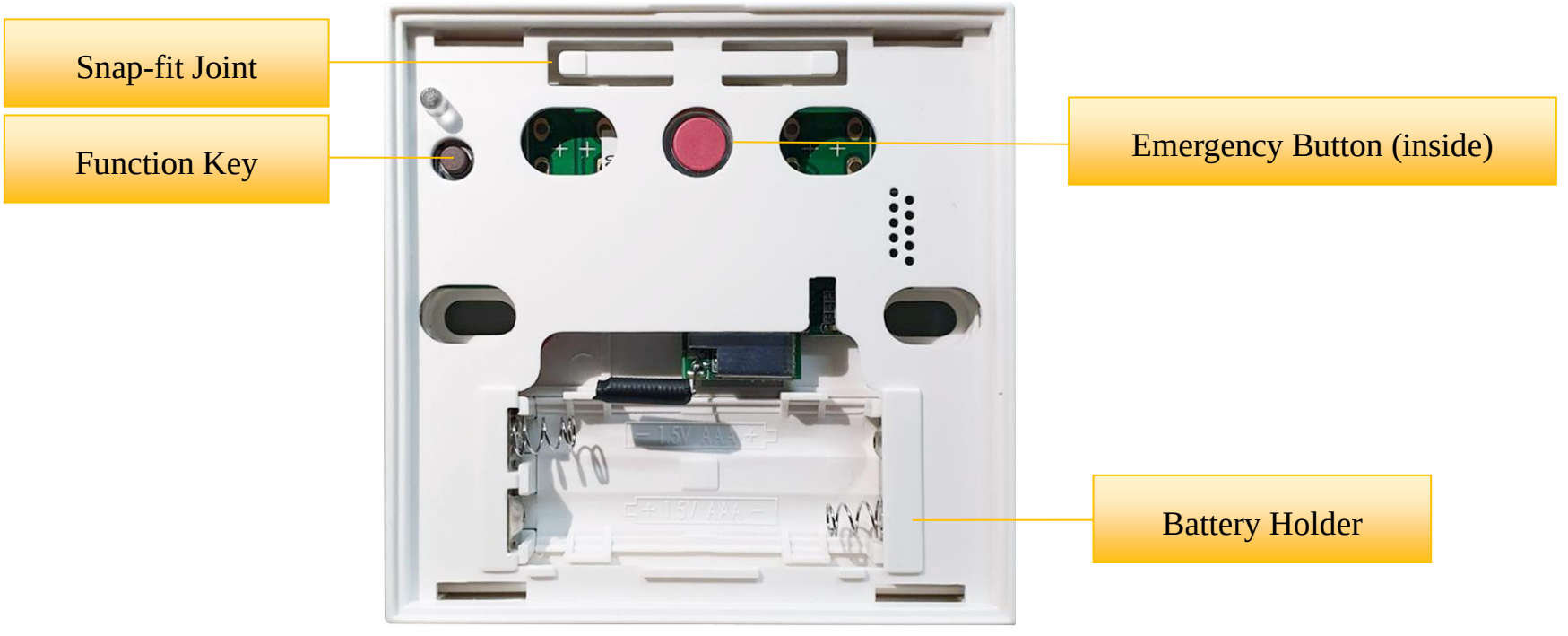
LoRa Wireless Technology:

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

- Apply SX1276 wireless communication module
- 2 AAA batteries in series (1.5V / section)
- Press emergency button to send an alarm message
- Compatible with LoRaWAN™ Class A
- Frequency hopping spread spectrum
- Configuration parameters can be configured via a third-party 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
- Improved power management for longer battery life

  Battery Life:

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

    *Kindly note the actual battery life is determined by the actual environment and device settings.

