Wireless Door Bell Button

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User Manual

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1. Introduction

The R313M is a door bell 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

- Door bell status detection

- Simple operation and setting

- Protection class IP30

- Compatible with LoRaWAN^{TM} 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

- Improved power management for longer 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 various models at different configurations.

  1. Actual range may vary depending on environment.

  2. Battery life is determined by sensor reporting frequency and other variables.

4. Set up Instruction

On/Off

Power on	Insert batteries (users may need a screwdriver to open) Insert two sections of 3V CR2450 button batteries and close the battery cover. Note: Require 2 button batteries to supply power at the same time.
Turn on	Press any function key and indicator flashes once meaning it is turned on successfully.
Turn off (Restore to factory setting)	Press and hold the function key for 5 seconds and green indicator flashes 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. If press 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. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Had joined the network (not restore to the factory setting)	Turn on the device to search the previous network. The green indicator stays on for 5 seconds: success The green indicator remains off: fail
Fail to join the network	Suggest to check the device verification information on the gateway or consult your platform server provider.

Function Key

Press and hold for 5 seconds	Restore to factory setting / Turn off The green indicator flashes 20 times: success The green indicator remains off: fail
Press 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
Press doorbell button	Trigger the doorbell alarm Note: 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 door bell alarm.

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

Default setting

> Maximum time: 3600s
>
> Minimum time: 3600s
>
> Battery change: 0x01 (0.1v)

Door bell button trigger:

> Press the door bell button and immediately send a report.
>
> R313M was pressed, Alarm=1
>
> R313M was not pressed, Alarm=0

Note:

MinInterval is the sampling period for the Sensor. Sampling period >= MinInterval.

Please refer Netvox *LoRaWAN Application Command document* and *Netvox Lora Command Resolver* http://www.netvox.com.cn:8888/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≥ 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

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		0x01		MinTime (2bytes Unit:s)	MaxTime (2bytes Unit:s)	Battery Change (1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)
Config ReportRsp	R313M	0x81	0x55	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)	Battery Change (1byte Unit:0.1v)	Reserved (4Bytes,Fixed 0x00)

(1) Command Configuration:

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

Downlink：0155003C003C0100000000   003C(Hex) = 60(Dec)

Response：

8155000000000000000000（Configuration success）

8155010000000000000000（Configuration failure）

(2) Read Configuration:

Downlink：0255000000000000000000

Response：

8255003C003C0100000000（Current configuration）

Example of Config Button Press Time

Default Press Time：0x00

Description	CmdID	PayLoad(Fix byte,1byte)
SetButtonPressTimeReq	0x01	PressTime (1bytes) 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 (1bytes) 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 door bell after press button 2 seconds

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

  Response：

    8100 (Configuration success)

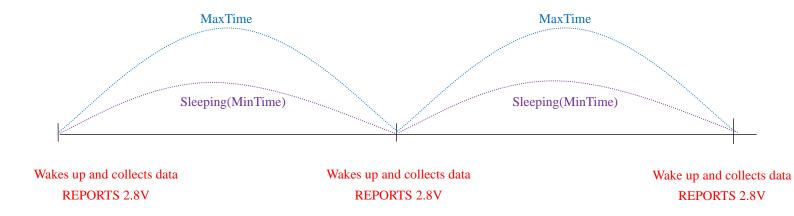   8101 (Configuration failure)

(2) Read Configuration:

  Downlink：02

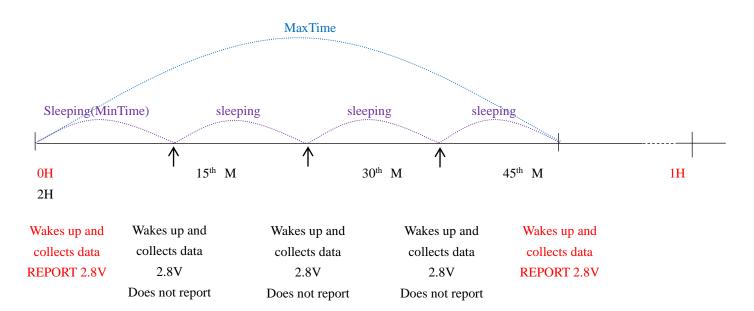 Response：8202 (Current configuration)

Example for MinTime/MaxTime logic

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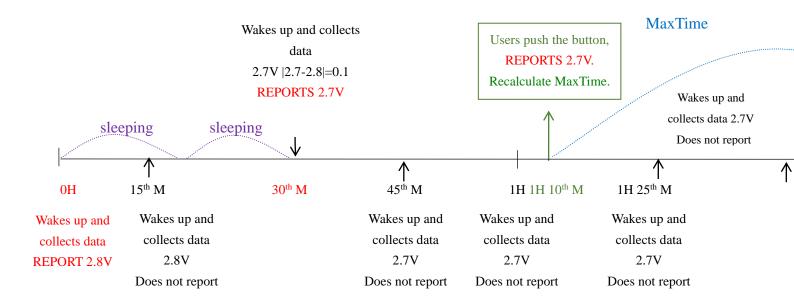
i.e.BatteryVoltageChange=0.1V

MaxTime   MaxTime

Sleeping(MinTime)   Sleeping(MinTime)

Wakes up and collects data   Wakes up and collects data   Wake up and collects data

REPORTS 2.8V   REPORTS 2.8V   REPORTS 2.8V

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.

MaxTime

Sleeping(MinTime)   sleeping   sleeping   sleeping

0H   15th M   30th M   45th M   1H

2H

Wakes up and collects data REPORT 2.8V	Wakes up and collects data 2.8V Does not report	Wakes up and collects data 2.8V Does not report	Wakes up and collects data 2.8V Does not report	Wakes up and collects data REPORT 2.8V

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

Wakes up and collects
data
2.7V |2.7-2.8|=0.1
REPORTS 2.7V

Users push the button,
REPORTS 2.7V.
Recalculate MaxTime.

MaxTime

Wakes up and
collects data 2.7V
Does not report

sleeping   sleeping

0H   15th M   30th M   45th M   1H 1H 10th M   1H 25th M

Wakes up and   Wakes up and   Wakes up and   Wakes up and   Wakes up and
collects data   collects data   collects data   collects data   collects data
REPORT 2.8V   2.8V   2.7V   2.7V   2.7V
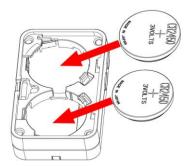   Does not report   Does not report   Does not report   Does not report
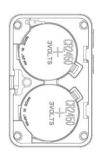
Notes:

(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 <u>reported</u>. 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)

   (Users may need a flat blade screwdriver to open the battery cover.)

1. Remove the 3M release paper on the back of the device and attach the device to the smooth wall (please do not stick it to the rough wall to avoid falling off after a long time use).
 	
  Note:
  ● Wipe the wall surface before installation to avoid dust on the wall surface and affect the paste capability.
  ● 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. When the doorbell (R313M) button is pressed, the message "Alarm" is sent. When the device reports data periodically, it restores the "normal" status and sends "normal" status information.
	
	  Note:
	   With the sound and light alarm (R602A), the audible and visual alarm will ring the door after the doorbell is pressed.

The figure shows the smart Doorbell Button (R313M) applied to the home entrance door scene.

It can also be applied to the following scenarios:

- Villa

- Office front desk

- Hotel

- Apartment

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.