# HSM02 DOOR/WINDOW DETECTOR

The Door/Window Detector is a Z-Wave™ enabled device and is fully compatible with any Z-Wave™ enabled network. Z-Wave™ enabled devices displaying the Z-Wave™ logo can also be used with it regardless of the manufacturer, and ours can also be used in other manufacturer's Z-Wave™ enabled networks. Inclusion of this Door/Window Detector on other manufacturer's Wireless Controller menu allows remote turn-on of connected modules and their connected lighting when the Detector is triggered.
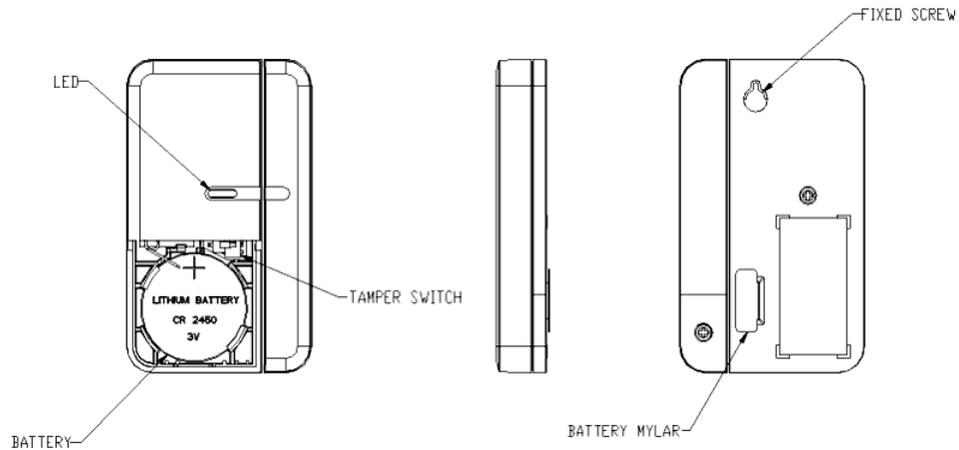
Include to or Exclude from a Z-Wave™ Network

SPEAKS Z-WAVE®

In the front casing, there is a tamper switch which is used to carry out inclusion, exclusion or reset. When power is first applied, its LED flashes on and off alternately and repeatedly at 2-second intervals. It implies that it has not been assigned a node ID and cannot work with Z-Wave enabled devices. Please get familiar with the terms below before starting the operations.

Function	Description
Inclusion	Add a Z-Wave enabled device (e.g. Detector) to Z-Wave network.
Exclusion	Delete a Z-Wave enabled device (e.g. Detector) from the network.
Association	After inclusion, you have to define the relationship between devices. Trough association, device can be assigned as master/slave, and specify which slave is going to be controlled by which master.

Reset	Restore Detector to factory default.

The table below lists an operation summary of basic Z-Wave functions. Please refer to the instructions for your Z-Wave™ Certificated Primary Controller to access the setup function, and to include/exclude/associate devices.

Function	Description	LED Indication
No node ID	The Z-Wave Controller does not allocate a node ID to the unit.	2-second on, 2-second off
Inclusion	1. Have Z-Wave Controller entered inclusion mode.	
	2. Pressing tamper switch three times within 1.5 second will enter inclusion mode.	
Exclusion	1. Have Z-Wave Controller entered exclusion mode.	LED lights up once whenever tamper switch is pressed once.
	2. Pressing tamper switch three times within 1.5 second will enter exclusion mode.	
Reset	1. Press tamper switch three times within 1.5 second.	
	2. Within 1 second, press and hold the tamper switch until LED is off.	LED keeps on before reset function has been completed.
	3. IDs are excluded and all of preset value will be reset to factory default.	2-second on, 2-second off
Association	1. Have Z-Wave Controller entered association mode.	
	2. When pressing tamper switch three times within 1.5 second, the unit will emit the NIF which implies that the unit has entered association mode.	

※Including a node ID allocated by Z-Wave Controller means inclusion. Excluding a node ID allocated by Z-Wave Controller means exclusion.
※Failed or success in including/excluding the node ID can be viewed from the Z-Wave Controller.

Choosing A Mounting Location

The Door/Window Detector is suitable for mounting in dry interior locations only.

Decide which doors/windows are to be protected by Door/Window Detectors, (usually the front and back doors as a minimum will have Door/Window Detectors fitted). Additional detectors may also be fitted where required to other vulnerable doors or windows, (e.g. garage, patio/conservatory doors etc).

Note: Take care when fixing the Detector to a metal frame, or mounting within 1m of metalwork (i.e. radiators, water pipes, etc) as this could affect the radio range of the device. If required, it may be necessary to space the magnet and detector away from the metal surface using a plastic or wooden spacer to achieve the necessary radio range.