4.Set up Instruction

On/Off

Power on	Open the upper cover and insert 2 AAA 1.5V batteries (You may use tools to open the upper cover, such as a screwdriver)
Turn on	Press the function key till seeing one green indicator flash and one red indicator flash.
Turn off (Restore to factory setting)	Press and hold the function key for 5 seconds till green indicator light flashes for 20 times.
Power off	Remove Batteries.
Note	1. The device will be off after removing the battery and insert it again. 2. It is suggested to wait for at least 10 seconds between turning the device on and off. 3. To enter the engineering test mode: keep pressing the function key and then insert the batteries

Network Joining

If the device has never joined the network	Turn on the device, and it will search for the network to join. The green indicator light stays on for 5 seconds: joins the network successfully The green indicator light remains off: fail to join the network
If the device has joined the network and it is not set to default	Turn on the device, and it will search for the previous network to join. The green indicator light stays on for 5 seconds: joins the network successfully The green indicator light remains off: fail to join the network
If the device fails to join the network (when the device is turned on)	For the first two minutes: the device will wake up every 15 seconds to send a join request. After two minutes: the device will enter sleep mode and wake up every 15 minutes to send a join request. Note: It is suggested to remove the batteries if the device is not in use to save power. 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 the function key and hold the pressing for 5 seconds	The device will be set to default and turned off The green indicator light flashes for 20 times: success The green indicator light remains off: fail
Press the function key once	The device is in the network: green indicator light flashes once and sends a report The device is not in the network: green indicator light remains off
Press the emergency button	The device is in the network: red indicator light flashes once and sends an alarm report The device is not in the network: red indicator light remains off Note: The report interval can be adjusted; please refer to the command *ConfigButtonPressTime*

Sleep Mode

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

Low Voltage Warning

Low Voltage	2.1V

5. Data Report

The device will immediately send a version packet report along with an uplink packet including alarm status and battery voltage when it joins the network.

The device sends data with default configurations before any new configuration is done.

Default setting:

MaxTime:Max Interval = 60 min=3600s

MinTime:Min Interval = 60 min =3600s

BatteryChange: 0x01 (0.1V)

Emergency alarm:

When emergency button is pressed that report “1”

When emergency button is not pressed that report “0”

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 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 Report configuration

FPort：0x07

Bytes	1	1	Var(Fix =9 Bytes)
	CmdID	DeviceType	NetvoxPayLoadData

CmdID– 1 bytes

DeviceType– 1 byte – Device Type of Device

NetvoxPayLoadData– var bytes (Max=9bytes)

<table>
<tr><th>Description</th><th>Device</th><th>Cmd ID</th><th>Device Type</th><th colspan="4">NetvoxPayLoadData</th></tr>
<tr><td>ConfigReportReq</td><td rowspan="5">RB02I</td><td>0x01</td><td rowspan="5">0x10</td><td>MinTime
(2bytes Unit:s)</td><td>MaxTime
(2bytes Unit:s)</td><td>BatteryChange
(1byte Unit:0.1v)</td><td>Reserved
(4Bytes,Fixed 0x00)</td></tr>
<tr><td>ConfigReportRsp</td><td>0x81</td><td colspan="2">Status
(0x00_success)</td><td colspan="2">Reserved
(8Bytes,Fixed 0x00)</td></tr>
<tr><td>ReadConfig ReportReq</td><td>0x02</td><td colspan="4">Reserved
(9Bytes,Fixed 0x00)</td></tr>
<tr><td>ReadConfig ReportRsp</td><td>0x82</td><td>MinTime
(2bytes Unit:s)</td><td>MaxTime
(2bytes Unit:s)</td><td>BatteryChange
(1byte Unit:0.1v)</td><td>Reserved
(4Bytes,Fixed 0x00)</td></tr>
</table>

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

Downlink: 0110003C003C0100000000

Device returns:

811000000000000000000 (configuration is successful)

811001000000000000000 (configuration failed)

(2) Read device configuration parameters

Downstream: 021000000000000000000

Device returns:

8210003C003C0100000000 (device current configuration parameter)

Example of ButtonPressTime configuration

FPort：0x0D

Description	CmdID	PayLoad(Var bytes)
SetButtonPressTimeReq	0x01	PressTime(1bytes,) 0x00_QuickPush_Less then 1 Second, OtherValue present the press time 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
SetButtonPressTimeRsp	0x81	Status (0x00_Success 0x01_Failure)
GetButtonPressTimeReq	0x02	
GetButtonPressTimeRsp	0x82	PressTime(1bytes) OtherValue present the press time 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

(3) Setting ButtonPressTime as 10 seconds to alarm.

