

WS-15ZBS Water Leak Sensor

Introduction

WS-15ZBS is a ZigBee Water Leak Sensor. It is capable of sending wireless signals to the coordinator in the ZigBee network upon water detection. The Water Sensor can be mounted on the wall using the extension probe, or placed on the ground to use the probe on the back to detect water leakage or flood condition.

The Water Sensor utilizes ZigBee technology for wireless signal transmission. ZigBee is a wireless communication protocol that is reliable and has low power consumption and high transmission efficiency. Based on IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and coordinated for data exchange and signal transmission

The Water Sensor serves as an end device in the ZigBee network. It can be included in the ZigBee network to transmit signal upon activation, but cannot permit any other ZigBee device to join the network through the Water Sensor.

PARTS IDENTIFICATION

1. Red LED (Inside)

- Two Quick flashes:
The Water Sensor has successfully joined a ZigBee network.
- Flashes every 20 minutes:
The Water Sensor has lost connection to its current ZigBee network.
- Flashes every second:
The Water Sensor is under Alarm Silence mode.

2. Function Button

- Press once to send a supervisory signal to the coordinator.
- Press and hold the button for 10 seconds to reset the Water Sensor.
- Press once to during an alarm to enter silence mode for 10 minutes.

3. External Water Detection Probe

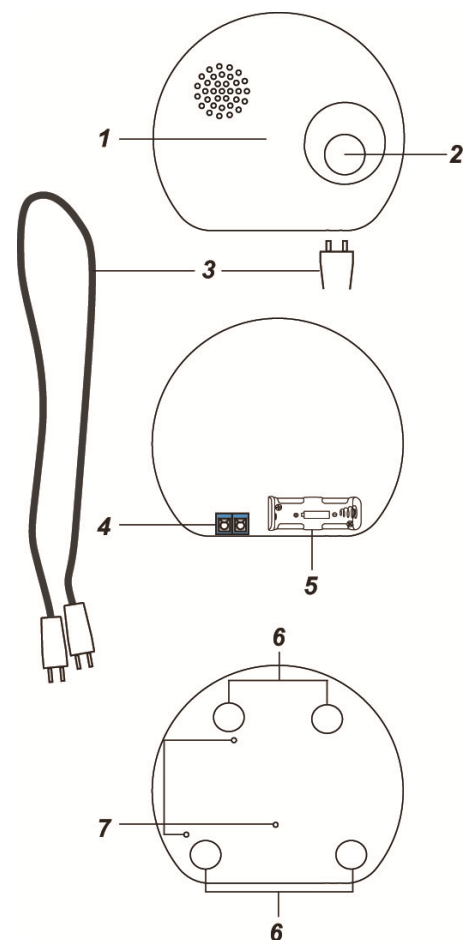
- Use when Water Sensor is mounted on the wall.
- See **Probe Types** under **Installation** for details.

4. External Water Probe Connection Terminal

5. Battery Compartment

6. Wall-Fixing Knockouts

7. Built-in Water Detection Probe



Features

● **Water Detection**

- The Water Sensor will be activated when water is detected by the probes. After activation, the Water Sensor will transmit signal to the ZigBee network coordinator and raise alarm with its built-in buzzer for 10 seconds.
- The Water Sensor will check if water is present every 10 seconds, if water persists after 10 seconds, the buzzer will continue to sound alarm.
- If water persists, the Water Sensor will continue to send the alarm signal every 10 minutes.
- If water is subsided, the Water Sensor will stop alarming and transmit a restore signal

● **Alarm Silence**

- When the Water Sensor is alarming, press the Function button once on Water Sensor to enter Alarm Silence mode for 10 minutes
- Under Alarm Silence mode, the Water Sensor will not sound alarm. The LED Indicator will flash

every second to indicate it is under Alarm Silence mode.

- After 10 minutes, if water still persists, the Water Sensor will raise alarm and send alarm signal again.

● **Battery and Low Battery Detection**

- The Water Sensor uses 1 CR123A 3V Lithium battery as its power source. The battery is included in the package.
- The Water Sensor features Low Battery Detection function. When the battery voltage is low, the Water Sensor will transmit Low Battery signal to the coordinator in ZigBee network.
- When changing batteries, after removing the old battery, press the Function Button twice to fully discharge before inserting a new battery.

● **Supervision**

- The Water Sensor will transmit a supervision signal to report its condition regularly according to user setting. The factory default interval is 30 minutes. The user can also press the Function Button once to transmit a supervision signal manually.

ZigBee Network Setup

● **ZigBee Device Guideline**

ZigBee is a wireless communication protocol that is reliable, has low power consumption and high transmission efficiency. Based on IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and coordinated for data exchange and signal transmission.

