Z-Wave Plus
Garage Door Tilt Sensor
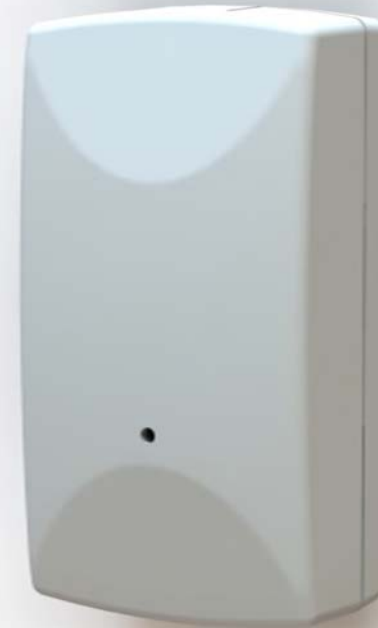
Installation Guide

Product Overview

The accelerometer based tilt sensor remotely monitors garages, hatches, roll-up doors, or any other tilt surface. Verify doors are closed when you leave, and automate lights to turn on inside your home when you arrive, all from your computer, tablet or smart phone.

Features

- Quick installation, flush mount bracket with screws or tape
- Compatible with all Z-wave certified hubs & controllers
- Detects angle of a door and transmits open/close status
- Reports a tamper if the case is removed

Specifications

- For indoor use only
- Operating frequency: 908.42, 916 MHz
- Operating temperature: 0° – 49°C, 32° – 120°F
- Operating humidity 5-95% non-condensing
- 1 CR123A battery
- Battery Life: 5 years

Package contents

- 1 x Z-Wave Tilt Sensor
- 1 x CR123A batteries
- 1 x Installation Guide
- 1x Accessory Pack
    - o 1x Mounting Bracket
    - o 1x Double Sided Adhesive Tape
    - o 2x Mounting Screws
    - o 1x Mounting Bracket Screw

Installation Instructions

(1) Identify location for Z-Wave Plus Tilt Sensor. It is very important that the Tilt sensor be located on the top section of a multi-panel garage door. This will be the first section to tilt when the door is opened and the last to move to the vertical position when closing.
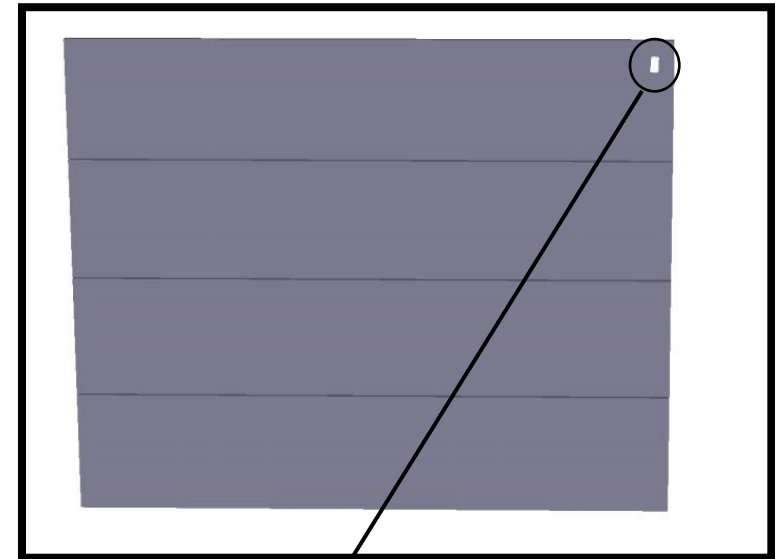
IMPORTANT:	The Tilt sensor must be located on the top panel AND have the arrow on the side of the sensor pointing UP in order to operate properly.