Installation

1. Ensure that the system properly powered.
    Factory default built in a CR2450 battery inside the detector and uses a Mylar film to isolate battery from electric circuit of the detector. Remove the battery Mylar film when ready to let the detector work.
    If there is no battery inside the detector or need to replace a new battery please insert the battery in 45° angle as below figure
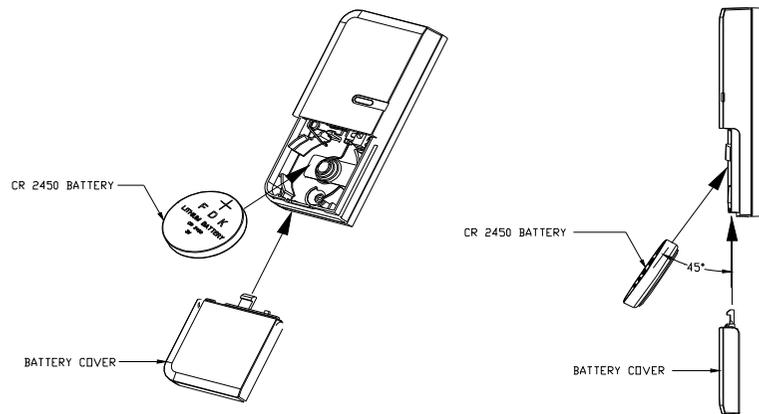
2. Using the adhesive tape to fit detector on the door or window.

3. Fit the magnet to the moving part of the door/window opposite the detector using the adhesive tape.

4. Ensure that the parallel gap between the magnet and detector is less than 20mm and that the matching line on the magnet is pointing towards and aligned with the line on the detector. An alarm condition will be occurred if the gap is greater than 35mm.

5. Remove the battery cover with the tamper switch not being pressed on the detector (test mode), detach or close the magnet from the Detector, the LED on the detector will illuminate.

6. After proper installation and test, put the battery cover back to the detector and the detector enters the normal mode.

Note: After removing batteries, wait for 5 seconds to refit batteries.

Operation

1. If first use of HSM02 with no node ID, LED will start twinkling for 30 sec. to lead the user for Inclusion. After HSM02 finishing Inclusion and enter sleeping mode, the unit will wake up by pressing Tamper and the user can see the LED start lighting up shortly every sec., currently the unit can receive set up for controller. After 30 sec., the unit will enter sleeping mode again, if set up is still needed, the user can press Tamper once more for HSM02 to be awake for another 30 sec.

2. Due to limited power output for CR2450, it can't continuously operate for a long time due to power consumption. Therefore, set up time for HSM02 should be minimized, and repeatedly press of Tamper should be avoided as well, in order to prevent unusual incident by a quick battery voltage drop down.

3. User can enter test mode by releasing or not pressing the Tamper SW, in the meantime if magnetic sensor is triggered then the LED will be illuminated. User can confirm whether the Tamper SW has been pressed properly by implementing this function. When Tamper SW is to be pressed and enter normal mode, LED will not be illuminated even if the magnetic sensor is

triggered, unless low battery is detected.

4. When the tamper switch is pressed, the unit enters normal mode and the red indicator LED on the Detector will not illuminate to conserve battery life when the detector is triggered, (unless the battery is low).

Programming

1. Z-Wave's Group (Association Command Class Version 1)

The unit supports two association groups. This has the effect that when the unit is triggered, all devices associated with the unit will receive the relevant reports.

Grouping 1 Support ALARM_REPORT, SENSOR_BINARY_REPORT
Grouping 2 Support BASIC_SET

Grouping 1 Application (Max. node=1)

Power Applied

Once the power has been applied, Alarm Report Command will be sent to Nodes in Grouping 1 to confirm the power applied status for HSM02.

Power Applied Notice:

[Command Class Alarm, Alarm Report, Alarm Level = 0x02, Alarm Type = 0x01]

1-1 Magnet status report: Binary Sensor Report

When the magnets of HSM02 are to be opened, Binary Sensor Report Command (Value = 0xFF) will be sent to Nodes in Grouping 1, and when the magnets are to be closed, Binary Sensor Report Command (Value = 0x00) will be sent as well.

Magnets to be opened:

[Command Class Sensor Binary, Sensor Binary Report, Value = 0xFF(255)]

Magnets to be closed:

[Command Class Sensor Binary, Sensor Binary Report, Value = 0x00(0)]

1-2 Low Battery Report

When HSM02 automatically wakes up, it will check the battery usage. When low battery is detected, Alarm Report Command will be sent to Nodes in Grouping 1, afterward, LED will light up for 1 sec to remind user when HSM02 is triggered due to open or close incidents.

