AEO_MULTISENS
Z-Wave Multisensor

Firmware Version : 1.18

Quick Start

S This device is a Z-Wave Sensor. Single click the little button behind the battery cover to include or exclude the device. Clicking the little button behind the battery cover will wake up the device and keep it awake.

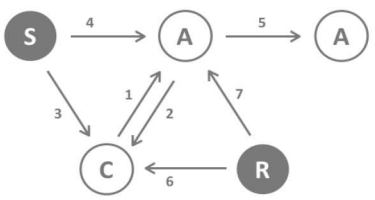
Please refer to the chapters below for detailed information about all aspects of the products usage.

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

The Aeon Labs Multisensor is a USB or battery-powered Z-Wave motion sensor, temperature sensor, humidity sensor and lightness sensor in one package. The sensor will send radio signals up to 6 associated Z-Wave devices within its own Z-Wave network when the sensor detects IR changes in front of its viewing window. The Aeon Labs Multisensor complies with the IP43 standard so it can be used outdoors. By adjusting the sensitivity of the sensor you can avoid the triggering due to small animals like dogs or cats. The Aeon Labs Multi Sensor is delivered with a swivelling Back-Mount Arm for wall mount and a Back-Mount Plate for ceiling mount.

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: 4 * AAA

Installation Guidelines

1. Release the Multisensor from the mounting by rotating it counterclockwise (sign: "Lock"/ "Unlock")

2. Put the 4 AAA batteries in the battery compartment.

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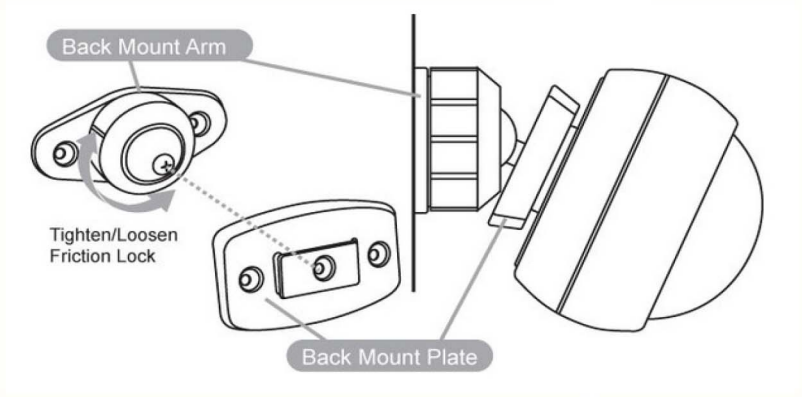
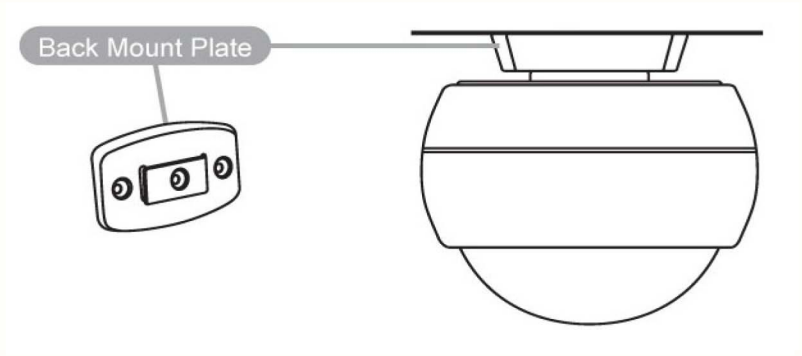
3. The sensor can be mounted as follows:

(a) For wall mount use the screws with the swivelling Back-Mount Arm. Further fix the sensor with Back-Mount Plate like shown in the picture.



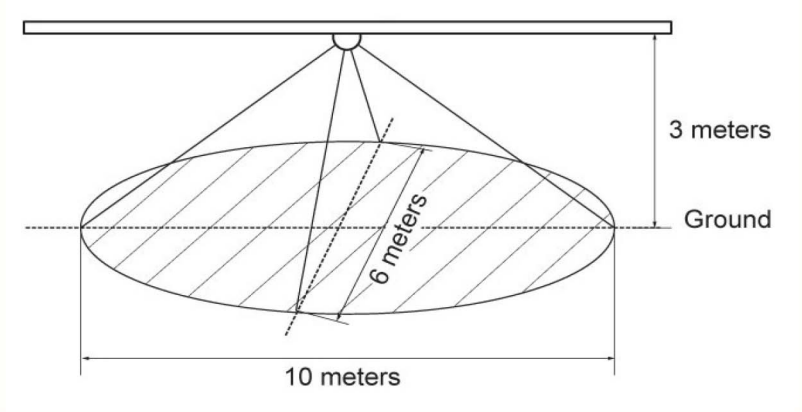
Important: The Multisensor should be mounted with the Temperature/Humidity Sensor facing downwards and positioned on the bottom of the unit to protect it from snow and rain.

