netvox Z308 ZigBee Wearable Presence Tag with Emergency Button User Manual

Wearable Presence Tag with Emergency Button
User Manual

Model: Z308
20171110
FW V2.0
HW V0.1/V0.2

Contents

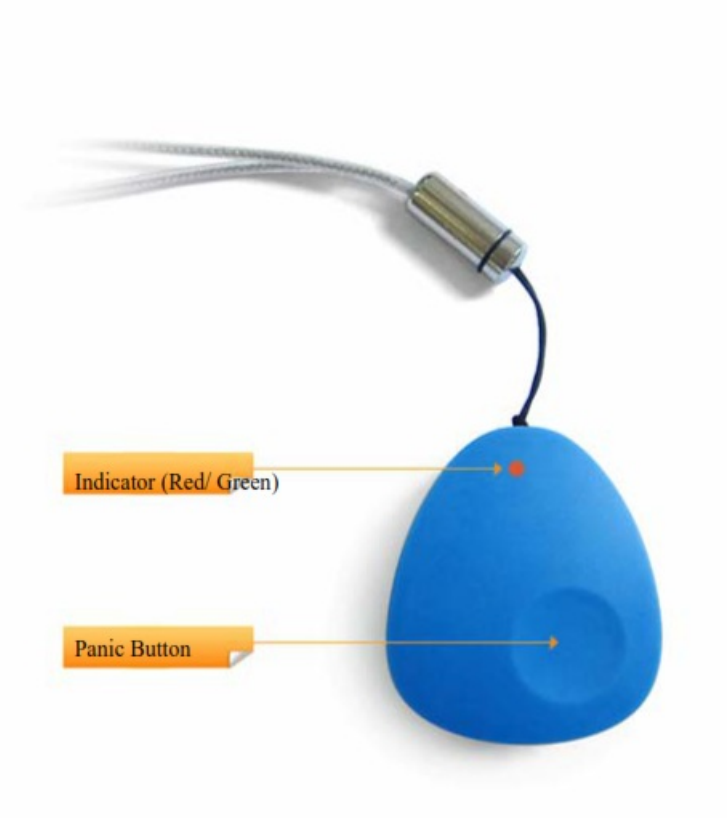
Introduction

Z308, a wearable presence tag, acts as an IAS device for minor children/aged-care use. It is an ideal product to detect one's presence within/ out of the network coverage for safety purposes. Z308 periodically sends presence/absence report to keep a close watch on those who wear it. Z308 also works as an emergency button. When users ask for urgent assistance, simply push the button, and Z308 will send the alarm message to the command center. The Warning Device will send out an alarm sound or lighting alert for immediate help.

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- ultipoint, and mesh networks. It is defined as 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.

Product Appearance



Specification

- Fully IEEE 802.15.4 compliant
- Utilizes 2.4GHz ISM band; up to 16 channels
- Power supply: 1 x CR2450 3.0V battery
- Operating Consumption: Tx ≤ 33mA; Rx ≤ 28mA
- Standby consumption: ≤ 1.3uA
- Wireless transmission is up to 200 meters linear distance in open field
- Easy installation and configuration

Installation

- Z308 is waterproof.

Setting up Z308

5-1. Turn On/ Turn Off Z308
To manually turn on or turn off Z308, please use the following instructions:
A. Turn it on: Press and hold the Panic Button for 3 seconds. The indicators will flash once, and the device is ready to be used.

- When ZB02C is in a ZigBee network → the indicator will flash green 5 times.

B. Turn it off: Press and hold the Panic Button for 6 seconds. The indicator will flash red 10 times within 5 seconds. Within the 5-second period of time, press the Panic Button again to turn it off.

5-2. Join the ZigBee Network

After Z308 is turned on, it will search for an existing ZigBee network and send a request to join the network automatically. While Z308 is under the coverage of a coordinator r a router whose permit-join feature is enabled, Z308 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 Z308. It will start to search and join the network.

Step3. Press and hold the button for three seconds to search a network to join.

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

Step5. When Z308 can not join a network in 3 minutes, it will go into off mode. To ask for joining Network again, press and hothe ld button for 3 seconds.

After joining a network, Z308 would try to enroll in the ZigBee security system. Please make sure Z308 and CIE (Control and Indicating Equipment) devices have enough power.

