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AEO_MREM
Aeonlabs
Minimote white

Firmware Version : 1.0

Quick Start

R This device is a Z-Wave Remote Control.

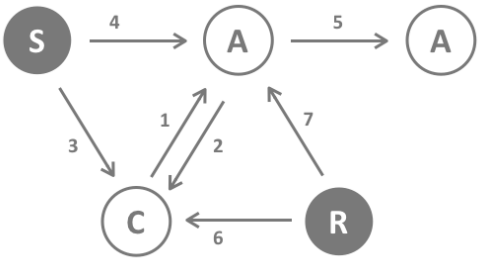
Use Network Management Buttons to include and exclude devices to the remote controls network and use the LEARN button to include the minimote into a different network. Pushing the LEARN button for 5 sec will wake up the device.

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 mini remote control can control a variety of Z-Wave compatible devices such as switches, dimmers, window blinds and motion sensors. The device can include and exclude devices, group them and set and release associations. The mini remote only offers four control buttons for scene selection. Behind a slider there are four more buttons for Z-Wave network control. A non-replaceable but rechargeable battery powers the remote control. Recharging is done on a conventional USB bus using the charging cable provided. The product is in the color white.

Before Device is installed

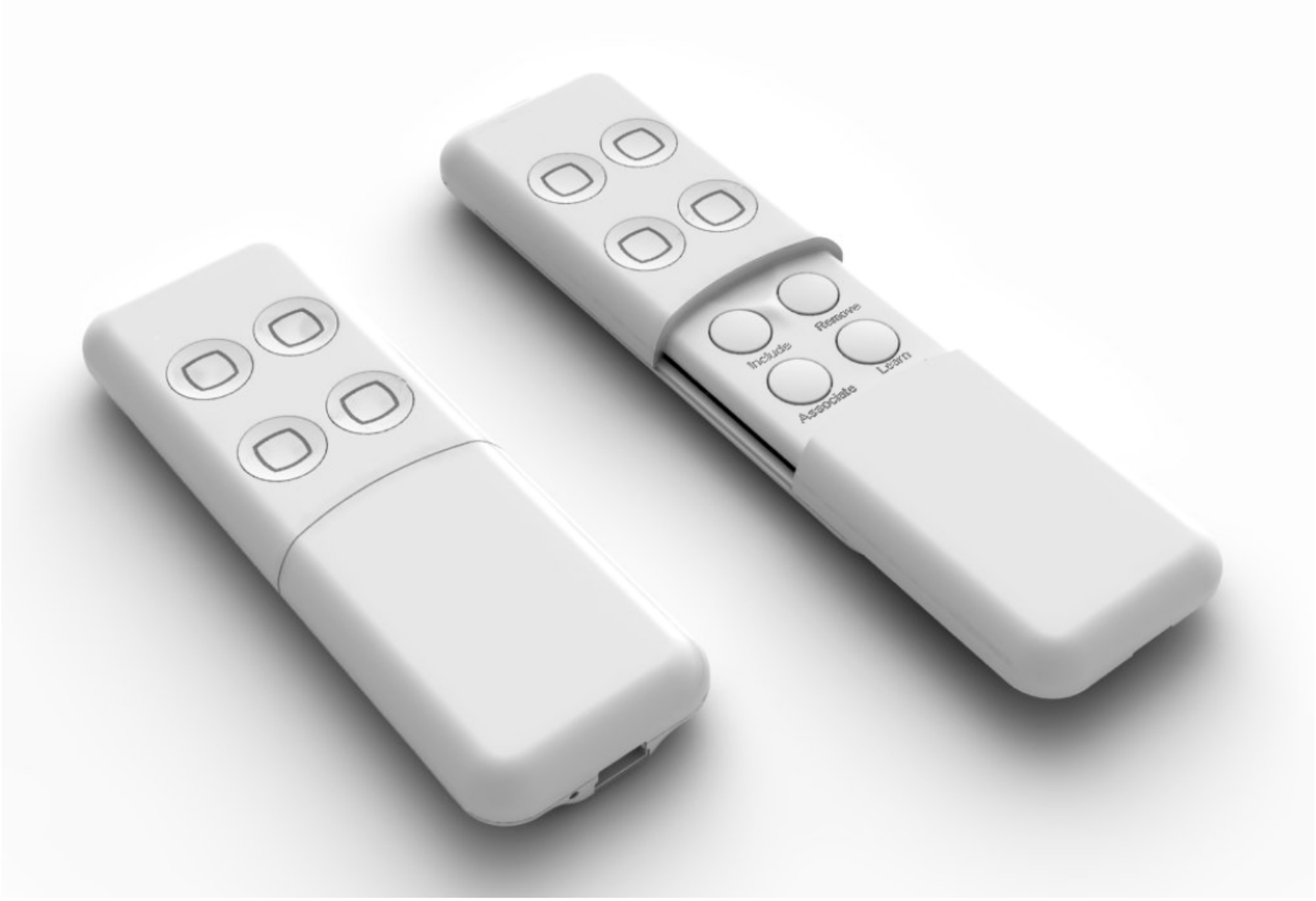
Please read carefully the enclosed user manual before installation of the radio-actuator, in order to ensure an error-free functioning.

