

Popp 4 Button Key Chain Controller

SKU: POPE009204



Quickstart

This is a **secure Simple Remote Control** for **Europe**. To run this device please insert fresh 1 * **CR2032** batteries. Please make sure the internal battery is fully charged.

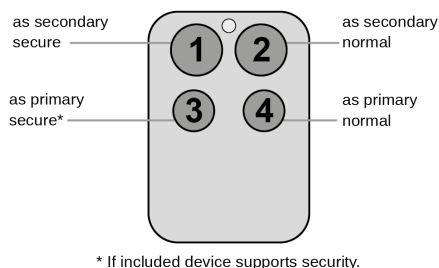
This wireless Z-Wave wall controller can act in two different modes that are activated with the first configuration action after factory default:

1. **Pushing Button 1 for one sec. (red/green blink)** adds the wireless wall controller **to an existing network as secondary controller**. The four buttons will send activate 4 different scenes (Central Scene Command) in the central controller. The wall controller is able to control up to 4 different scenes with its four buttons. (with different configuration even more)
2. **Pushing Button 3 for one sec. (green blink)** adds a new **Z-Wave actuator device to the controller who becomes the primary controller** of this new network. The connected new device (actuator) can be controlled using the two buttons left (Button 1 = up/on/open, Button 3 = down/off/closed).

After the first action you can further manage and configure the wall controller using the management mode. To activate this **management mode push all four buttons for one second simultaneously** (green blinks slowly). The buttons will have different functions then (see Installation Guidelines).

Attention:For convenience reasons some special short cut apply **IF and only IF the KFOB is the primary controller** of the network: The **first device included into a button group will define the commands** sent out by this group regardless of the default value of the configuration parameters 11-14. If the device is a door lock the button group will turn into door lock control (value=7). For dimmers and motor controls the value changes into Multilevel Switch Control (value=1). All other devices will turn the button group into Basic control (value=2). All configuration values can be changed if needed. When KFOB is primary controller the very first device included **will be automatically put into button group A** and the command set will change according to the rules just mentioned. All other devices need to be put in button groups manually.

Include



What is Z-Wave?

Z-Wave is the international wireless protocol for communication in the Smart Home. This device is suited for use in the region mentioned in the Quickstart section. (For more information about frequency regulations please refer to [the frequency coverage overview at Sigma Designs Website](#)).

Z-Wave ensures a reliable communication by reconfirming every message (**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.

This device and every other certified Z-Wave device can be **used together with any other certified Z-Wave device regardless of brand and origin** as long as both are suited for the same frequency range.

If a device supports **secure communication** it will communicate with other devices secure as long as this device provides the same or a higher level of security. Otherwise it will automatically turn into a lower level of security to maintain backward compatibility.

For more information about Z-Wave technology, devices, white papers etc. please refer to www.z-wave.info.



Product Description

The Secure Key Fob Controller is a 4 button Z-Wave device capable to act both as primary or secondary controller. The four buttons **can control other Z-Wave devices such as switches, dimmer and even door locks directly**. Various options - configurable by Z-Wave configuration commands - define the actions and the commands used for this control. It is possible to use two sets of buttons (one of on/open/up and one for off/closed/down) or 4 single buttons to control 4 different groups of devices.

The controller also allows **triggering scenes in a central controller**. Again different modes can be configured to adapt to the various implementations of scenes in different central controllers in the market.

Control options also include special modes like "all on/off" or always controlling the Z-Wave device in proximity to the fob.

The **device supports secure communication** when included with enhanced security option and when communicating to a device also supporting enhanced security option. Otherwise the device will automatically turn into normal communication to maintain backward compatibility.

Prepare for Installation / Reset

Please read the user manual before installing the product.

In order to include (add) a Z-Wave device to a network it **must be in factory default state**. Please make sure to reset the device into factory default. You can do this by performing an Exclusion operation as described below in the manual. Every Z-Wave controller is able to perform this operation however it is recommended to use the primary controller of the previous network to make sure the very device is excluded properly from this network.

