

Wireless Panic Button

ZB02I

User Manual

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1. Introduction

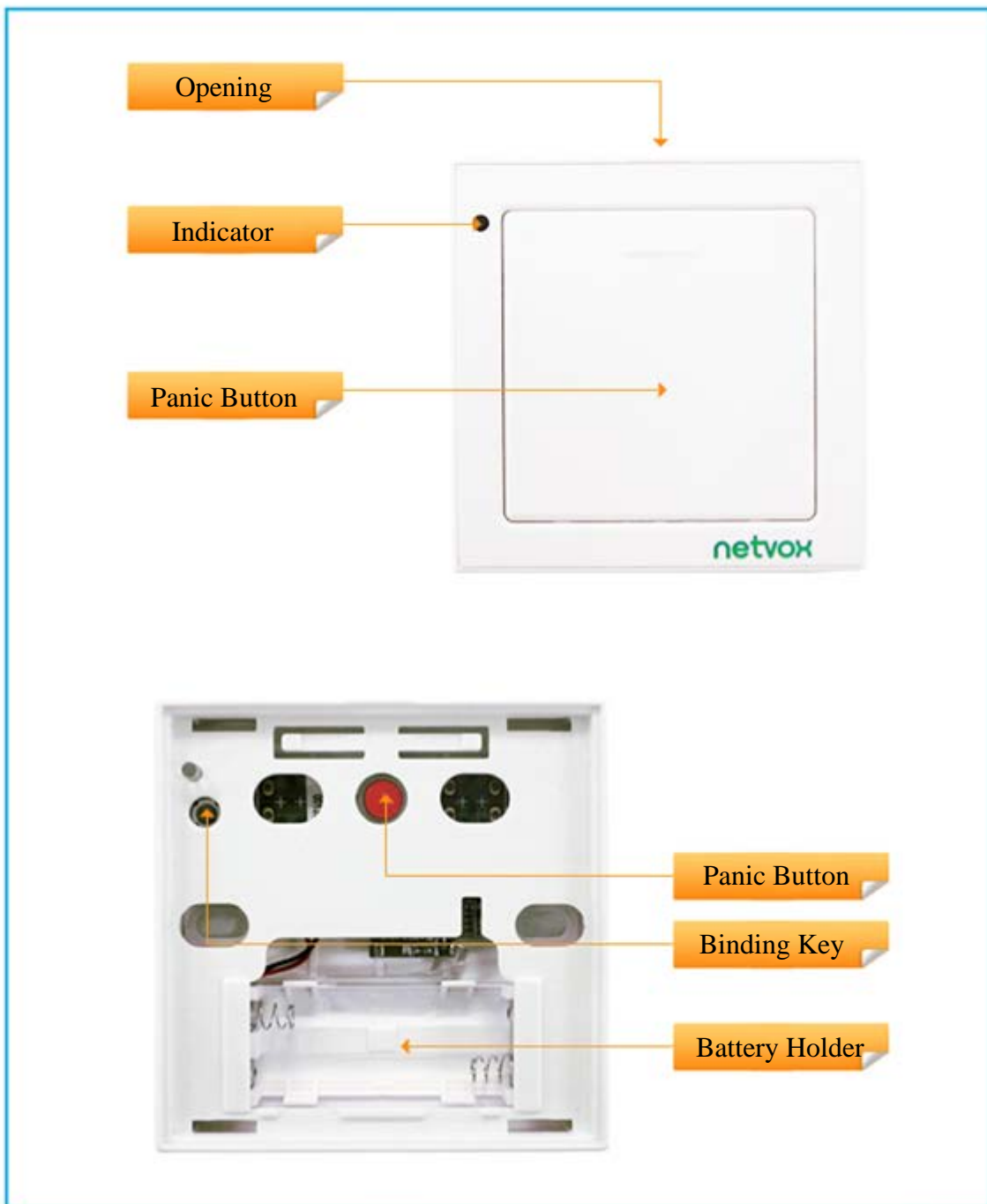
Netvox ZB02I, the wireless emergency push button, is used as an end device in the network, and other devices are not allowed as its sub-devices.

ZB02I is an emergency alarm trigger device which is a detection device in the security system (called: Zone). When people encounter danger and need emergency help, press the alarm button of ZB02I, and the device will immediately send to CIE (Control and Indicating Equipment). When an alarm message is issued, CIE will make the warning device emit sound and light to remind; therefore, other people can provide assistance immediately when they hear or see the alarm signal.

What is ZigBee?

ZigBee is a short range wireless transmission technology based on IEEE802.15.4 standard and supports multiple network topologies such as point-to-point, point-to-multipoint, and mesh networks. It is defined for a general-purpose, cost-effective, low-power-consumption, low-data-rate, and easy-to-install wireless solution for industrial control, embedded sensing, medical data collection, smoke and intruder warning, building automation and home automation, etc.

