



RECESSED DOOR SENSOR



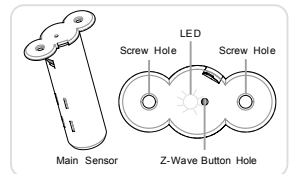
1 Aeotec by Aeon Labs Recessed Door Sensor Gen5.

From Aeotec by Aeon Labs' intelligence series and our Gen5 range, comes Recessed Door Sensor. Invisibly installed, it sits within a door and its frame to provide all the information needed by a Z-Wave® system for security, safety and ambiance without altering a room's aesthetics.

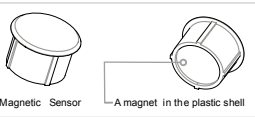
2 Familiarize yourself with your Recessed Door Sensor Gen5.

Your Recessed Door Sensor is comprised of two parts: the larger Main Sensor and the smaller Magnetic Sensor.

- The larger Main Sensor



- The Magnetic Sensor



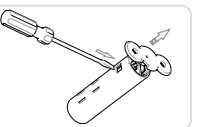
3 Quick start.

The installation of your Recessed Door Sensor has two key steps:

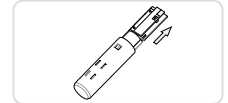
1. Install both parts of your sensor.
2. Connect your sensor to your Z-Wave network.

Prepare the Main Sensor.

1. Using a slot-head screw driver, remove the Main Sensor's lid by pressing gently against its exposed connector.



2. Separate the Main Sensor's two sections by first removing its lid and then removing its internal components.



3. Remove the clear battery insulator by pulling it away from the Main Sensor.



4. With the battery insulator removed, reinsert the internal components into the Main Sensor's enclosure before reattaching its lid. Ensure that the Main Sensor's button aligns with the button hole of its lid. The Main Sensor will now look as it did prior to step 1.



Install your Recessed Door Sensor.

With the Main Sensor powered and activated, it is now time to inlay it within your selected door frame.

Before beginning it is important to select a suitable position for your Recessed Door Sensor. For optimal performance, your sensor should be:

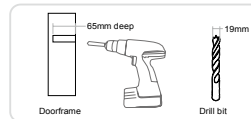
1. Either installed at the top of a door or the side of a door.
2. Positioned away from metal that could interfere with its magnetic functionality. This includes your door's plate, handle or lock mechanism.
3. Installed in a suitable location to ensure a clear (between 1mm and 5mm) separation when the door is closed.
4. Positioned exactly above or beside the position in which the Magnetic Sensor will be inlayed.



The rectangular areas highlighted above are optimal installation positions.

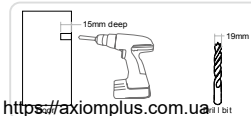
Step 1

Prepare a space for the Main Sensor by drilling a hole into your doorframe using a 19mm wide drill bit. The hole should be 65mm deep.



Step 2

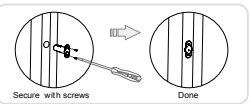
Drill a corresponding hole in your door. The hole should be 15mm deep. As stated, the position of this hole should align exactly with the hole you just created in the doorframe. Again, use a 19mm wide drill bit.



With your door and doorframe prepared and the drill holes created, it's now time to mount both parts of your Recessed Door Sensor.

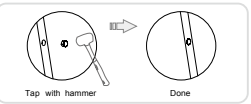
Step 3

Insert the Main Sensor into the hole you created in the door frame then secure it using two screws.



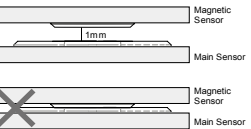
Step 4

Place a small amount of white glue (PVA) inside the hole you created for the Magnetic Sensor. Then place the sensor over and into the hole. Next, insert it by tapping gently on it with a rubber hammer.



Step 5

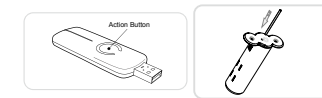
The gap between the two parts of your sensor must be no less than 1mm and no more than 5mm. If your gap is different, re-affix the Main Sensor by altering its hole.



- Add your sensor to your Z-Wave network.