Reset to factory default

This device also allows to be reset without any involvement of a Z-Wave controller. This procedure should only be used when the primary controller is inoperable.

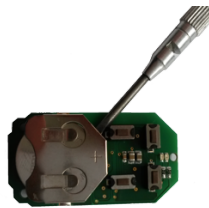
Enter management mode by push all four buttons together for one second - green led blinks slowly), then hit button 3 followed by keeping button 4 pushed down for 10 seconds. The first five seconds the green LED still blinks followed by a long red, shot green sequence. Once LEDs go off, reset was executed.

Safety Warning for Batteries

The product contains batteries. Please remove the batteries when the device is not used. Do not mix batteries of different charging level or different brands.

Installation

The device comes ready to use with a battery already installed.



For battery change the device needs to be opened by removing the three little screws on the backside of the device. Use a screwdriver or any other usable device to gently push out the battery as shown on the picture. 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 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 one second**. A blinking 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.

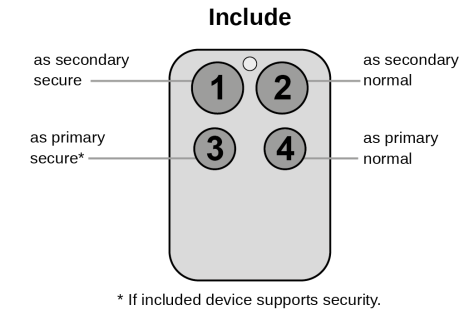
In management mode the following actions can be performed:

- **Button 1** - Inclusion/Exclusion: Every inclusion or exclusion attempt is confirmed by hitting this button. Single Click is used for standard inclusion and exclusion, double click is used for network wide inclusion. With this operation the device can be included into a Z-Wave Network from any physical location in the network. This requires a primary controller supporting network wide inclusion. This mode lasts for 20 seconds and stops automatically. Any button press stops the mode as well.
- **Button 2** - Sends Node Information Frame and Wake up Notification. (see explanation below)
- **Button 3** - Activates the primary controller management menu. The following sub menu items are available:
 - **Button 3 followed by short click of button 1:** Start Secure Inclusion
 - **Button 3 followed by short click of button 2:** Start Unsecure Inclusion
 - **Button 3 followed by short click of button 3:** Start Exclusion
 - **Button 3 followed by short click of button 4:** Start Primary Handover
 - **Button 3 followed by pushing button 4 for 5 seconds:** Factory Default Reset. After clicking on button 3 keep button 4 pushed for 4 seconds
- **Button 4** - Enters into Association mode to assign target devices to one of the four associations. Refer to the manuals section about association for more information how to set and unset association groups.

In factory default mode pushing one of the four buttons for 1 sec will start different inclusion modes:

- Button 1: Include KFOB as secondary controller
- Button 2: Include KFOB as secondary controller - non secure
- Button 3: Include new device into KFOBS network
- Button 4: Include new device into KFOBS network - non secure

The process for button 1 and 2 is indicated with fast red/green blinking, the process for button 3 and 4 shows a fast green blinking. Every button push stops the process. This fast inclusion only works when device is in factory default.



Attention: For convenience reasons some special short cut apply IF and only IF the KFOB is the **primary controller of the network**: The **first device included into a button group will define the commands sent** out by this group regardless of the default value of the configuration parameters 11-14. If the device is a door lock the button group will turn into door lock control (value=7). For dimmers and motor controls the value changes into Multilevel Switch Control (value=1). All other devices will turn the button group into Basic control (value=2). All configuration values can be changed if needed. When KFOB is primary controller the **very first device included** will be **automatically put into button group A** and the command set will change according to the rules just mentioned. All other devices need ot be put in button groups manually.

Inclusion/Exclusion

On factory default the device does not belong to any Z-Wave network. The device needs to be **added to an existing wireless network** to communicate with the devices of this network. This process is called **Inclusion**.

Devices can also be removed from a network. This process is called **Exclusion**. Both processes are initiated by the primary controller of the Z-Wave network. This controller is turned into exclusion respective inclusion mode. Inclusion and Exclusion is then performed doing a special manual action right on the device.