Downlink: 010A

Device returns:

8100 (configuration successful)

8101 (configuration failed)

(4) Read device parameters

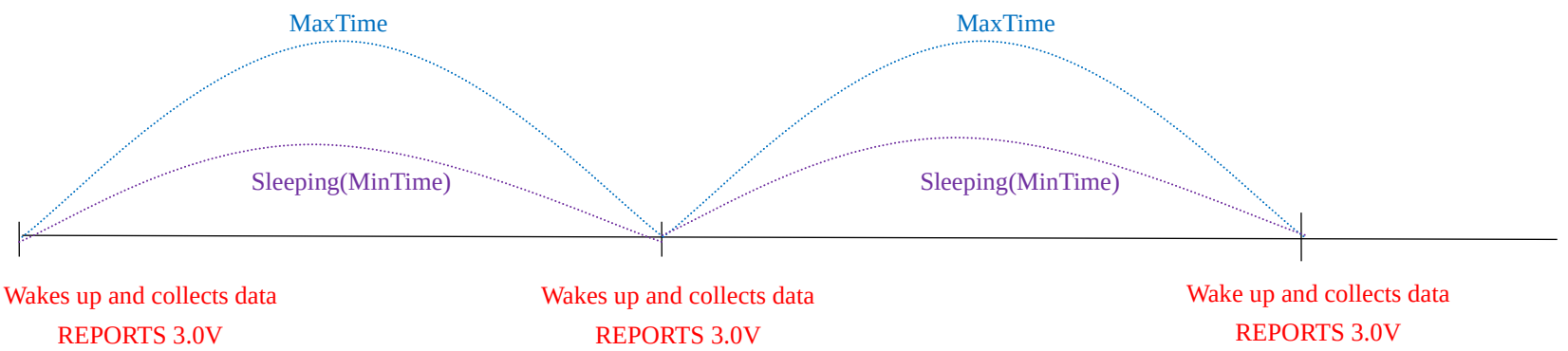
Downlink: 02

Device returns:

820A (device current parameter)

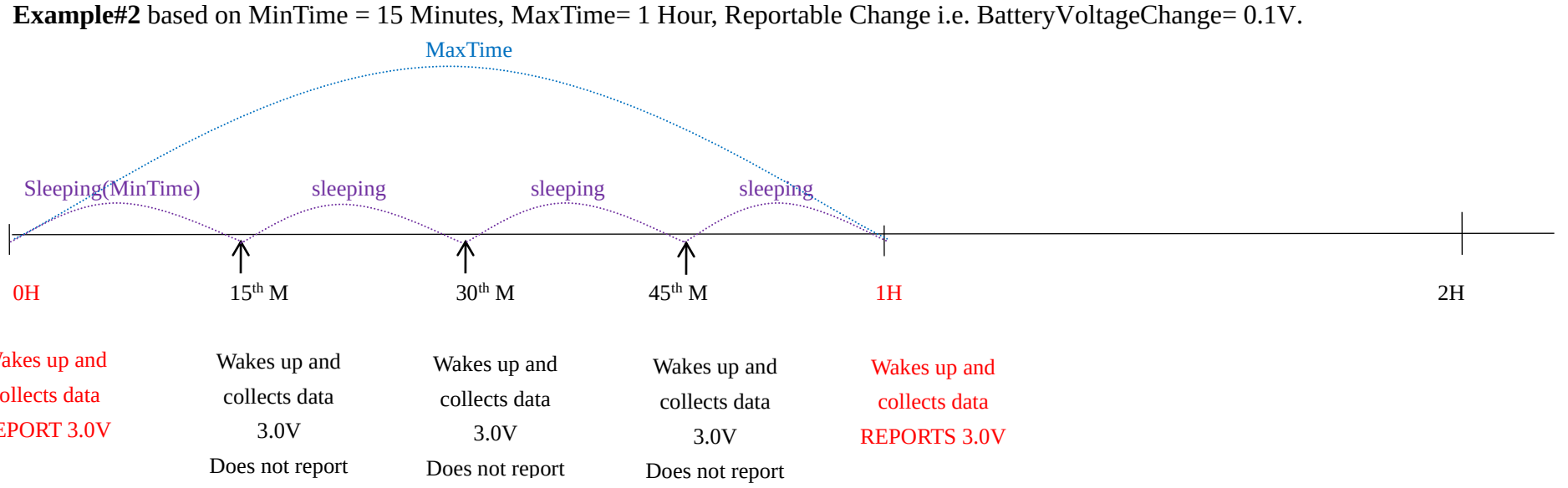
Example for MinTime/MaxTime logic:

