User Manual

Humidity/Temperature Sensor
Model: Z716A

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1. Introduction

Netvox Z716A, a humidity/temperature sensor with LCD display, 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. The humidity/temperature data can be also sent to the ZigBee network center wirelessly.

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.
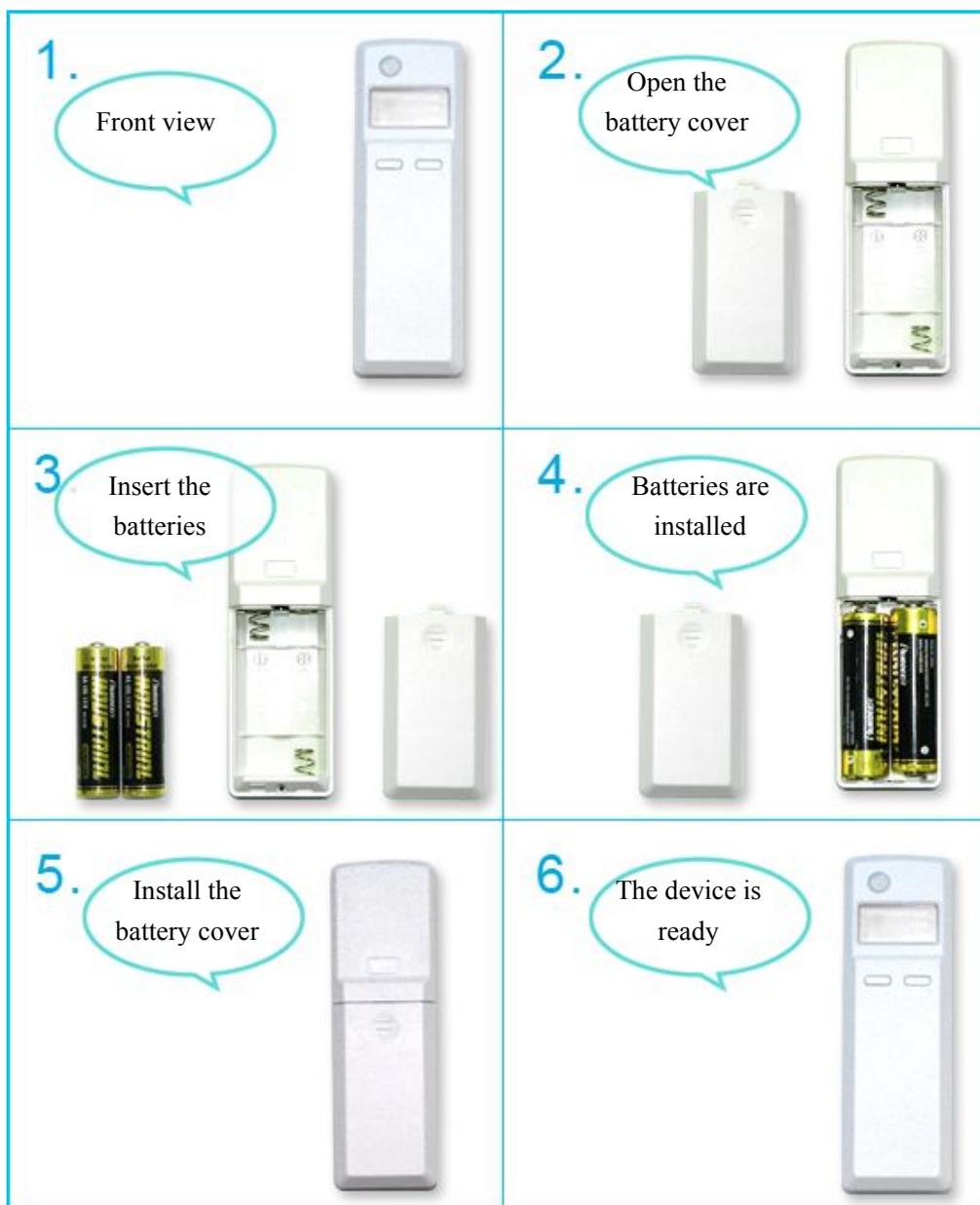
2. Product Appearance

