

User Manual

ZigBee Remote

Model: Z502A

Firmware: V1.0

Hardware: V0.4

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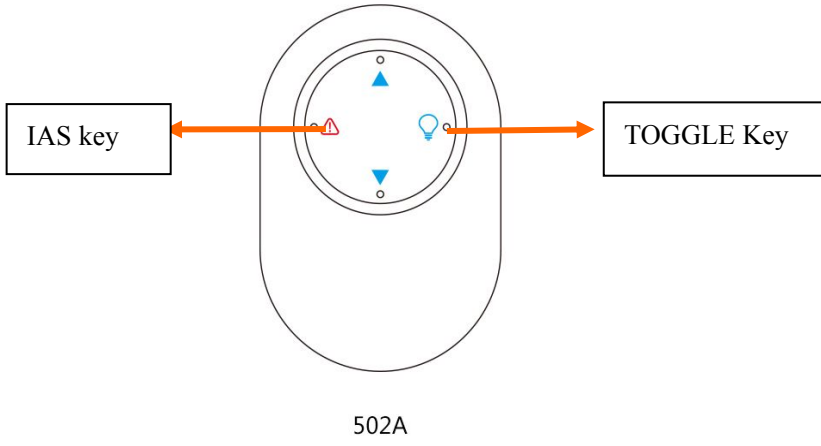
1. Introduction

Netvox Z502A, ZigBee remote controller, 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. Z502A can be bound with the On/Off or dimmer devices for users to control the devices wirelessly. It also equipped with an emergency button. When users ask for urgent assistance, simply push the button, and Z502A will send the alarm message to the command center. The Warning Device will send out 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-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: 3V CR2450 button cell battery
- Up to 70 meters wireless transmission range in non-obstacle space
- Easy installation and configuration

4. Setting up Z502A

4-1. Join the ZigBee Network

While Z502A is under the coverage from a coordinator or a router whose **permit-join feature is enabled**, Z502A will be permitted to join the network.

- (1) Turn on permit-join function of a coordinator or a router
- (2) Load batteries after device is restored to factory setting. Device will start to search the network.
- (3) While scanning a network to join, the network indicator flashes once.
- (4) Join network successfully: the indicator flashes 5 times, otherwise, there is no responds. After joining network, device will match CIE system automatically. The indicator flashes 6 times to show success, 4 times to show fail.

4-2. Bind and Unbind

In HA network, Z502A can bind with devices with server ports: On/Off (0x0006) Cluster 、 Level Control(0x0008) Cluster or IAS ACE (0x0501) Cluster. After binding, Z502A can control bind device with on/off, level control functions:

1. Control bind device to send binding request.
2. Press and hold “TOGGLE” key for 2 seconds, indicator flashes once. Press shortly “LEVEL_UP” in 2 seconds to send binding request to bind with corresponding device.
3. After binding successfully, indicator flashes 5 times (5, 500 ms, 500 ms). If binding is fail, indicator flashes 10 times (10, 100 ms, 400 ms).

To bind with IAS ACE devices:

1. Operate device which Z502A is going to bind with to send binding request.
2. Press and hold “TOGGLE” key for 2 seconds, the indicator flashes once. Press shortly “IAS” key within 2 seconds to send bind request.
3. After binding successfully, indicator flashes 5 times (5, 500 ms, 500 ms). If binding is fail, indicator flashes 10 times (10, 100 ms, 400 ms).

4-3. Control

(1) Control HAS device

- ① After binding with dimmable device, press shortly “LEVEL_UP” key to level up brightness.
- ② After binding with dimmable device, press shortly “LEVEL_down” key to level down brightness.
- ③ After binding with on/off switch device, press shortly “TOGGLE” key to toggle.
- ④ After binding with IAS ACE device, press and hold “LEVEL_UP” key for 2 seconds arm. Press and hold “LEVEL_DOWN” key for 2 seconds to disarm.
- ⑤ Press shortly “IAS” key to broadcast emergency warning.

(2) Once matching CIE successfully, press and hold “LEVEL_UP” key for 2 seconds to arm, press and hold

“LEVEL_DOWN”key for 2 seconds to disarm. Press shortly “IAS” key to broadcast emergency warning.