(2) Mount the Tilt sensor mounting bracket a clean dry surface with the sensor screw facing the floor. The bracket can be mounted by the screws of adhesive tape. Caution: Use of the screws is only recommended for garage doors that are thicker than the screws are long. Use the adhesive tape for any garage door that is thinner than the length of the provided screws.

| Adhesive Tape | Mounting Bracket | Sensor Screw | Bracket Screws (optional) | Sensor |
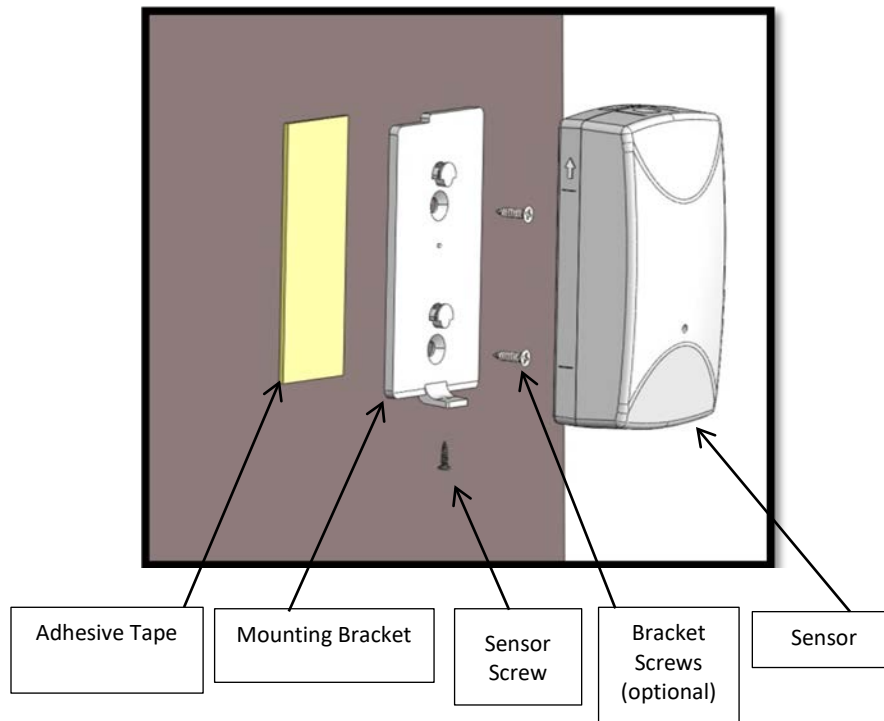
(3) Adhesive Tape Mounting: Make sure that the desired mounting location on the door is clean and dry. The adhesive tape can withstand the temperature and humidity conditions of a typical garage. However, it is recommended that the sensor be mounted when air or surface temperatures are not extreme. Installing the adhesive tape when the conditions are right promotes a good long-lasting adhesive bond between the bracket and the surface of the door. Peel back the outer layer of one side of the adhesive tape, stick the tape to the garage door and press firmly. Peel back the outer layer on the other side of the tape and press the mounting

bracket firmly onto the adhesive tape.

(4) Screws Mounting: Place the mounting bracket in the desired position on the garage door. Use the mounting bracket as a template to mark the location of the screw holes with a pencil. Drill a small hole through each of the marked locations. Use a screwdriver to fasten the mounting bracket to the door.

(5) Install 1x CR123A batteries provided in the package.

(6) Before the sensor is secured to the mounting bracket. Follow the inclusion instructions to verify successful communication with the Z-Wave Controller.Follow the Network Inclusion steps in next section.

(7) After network inclusion, secure the sensor onto the mounting bracket with the sensor screw.

(8) Test the connection by opening and closing your garage and observing the open and close statuses.

Network Inclusion

The Z-Wave Plus Garage Tilt Sensor must be added to a Z-Wave Plus network prior to use. To include the device in a network both the device and the network controller must be in inclusion mode at the same time. *Refer to the instructions provided by the manufacturer of your specific controller for details on initiating the controller's inclusion mode.*

1) Verify that the Z-Wave Plus controller you are using is compatible with the Z-Wave Plus Tilt Sensor.
2) Put your Z-Wave Plus Controller into add (inclusion) mode.
3) Insert the battery and press the learn button on the tilt sensor.
4) The LED on the front of the unit will turn off if network inclusion is successful.