2. Product Appearance



3. Feature

- Fully compatible with IEEE 802.15.4
- Utilizes 2.4GHz ISM band; up to 16 channels
- 2 x AAA size batteries power supply
- Communication distance 70 meters (Depending on the specific environmental conditions)
- Easy installation and configuration

4. Installation Diagram



5. Instruction

5.1. Join the ZigBee Network

After ZB02I is turned on, it will search for an existing ZigBee network and send a request to join the network automatically. While ZB02I is under the coverage from a coordinator or a router whose **permit-join feature is enabled**, ZB02I will be permitted to join the network.

Step1. Enable the permit-join function (valid for 60 seconds) of a coordinator or a router (please refer to the user manual of the coordinator or the router to enable the permit-join feature).

Step2. Insert the batteries into ZB02I. It will start to search and join the network.

Step3. The indicator will flash **green once** when it finds out a network to join.

Step4. The indicator will flash **green 5 times** after it is joined successfully. Otherwise, the indicator will not flash.

Step5. If the device does not join the network for more than 3 minutes, it will try to join the network every 15 minutes.

NOTE:

After joining the network, ZB02I will try to enroll in the ZigBee security system. Please keep it powering on.

5.2. Enroll in the ZigBee Security System

After ZB02I join the ZigBee network, it will automatically find out a CIE (Control and Indicating Equipment) device and send a registration request to the CIE device to enroll in the security system.

The enrollment has these 3 situations:

- A. There is no CIE device or no compatible CIE device in the network → the indicator flashes **orange twice**.
- B. There is a compatible CIE device in the network, but it is failed to enroll → the indicator flashes **orange 4 times**.
- C. The enrollment is completed → the indicator flashes **orange 6 times**.

NOTE:

Users had better NOT enroll multiple Zone devices at the same time to prevent registration failure.

5.3. Trigger

The Zone Type of ZB02I is Key fob. The value is 0x0115.

The Alarm2 byte of Zone status is 1 in the alarm command sent by ZB02I.

- A. After the registration is successful, short press the alarm button, and ZB02I sends an alarm command through the Zigbee wireless network to trigger its registered CIE. (If clusterID (0x0500) is bound to the device, the alarm will also be sent to the bound device.) CIE will control the alarm device to issue an emergency alarm sound.
- B. If ZB02I has not registered successfully when the alarm button is pressed shortly, the registration will start at this time (after 5 seconds), and the alarm command will be issued immediately after the registration is successful.
- C. If no response is received when issuing an emergency alarm, the command will be re-sent three times. If there is still no response, the customized alarm command will be sent by broadcast at an interval of 10 seconds. It will not stop until the response is received.

If there is a power outage or low power during this period, the device will judge whether to stop the broadcast according to whether there is an alarm command response after the power is turned on again.
- D. If it is not enrolled, it will remain enrolled until it succeeds and an alarm is sent.

5.4. Product Active Status

In order to save power, the device is generally in the [sleep mode](#). If users need to obtain its data and attributes, or set the device, please follow the following operations to make it enter the active status.

Operation Method:

Short press the binding key. If the device is still in the network state, the **green** indicator will flash **5 times** and an announce will be sent to notify IEEE address and network address of the device.

In the next 2 minutes, the device is in the active status and can communicate. If the device is not in the network state, it will try to search for available networks.

Note:

The device is activated for 5min by default when it is connected to the network for the first time or is re-powered on.

5.5. Restore to Factory Setting

ZB02I can save the data when power off. Once it cannot be associated and controlled with its registered device, or if it joins a new zigbee network, users need to perform the following operations first to restore the saved data to the factory setting.

To restore it to factory setting, please follow the steps:

Step1. Remove the batteries to power off ZB02I.

Step2. Press and hold the *Binding Key*, then power on ZB02I to complete the restore.

5.6. Battery

Low-power report: When the operating voltage is lower than 2.4V, ZB02I will send a low-power report to the CIE device.

The related data:

- Power configuration cluster (ID:0x0001)
- Battery voltage attribute (ID:0x0020)

5.7. HeartBeat Technique

In a security system, it is important that Zone devices report the conditions to the central security unit (the CIE device). To meet this need, Netvox came up with a technique called “**HeartBeat**”.

Right after ZB02I enrolls to a security system, it sends a HeartBeat signal to the CIE device. Afterward, it will send HeartBeat data every hour by default settings.

5.8. Specify the Function of CIE

Whether the ZB02I has been registered on a certain CIE, other devices can send the air command to set a specified IEEE address for IAS_CIE_Address attribute of the device. In this way, the matching and registration process will be restarted, so that ZB02I will be registered to the designated CIE.