Inclusion

Please check the instructions in the quick start section how to include and exclude the device from a network.

Exclusion

Please check the instructions in the quick start section how to include and exclude the device from a network.

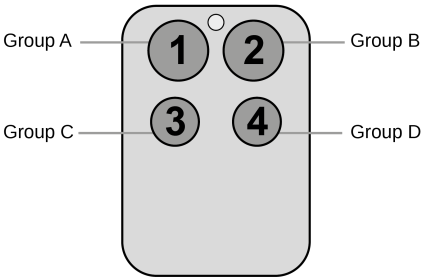
Product Usage

Depending on the button mode and operating modes configured using the configuration parameters the key fob can be used in different ways.

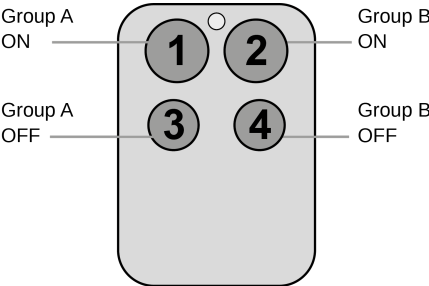
Button modes:

4 Groups are controlled with single button (parameter 1/2 = 0) The four buttons 1-4 control one single control group each: 1->A, 2->B, 3->C, 4->D. Single click turns devices in the control group on, double click turns them off. Click and hold can be used for dimming.

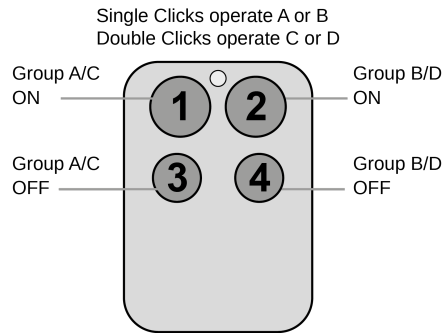
Parameter 11-14 define what to send to the groups.



2 Groups are controlled with two buttons (parameter 1/2 = 1) The buttons 1 and 3 control the control group A (button one turns on, button three turns off), the buttons 2 and 4 control the control group B (button two turns on, button four turns off). In case dimmers are controlled, holding down the larger button will dim up, holding down the smaller button will dim down the load. Releasing the button will stop the dimming function.



4 Groups are controlled with two buttons and double click (parameter 1/2 = 2) This mode enhances the previous mode and allows to control two further control groups C and D using double clicks.



Operating modes:

The device supports 8 different operating modes - this means the kind of command sent out when pushing a button. Operating modes either directly control other devices or they issue various scene activation commands to a central controller. Operating modes for direct device control are:

- **Direct Control of associated devices with On/Off/Dim commands (parameter 11...14 = 1).** Devices are controlled using Basic Set On/Off commands and Switch-Multilevel Dim Start/Stop. This mode implements communication pattern 7.
- **Direct Control of associated devices with only On/Off commands (parameter 11...14 = 2).** Devices are controlled using only Basic Set On/Off commands. On dimming Up event On is sent, on dimming Down Off is sent. This mode also implements communication pattern 7.
- **Switch All commands (parameter 11...14 = 3)** In this mode a **all neighboring devices** will receive Switch-All Set On/Off command and interpret it according to their membership in Switch-All groups. This mode implements communication pattern 7.
- **Direct Control of Devices in proximity (parameter 11...14 = 6).** Basic Set and Switch-Multilevel Dim commands are sent to a device in proximity (50...100 cm) from the Fob. Attention: In case there are more than one Z-Wave devices nearby all these devices may be switched. For this reason the proximity function should be handled with care. This mode implements communication pattern 7.
- **Door Lock Control (parameter 11...14 = 7)** This mode allows direct control (open/close) of electronic door locks using secure communication. The mode implements communication pattern 7.