Network Exclusion

1) Any Z-Wave Plus Device can be removed from any Z-Wave Plus controller. Follow the directions to put your Z-Wave Plus Controller into exclusion mode.
2) Press the inclusion / exclusion button on the Z-Wave Plus Tilt Sensor.
3) The LED in front of the unit will blink steadily if the network exclusion is successful.

*Please refer to the LED status section for more information on the LED behavior

Factory Reset Button

Learn Button (Inclusion/Exclusion)

Notes:

- Controller inclusion mode must be activated BEFORE starting sensor inclusion or exclusion mode.
- The device can only be included into one controller network at a time, and must be excluded from one network before inclusion in another.

LED Status

The Z-Wave Plus Tilt Sensor is equipped with a red LED.
The state of the LED will change based on the state of the device.

LED Blinking   - Device in learn mode
LED On   - Device OTA (over the air) Update
LED blink   - Tilt Detected/Restore, Tamper Detected/Restore

Battery State

The Z-Wave Plus Tilt Sensor will alert the user when the batteries become low. The Z-Wave Plus Tilt Sensor will continue reporting the state of the sensor until the batteries are completely depleted.

Factory Default

The Z-Wave Plus Tilt Sensor can be factory defaulted by pressing and holding the factory reset button for 5 seconds.
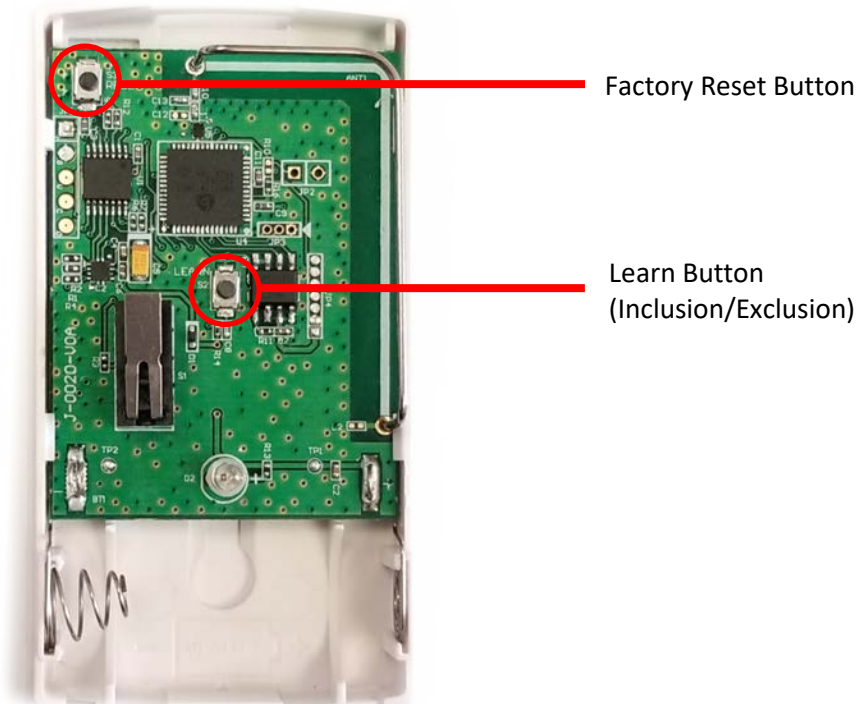
Z-Wave Plus Specific Information

Z-Wave Plus is a wireless mesh network and data protocol that allows devices from many different manufacturers to interoperate. This device implements Z-Wave Plus functionality, Network Wide Inclusion. The following information is intended for software engineers working on Z-Wave Plus controllers and home automation enthusiasts to integrate the Z-Wave Plus device into their system. This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

Z-Wave Plus Command Class Basic

For backwards compatibility with older Z-Wave Plus Controllers, the Basic Command Class is supported in the following manner. A Basic Report of 0xFF is Garage Open. A basic report of 0x00 is garage closed.

Manufacturer ID	0x01 4A
Product Type	0x00 05
Product ID	0x04 AA

Network Wide Inclusion

This device also supports Network Wide Inclusion such that the device can be included into the Z-Wave network over the mesh network and not directly near the main controller. This mode is automatically activated after regular inclusion was not successful.