ATTENTION: only authorized technicians under consideration of the country-specific installation guidelines/norms may do works with 230?Volt mains power. Prior to the assembly of the product, the voltage network has to be switched off and ensured against re-switching.

The product is permitted only for proper use as specified in the user manual. Any kind of guarantee claim has to be forfeited if changes, modifications or painting are undertaken. The product must be checked for damages immediately after unpacking. In the case of damages, the product must not be operated in any case. If a danger-free operation of the equipment cannot be assured, the voltage supply has to be interrupted immediately and the equipment has to be protected from unintended operation.

Installation Guidelines

The device is ready for use. In case there are no LED signals when hitting the buttons the device needs to be recharged using the USB cable provided.



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.

Once the primary controller is turned into inclusion mode **press the "Learn" button**.

Operating the device

The Minimote has 4 scene control buttons. A scene defines a certain switching state for a number of devices connected to this scene. A single click on the scene button will then turn all these devices into the desired switching state. Below the cover there are 4 dedicated buttons for network management. The Minimote can manage a Z-Wave network as primary controller. However it is also possible to reconfigure all 8 buttons for other functions e.g. activating a scene in a different controller.

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.

The device can be woken up manually by pressing the "Learn" button for 5 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 at the "Learn" button for 5 seconds 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	Scene 1 (max. nodes in group: 5)
2	Scene 2 (max. nodes in group: 5)
3	Scene 3 (max. nodes in group: 5)
4	Scene 4 (max. nodes in group: 5)

Set and unset associations to actuators

Associations can be assigned and remove either via Z-Wave commands or using the device itself.

SA

1. Press the scene button the new device shall be associated with and keep this button pressed.
2. Issue a Node Information Frame from the target device. This is usually done by single or triple click a button. Please refer to the manual of this device how to issue a NIF.
3. Before releasing the scene button turn the device into the desired state. After the button is released the minimote will detect the status of the device and store it in the scene.

To delete a device from a scene repeat the process for the scene where the device was already associated with.

Special Functions as Z-Wave Controller

As long as this device is not included into a Z-Wave network of a different controller it is able to manage its own Z-Wave network as primary controller. As a primary controller the device can include and exclude other devices in its own network, manage associations, and reorganize the network in case of problems. The following controller functions are supported:

Include other device in own network

CI Communication between two Z-Wave devices only works if both belong to the same wireless network. Joining a network is called inclusion and is initiated by a controller. The controller needs to be turned into the inclusion mode. Once in this inclusion mode the other device needs to confirm the inclusion - typically by pressing a button.

Click the "Inclusion" button to start the inclusion mode.