Due to the fundamental structure of ZigBee network, ZigBee device will actively seek and join network after powering on. Since performing a task in connecting network may consume some power, it is required to follow the instructions to avoid draining battery of a ZigBee device

- Ensure your ZigBee network router or coordinator is powered on before inserting battery into the ZigBee device.

- Ensure the ZigBee network router or coordinator is powered on and within range while a ZigBee device is in use.

- Do not remove a ZigBee device from the ZigBee network router or coordinator without removing the battery from a ZigBee device.

● **Joining the ZigBee Network**

As a ZigBee device, the Water Sensor needs to join a ZigBee network to transmit signal when high water level is detected. Please follow the steps below to join the Water Sensor into the ZigBee network.

The Water Sensor can only join ZigBee network within 3 minutes after power on.

1. Insert the battery into the battery compartment to power on the Water Sensor.
2. Within **3 minutes** after powering up, press and hold the Function button for 10 seconds, then release it to join the network. Please make sure the permit-join feature on the router or coordinator of your ZigBee network is enabled.
3. After joining the ZigBee network, the Water Sensor will be registered in the security system in the network automatically. Please check the security system control panel or CIE (Control and Indicating Equipment) to confirm if joining and registration is successful.
4. After joining the ZigBee network, if the Water Sensor loses connection to current ZigBee network, the LED indicator will flash every 20 minutes. Please check the ZigBee network condition and Water Sensor signal range to correct the situation

● **Factory Reset**

If the Water Sensor did not successfully join a ZigBee network upon power up, or if you want to remove the Water Sensor from current network and join a new network, you need to use the Factory Reset function to clear the Water Sensor's stored setting and information first before it can join another network. To perform Factory Reset:

1. The Water Sensor can only be reset **within 3 minutes** after power up. If the Water Sensor has been powered up for more than 3 minutes, remove and reinsert the battery.
2. Press and hold the Function button for 10 seconds, release the button until the Water Sensor emits one long beep.
3. The Water Sensor has been reset to factory default setting with all its previous network information removed. It will now actively search for available ZigBee network again and join the network automatically.
4. If the Water Sensor successfully joins a ZigBee network, the LED Indicator will flash twice to indicate.

Installation

● **Mounting**

The Water Sensor can be deployed on the ground or mounted on the wall

Ground Deployment

When deployed on the ground, the Water Sensor detects water through the probes protruding from its back cover.

1. (If extension probe is connected) Open the cover by removing the bottom fixing screw on the Water Sensor.
2. Remove the extension probe from the terminal.
3. Replace the cover.
4. Put the Water Sensor on the ground with the back cover facing downward.

Wall Mounting:

For wall mounting, the Water Sensor must be connected to the external extension probe, then installed at desired height.

1. Remove the fixing screw and cover assembly.
2. Use a Philip screw driver to turn counter-clockwise and loosen the 2 screws on the extension probe terminal. (**Figure 1**)
3. Insert the extension probe into the terminal, use the Philip screw driver to turn clockwise and tighten and screws to secure the probe. (**Figure 2**)

Figure 1



Figure 2



4. Break through the wall mounting knockouts on the base.
5. Using the holes as a template, drill holes in the surface.
6. Insert the wall plugs if fixing it into plaster or brick.
7. Screw the base into the wall plugs.
8. Screw the cover back onto its base.
9. Find the plastic clip included in the package, insert the extension probe in the clip.
To use the plastic clip:
 - Remove the double-side adhesive tape at the back of the clip and apply it to desired location on the wall.
 - Open the clip as in (**Figure 3.**) by using your thumbs.
 - Once clip is opened, insert the water probe and secure the probe's sensor head, make sure the sensing probes are touched on the ground for water detection, then close the clip (**Figure 4**).

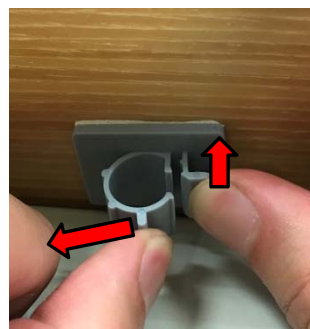


Figure 3.

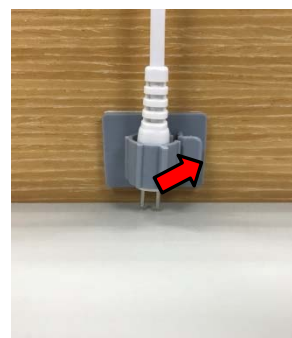


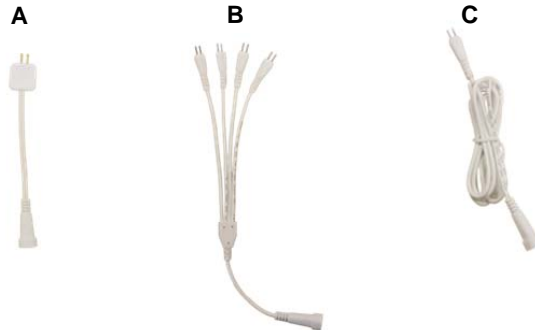
Figure 4.