5-3. Enroll in the ZigBee Security System

Z308 is a Zone device in the ZigBee security system. Right after Z308 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. The enrollment has these 3 situations:

A. There is no CIE device or no compatible CIE device in the network → the indicator flashes **red twice.**

B. There is a compatible CIE device in the network, but it failed to enroll → the indicator flashes **red 4 times**. Users can reboot Z308 to initiate the registration.

C. The enrollment is completed → the indicator flashes **red 6 times.**

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

5-4. Sleeping Mode

Z308 is designed to go into a sleeping mode for power-saving in 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. Once Z308 was joined to a network and by any chance, the network is no longer existed or the device is out of the network → Z308 will wake up every 5 minutes to find the network it joined before.

It never keeps in sleeping mode and continues to find out a network every 5 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 turn off the device.

5-5. Wake up Z308

When users would like to setup or acquire data from the device which is in sleeping mode, we have to wake up the device as the following steps:

Step1. Press and hold the Panic Button for 3 seconds. Release the button when the indicator flashes once.

Step2. The indicator flashes **green 5 times** when Z308 is online.

Step3. Z308 will broadcast the device data to the ZigBee network.

Z308 would be in active status for 2 minutes for communication.

5-6. Panic Button

- Z308's Zone Type: Key Fob (ID: 0x0115)
- The value of Alarm2 is 1 when sending alarm message.

Under the circumstances that Z308 has enrolled to the security system, it will send the alarm message to the command center (and the bound devices with ID: 0x0500) after pressing the Panic Button. The Warning Device will send out an alarm sound or lighting alert for immediate help.

Under the circumstances that Z308 hasn't enrolled to the security system, it will try enroll in a security system after pressing the Panic Button. After the enrollment, Z308 will send the alarm message to the command center.

ZoneStatusChange commands: 0x00.

The command list:

Bits: 8	8	8	var	
Frame	Transaction	Command	Frame payload	

control	Sequence number	identifier	16-Bit Enumeration	8-Bit Enumeration
0x09		0x00	ZoneStatus	ExtendedStatus

(clustered: 0x 0500)

Values of the ZoneStauts payload

ZoneStatus Attribute Bit Number	**Meaning**	**Values**
0	Alarm1	1 – opened or alarmed 0 – closed or not alarmed
1	Alarm2	1 – opened or alarmed 0 – closed or not alarmed
2	Tamper	1 – Tampered 0 – Not tampered
3	Battery	1 – Low battery 0 – Battery OK
4	Supervision reports	1 – Reports 0 – Does not report
5	Restore reports	1 – Reports restore 0 – Does not report restore
6	Trouble	1 – Trouble/Failure 0 – OK
7	AC (mains)	1 – AC/Mains fault 0 – AC/Mains OK
8-15	Reserved	

Values of the ExtendedStatus payload

ExtendedStatu Attribute Bit Number	Meaning	Values
0-6	ZoneID	
7	**ZoneStatusChange Or Heartbeat**	**1 – HeartBeat** **0 – ZoneStatusChange**

5-7. Presence Tag

Z308 works as a presence tag. It is an ideal product to detect one's presence within/ out of the network coverage for safety purpose. Z308 periodically sends presence/absence report to keep a close watch on those who wear it. The bound devices (with ID: 0xFE60) could calculate Z308's location based on the RSSI values between Router

Devices and 308.
The command list:

Bits:8	16	8	8	var
Frame	Manufacturer	Transaction	Command	Frame payload

control	code	Sequence nu mber	identifier	Count	NodeI D	RSSI	…	NodeID	RSSI
0x05	0x109F		0x5F	Byte	2byte	Signed			

(Clustered 0x FE60)

5-8. 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 Z308 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.

5-9. Battery
When the operating voltage is lower than 2.1V, the indicator will flash red once. Z308 will send a low-power report to the ZigBee network.
The related data:

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

5-10. Restore to Factory Setting
To restore it to the factory setting, please follow the steps:
Step1. Press and hold the Panic Button or 15 seconds.
Step2. Release the button after the indicator shows fast red flashes.
Step3. After 10 red flashes, it will go into turn-off mode. The indicator will be Off.

5-11. Offline activation
If Z308 disconnects from the network, it will wake up every 5 minutes to try re-joined the network. It also can manually trigger Z308 to re-join the network in the following two ways.

1. Press the panic button for 3 seconds and the red indicator flashes once then the device would try re-joined the network.
2. Press the panic button once to alarm and the device would try to re-joined the network.