If inclusion of a new device fails, first exclude it from its previous network or reset it.

If current primary controller in your network is in special SIS mode this and any other secondary controller can also include and exclude devices.

To become primary a contoller have to be resetted and then include a device.

Exclude device from network

The primary controller can exclude devices from the Z-Wave network. During exclusion the relationship between the device and the network of this controller is terminated. No communication between the device and other devices still in the network can happen after a successful exclusion. The controller needs to be turned into the exclusion mode. Once in this exclusion mode the other device needs to confirm the exclusion - typically by pressing a button.

Attention: Removing a device from the network means that it is turned back into factory default status. This process can also exclude devices from it's previous network.

Click the "Exclusion" button to start the exclusion mode.

Attention: Removing a device from the network means that it is turned back into factory default status. This process can also exclude devices from its previous network.

Shift Primary Role to a different Controller

The device can hand over its primary role to another controller and become secondary controller.

The primary shift is initiated on the device by pressing the "Learn" button.

Set association between two device in Z-Wave network

CA The controller is able to set association between two other devices in the network. The controller is turned into an association mode both devices are announced by pressing a button. After both association partners are known the controller will perform all necessary steps to set the association.

1. Press "Association"€ button
2. Issue a Node Information Frame from the target device. This is usually done by single or triple click a button. Please refer to the manual of this device how to issue a NIF.
3. Issue a Node Information Frame from the device where the association will be set. This is usually done by single or triple click a button. Please refer to the manual of this device how to issue a NIF.

Update Network Information

As a battery operated controller the device will not automatically received updates about the network structure. This process should be initiated when the primary controller has included/excluded devices and it will result in an update of the network information in the battery operated controller. This prevents wrong communication that may cost battery life and delay other communication.

Press the button "Association" •for 10 seconds to update the network.

it is possible that a network update fails if the network was changed too much after the last update. In this case the the device need to be reincluded. Re-Inclusion is similar to a normal inclusion. Its just not needed to exclude the device before. Re-Inclusion makes sure that the node ID of the device remails unchanged.

Reset the Controller

Press the buttons "Association"• and "Learn" together for 10 seconds to reset the device.

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.

Mode of Button 1 (upper left) (Parameter Number 241, Parameter Size 1) Defines the switching mode of Button 1

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 2 (upper right) (Parameter Number 242, Parameter Size 1) Defines the switching mode of Button 2

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 3 (lower left) (Parameter Number 243, Parameter Size 1) Defines the switching mode of Button 3

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 4 (lower right) (Parameter Number 244, Parameter Size 1) Defines the switching mode of Button 4

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 5 (marked as Include) (Parameter Number 245, Parameter Size 1) Defines the switching mode of Button 5

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 6 (marked as Exclude) (Parameter Number 246, Parameter Size 1) Defines the switching mode of Button 6

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 7 (marked as Association) (Parameter Number 247, Parameter Size 1) Defines the switching mode of Button 7

Value	Description
0	Factory Default (Default)
1	Scene Mode
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Mode of Button 8 (marked as LEARN) (Parameter Number 248, Parameter Size 1) Defines the switching mode of Button 8

Value	Description
0	Factory Default (Default)
2	Add Mode
3	Remove Mode
4	Association Mode
5	Learn Mode

Command Classes

Supported Command Classes
Basic (version 1)
Association (version 2)
Version (version 1)
All Switch (version 1)
Manufacturer Specific (version 1)
Configuration (version 0)
Meter (version 2)
Binary Switch (version 1)

Technical Data

Explorer Frame Support	Yes
SDK	4.50 beta
Device Type	Slave with routing capabilities
Generic Device Class	Binary Switch
Specific Device Class	Binary Power Switch
Routing	Yes
FLiRS	No
Firmware Version	1.0

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.
Node Information Frame — is a special wireless message issued by a Z_Wave device to announce its capabilities and functions.

Disposal Guidelines

The product does not contain hazardous chemicals.

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.