● **Water Detection Probe**

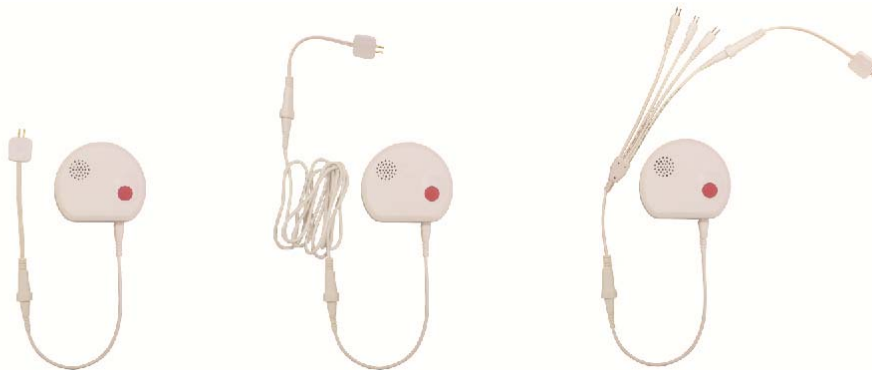
The Water Sensor is shipped with a factory supplied water detection probe. The probe may be further extended by connecting other optional probes to improve detection range.

Available option probe types include

- A. 1 to 1 19cm probe.
- B. 1 to 4 33cm probe.
- C. 1 to 1 180 cm probe.



Multiple extension probes can be further interconnected according to user need. See pictures below for some wiring samples.



● **Using Water Sensor with ZigBee Router**

IMPORTANT NOTE

If Water Sensor installation location is away from your system control panel and requires ZigBee routers to improve signal strength. **DO NOT** use a ZigBee Router without backup battery. A ZigBee router without battery will be powered down during AC power failure and the Water Sensor connected to the router will lose connection with ZigBee network. You should plan your Water Sensor installation location using only ZigBee router with backup battery.

Appendix(For developers only.)

● **Water Sensor Cluster ID**

Device ID: IAS Zone 0x402	
Endpoint: 0x0A	
Server Side	Client Side
Mandatory	
Basic (0x0000)	None
Identify(0x0003)	
IAS Zone(0x0500)	
Optional	
None	None

● **Attribute of Basic Cluster Information**

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
------------	------	------	-------	--------	---------	----------------------

0x0000	<i>ZCLVersion</i>	Unsigned 8-bit integer	0x00 –0xff	Read only	0x01	M
0x0001	<i>ApplicationVersion</i>	Unsigned 8-bit integer	0x00 –0xff	Read only	0x00	O
0x0003	<i>HWVersion</i>	Unsigned 8-bit integer	0x00 –0xff	Read only	0	O
0x0004	<i>ManufacturerName</i>	Character String	0 – 32 bytes	Read only	Vesta Technology	O
0x0005	<i>ModelIdentifier</i>	Character String	0 – 32 bytes	Read only	(Model Version)	O
0x0006	<i>DateCode</i>	Character String	0 – 16 bytes	Read only		O
0x0007	<i>PowerSource</i>	8-bit	0x00 –0xff	Read only		M
0x0010	<i>LocationDescription</i>	Character String	0 – 32 bytes	Read / Write		O
0x0011	<i>PhysicalEnvironment</i>	8-bit	0x00 –0xff	Read / Write	0x00	O
0x0012	<i>DeviceEnabled</i>	Boolean	0x00 –0x01	Read / Write	0x01	M

● **Attribute of Identify Cluster Information**

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>IdentifyTime</i>	Unsigned 16-bit integer	0x00 –0xffff	Read / Write	0x0000	M

● **Attribute of IAS Zone Cluster Information**

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	<i>ZoneState</i>	8-bit Enumeration	All	Read only	0x00	M
0x0001	<i>ZoneType</i>	16-bit Enumeration	All	Read only		M
0x0002	<i>ZoneStatus</i>	16-bit bitmap	All	Read only	0x00	M
0x0010	<i>IAS_CIE_ADDRESS</i>	IEEE ADDRESS	Valid 64bit IEEE address	Read / Write		M
0x0011	<i>ZONE_ID</i>	Unsigned 8-bit integer	All	Read only	0xFF	M