Operating modes for scene activation are:

- **Direct Activation of preconfigured scenes (parameter 11...14 = 5)** Associated devices in an association group are controlled by individual commands defined by Z-Wave command class ?Scene Controller Configuration?. This mode enhances mode **Direct Control of associated devices with On/Off/Dim commands** and implements communication patterns 6 and 7. Please turn the button mode to "separate" to allow different a scene ID on every button.
- **Scene Activation in IP Gateway (parameter 11...14 = 4)** If configured correctly the buttons can trigger a scene in a gateway. The scene number triggered 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 will issue scene triggers, scene 11 (button 1 click, event on), scene 12 (button double click 1, event off, single button control is used in this example)

- **Activation of Central Scenes (parameter 11...14 = 8, Default)** Z-Wave Plus introduces a new process for scene activation - the central scene control. Pushing a button and releasing a button send a certain command to the central controller using the lifeline association group. This allows reacting both on button push and button release. This mode implements communication patterns 6 but requires a central gateway supporting Z-Wave Plus.

LED Indication

- Confirmation - green 1 sec
- Failure - red 1 sec
- Button press confirmation - green 1/4 sec
- Waiting for Network Management mode selection - slow green blinks
- Waiting for group selection in Association Set Mode - green fast blink
- Waiting for primary controller function selection - green fast blink
- Waiting for NIF in Association Set Mode - green-red-off blink

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. 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

Communication to a Sleeping device (Wakeup)

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. To wakeup the device please perform the following action:

The device will stay awake right after inclusion for 10 seconds allowing the controller to perform certain configuration. It is possible to manually wake up the device by pushing button 2 in management mode.

The minimum allowed wakeup time is 240s 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. The device has a periodic wakeup function however this function is disabled by the configuration parameter #25. This will protect the battery in case the controller is accidentally configuring a wakeup interval. A wakeup of the fob outside the range of the controller will lead to lots of unsuccessful communication attempts draining the battery. Defining Node ID of 0 as a destination of the Wake up Notification will disable the periodical wakeup function as well.

Quick trouble shooting

Here are a few hints for network installation if things dont work as expected.

1. Make sure a device is in factory reset state before including. In doubt exclude before include.
2. If inclusion still fails, check if both devices use the same frequency.
3. Remove all dead devices from associations. Otherwise you will see severe delays.
4. Never use sleeping battery devices without a central controller.
5. Dont poll FLIRS devices.
6. Make sure to have enough mains powered device to benefit from the meshing

Association - one device controls an other device

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 the same wireless command wireless command, typically a 'Basic Set' Command.

Association Groups:

Group Number	Maximum Nodes	Description
1	10	Lifeline
2	10	Control Group A
3	10	Control Group B
4	10	Control Group C
5	10	Control Group D

Special Operations 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:

Inclusion of other devices

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.

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 controller have to be resetted and then include a device.

For Inclusion of Z-Wave devices into the own network the following two options exist:

- In factory-default state only: Hit Button 3 (secure) or button 4 (normal) to turn the controller into inclusion state. Consult the manual of the new device how to start the inclusion process.
- Always: Turn into management mode by pressing all 4 buttons for 5 seconds. The green LED will start blinking slowly. Now hit button 3 to activate the primary controller functions. The green LED will blink faster. Now Hit Button 1 (secure) or button 2 (normal) to turn the controller into inclusion state. Consult the manual of the new device how to start the inclusion process.

Exclusion of other devices

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.

Turn into management mode by pressing all 4 buttons for 5 seconds. The green LED will start blinking slowly. Now hit button 3 to activate the primary controller functions. The green LED will blink faster. Now Hit Button 3 again to turn the controller into exclusion state. Consult the manual of the new device how to start the

Shift of Primary Controller Role

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

Turn into management mode by pressing all 4 buttons for 5 seconds. The green LED will start blinking slowly. Now hit button 3 to activate the primary controller functions. The green LED will blink faster. Now Hit Button 4 to turn the controller into primary shift mode. Consult the manual of the new device how to start the primary shift process for the new primary controller.

Management of Association in the controller

To control a Z-Wave device from the Key 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 Key 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 you like the Z-Wave actuator to be assigned with. After 10 sec. the device goes back to sleep. **Single click means adding to this association group, double click means removing the node selected** in step (3) from this association group.
3. Find the Z-Wave actuator you like to control by the key fob. 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 an Node Information Frame. Any button press on Key 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.