Command Class Association

This Z-Wave Plus Tilt Sensor has two Association groups of 1 nodes.
Group one – Group one is the lifeline group. The garage door tilt sensor will send Basic Reports with a value of 0x00 if the door is closed and 0xFF if the door is opened to all nodes in group 1.

Commands Sent to Association Group One

SENSOR CONDITION	COMMAND CLASS AND VALUE	CONFIGURABLILITY
Tilt Detected	Notification report Type: HOME SECURITY (0x07) Event: Garage Open (0x02)	YES*
	Basic Report of 0xFF	NO
Tilt Clear	Notification report	YES*

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	Type: HOME SECURITY (0x07) Event: Previous Events Cleared (0x00)	
	Basic Report of 0x00	NO
Case Tampered	Notification report Type: HOME SECURITY (0x07) Event: Tampering Covering Removed (0x03)	YES*
	Wake Up Notification	YES
Case Closed	Notification report Type: HOME SECURITY (0x07) Event: Previous Events Cleared (0x00)	YES*
Battery Level	Battery Report of 0x01 to 0x64 is an estimated battery level. A level of 0x00 indicates that battery should be changed soon. A battery level of 0xFF indicates that the battery should be changed immediately.	NO

*Notification Reports can be configured through the Notification Set of Notification Type 0x07, and status of: 0x00: This type of notification turned off. 0xFF: This type of notification turned on.

Z-Wave Device Class Information

This Z-Wave sensor is a Z-Wave generic Device Class of GENERIC_TYPE_SENSOR_NOTIFICATION, and a specific device class of SPECIFIC_TYPE_NOTIFICATION_SENSOR.

Parameter Number	Description	Number of Bytes	Default	Min	Max
1	Number of attempts the device should attempt application level retries.	1	3	0	10
2	Number of milliseconds between application levels retries.	2	500 (0x01F4)	10 (0x0A)	5000 (0x1388)
3	The tilt angle at which the garage door is considered closed. Byte value 0: 10 degrees Byte value 1: 30 degrees Byte value 2: 50 degrees	1	0	0	2
4	The tilt angle at which the garage door is considered opened. Byte value 0: 30 degrees Byte value 1: 50 degrees Byte value 2: 70 degrees	1	0	0	2

* If you set Parameter 3 and 4 to the same byte value, Parameter 4 must be set first before Parameter 3 can be set. The opened tilt angle must be greater than the closed tilt angle

S2 Encryption

The sensor uses industry standard elliptic key cryptography to encrypt all sensitive communications. The DSK code is located on the device below the QR codes. The DSK is used for authenticating the encrypted command classes in the table above.
A Security Enabled Z-Wave Controller must be used to fully utilize the product.

COMMAND CLASS NAME	VERSION	SECURED USING S2 ENCRYPTION
ASSOCIATION	2	Yes
ASSOCIATION_GRP_INFO	1	Yes
BATTERY	1	Yes
BASIC	2	Yes
CONFIGURATION	1	Yes
DEVICE_RESET_LOCALLY	1	Yes
FIRMWARE_UPDATE_MD	4	Yes
MANUFACTURER_SPECIFIC	2	Yes
NOTIFICATION	8	Yes
POWERLEVEL	1	Yes
VERSION	3	Yes
WAKE_UP	2	Yes
ZWAVEPLUS_INFO	2	NA
SECURITY_2	1	NA
SUPERVISION	1	Yes
TRANSPORT_SERVICE	2	NA

FCC Compliance 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 Class B digital devices, 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 instruction manual, 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:

- Re-orient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment to an outlet on a different circuit from the receiver
- Consult the dealer or an experienced radio/TV contractor for help.

Warning: Changes or modifications not expressly approved by Ecolink Intelligent Technology Inc. could void the user's authority to operate the equipment.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

C'et appareil est conforme la norme d'Industrie Canada exempts de licence RSS. Son fonctionnement est soumis aux deux conditions suivantes: (1) c'et appareil ne peut pas provoquer d'interférences, et (2) c'et appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de la dispositif.

FCC ID: XQC-TILTZWAVE5
IC: 9863B-TILTZWAVE5