

# Z-Wave.Me Key Chain Controller

## ZME\_KFOB

Firmware Version 1.2

## 1 General Information about Z-Wave

### Safe:

Generally radio systems build a direct link between the transmitter and the receiver. The radio signals are attenuated at every obstacle (in the household e.g. wall, furniture etc). In the worst case the radio system ceases to function. The advantage of the intelligent Z-Wave system is the so-called routing function: All devices of Z-Wave not only act as transmitter or receiver but also simultaneously as “repeater” . If there is no direct radio link between the transmitter and the receiver communication will be established with the assistance of other devices.

### Communicative:

Z-Wave is a bidirectional radio system. This means that a signal is not just sent but also a feedback confirming the reception of the signal occurs automatically. The safety of transmission of the Z-Wave radio-bus-technology is comparable with that of a wire-linked bus system. It is likewise possible to determine the switching status by pushing a button: Has the cellar light been definitely switched off?

### Trouble-free:

Z-Wave transmits at a regulated frequency band with a frequency of 868 MHz in Europe resp. 869 MHz in Russia. Every Z-Wave network has its own unique network identification. Therefore, two or more independently operating networks in a room or home can be operated without any interference.

### Established:

Z-Wave is an international wireless standard adopted by many companies from all areas of the world and across various industries. This makes the system fit for the future and promises further upgrades.

## 2 General 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. It can be included in a Z-Wave network and work with other certified products regardless of their brand or origin. 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 Key Fob has two pairs of buttons: 1 + 3 and 2 + 4. Each pair can work in three different modes:

### 1) Separate buttons

Each button of the pair works with it's own group. Association group 1 is controlled by button 1, group 2 by button 3, group 3 by button 2, group 4 by button 4. Single Click = On, Double Click = Off, Hold = Dim up, Click and Hold = Dim down.

### 2) Buttons are grouped

Button 1 Single Click = On, Hold = Dim up, Button 3 Single Click = Off, Hold = Dim down. Only association group 1 is controlled. This applies too for buttons 2 + 4 and group 3.

### 3) Buttons are grouped with double click

Button 1 Single Click = On, Hold = Dim up, Button 3 Single Click = Off, Hold = Dim down for group 1.  
Button 1 Double Click = On, Click and Hold = Dim up, Button 3 Double Click = Off, Click and Hold = Dim down for group 2. This applies too for buttons 2 + 4 and groups 3 and 4.

Each group can work in six different modes:

### **1) Control dimmers, blinds and switches**

Basic and Multilevel Switch commands are sent to appropriate association group.

### **2) Control switches**

Only Basic command are sent to appropriate association group. On and Off commands are sent instead of dimming commands

### **3) Switch All On/Off**

Switch All commands are sent in broadcast mode to all neighbors. (Content of association group is not used)

### **4) Scene Activation in IP Gateway**

Button events are sent using Scene Activation commands. Clicking a button activates a corresponding scene (see table below) in associated devices (usually an IP gateway).

### **5) Direct Activation of preconfigured Scenes**

Control associated devices using Scene Activation commands configured by Scene Controller Configuration command class.

### **6) Direct Control of Devices in proximity**

Control devices in short distance (50...100 cm) from the fob. Basic and Multilevel Switch commands are sent. (Content of association group is not used)

In Scene Activation mode six different scene commands can be activated on a group. The number of the button (1...4) defined the upper digit of the scene number, the event define the lower digit of the scene number:

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

Example: Clicking or Double Clicking button 1 (if pair 1 + 3 is in Separate mode) or Clicking buttons 1 and 3 (if pair 1 + 3 is in Grouped mode) activates either scene No 11 or 12 (10 = button 1 upper digit plus either On or Off command)

## **3 Technical data**

- Frequency: 868.42 MHz for Europe, 869.0 MHz for Russia
- Z-Wave Device Type: Routing Slave
- Battery Type: 1 \* CR2032, to change, open the enclosure with the three screws
- Dimensions: 44 x 30 x 10 mm