(1) When ZB02I is already registered on a CIE which is the same as the designated CIE, after the re-registration is successful, the **orange** indicator will flash **6 times**.

When the designated CIE is different from the registered CIE, after it is registered successfully, ZB02I will send the command-- UnEnroll to the CIE to delete its own information from the CIE, and the **orange** indicator flashes **6 times** to indicate success.

(2) If ZB02I has not been registered on a certain CIE, the action of the designated CIE is to start the matching and registration process, and the prompt for success is the same as 5.2.

5.9. Indicate the Remaining Battery Power

In the alarm command-- zone status change Notification which is sent by ZB02I to CIE, the high byte of Zone status contains the percentage value of remaining battery power. After receiving it, CIE can understand the battery power of ZB02I.

5.10. Sleeping Mode

ZB02I is designed to go into sleeping mode for power-saving in some situations:

- A. When it doesn't find a network to join → ZB02I will become the sleeping mode.
- B. While the device is in the network → the sleeping period is 5 minutes; it will wake up every 5 minutes to keep online.
- C. Once ZB02I was joined to a network and the network is no longer existed or the device is not connected to the network → ZB02I will wake up every 5 seconds to find the network it

joined before.

It will reconnect to the current network when it wakes up for the first time, and then program to reconnect.

The power consumption of the device in the situation C is about 30 times that in the situation A and B. In order to save the power, if the device is in the situation C, it is recommended to remove the battery from the device.

5.11. Home Automation Clusters for ZB02I

A cluster is a set of related attributes and commands which are grouped together to provide a specific function. A simple example of a cluster would be the On/Off cluster which defines how an on/off switch behaves. This table lists the clusters which are supported by ZB02I.

1.End Point(s) : 0x01:

2.Device ID : IAS Zone (0x0402)

3.EndPoint Cluster ID

Cluster ID for ZB02I	
Server side	Client side
EP 0x01 (Device ID: IAS Zone(0x0402))	
Basic(0x0000)	<i>None</i>
Power configuration(0x0001)	
Identify(0x0003)	
IAS zone (0x0500)	
Commissioning (0x0015)	
Poll control (0x0020)	
Diagnostic (0x0b05)	

4. Attributes of the Basic Information

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>ZCLVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x03	M
0x0001	<i>ApplicationVersion</i>	Unsigned	0x00 – 0xff	Read only	-0x20	O

		8-bit integer				
0x0002	<i>StackVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	--	O
0x0003	<i>HWVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	-0x32	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 bytes	Read only	“netvox”	O
0x0005	<i>ModelIdentifier</i>	Character string	0 – 32 bytes	Read only	9 “ZB02IE3 ED”	O
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20170214	O
0x0007	<i>PowerSource</i>	8-bit Enumeration	0x00 – 0xff	Read only	0x03	M
0x0010	<i>LocationDescription</i>	Character string	0 – 16 bytes	Read/write	16, 0x20	O
0x0011	<i>PhysicalEnvironment</i>	8-bit Enumeration	0x00 – 0xff	Read/write	0x00	O
0x0012	<i>DeviceEnabled</i>	Boolean	0x00 – 0x01	Read/write	0x01	M

5.12. Product attributes can be reported.

Cluster ID (0x0001):

The Attribute ID used by Battery voltage Attr: 0x0020

The Attribute ID used by BatteryAlarmState Attr: 0x003E

5.13. Offline Activation Trigger:

After the device is not connected to the network, it will wake up every 5 minutes to try to rejoin the network. If users need to rejoin the network immediately without waiting for the 5 minutes, users can use the following two methods to immediately rejoin the network.

(1) Manual Activation:

Short press the binding key, the device will immediately try to rejoin the network.

(2) Alarm Trigger:

In the offline state, short press the button to trigger the alarm, and the device will immediately try to rejoin the network.

6. Important Maintenance Instructions

- Please keep the device in a dry place. Precipitation, humidity, and all types of liquids or moisture can contain minerals that corrode electronic circuits. In cases of accidental liquid spills to a device, please leave the device dry properly before storing or using.
- Do not use or store the device in dusty or dirty areas.
- Do not use or store the device in extremely hot temperatures. High temperatures may damage the device or battery.
- Do not use or store the device in extremely cold temperatures. When the device warms to its normal temperature, moisture can form inside the device and damage the device or battery.
- Do not drop, knock, or shake the device. Rough handling would break it.
- Do not use strong chemicals or washing to clean the device.
- Do not paint the device. Paint would cause improper operation.

Handle your device, battery, and accessories with care. The suggestions above help you keep your device operational. For damaged device, please contact the authorized service center in your area.

7. FCC Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.