

User Manual

Door Bell

Model: ZB02E

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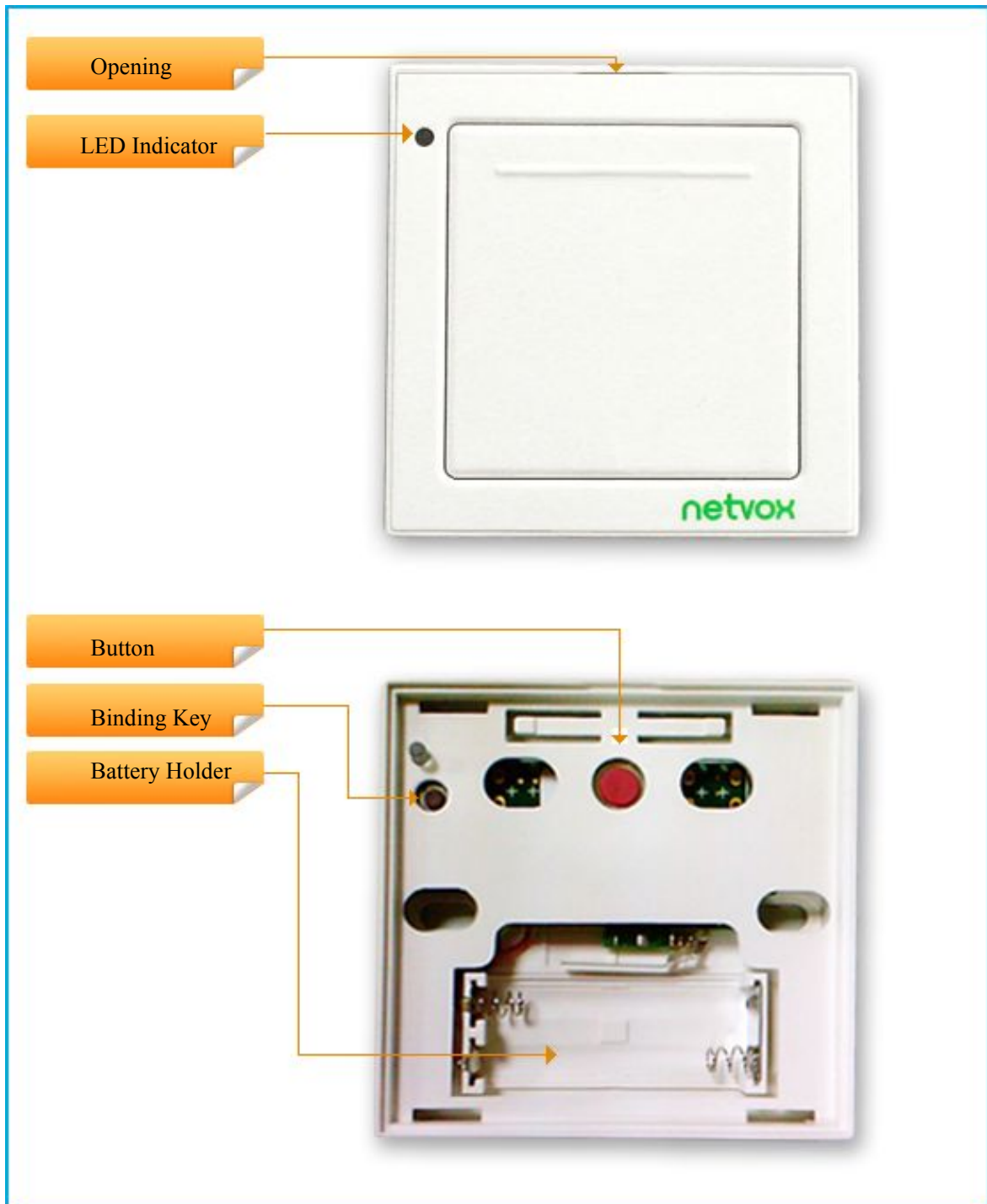
1. Introduction

Netvox ZB02E, a battery-powered door bell, acts as an End Device in ZigBee network. It does not perform permit-join function as a coordinator or a router for other devices to join the network. ZB02E can be bound with a warning device such as Z601A. While ZB02E button is pressed, the warning device will generate the door bell sound.

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.