- Weight: 30 gr. (with battery)
- Association Groups: 4 groups with up to 14 target devices each
- Operating temperature: 0° C to +40° C

## 4 Wireless Functions – Z-Wave

### 4.1 Device Management and Setup

The device can be operated in two different modes: the operation mode and the management mode:

- **Operation Mode:** This is the mode where the device is controlling other devices.
- **Management Mode:** The device is turned into the management mode by pushing all four buttons for 5 sec. A slowly blinking green LED indicates the management mode. In the management mode buttons of the device have different functions. If no further action is performed the device will turn back to the normal mode after 10 sec. Any management action terminates the management mode as well.

In management mode the following actions can be performed:

Button 1 - **Network Wide Inclusion (NWI Learn mode):** The device can be included into a Z-Wave Network from any physical location in the network. This requires a network controller supporting Network Wide Inclusions (controller based on SDK 4.5 and up). This mode lasts for 20 seconds and stops automatically. Any button press Stops the mode as well

Button 2 - **Send Node Information Frame** and Wake up Notification.

Button 3 - **Learn Mode:** The device is included or excluded from a controller in direct wireless range. Performing an exclusion of the device from a network resets the device into its factory default.

Button 4 - **Enter into Association mode** to assign target devices to one of the four association groups.

### 4.2 Z-Wave Associations

To control a Z-Wave device from the Key Fob the node ID of this devices needs to be assigned to one of the four association groups. This is a three-step process. The process is aborted on timeout.

Turn the Key Fob into association mode by pushing **all four buttons for 5 sec**. Once in the management mode press **button No 4** within 10 sec. (LED is blinking green when management mode is reached).

Within 10 sec push the button corresponding to the association group you would like the Z-Wave actuator to be assigned with (as if all buttons were in Separate mode: button 1 group 1, button 2 group 3, button 3 group 2, button 4 group 4). Single click means adding to association group, double click means removing from association group.

Within 20 sec find the Z-Wave actuator you would like to control by the Key Fob. Hit the button on the device to issue a Node Information Frame (NIF). Typically this is achieved by hitting a control button one or three times. Please consult the manual of the device to be controlled for more information. Any button press on Key Fob at this stage will abort the process.

## 4.3 Wakeup of the device

The Key Fob is a battery-operated remote control device that will remain in sleep state most of the time. Every click on the buttons will initiate a command to be sent out but the device will return into sleep state right after sending out the command.

In order to receive commands the device will stay awake for 2 seconds after sending out a Node Information Frame and Wake up Notification.

Additionally the device will wake up regularly. The wakeup interval can be defined using the Wakeup Command class. The minimum allowed wakeup time is 240 sec but it's strongly recommended to define a much longer interval since the only purpose of a wakeup should be the reporting of the battery status or an update of the child protection settings. Defining Node id of 0 as a destination of the Wake up Notification will disable the periodical wakeup function entirely.

On factory default the wakeup destination node id is set to 0 - hence the periodical wakeup function is disabled.

## 4.4 Child Protection

The device can be turned into a child protection mode. This means that the local operation of the device is not possible. The child protection mode MUST be turned on wirelessly. However it is possible to unlock the device for local operation with a long press of any button for 5 seconds. The unlock state will last for 5 seconds.

## 4.5 LED Codes

- Confirmation – green 2 sec
- Failure– red 2 sec
- Button press confirmation – green 1/4 sec
- Waiting for Network Management mode selection – green slow blinks (once per 2 sec)
- Waiting for group selection in Self-Association mode – green fast blink (twice per sec)
- NWI mode active or waiting for NIF in Association mode – green-red-off blink

## 4.6 Z-Wave Configuration

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

### Modes for Button 1 and 3 (parameter No 1, size 1 byte)

Defines how the two buttons are assigned to each other.

- |   |  |
|---|--|
| 0 | Separate buttons   |
| 1 | Buttons are grouped (one is on, one if off), no double click supported (default) |
| 2 | Buttons are grouped (one is on, one if off), double click supported              |

### Modes for Button 2 and 4 (parameter No 2, size 1 byte)

Defines how the two buttons are assigned to each other.

