



## EVR\_HSM02

### Door- and Window Sensor

Firmware Version : 1.1

#### Quick Start

A tripple click on the tampering switch behind the battery cover within 1.5 seconds will confirm Inclusion and Exclusion. A single click on the same switch will wake up the device and keep it awake for 30 seconds.

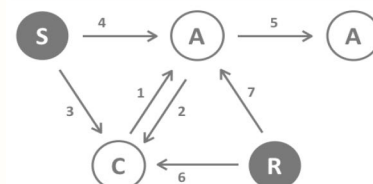
Please refer to the chapters below for detailed information about all aspects of the products usage.

#### What is Z-Wave?

This device is equipped with wireless communication complying to the Z-Wave standard. Z-Wave is the **international standard for wireless communication** in smart homes and buildings. It is using the **frequency of 868.42 MHz** to realize a very stable and secure communication. Each message is reconfirmed (**two-way communication**) and every mains powered node can act as a repeater for other nodes (**meshed network**) in case the receiver is not in direct wireless range of the transmitter.

Z-Wave differentiates between Controllers and Slaves. Slaves are either sensors (**S**) transmitting metered or measured data or actuators (**A**) capable to execute an action. Controllers are either static mains powered controllers (**C**) also referred to as gateways or mobile battery operated remote controls (**R**). This results in a number of possible communication patterns within a Z-Wave network that are partly or completely supported by a specific device.

1. Controllers control actuators
2. Actuators report change of status back to controller
3. Sensors report change of status of measured values to controller
4. Sensors directly control actuators
5. Actuators control other actuators
6. Remote controls send signals to static controllers to trigger scenes or other actions
7. Remote controls control other actuators.



There are two different role a controller can have. There is always one single primary controller that is managing the network and including/excluding devices. The controller may have other functions - like control buttons - as well. All other controllers don't manage the network itself but can control other devices. They are called secondary controllers. The image also shows that its not possible to operate a sensor just from a remote control. Sensors only communicate with static controllers.

#### Product description

This sensor offers information whether a door or window is open or closed. The product consists of a magnetic element and the main unit. One of the parts is mounted on the moving part of the window or of the door. The other part is placed on the frame. The installation can be done with screws or double-sided tape. The HSM02 is a battery-powered device, which is in sleeping mode unless an action is detected. After a programmable sleeping time the device wakes up and sends a status information. After this the unit goes back to sleeping modus. Batteries can be changed without unscrewing the device from the door or frame. The unit will give a visual warning on the device and send a warning to the Z-Wave controller, when batteries need to be replaced. The units send information to a controller or any other associated Z-Wave device. Up to 5 devices can be controlled from this device.

The device needs to be included into a Z-Wave network by a remote control or any other Z-Wave controller. For configuration of certain behaviour a static controller such as a PC with home automation software or a gateway is required.

#### Batteries

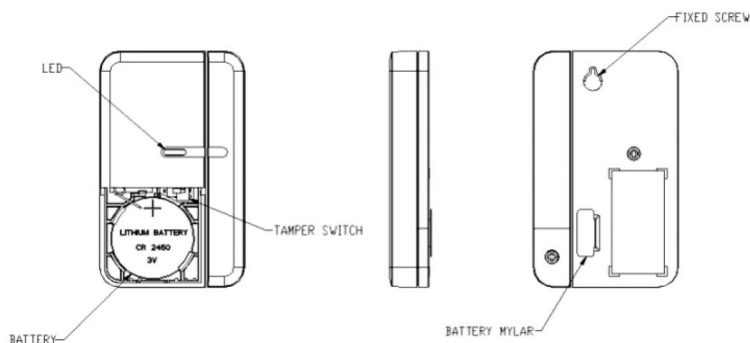
The unit is operated by batteries. Use only batteries of correct type. Never mix old and new batteries in the same device. Used batteries contain hazardous substances and should not be disposed of with household waste!

Battery Type: 1 \* CR2450

#### Installation Guidelines

1. Ensure that the system properly poweres. 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 figured



2. Using the adhesive tape to fit the detector on the door or window.
3. Fit the magnet to the moving part of the door/window on the opposite of the detector using the adhesive tape.
4. Ensure that the parallel gap between the magnet and the detector is less than 20 mm 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 larger than 35 mm.
5. Remove the battery cover without pressing the tamper switch on the detector (test mode) and 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.

## Behavior within the Z-Wave network

**I** On factory default the device does not belong to any Z-Wave network. The device needs to join an existing wireless network to communicate with the devices of this network. This process is called **Inclusion**. Devices can also leave a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller will be turned into exclusion respective inclusion mode. Please refer to your primary controllers manual on how to turn your controller into inclusion or exclusion mode. Only if the primary controller is in inclusion or exclusion mode, this device can join or leave the network. Leaving the network - i.e. being excluded - sets the device back to factory default.