Humidity/Temperature Sensor

LCD Display

Binding Key

Setting Key

netvox

3. Specification

- Fully IEEE 802.15.4 compliant

- Utilizes 2.4GHz ISM band; up to 16 channels

- Power supply: 2 x 1.5V AA batteries

- Operating consumption: $\leq$ 40mA

- Standby consumption: $\leq$ 0.6uA

- Humidity/Temperature sensor

- Equipped with LCD display

- Up to 180 meters wireless transmission range in non-obstacle space

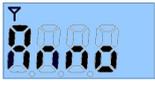- Easy installation and configuration

4. Installation

1. Front view	**2.** Open the battery cover
3. Insert the batteries	**4.** Batteries are installed
5. Install the battery cover	**6.** The device is ready

5. Setting up Z716A

5-1. Turn On Z716A

To manually turn on Z716A, press the *Binding Key* once.

- When Z716A is first time used or after resetting → it will try to join the network.
- When Z716A is in a ZigBee network → it will send out the device data, like IEEE address/Network address, and the LCD display will show [Anno] for 2 minutes.
- When Z716A 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 Z716A is turned on, it will search for an existing ZigBee network and send a request to join the network automatically. While Z716A is under the coverage from a coordinator or a router whose **permit-join feature is enabled**, Z716A 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 Z716A. It will start to search and join the network.

Step3. The ▼ icon will flash **once** when it finds out a network to join.

Step4. The ▼ icon will stay on after it is joined successfully.

Z716A will try 3 times to join the network. After it is failed to join the network, it will go to sleeping mode and automatically wake up to find out a network to join every 15 minutes.

5-3. Binding

Z716A can be bound with the HA Temperature/Relative Humidity device .

Step1. Press and hold the *Binding Key* for 3 seconds to broadcast the binding request. The LCD will show **!** **once** and display [bind]. The ▼ icon will be flashing.

Step2. Enable the binding feature of the HA Temperature/Relative Humidity device.

Step3. The LCD display shows [Good] after the binding is completed; otherwise, it will show

- Z716A can be bound with up to 10 devices.

5-4. Sleeping Mode

Z716A is designed to go into 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. When it doesn't find a network to join → Z716A will go to sleeping mode. It will wake up every 15 minutes to search a network to join.
C. Once Z716A was joined to a network and by any chance the network is no longer existed or the device is out of the network → Z716A 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.

5-5. Identification

According to the received Identify Times, the LCD display will show and the icon will flash N times (N = Identify Times. Period = 1 second. Duty cycle = 50%.)

5-6. LCD Display

Users could use the *setting key* to switch the readings of Temperature → Humidity → Battery Voltage.

To display Celsius/Fahrenheit for temperature, press and hold the *setting key* for 3 seconds to switch the units.

5-7. Battery

When the operating voltage is lower than 2.5V, the LCD display will flash **once** and will show the icon.

5-8. Restore to Factory Setting

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

Step1. Press and hold both *Binding Key* and *Setting Key* for 5 seconds.

Step2. Release the button after the LCD display flashes**.**

Step3. After the display shows , the restore is completed.

6. Home Automation Clusters for Z716A

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 Z716A.

Server side	Client side
Mandatory	
Basic(0x0000)	
Identify(0x0003)	
Temperature Measurement(0x0402)	
Optional	
Power Configure(0x0001)	
Commissioning(0x0015)	
Relative Humidity Measurement(0x0405)	
Alarm(0x0009)	

This lists the attributes of the basic information.

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	ZCLVersion	8-bit Unsigned integer	0x00 –0xff	Read only	0x03	M
0x0001	ApplicationVersion	8-bit Unsigned integer	0x00 –0xff	Read only	0x0B	O
0x0002	StackVersion	8-bit Unsigned integer	0x00 –0xff	Read only	0x2F	O
0x0003	HWVersion	8-bit Unsigned integer	0x00 –0xff	Read only	0x0F	O
0x0004	ManufacturerName	Character string	0 – 32 Bytes	Read only	netvox	O
0x0005	ModelIdentifier	Character string	0 – 32bytes	Read only	Z716AE2ED	O
0x0006	DateCode	Character string	0 – 16 bytes	Read only	20130802	O

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0007	PowerSource	8-bit Enumeration	0x00 –0xff	Read only	0x03	M
0x0010	LocationDescription	Character string	0 – 16bytes	Read/ write	Empty string	O
0x0011	PhysicalEnvironment	8-bit Enumeration	0x00 –0xff	Read/ write	0x00	O
0x0012	DeviceEnabled	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