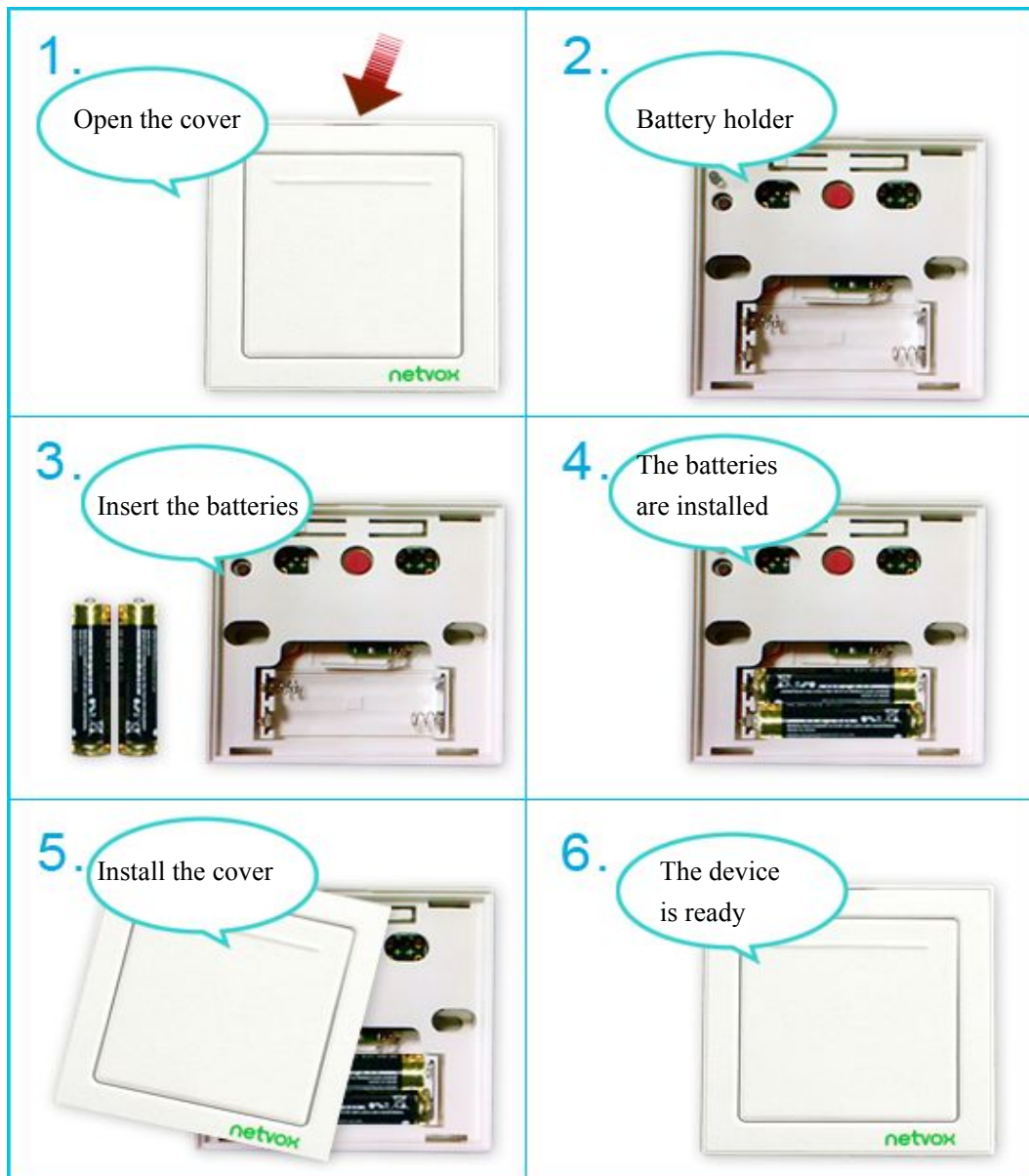
2. Product Appearance



3. Specification

- Fully IEEE 802.15.4 compliant
- Utilizes 2.4GHz ISM band; up to 16 channels
- Power supply: 2 x AAA batteries
- Operating consumption: $\leq 40\text{mA}$
- Standby consumption: $\leq 1\mu\text{A}$
- Up to 171 meters wireless transmission range in non-obstacle space
- Easy installation and configuration

4. Installation



5. Setting up ZB02E

5-1. Turn On ZB02E

For power saving, ZB02E is designed to get into **sleeping mode** when there is no activity for 2 minutes.

To manually turn on ZB02E, press the *Binding Key* **once**.

- When ZB02E is first time used or after resetting → it will try to join the network.
- When ZB02E is in a ZigBee network → it will send out the device data, like IEEE address/Network address, and the indicator will flash **5 times**. ZB02E will be activated for 2 minutes.
- When ZB02E was in a ZigBee network, but by any change it is offline → it will start to rejoin the ZigBee network.