If the device already belongs to a network, follow the exclusion process before including it in your network. Otherwise inclusion of this device will fail. If the controller being included was a primary controller, it has to be reset first.

**A tripple Click on the tampering switch behind the battery cover within 1.5 seconds will confirm Inclusion and Exclusion.**

## Operating the device

### Wakeup Intervals - how to communicate with the device?

**W** This device is battery operated and turned into deep sleep state most of the time to save battery life time. Communication with the device is limited. In order to communicate with the device, a static controller **C** is needed in the network. This controller will maintain a mailbox for the battery operated devices and store commands that can not be received during deep sleep state. Without such a controller, communication may become impossible and/or the battery life time is significantly decreased.

This device will wakeup regularly and announce the wakeup state by sending out a so called Wakeup Notification. The controller can then empty the mailbox. Therefore, the device needs to be configured with the desired wakeup interval and the node ID of the controller. If the device was included by a static controller this controller will usually perform all necessary configurations. The wakeup interval is a tradeoff between maximal battery life time and the desired responses of the device.

**A single click on the tampering switch behind the battery cover will wake up the device and keep it awake for 30 seconds.**

It is possible to set the node ID to 255 to send wakeup notifications as broadcast. In this mode device takes more time to go to sleep and drains battery faster, but can notify all it's direct neighbors about a wakeup.

## Node Information Frame

**NI** The Node Information Frame is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. The inclusion and exclusion of the device is confirmed by sending out a Node Information Frame. Beside this it may be needed for certain network operations to send out a Node Information Frame.

A single click on the tampering switch behind the battery cover will send out a Node Information Frame.

## Associations

**A** Z-Wave devices control other Z-Wave devices. The relationship between one device controlling another device is called *association*. In order to control a different device, the controlling device needs to maintain a list of devices that will receive controlling commands. These lists are called **association groups** and they are always related to certain events (e.g. button pressed, sensor triggers, ...). In case the event happens all devices

stored in the respective association group will receive a common wireless command.

Association Groups:

1	Alarms and Sensor Status Reports (max. nodes in group: 1)
2	Controls devices when sensor triggers (max. nodes in group: 5)

Configuration Parameters

Z-Wave products are supposed to work out of the box after inclusion, however certain configuration can adapt the function better to user needs or unlock further enhanced features.

**IMPORTANT:** Controllers may only allow to configure signed values. In order to set values in the range 128 ... 255 the value sent in the application shall be the desired value minus 256. For example: to set a parameter to 200 it may be needed to set a value of 200 minus 256 = minus 56. In case of two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Level sent on open event (Parameter Number 1, Parameter Size 1)

Defines which level to send when sensor triggers

Value	Description
1 — 99	Level (Default 99)
99	100% (Default)
255	On

OFF Delay (Parameter Number 2, Parameter Size 1)

Defines the time to wait before the sensor will send OFF command

Value	Description
0	Immediately
1 — 127	Seconds (Default 1)

Command Classes

Supported Command Classes

- Battery (version 1)
- Basic (version 1)
- Wake Up (version 1)
- Association (version 1)
- Version (version 1)
- Binary Sensor (version 1)
- Configuration (version 1)
- Alarm (version 1)
- Manufacturer Specific (version 1)

Technical Data

IP Rating	20
Battery Type	1 * CR2450
Explorer Frame Support	No
SDK	5.02 pl3
Device Type	Slave with routing capabilities
Generic Device Class	Binary Sensor
Specific Device Class	Routing Binary Sensor
Routing	No
FLiRS	No

## Explanation of Z-Wave specific terms

- **Controller** — is a Z-Wave device with capabilities to manage the network. Controllers are typically Gateways, Remote Controls or battery operated wall controllers.
- **Slave** — is a Z-Wave device without capabilities to manage the network. Slaves can be sensors, actuators and even remote controls.
- **Primary Controller** — is the central organizer of the network. It must be a controller. There can be only one primary controller in a Z-Wave network.
- **Inclusion** — is the process of bringing new Z-Wave devices into a network.
- **Exclusion** — is the process of removing Z-Wave devices from the network.
- **Association** — is a control relationship between a controlling device and a controlled device.
- **Wakeup Notification** — is a special wireless message issued by a Z-Wave device to announce that it is able to communicate.
- **Node Information Frame** — is a special wireless message issued by a Z-Wave device to announce its capabilities and functions.

## Disposal Guidelines

The product contains batteries. Please remove the batteries when the device is not used.

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.

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