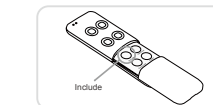
With your Recessed Door Sensor installed within a door and its frame, it's time to add it to your Z-Wave network. The following instructions tell you how to do this using Aeotec's Z-Stick and Minimote controllers. If you are using other products as your main Z-Wave controller, please refer to the part of their respective manuals that tell you how to add new devices to your network.

If you're using a Z-Stick:



1. If your Z-Stick is plugged into a gateway or a computer, unplug it.
2. Take your Z-Stick to the door in which your Recessed Door Sensor has been installed.
3. Press the Action Button on your Z-Stick.
4. Press the Z-Wave Button on your sensor with a small pin or toothpick.
5. If your Recessed Door Sensor had been successfully linked to your network, its LED light will remain illuminated for 10 minutes. If the linking was unsuccessful, its LED light will blink for 3 seconds before turning off.
6. Press the Action Button on the Z-Stick to take it out of installation mode.

If you're using a Minimote:



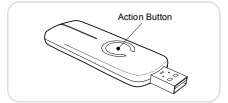
1. Take your Minimote to the door in which your Recessed Door Sensor has been installed.
2. Press the Include button on your Minimote.
3. Press the Z-Wave Button on your sensor with a small pin or toothpick.
4. If your Recessed Door Sensor had been successfully linked to your network, its LED light will remain illuminated for 10 minutes. If the linking was unsuccessful, its LED light will blink for 3 seconds before turning off.
5. Press any button on your Minimote to take it out of installation mode.

4 Advanced.

- Remove your sensor from your Z-Wave network.

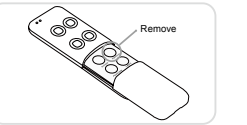
Your Recessed Door Sensor can be removed from your Z-Wave network at any time. You'll need to use your Z-Wave network's main controller to do this. The following instructions tell you how to do this using Aeotec by Aeon Labs' Z-Stick and Minimote controllers. If you are using other products as your main Z-Wave controller, please refer to the part of their respective manuals that tell you how to remove devices from your network.

If you're using a Z-Stick:



1. If your Z-Stick is plugged into a gateway or a computer, unplug it.
2. Take your Z-Stick to your Recessed Door Sensor. Hold the Action Button on your Z-Stick for 3 seconds.
3. Press the Z-Wave Button on your sensor with a small pin or toothpick.
4. If your sensor has been successfully removed from your network, its LED light will blink for 3 seconds when you press the Z-Wave Button. If the removal was unsuccessful, its LED light will remain illuminated for 3 seconds.
5. Press the Action Button on your Z-Stick to take it out of removal mode.

If you're using a Minimote:



1. Take your Minimote to your Recessed Door Sensor.
2. Press the Remove button on your Minimote.
3. Press the Z-Wave Button on your sensor with a small pin or toothpick.
4. If your Recessed Door Sensor has been successfully removed from your network, its LED light will blink for 3 seconds when you press the Z-Wave Button. If the removal was unsuccessful, its LED light will remain illuminated for 3 seconds.
5. Press any button on your Minimote to take it out of removal mode.

● Reset your sensor.

At some stage, you may wish to reset all of your Recessed Door Sensor's settings to their factory defaults. To do this, press and hold the Action Button for 20 seconds and then release it. Your sensor will now be reset to its original settings.

⑤ Technical specifications.

Operating distance: Up to 300feet/100metres outdoors.
Battery: Lithium cell CR2, 3 volt battery, 800mAh.
Operating temperature: -10°C to 50°C.
Relative humidity: 8% to 80%.

⑥ Warranty.

Aeon Labs warrants to the original purchaser of Products that for the Warranty Period (as defined below), the Products will be free from material defects in materials and workmanship. The foregoing warranty is subject to the proper installation, operation and maintenance of the Products in accordance with installation instructions and the operating manual supplied to Customer. Warranty claims must be made by Customer in writing within thirty (30) days of

the manifestation of a problem. Aeon Labs' sole obligation under the foregoing warranty is, at Aeon Labs' option, to repair, replace or correct any such defect that was present at the time of delivery, or to remove the Products and to refund the purchase price to Customer.