5-2. Join the ZigBee Network

After ZB02E is turned on, it will search for an existing ZigBee network and send a request to join the network automatically. While ZB02E is under the coverage from a coordinator or a router whose **permit-join feature is enabled**, ZB02E 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. Turn on ZB02E. It will start to search and join the network.

Step3. The indicator will flash **5 times** after it is joined successfully. Otherwise, the indicator will not flash.

ZB02E will try to join the network for 1 minute. Please try step1~3 again when it is failed to join the network.

5-3. Binding

ZB02E can be bound with the IAS WD cluster device such as Netvox Z601A.

Step1. Press and hold the *Binding Key* for 3 seconds. The indicator will flash **once**.

Step2. Enable the binding feature of the IAS WD device.

Step3. The indicator flashes **5 times** after the binding is completed; otherwise, it will flash **10 times**.

5.4. Doorbell

After binding, the Warning Device would generate the doorbell sound and the indicator will flash **red once** when ZB02E's doorbell button is applied.

5-5. Sleeping Mode

ZB02E is designed to go into sleeping mode for power-saving after it joins the network for 2 minutes. There are some situations:

- A. While the device is in the network → the sleeping period is 5 minutes; it will wake up every 5 minutes to keep online.
- B. When it doesn't find a network to join → ZB02E will go to sleeping mode. It will wake up every 15 minutes to search a network to join.
- C. Once ZB02E was joined to a network and by any chance the network is no longer existed or the device is out of the network → ZB02E will wake up every 15 minutes to find the network it joined before.

It never keeps in sleeping mode and continues to find out a network every 15 minutes. This condition would consume up to 30 times power spending compared to normal-operating status. To prevent this unwanted power consumption, we recommend that users remove the batteries to power off the device.

5.6. Enroll in the ZigBee Security System

ZB02E is a Zone device in the ZigBee security system. Right after ZB02E join the ZigBee network, it will automatically find out a CIE (Control and Indicating Equipment) device (i.e. Netvox Z201B) and send a registration request to the CIE device to enroll in the security system.

- A. When the enrollment is completed → the indicator flashes **6 times**.
- B. When the enrollment is failed → the indicator flashes **4 times**.

Users can also press and hold the *Binding Key* for 5 seconds to initiate the registration manually.

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

5-7. Battery

When the operating voltage is lower than 2.4V, the indicator will flash **once**. ZB02E will send a low-power report to the ZigBee network.

- A. When ZB02E is enrolled into the CIE → it sends the low-power message via Zonestatuschange command.
- B. When ZB02E is not enrolled into the CIE → it sends the low-power message via Alarm command.

5-8. Restore to Factory Setting

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

- Step1. Remove the batteries to power off ZB02E.
- Step2. Press and hold the *Binding Key*, and then power on ZB02E.
- Step3. The indicator will generate fast flashes.
- Step4. Reboot ZB02E to complete the restore.

6. Home Automation Clusters for ZB02E

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 ZB02E.

- 1、End Point(s) : 0x01
- 2、Device ID : IAS Ancillary Control Equipment (0x0401)
- 3、EndPoint Cluster ID

Cluster ID for ZB02	
Server side	Client side
EP 0x01 (Device ID: IAS Ancillary Control Equipment (0x0401))	
Basic(0x0000)	Identify(0x0003)
Identify(0x0003)	IAS ACE(0x0501)
Commissioning(0x0015)	IAS WD(0x0502)
IAS Zone(0x0500)	
power configure(0x0001)	
Diagnostics Information(0x0B05)	
Poll Control(0x0020)	

Attributes of the Basic Cluster 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 8-bit integer	0x00 – 0xff	Read only	0x15	O
0x0002	<i>StackVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x33	O
0x0003	<i>HWVersion</i>	Unsigned 8-bit integer	0x00 – 0xff	Read only	0x0E	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 bytes	Read only	netvox	O
0x0005	<i>ModelIdentifier</i>	Character	0 – 32	Read only	ZB02EE3ED	O

		string	bytes			
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20140304	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		O
0x0011	<i>PhysicalEnvironment</i>	8-bit Enumeration	0x00 – 0xff	Read/write	0x00	O
0x0012	<i>DeviceEnab</i>	Boolean	0x00 – 0x01	Read/write	0x01	M

7 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.

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.

Note:

1. Use the product in the environment with the temperature between -10°C and 50°C .

For the following equipment:

CE 0700

Is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC,
The equipment was passed. The test was performed according to the following European standards:

EN 301 489-1 V1.9.2: 2011-09

ETSI EN 301 489-17 V2.1.1: 2009-05

ETSI EN 300 328 V1.7.1:2006-10

EN62311:2008

EN 60950-1:2006+A11:2009+A1:2010+A12:2011

**CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED
BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS**