Z-WAVE>ME
BUILDS THE SMART HOME

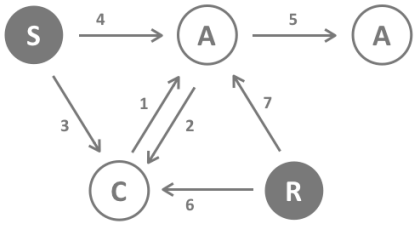
Key Ring Controller KFOB2

Quick Start

When in factory default mode a **1 sec. click on any button will trigger the device for 5 sec to accept inclusions** (red and green LEDs blink slowly). The device operates in normal control mode or in management mode. **Pushing all four buttons for 5 sec. turns the device into management mode** for 10 sec. (green LED blinks slowly). In management mode **Button 1 confirms inclusion or exclusion**, button 2 issues a Node Information Frame and wakeup notification.

What is Z-Wave?

This device is equipped with wireless communication complying with 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 (EU) or 908 MHz (US)** to realize a very stable and secure communication between devices of different origin, type and brand. 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.

Product description

The Z-Wave.Me Key Fob is a Z-Wave device that can both **control other Z-Wave devices** and **activate predefined scenes in an IP gateway**. Although it is controlling other devices, the KFOB can't act as Z-Wave network controller (primary or secondary) and will always need a Z-Wave network controller to be included into a Z-Wave network.

The device can be used in different modes that are selected by configuration parameters:

1. Direct Control of associated devices
2. Control of Devices in Proximity
3. Control of all Devices in the Z-Wave network
4. Simple ad enhanced scene configuration

Installation Guidelines

The device comes ready to use with a battery already installed. For battery change open the device by removing the three little screws on the backside of the device. Push out the old battery with a screwdriver. During reassembly, watch the position of the white rubber and make sure the silver buttons fit exactly into the nipples of the rubber. The device offers two different modes:

- Operation Mode: This is the mode where the device is controlling other Z-Wave devices or is activating scenes. See "Operating the device" for details.
- Management Mode: The device is turned into the management mode by **pushing all four buttons for 5 sec**. A blinking green LED indicates the management mode. In the management mode the buttons of the device have different functions. The modes times out after 10 sec or when a management action is performed.

Management mode allows the following actions:

- Button 1 – Inclusion/Exclusion: See "Behavior with Z-Wave-Network" for details.
- Button 2 - Send Node Information Frame and Wake up Notification. See "Wakeup Intervals" for further information.
- Button 3 – Reset of the device: See "Reset" for further details
- Button 4 - Association Set: See "Associations" for further details.

Behavior within the Z-Wave network

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

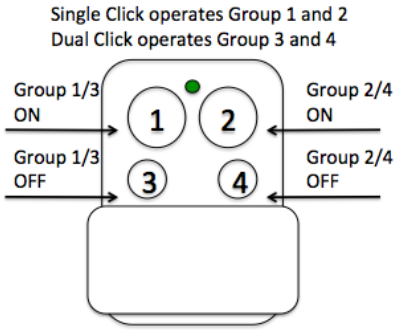
network. This process is called **Inclusion**. Devices can also leave a network. This process is called **Exclusion**. The primary controller of the Z-Wave network initiates both processes. This controller will be turned into exclusion respective inclusion mode. Please refer to your primary controllers 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.

When in factory default mode a **1 sec. click on any button will trigger the device for 5 sec to accept inclusions** (red and green LEDs blink slowly). **Button 1 in management mode confirms inclusion or exclusion.**

Operating the device

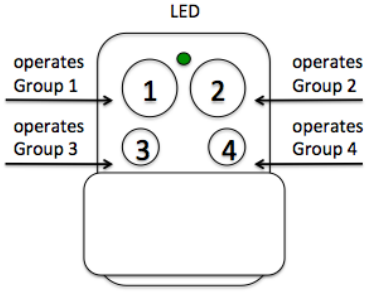
Depending on the button mode and command set configured the key fob can be used in different ways.

Button Group modes:



Control with two groups of two buttons: (default) One group (No. 1) of devices is controlled by button 1 and 3, the other group (No. 2) is controlled by button 2 and 4. Clicking the larger button turns the loads 'ON', clicking the smaller button turns the loads 'OFF'. If double clicks are enabled in configuration parameters #1 or #2, groups No. 3 and No. 4 are controlled by short double click of the buttons.

Dimming commands are sent by holding down the buttons (Dim UP using Buttons 1 and 2, Dim Down using Buttons 3 and 4) respective Click + Hold in case the double click option is enabled.



Control with single buttons: A group of devices is controlled by a single button: single click turns 'ON'; double click turns 'OFF' devices in the group. In case dimmers are controlled, holding down the button will dim up, click and hold down will dim down the load. The group number corresponds to the button label.

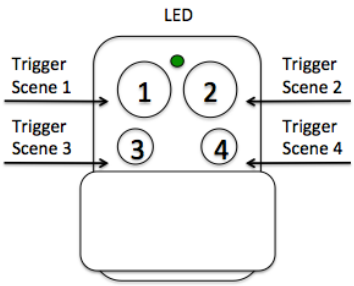
Control Commands Sent Out:

The configuration parameters #11…#14 specify what commands are sent when the buttons are operated.

Direct Control of associated devices: (This is the default mode No. 1). Devices in association groups are controlled using Basic 'ON' and 'OFF' commands and Dim Start/Stop commands. This mode implements the communication pattern **7**. The parameter value No. 2 disables the use of Dim commands.

Control of Devices in proximity: Basic 'ON', 'OFF' and Dim Start/Stop commands are sent to the device nearest to the Fob. (50...100 cm) Attention: In case there is more than one Z-Wave device nearby all these devices may be switched. For this reason the proximity function should be handled with care. This mode implements the communication pattern **7**.

Control of all devices in Z-Wave network: The special commands 'ALL ON' resp. 'ALL OFF' are sent as broadcast to all devices in direct wireless range. The devices act according to their individual settings for 'Switch ALL' commands. This mode implements the communication pattern **7**.



Simple Scene Activation: Devices in an association group are controlled by individual commands defined by Z-Wave command class 'Scene Controller Configuration'. One scene number can be configured per association group. On default, the scene number equals the association group number as shown in the figure below. This mode implements communication patterns **6** and **7**. This mode is typically used to activate scenes in IP gateways but can also be used to activate predefined scenes in other scene-capable devices.

Enhanced Scene Activation: In this mode every button action can issue a scene activation command with a dedicated number. The scene number is a combination of the group number and the action performed on the button and has always two digits. The group number defines the upper digit of the scene number, the action the lower digit. The following actions are possible:

- 1 = On
- 2 = Off
- 3 = Dim Up Start
- 4 = Dim Down Start
- 5 = Dim Up Stop
- 6 = Dim Down Stop

*Example: Clicking/double clicking the button 1 will issue a scene activation command for scene 11 (button 1 click, event on) and scene 12 (button double click 1, event off, single button control is used in this example). This mode implements the communication pattern **6**.*

Child Protection

The device can be turned into a child protection mode. In this mode all local operation is disabled. The child protection mode MUST be turned on wirelessly. However, in protected by sequence mode it is possible to unlock the device for local operation by pressing any button for 5 seconds. The unlock state will last for 5 seconds.

Wakeup Intervals - how to communicate with the device?

This device is battery operated and turned into deep sleep state most of the time to save battery power. 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 cannot be received during deep sleep state. Without such a controller, communication may become impossible and/or the battery lifetime is significantly decreased.

The device will stay awake right after inclusion for 10 seconds allowing the controller to perform configuration actions. It is possible to manually wake up the device by pushing button 2 in management mode. The device implements a regular wakeup. The minimum wakeup interval is 240 sec and can be set by the controller. The configuration parameter #25 however disables all wakeup intervals on default and overwrites all wakeup settings. This shall protect the battery from draining if the controller unintended sets up a wakeup interval.

Node Information Frame

The Node Information Frame (NIF) is the business card of a Z-Wave device. It contains information about the device type and the technical capabilities. Certain network operations such as setting associations requires a NIF. Pressing Button 2 in management mode will issue a NIF.