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

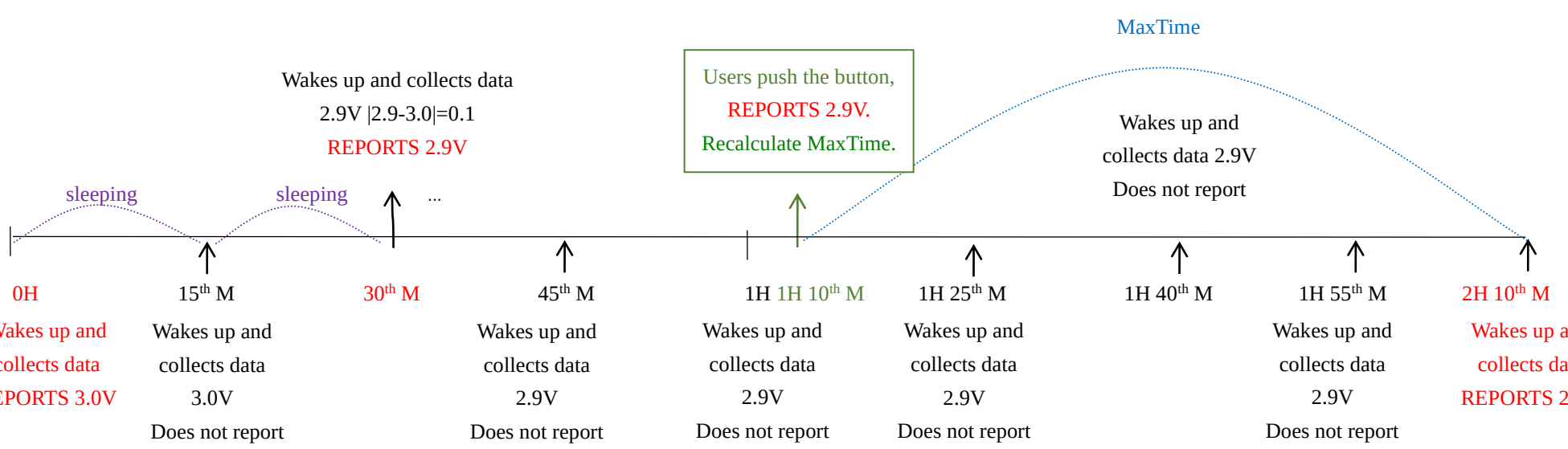


Note: MaxTime=MinTime. Data will only be report according to MaxTime (MinTime) duration regardless BatteryVoltageChange value.

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.



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. Installation

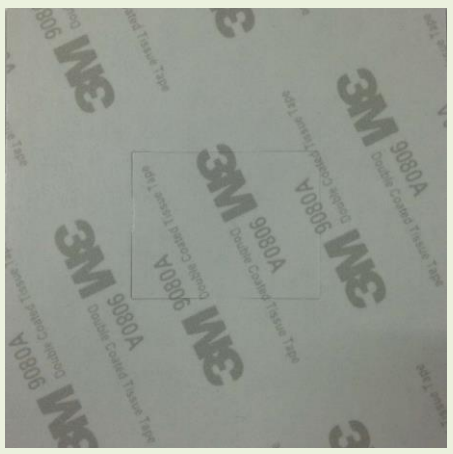
1. Use the 3M double-sided tape that is provided with the device. Attach one side of the tape to the bottom of the device (RB02I) and the other side to the wall. (Please make sure the surface of the wall is clear and smooth, so the device will not fall off easily.)