The "Warranty Period" begins on the date the Products is delivered and continues for 12 months.

Any repairs under this warranty must be conducted by an authorized Aeon Labs service representative and under Aeon Labs' RMA policy. Any repairs conducted by unauthorized persons shall void this warranty.

Excluded from the warranty are problems due to accidents, acts of God, civil or military authority, civil disturbance, war, strikes, fires, other catastrophes, misuse, misapplication, storage damage, negligence, electrical power problems, or modification to the Products or its components.

Aeon Labs does not authorize any person or party to assume or create for it any other obligation or liability in connection with the Products except as set forth herein.

Aeon Labs will pass on to Customer all manufacturers' Material warranties to the extent

that they are transferable, but will not independently warrant any Material.

Customer must prepay shipping and transportation charges for returned Products, and insure the shipment or accept the risk of loss or damage during such shipment and transportation. Aeon Labs will ship the repaired or replacement products to Customer freight prepaid.

Customer shall indemnify, defend, and hold Aeon Labs and Aeon Labs' affiliates, shareholders, directors, officers, employees, contractors, agents and other representatives harmless from all demands, claims, actions, causes of action, proceedings, suits, assessments, losses, damages, liabilities, settlements, judgments, fines, penalties, interest, costs and expenses (including fees and disbursements of counsel) of every kind (i) based upon personal injury or death or injury to property to the extent any of the foregoing is proximately caused either by a defective product (including strict liability in tort) or by the negligent or willful acts or omissions of Customer or its officers, employees, subcontractors or agents, and/or (ii) arising from or relating to any actual or alleged infringement or misappropriation of any patent,

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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:

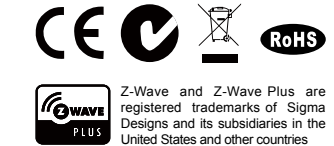
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consul the dealer or an experienced radio/TV technician for help.

● Warning

Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.

Contact your local government for information regarding the collection systems available.

● Certifications (regional):





Aeon Labs Recessed Door Sensor Gen5

(Z-Wave Recessed Door Sensor Gen5)



Change history

Revision	Date	Change Description
1	05/27/2013	Initial draft.
3	6/17/2014	Update Z-wave Library to 6.51.01

Aeon Labs Recessed Door Sensor Gen5
Engineering Specifications and Advanced Functions for Developers
(V1.10)

Aeon Labs Recessed Door Sensor Gen5 is a door detector that can detect the state of the door's open/close. It is a notification sensor device based on Z-wave routing slave library V6.51.01

The Recessed Door Sensor can be included and operated in any Z-wave network with other Z-wave certified devices from other manufacturers and/or other applications. All non-battery operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network.

It is a Z-Wave security enabled device and supports the AES 128 encryption. So a Security Controller would be needed in order to fully use the product's features. Recessed Door Sensor Gen5 also supports the Over the Air (OTA) feature that allows you to update its firmware if needed.

1. Library and Command Classes:

1.1 SDK:6.51.01

1.2 Library:

- Basic Device Class: BASIC_TYPE_ROUTING_SLAVE
- Generic Device class: GENERIC_TYPE_SENSOR_NOTIFICATION
- Specific Device Class: SPECIFIC_TYPE_NOTIFICATION_SENSOR