- 0 Separate buttons
- 1 Buttons are grouped (one is on, one if off), no double click supported (default)
- 2 Buttons are grouped (one is on, one if off), double click supported

#### Action on group 1 (parameter No 11, size 1 byte)

Defines which command should be sent to the group. Basic and Scene Activation commands are sent to association group. Switch All and Proximity commands are sent broadcast.

- 0 Disabled
- 1 Control Dimmer, Motor Control and Switches using Basic+Multilevel Switch Commands (default)
- 2 Control Switches only, click and hold sends only Basic Commands
- 3 Switch All On/Off
- 4 Send Scene Activation
- 5 Control preconfigured Scenes
- 6 Control devices in proximity

#### Action on group 2 (parameter No 12, size 1 byte)

Defines which command should be sent to the group. Basic and Scene Activation commands are sent to association group. Switch All and Proximity commands are sent broadcast.

- 0 Disabled
- 1 Control Dimmer, Motor Control and Switches using Basic+Multilevel Switch Commands (default)
- 2 Control Switches only, click and hold sends only Basic Commands
- 3 Switch All On/Off
- 4 Send Scene Activation
- 5 Control preconfigured Scenes
- 6 Control devices in proximity

#### Action on group 3 (parameter No 13, size 1 byte)

Defines which command should be sent to the group. Basic and Scene Activation commands are sent to association group. Switch All and Proximity commands are sent broadcast.

- 0 Disabled
- 1 Control Dimmer, Motor Control and Switches using Basic+Multilevel Switch Commands (default)
- 2 Control Switches only, click and hold sends only Basic Commands
- 3 Switch All On/Off
- 4 Send Scene Activation
- 5 Control preconfigured Scenes
- 6 Control devices in proximity

#### Action on group 4 (parameter No 14, size 1 byte)

Defines which command should be sent to the group. Basic and Scene Activation commands are sent to association group. Switch All and Proximity commands are sent broadcast.

- 0 Disabled
- 1 Control Dimmer, Motor Control and Switches using Basic+Multilevel Switch Commands (default)
- 2 Control Switches only, click and hold sends only Basic Commands
- 3 Switch All On/Off
- 4 Send Scene Activation
- 5 Control preconfigured Scenes

6 Control devices in proximity

### Typical click timeout (parameter No 20, size 1 byte)

Typical time used to differentiate click, hold, double and click-holds.

1 – 100 in 10 ms units (default is 50, that is equivalent to 500 ms)

### Send the following Switch All commands (parameter No 11, size 1 byte)

1 Switch All Off only (default)  
2 Switch All On only  
255 Switch All On and Off

### Invert buttons (parameter No 22, size 1 byte)

Invert meaning of On/Dim up and Off/Dim down in pairs of buttons. This applies only to pairs in grouped mode. Buttons 1 and 2 will become Off/Dim down, buttons 3 and 4 – On/Dim up.

0 No (default)  
1 Yes

### LED confirmation mode (parameter No 24, size 1 byte)

To save batteries LED confirmation can be disabled.

0 No confirmations  
1 Confirm button press  
2 Confirm button press and delivery (default)

### Send unsolicited battery report on wakeup (parameter No 30, size 1 byte)

0 No (default)  
1 To same node as wakeup notification  
2 Broadcast

## 5 Z-Wave Specific Device Information

### 5.1 Z-Wave Device Types

- Generic: Remote Switch
- Specific: Multilevel Remote Switch

### 5.2 Supported Command Classes:

Association (V2), Battery (V1), Configuration (V1), Manufacturer Specific (V1), Multi Channel Association (V2), Node Naming and Location (V1), Protection (V1), Version (V1), Scene Controller Configuration (V1), Wakeup (V2)

### 5.3 Controlled Command Classes

Basic (V1), Multilevel Switch (V1), Switch All (V1), Scene Activation (V1), Multichannel (V2)