4.4. Low Battery Voltage Warning

Z502A uses a CR2450 3V button battery as power supply. When the operating voltage is low, Z502A will send a low-power report to the CIE device. The 4 battery attributes:

- BatteryVoltageMinThreshold: 2.1V
- BatteryVoltageThreshold1: 2.2V
- BatteryVoltageThreshold2: 2.3V
- BatteryVoltageThreshold3: 2.4V

When the battery voltage is lower than the VoltageThreshold, it will send the voltage alarm code:

- Lower than BatteryVoltageMinThreshold → sends the Alarmcode = 0x10
- Lower than BatteryVoltageThreshold1 → sends the Alarmcode = 0x11
- Lower than BatteryVoltageThreshold2 → sends the Alarmcode = 0x12
- Lower than BatteryVoltageThreshold3 → sends the Alarmcode = 0x13

While battery power is lower than any of four voltage thresholds, device can not work normally. The indicator flashes once and send low power warning. Or check data request every 5 minutes to see if it's low power. If it is low power, the indicator flashes once and sends warning to remind users change batteries.

4.5. Wake up Z502A

When users would like to setup or acquire data from the device which is in sleeping mode, we have to wake up the device. To wake up Z502A, press “IAS” key for 5 seconds and release. Z502A will broadcast the device information such as IP address and IEEE address.

4-6. Restore to Factory Setting

Before joining a new network, device will need to be restored to factory setting, please follow the steps:

Step1. Power off Z502A.

Step2. Press and hold “IAS” key, and then power on Z502A.

Step3. After the indicator flashes **20 times**, reboot Z502A to complete the restore. It will start to search the new network.

4.7. Rejoin

- (1) When ED is out of network coverage (turn off coordinator or router), it will go to sleeping mode.
- (2) When ED is in sleeping mode, it will rejoin the network automatically every 15 minutes.
- (3) When ED is back to network coverage (turn on coordinator or router), users can turn on ED to rejoin manually.

4.8. Sleeping Mode

Z502A is designed to go into sleeping mode for power-saving in some situations:

- ① After powering on, if there is no network to join, it will enter 15 minutes sleeping mode and search for network after waking up.
- ② After joining a network, device will enter 5 minutes sleeping mode.
- ③ If there is a network to join but device goes off line. It will enter 15 minutes sleeping mode and search for original network to join after waking up.

Situation ③ will consume up to 30 times energy of ① and ②. For saving power, if device in ③ status, users can take the batteries off.

4.9. Check Battery Voltage

Battery voltage attribute(ID:0x0020) of Power configuration cluster(ID:0x0001) can show battery voltage status. Users are able to check battery power and send data to bind device.

5. Home Automation Clusters for Z502A

1. **End Point(s):** 0x01, 0x02

2. **DEVICE ID:** Level Control Switch (0x0001), IAS Ancillary Control Equipment (0x0401)

3. **Cluster ID which EndPoint supports:**

Cluster ID for Z502A	
Server side	Client side
EP 0X01 Device ID: Level Control Switch (0x0001)	
Basic(0x0000)	
Power Configuration(0x0001)	
Identify(0x0003)	On-Off(0x0006)
Commissioning(0x0015)	Level Control(0x0008)
Poll Control(0x0020)	
Diagnostics(0x0B05)	
EP 0X02 Device ID: IAS Ancillary Control Equipment (0x0401)	
Basic(0x0000)	
Identify(0x0003)	
Commissioning(0x0015)	IAS ACE (0x0501)
Diagnostics(0x0B05)	

4. Attribute each cluster ID supports:

(1) Attributes of the Basic Device Information attribute set

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>ZCLVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x03	M
0x0001	<i>ApplicationVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x32	O
0x0002	<i>StackVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x35	O

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0003	<i>HWVersion</i>	8-bit Unsigned integer	0x00 –0xff	Read only	0x04	O
0x0004	<i>ManufacturerName</i>	Character string	0 – 32 Bytes	Read only	netvox	O
0x0005	<i>ModelIdentifier</i>	Character string	0 – 32bytes	Read only	Z502AE3ED	O
0x0006	<i>DateCode</i>	Character string	0 – 16 bytes	Read only	20150715	O
0x0007	<i>PowerSource</i>	8-bit Enumeration	0x00 –0xff	Read only	0x01	M

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.