Low Battery Report :
[Command Class Alarm, Alarm Report, Alarm Type = 0x01, Alarm Level = 0xFF]

1-3 Tamper Event Report (Alarm Report)

Press and hold the tamper switch more than 10 seconds then release, the unit will send ALARM REPORT command to the nodes of Grouping 1 to inform them there is a tamper event.

Tamper Event Report :
[Command Class Alarm, Alarm Report, Alarm Type = 0x01, Alarm Level = 0x11]

1-4 Control other Z-Wave Devices

When door/window is opened, the unit will send BASIC SET command which contains a value that is adjustable, to the nodes of Grouping 2. For instance, the brightness level of a lamp module can be fixed according to the set value.

Grouping 2 Application (Max. node=5)

However, the BASIC_SET command will be also sent to the nodes of Grouping 2. For instance, a lamp module will be turned off after receiving the BASIC_SET command.

Basic Set Command:
Event Present:
[Command Class Basic, Basic Set, Value = 255 (0xFF)]
Event Clear:
[Command Class Basic, Basic Set, Value = 0 (0x00)]

2. Z-Wave's Configuration

2-1 Basic Set Level

When Basic Set Command is sent where contains a value, the receiver will take it for consideration; for instance, if a lamp module is received the Basic Set command of which value is decisive as to how bright of dim level of lamp module shall be.

Example:
1-99: ON   (Binary Switch Device)
       Dim Level (Multilevel Switch Device)

Function	Parameter Number	Size	Range	Default
Basic Set level	1	1	1~99	99

Configuration Command

2-2 Configuring the OFF Delay

The Configuration parameter that can be used to adjust the amount of delay before the OFF command is transmitted as Configuration Parameter #2. This parameter can be configured with the value of 0 through 127, where 0 means send OFF command immediately and 127 means 127 seconds of delay.

Function	Parameter Number	Size	Range	Default
Basic Set level	2	1	0~127	0s

Configuration Command

3. Advanced Programming

The following information is for someone that has some experience setting up a Z-Wave system or someone that has computer software running a Z-Wave controller.

3-1 Battery Check Command

The users can also enquire the battery status of the unit by sending BATTERY_GET command via Z-Wave Controller. Once the unit receives the command, it will return BATTERY_REPORT command. The unit will send Battery_Level = 255 (0xFF) command to the Z-Wave Controller to inform that the unit is in low battery status.

BATTERY REPORT Command:
[Command Class Battery, Battery Report, Battery Level = 20%-100%]

3-2 Wakeup Command Class

The unit stays in sleep status for the majority of time in order to conserve battery power. However, it can be woken up at specified intervals by setting WAKE_UP_INTERVAL_SET command by Z-Wave Controller. After the unit wakes up, it will send Wakeup Notification Command to the node ID that requires to be reported and stay awake for 5 seconds if no WAKE_UP_NO_MORE_INFORMATION command is received. The minimum and maximum wakeup interval is 60 seconds and 194 days respectively. Allowable interval among each wakeup interval is 1 second, such as 60, 61, 62 ….

Note: The default value is 1 day, which implies that the detector awakes and sends the Wakeup Notification Command to the set node every day.

4. Factory Default Setting

Command	Default setting
Basic Set level	99
Period of Wake Up Notification	1 day

5. Command Classes

The Door/Window Detector supports Command Classes including…

*COMMAND_CLASS_ALARM
*COMMAND_CLASS_SENSOR_BINARY
*COMMAND_CLASS_CONFIGURATION
*COMMAND_CLASS_WAKE_UP
*COMMAND_CLASS_MANUFACTURER_SPECIFIC
*COMMAND_CLASS_VERSION
*COMMAND_CLASS_ASSOCIATION
*COMMAND_CLASS_BATTERY
---For Control Other Devices---
*COMMAND_CLASS_BASIC

Troubleshooting

Symptom	Possible Cause	Recommendation
Cannot carry out inclusion and association	Included a node ID allocated by other Z-Wave Controller.	Exclude a node ID then carry out inclusion and association with new Controller.
	Does not fit batteries or run out of battery power.	Check if batteries are fitted or replace a new battery.
LED not illuminating and not working	Does not fit batteries or run out of battery power.	Check if batteries are fitted or replace a new battery.
	Break down	Send it for repair and do not open up the unit.

Specifications

Battery	CR2450 3.0V 620mAh Lithium Battery
Range	Minimum 30 m line of sight
Frequency Range	908.42 MHz (US) / 868.42 MHz (EU)

Specifications are subject to change without notice

Federal Communication Commission Interference Statement

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 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.

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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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.

If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundwater and get into the food chain, damaging your health and well-being.

When replacing old appliances with new once, the retailer is legally obligated to take back your old appliance for disposal at least for free of charge.