1.3 Commands:

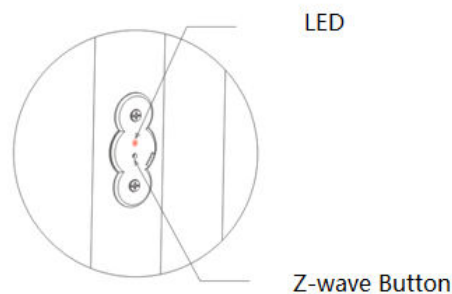
	Added into Non- security network	Added into Security network
Node Info Frame	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_SENSOR_BINARY V1 COMMAND_CLASS_BASIC COMMAND_CLASS_BATTERY V1 COMMAND_CLASS_WAKE_UP V2 COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_NOTIFICATION V3 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1	COMMAND_CLASS_ZWAVEPLUS_INFO V2 COMMAND_CLASS_VERSION V2 COMMAND_CLASS_MANUFACTURER_SPECIFIC V2 COMMAND_CLASS_SECURITY V1 COMMAND_CLASS_MARK V1 COMMAND_CLASS_DEVICE_RESET_LOCALLY V1 COMMAND_CLASS_HAIL V1
Security Command Supported Report Frame		COMMAND_CLASS_SENSOR_BINARY V1 COMMAND_CLASS_BASIC COMMAND_CLASS_BATTERY V1 COMMAND_CLASS_WAKE_UP V2 COMMAND_CLASS_CONFIGURATION V1 COMMAND_CLASS_ASSOCIATION_GRP_INFO V1 COMMAND_CLASS_ASSOCIATION V2 COMMAND_CLASS_NOTIFICATION V3 COMMAND_CLASS_FIRMWARE_UPDATE_MD V2 COMMAND_CLASS_POWERLEVEL V1

2. Technical Specifications

Operating distance: Up to 100 ft/ 30 meters indoors and 300 feet/100 meters outdoors.

3. Familiarize yourself with your Recessed Door Sensor

3.1 Interface



4. All functions of each trigger are like the following

4.1 Event and Response

Event	Response
Short press the Z-Wave Button	Add Recessed Door Sensor Gen5 into z-wave network: <ol style="list-style-type: none">1. Power on the Recessed Door Sensor Gen5.2. Let the primary controller into inclusion mode (If you don't know how to do this, refer to its manual).3. Press the Z-Wave button.4. If the inclusion is success, Recessed Door Sensor Gen5's LED will be kept turning on for 10 minutes. If the LED still blinks slowly, in which you need to repeat the process from step 2. Remove Recessed Door Sensor Gen5 from z-wave network: <ol style="list-style-type: none">1. Power on the Recessed Door Sensor Gen5.2. Let the primary controller into exclusion mode (If you don't know how to do this, refer to its manual).3. Press the Z-Wave button.4. If the exclusion is success, Recessed Door Sensor Gen5's LED will blink slowly. If LED still be solid status for 3 seconds after you short press the Z-Wave button, in which you need to repeat the process from step 2.
Press and hold the Z-wave Button for 6 seconds	<ol style="list-style-type: none">1, It will be wake up and send Wake Up Notification with broadcast.2, It will sleep after you released the z-wave button for 10 seconds, or sleep right away when received the Wake Up No More Information and then the led will turn off.

Press and hold the Z-wave Button for 20 seconds	Recessed Door Sensor will be reset and send Device Reset Locally CC to controller. Note: This procedure should only be used when the primary controller is inoperable or missing.
Magnet switch open/close	Send Sensor Binary Report (configurable) or Basic Set Command (configurable)

We can configure Recessed Door Sensor send or don't send the configurable commands. The Basic Set CC/Sensor Binary Report CC will be sent to associated nodes. If Recessed Door Sensor does not have any associated node, the commands will not be sent.

The priority of destination node that Wake Up Notification will be sent to:

Destination nodes	Priority
The Node configured by Wake up Interval set command	Supreme
SIS or SUC Node	High
First Associated Node	Middle
Broadcast	Low

5. Special Rule of each Command

5.1 Wake up time

Recessed Door Sensor will keep wake up for 10 seconds after it send wake up notification command. If it's included into Z-wave network, the Recessed Door Sensor will wake for 10 minutes.

Only 2 ways can abort this status:

1. Z-wave Button held 6 seconds, then released, after 8 seconds, sleep right now;
2. Recessed Door Sensor received "Wake up no more information CC", sleep immediately;

5.2 Association Command Class

Recessed Door Sensor supports 2 Association groups and can add maximum 5 nodes into each Association group.

If Recessed Door Sensor is included into a SIS or SUC z-wave network, it will be associated to SIS/ SUC controller automatically.

The Node IDs in Group 1 will receive Basic Set/ Sensor Binary Report (configurable) which is sent via multicast (if there are more than 2 Node IDs) or single-cast (if there is only one Node ID) when the Recessed Door Sensor's magnet switch to open or close.