Home Automation Clusters for Z308

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 Z308.

1. End Point(s) 0x01:
2. Device ID IAS Zone 0x0402

3. EndPoint Cluster ID

Cluster ID for Z308	
Server side	Client side
EP 0x01 (Device ID: IAS Zone(0x0402))	
Basic(0x0000)	None
Power configuration(0x0001)	
Identify(0x0003)	
IAS zone (0x0500)	
Commissioning(0x0015)	
Poll Control 0x0020	
Diagnostics 0x0B05	

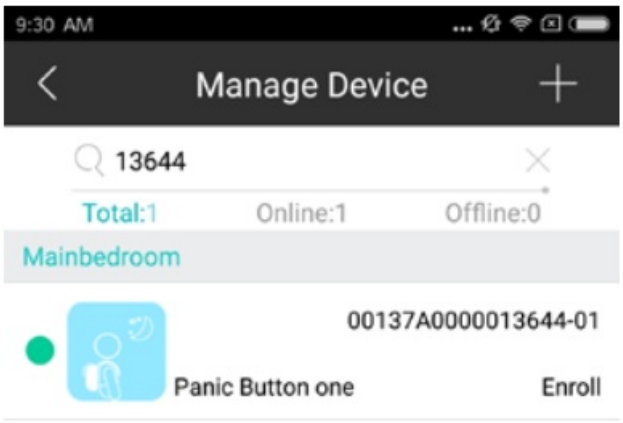
This lists the attributes of the basic information.

Identifier	**Name**	**Type**	**Range**	**Access**	**Default**	**Mandatory / Optional**
0x0000	ZCLVersion	Unsigned 8-bit integer	0x00 – 0xff	Read-only	0x03	M
0x0001	Application Version	Unsigned 8-bit integer	0x00 – 0xff	Read-only	0x28	O
0x0002	StackVersion	Unsigned 8-bit integer	0x00 – 0xff	Read-only	0x38	O
0x0003	HWVersion	Unsigned 8-bit integer	0x00 – 0xff	Read-only	0x02	O
0x0004	ManufacturerName	Character string	0 – 32 bytes	Read-only	netvox	O
0x0005	ModelIdentifier	Character string	0 – 32 bytes	Read-only	Z308E3ED	O
0x0006	DateCode	Character string	0 – 16 bytes	Read-only	20160113	O
0x0007	PowerSource	8-bit Enumeration	0x00 – 0xff	Read-only	0x03	M

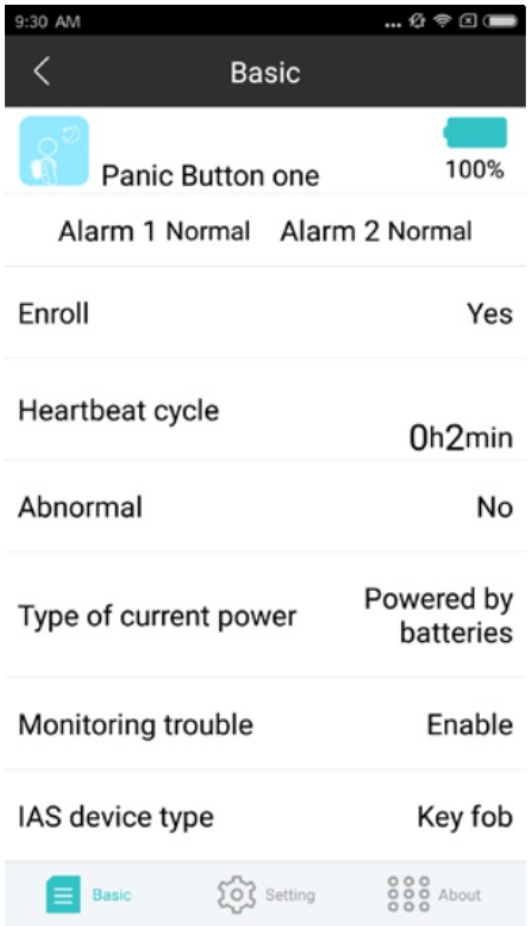
0x0010	LocationDescription	Character string	0 – 16 bytes	Read/write		O
0x0011	physical environment	8-bit Enumeration	0x00 – 0xff	Read/write	0x00	O
0x0012	DeviceEnabled	Boolean	0x00 – 0x01	Read/write	0x01	M