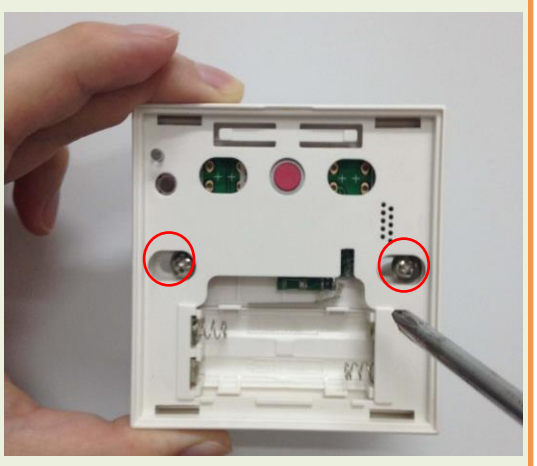
To make the installation more secure, use self-purchased screws to secure the device to the wall.

*Please wipe and clean the surface of the wall before using the double-sided tape.

The 3M double-sided tape is pre-cut with the size of the bottom of the device (as shown in the left photo below.)

Please keep the device from metals or other electronics so the transmission of the device will not be affected.





2. Insert the batteries in the battery holder and put the upper cover back. Put on the included waterproof silicone sleeve to avoid water splashing as shown in picture on the right.

*To open the device, use the snap-fit joint and gently remove the upper cover.

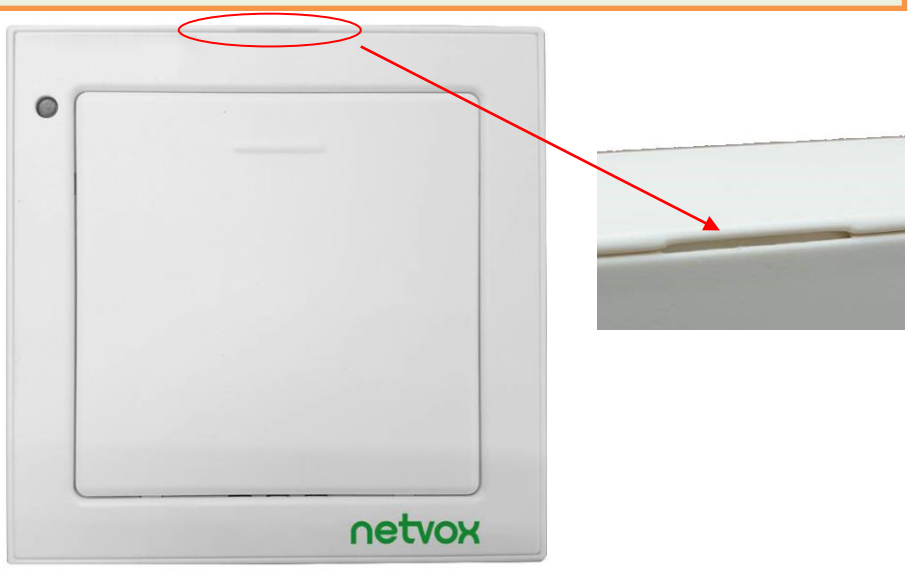
3. When the emergency button is pressed, it will send an "alarm" report.

If the emergency and alarm is disarmed when it comes to the regular report interval, the device will send a "normal" status report.

*The "alarm" report will be "1" and the “normal” report will be "0."

Applicable use cases for RB02I wireless emergency push button include but are not limited to the following:

- Home (bathrooms)
- Schools
- Nursing homes
- Hospitals
- Banks
- Hotels



Put on the Waterproof Silicone Sleeve

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.