If enable the low battery check (configurable) and when the battery voltage is less than the warning voltage, the associated Node IDs in Group 2 will receive the Battery Low Warning Report which is sent as multicast (if there are more than 2 Node IDs) or single-cast (if there is only one Node ID) when it is waked up.

If you change the battery and the new battery voltage is a reliable voltage (higher than 80%). the associated Node IDs in Group 2 will also receive the current Battery Report CC once when the Recessed Door Sensor is wake up.

5.3 Z-Wave Plus Info Report Command Class

Parameter	Value
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Z-Wave Plus Version	1
Role Type	6 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_SLEEPING_REPORTING)
Node Type	0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)
Installer Icon Type	0x0C00 (ICON_TYPE_GENERIC_SENSOR_NOTIFICATION)
User Icon Type	0x0C00 (ICON_TYPE_GENERIC_SENSOR_NOTIFICATION)

5.4 Manufacturer Specific Report

Parameter	Value
Manufacturer ID 1	0x00
Manufacturer ID 2	0x86
Product Type ID 1	EU=0x00, US=0x01, AU=0x02.
Product Type ID 2	0x02
Product ID 1	0x00
Product ID 2	0x59

5.5 Configuration Set Command Class

7	6	5	4	3	2	1	0
Command Class = COMMAND_CLASS_CONFIGURATION							
Command = CONFIGURATION_SET							
Parameter Number							
Default	Reserved					Size	
Configuration Value 1(MSB)							
Configuration Value 2							
.....							
Configuration Value n(LSB)							

Parameter Number Definitions (8 bit):

Parameter Number	Description	Default Value	Size
1	Which value of the Sensor Binary Report will be sent when the magnet switch to open/close. 1, Value=0, Open=Sensor Binary Report 0xFF, Close=Sensor Binary Report 0x00. 2, Value=1, Open= Sensor Binary Report 0x00, Close= Sensor Binary Report 0xFF.	0	1
3	Which value of the Basic Set will be sent when the magnet switch to open/close. 1, Value=0, Open= Basic Set 0xFF, Close=Basic Set 0x00. 2, Value=1, Basic Set 0x00, Close= Basic Set 0xFF.	0	1
101	Enable/disable the function of low battery checking, when the current voltage is less than the warning voltage, it will send the Battery Low Warning Report. (00==Disable, 1==Enable).	0	1
111	The Interval time of low battery checking (0~0x7FFFFFFF seconds). The minimum unit of interval time is 4 minutes. If the value	0x00 01 52 70	4

	is set to 1 minute, the interval time will be 4 minutes. The same is if the value is set to 7 minutes, the interval time will be 8 minutes. Note: 1, This parameter only will be activated after the function of low battery checking (parameter 101) is enabled. 2, Recessed Door Sensor also will check the current battery voltage when it was wake up as other ways (e. g. the Z-Wave button trigger, magnet switch trigger, and the Wake Up Interval Set timeout trigger) after the function of low battery checking (parameter 101) is enabled.		
121	To set which command will be sent to the associated nodes when the magnet switch is triggered. See the below table.	0x00000100	4
252	Lock/ unlock all configuration parameters. (0==Unlock, 1==Lock).	0	1
254	Device Tag.	0	2
255	1, Value=0x55555555、Default=1、Size=4 2, Value=0、Default=1、Size=1 Reset all configuration parameters (except the parameter 254) to default settings. 3, Other values will be reserved.	--	4

Parameter number equals 121:

	7	6	5	4	3	2	1	0
Configuration Value 1(MSB)	Reserved							
Configuration Value 2	Reserved							
Configuration Value 3	Reserved							Basic Set
Configuration Value 4(LSB)	Reserved	Reserved	Reserved	Sensor Binary	Reserved	Reserved	Reserved	Reserved

Example:

Configure the recessed door sensor to send Sensor Binary report to controller when the magnet switch's state is changed:

1), Set the association to node 1(controller).

ZW_SendData(0x85, 0x01, 0x01, 0x01); // Association Set

2), Set the parameter 121 to 0x00000010.

ZW_SendData(0x79, 0x04, 0x00, 0x00, 0x00, 0x10); //Configuration Set