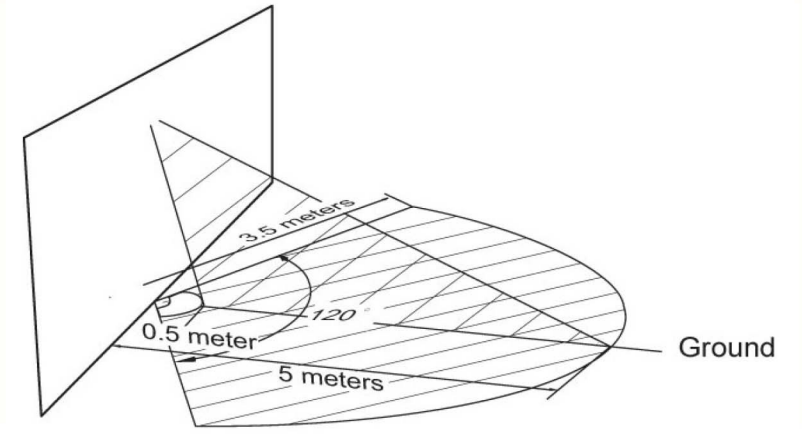
(b) For ceiling mount use the screws with the Back-Mount Plate.



4. Mount the Multisensor on the Mount Plate by rotating it clockwise to the "Lock" sign.

The next pictures are showing the effective motion sensor range for ceiling and wall mounting.





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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.

Make sure that your Z-Wave Controller is in the Inclusion-/Exclusion-Mode. Click the little button behind the battery to confirm the process.

A successful Inclusion/Exclusion lights up the sensor LED for a few seconds.

Operating the device

The Multisensor reports the temperature, humidity and lightness by request to a Z-Wave gateway or controller. The sensor will send radio signals up to 6 associated Z-Wave devices within its own Z-Wave network.

The sensitivity of the motion detector can be manually adjusted via the Sensitivity Knob at the battery cover. To increase the sensitivity rotate the Knob clockwise, to decrease it rotate it counterclockwise.

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 little button behind the battery will wake up the device and keep it awake.

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 little button behind the battery sends 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	Devices to be switched on upon motion deteced and off after a timeout (on time) (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.

Sensor report type on Get without instances (Parameter Number 1, Parameter Size 1)
Which type of multi sensor report should be sent on multi sensor Get command without instances

Value	Description

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0	Temperature, humidity and luminance (Default)
1	Temperature
2	Luminance
3	Humidity

Wake up 10 minutes when batteries are inserted (Parameter Number 2, Parameter Size 1)
Stay awake for 10 minutes after batteries are inserted

Value	Description
0	No (Default)
1	Yes

On time (Parameter Number 3, Parameter Size 2)
How long should the device associated to multi senor keep state On before sending it Off command (if the value is bigger than 255, the value would be rounded to next integer in minutes)

Value	Description
1 — 15300	sec (Default 240)

Enable motion sensor (Parameter Number 4, Parameter Size 1)

Value	Description
0	Disabled
1	Enabled (Default)

Send unsolicited reports periodicaly. Interval group 1 (Parameter Number 101, Parameter Size 4)
Which reports need to send automatically in timing intervals for group 1

Value	Description
0	Battery report (Default)
5	Temperature
6	Luminosity
7	Humidity

Send unsolicited reports periodicaly. Intervcal group 2 (Parameter Number 102, Parameter Size 4)
Which reports need to send automatically in timing intervals for group 2

Value	Description
0	Battery report (Default)
5	Temperature
6	Luminosity
7	Humidity

Send unsolicited reports periodicaly. Intervcal group 3 (Parameter Number 103, Parameter Size 4)
Which reports need to send automatically in timing intervals for group 3

Value	Description
0	Battery report (Default)
5	Temperature
6	Luminosity
7	Humidity

Unsolicitate reports interval for timing groups 1 (Parameter Number 111, Parameter Size 4)
Interval to send out reports to timing group 1

Value	Description

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1 — 2678400	sec (Default 720)

Unsolicitate reports interval for timing groups 2 (Parameter Number 112, Parameter Size 4)
Interval to send out reports to timing group 2

Value	Description
1 — 2678400	sec (Default 720)

Unsolicitate reports interval for timing groups 3 (Parameter Number 113, Parameter Size 4)
Interval to send out reports to timing group 3

Value	Description
1 — 2678400	sec (Default 720)

Command Classes

Supported Command Classes

- Battery (version 1)
- Basic (version 1)
- Wake Up (version 2)
- Association (version 1)
- Version (version 1)
- Binary Sensor (version 1)
- Configuration (version 1)
- Multilevel Sensor (version 5)
- Manufacturer Specific (version 1)

Technical Data

IP Rating	IP 43
Battery Type	4 * AAA
Wireless Range	up to 100 m outside, on average up to 20 m inside buildings
Explorer Frame Support	No
SDK	5.03
Device Type	Slave with routing capabilities
Generic Device Class	Multilevel Sensor
Specific Device Class	Routing Multilevel Sensor
Routing	Yes
FLiRS	No
Firmware Version	1.18

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 annonces that is is able to communicate.

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- **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.

Технологии беспроводного умного дома «DomZWave»
197374, РФ, г.Санкт-Петербург, ул. Оптиков, д.4
umnyj@dom-z-wave.ru
dom-z-wave.ru