Netvox App Control Interface

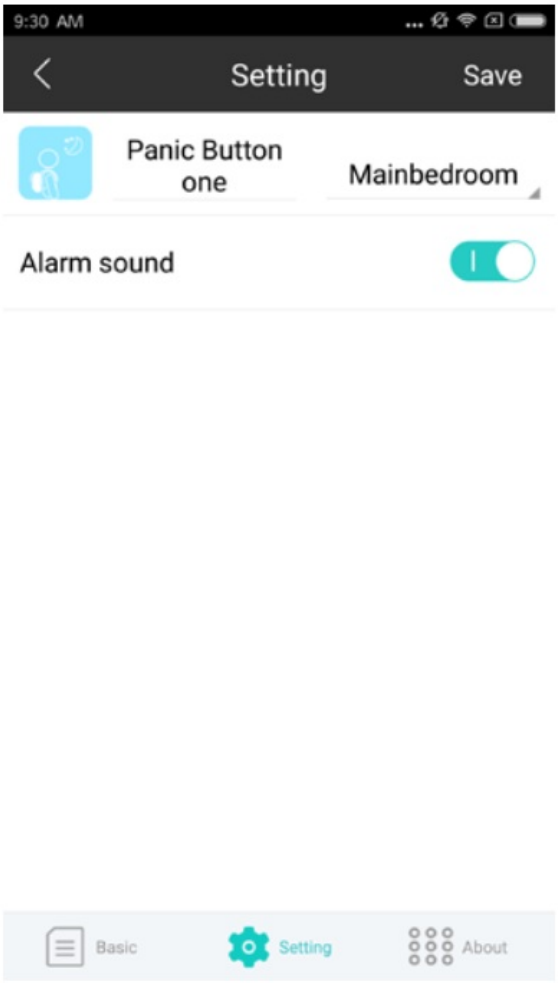
Add device to devise a list of Z308 in the Netvox App and the device information will show up in the management interface as below IAS Zone device.



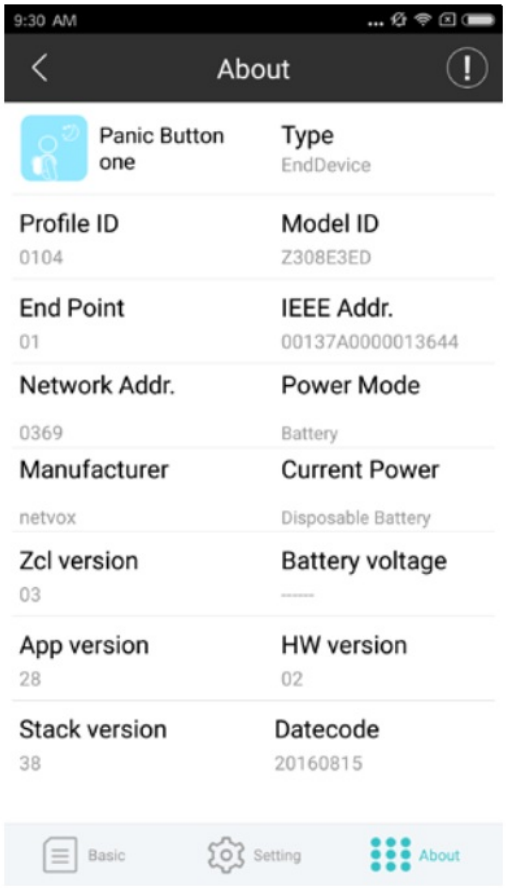
The added device EP01 is a “Panic Button” device type. Choose it to enter the control interface as below:



Press the button shortly to carry out the emergency alarm. Through the following interface of APP setting, you can set the “Alarm sound” after the emergency alarm.



Choose” about device” to check device information as below:



Related Netvox Devices

-  Z201B: ZigBee HA Coordinator with CIE

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 it.
- 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 devices, 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 an environment with a 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 1999/5fEC, 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+AI:2010a12:2011

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED
BY AN INCORRECT TYPE.
DISPOSE OF USED BA-TE.RIES ACCORDING
TO THE INSTRUCTIONS

Documents / Resources

	netvox Z308 ZigBee Wearable Presence Tag with Emergency Button [pdf] User Manual Z308 ZigBee Wearable Presence Tag with Emergency Button, Z308, ZigBee Wearable Presence Tag with Emergency Button