LED Control

- Confirmation - green 1 sec
- Failure - red 1 sec
- Inclusion Mode – blink red/green
- Button press confirmation - green 1/4 sec
- Network management mode - blink green
- Waiting for group selection in Association Set Mode - green fast blink
- Waiting for NIF in Association Set Mode - green-red-off blink

Associations

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	By button 1 or single clicks of buttons 1 and 2
2	By button 2 or double clicks of buttons 3 and 4
3	By button 3 or single clicks of buttons 1 and 2
4	By button 4 or double clicks of buttons 3 and 4

The controller receiving the scene activation commands must be placed on all association groups.

Set and unset associations to actuators

Associations can be assigned and removed either via Z-Wave commands or using the device itself. To control a Z-Wave device from the Fob, the node id of this device needs to be assigned to one of the four association groups. This is a three-step process:

1. Turn the Fob into management mode and hit button 4 within 10 sec. (LED is blinking green when management mode is reached).
2. Within 10 sec. push the button of the Fob you like the Z-Wave actuator to be controlled with. **Single click means adding to this association group, double click means removing the node selected** in step (3) from this association group. After 10 sec. the devices goes back to sleep.
3. Find the Z-Wave actuator you like to control by the device. Hit the button on the device to issue a Node Information Frame within 20 sec. A common way is hitting a control button one or three times. Please consult the manual of the device to be controlled for more information how to issue a Node Information Frame. Any button press on Fob at this stage will terminate the process.

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.

Pair Mode for Button 1 and 3 (# 1)
Pair Mode for Button 2 and 4 (#2)

Value	Description
0	Separately
1	**In pair without double clicks (Default)**
2	In pair with double clicks

Control Commands on Group 1 (# 11)
Control Commands on Group 2 (# 12)
Control Commands on Group 3 (# 13)
Control Commands on Group 4 (# 14)

Value	Description
0	Disabled
1	**Switch On/Off and Dim (Basic and Multilevel) (Default)**
2	Switch On/Off only (send Basic Set)
3	Switch All
4	Send Scenes
5	Send Preconfigured Scenes
6	Control devices in proximity

Typical click timeout (# 20)
Typical time to differentiate click, hold and double click

Value	Description
1 — 100	in 10ms units (Default 50)

Send the following Switch All commands (# 21)

Value	Description
1	Switch off only (Default)
2	Switch on only
255	Switch all on and off

Invert buttons (# 22)

Value	Description
0	No (Default)
1	Yes

LED confirmation mode (# 24)
This allows saving battery power

Value	Description
0	No confirmations
1	Confirm button press
2	Confirm button press and delivery (Default)

Suppress Device Wakeup (# 25)
If no device is in range when wakeup several unsuccessful communication attempts will drain battery.

Value	Description
0	Suppress (Default)
1	Allows Wakeup

Unsolicited Battery Report on Wake Up (# 30)

Value	Description
0	No (Default)
1	To same node as wake up notification
2	Broadcast to neighbors

Technical Data

Battery Type	1 * CR2032 (only use battery of correct type, don't dispose in normal trash bin but recycle)
Frequency	EU: 868.4 MHz (EN 300 220) or IN: 865.2 MHz (CSR 564) or RU: 869.0 MHz (GKRCh/EN 300 200) or US: 908.4 MHz (FCC CFR47 P 15.249)
Wireless Range	Up to 100 m outside, on average up to 20 m
Explorer Frame	Yes (SDK 4.55)
Specific Device Class	Multilevel Remote Switch
Routing	No (FLIRS)
Firmware Version	1.3
Dimensions	50 x 30 x 10 mm
Weight	30 gr.
FCC - ID	2AAYU-KFOBUS

Z-Wave.Me guarantees that every device is free from physical defects in material and workmanship under normal use for one year from the date of purchase. If the product proves defective during this one-year warranty period, Z-Wave.Me will replace it free of charge. Z-Wave.Me does not issue any refunds. This warranty is extended to the original end user purchase only and is not transferable. This warranty does not apply to: (1) damage to units caused by accident, dropping or abuse in handling, or any negligent use; (2) units which have been subject to unauthorized repair, taken apart, or otherwise modified; (3) units not used in accordance with instruction; (4) damages exceeding the cost of the product; (5) transit damage, initial installation costs, removal cost, or reinstallation cost. For information on additional devices, please visit us online.

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