IMPORTANT: Controllers may only allow configuring 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 a two byte value the same logic applies: Values greater than 32768 may needed to be given as negative values too.

Parameter 1: Button 1 and 3 pair mode

In separate mode button 1 works with Group A, button 3 with Group C. Click is ON, Hold is dimming UP, Double click is OFF, Click-Hold is dimming DOWN. In pair button 1/3 are UP/DOWN correspondingly. Click is ON/OFF, Hold is dimming UP/DOWN. Single clicks works with Group A, double click with Group C.

Size: 1 Byte, Default Value: 1

Setting	Description
0	Separately
1	In pair without double clicks
2	In pair with double clicks

Parameter 2: Button 2 and 4 pair mode

In separate mode button 2 works with control group B, button 4 with control group D. Click is ON, Hold is dimming UP, Double click is OFF, Click-Hold is dimming DOWN. In pair button B/D are UP/DOWN correspondingly. Click is ON/OFF, Hold is dimming UP/DOWN. Single clicks works with Group B, double click with Group D.

Size: 1 Byte, Default Value: 1

Setting	Description
0	Separately
1	In pair without double clicks
2	In pair with double clicks

Parameter 11: Command to control Group A

This parameter defines the command to be sent to devices of control group A when the related button is pressed.

Size: 1 Byte, Default Value: 8

Setting	Description
0	Disable
1	Switch on/off and Dim (send Basic Set and Switch Multilevel)
2	Switch on/off only (send Basic Set)
3	Switch all
4	Send scenes
5	Send preconfigured scenes
6	Control devices in proximity
7	Control door lock
8	Central scene to gateway (default)

Parameter 12: Command to control Group B

This parameter defines the command to be sent to devices of control group B when the related button is pressed.

Size: 1 Byte, Default Value: 8

Setting	Description
0	Disable
1	Switch on/off and Dim (send Basic Set and Switch Multilevel)
2	Switch on/off only (send Basic Set)
3	Switch all
4	Send scenes
5	Send preconfigured scenes
6	Control devices in proximity
7	Control door lock
8	Central scene to gateway (default)

Parameter 13: Command to control Group C

This parameter defines the command to be sent to devices of control group C when the related button is pressed.

Size: 1 Byte, Default Value: 8

Setting	Description
0	Disable
1	Switch on/off and Dim (send Basic Set and Switch Multilevel)
2	Switch on/off only (send Basic Set)
3	Switch all
4	Send scenes
5	Send preconfigured scenes
6	Send preconfigured scenes
7	Control door lock
8	Central scene to gateway

Parameter 14: Command to control Group D

This parameter defines the command to be sent to devices of control group D when the related button is pressed.

Size: 1 Byte, Default Value: 8

Setting	Description
0	Disable
1	Switch on/off and Dim (send Basic Set and Switch Multilevel)
2	Switch on/off only (send Basic Set)
3	Switch all
4	Send scenes
5	Send preconfigured scenes
6	Control devices in proximity
7	Control door lock
8	Central scene to gateway (default)

Parameter 21: Send the following switch all commands

Size: 1 Byte, Default Value: 1

Setting	Description
1	Switch off only
2	Switch on only
255	Switch all on and off

Parameter 22: Invert buttons

Size: 1 Byte, Default Value: 0

Setting	Description
0	No
1	Yes

Parameter 25: Blocks wake up even when Wake Up Interval is set

If the KFOB wakes up and there is no controller nearby, several unsuccessful communication attempts will drain battery.

Size: 1 Byte, Default Value: 0

Setting	Description
0	Wake up is blocked
1	Wake up is possible if configured accordingly

Parameter 30: Send unsolicited battery report on Wake Up

Size: 1 Byte, Default Value: 1

Setting	Description
0	No
1	To same node as Wake Up Notification
2	Broadcast to neighbors

Technical Data

Dimensions	30x55x15 mm
Weight	32 gr
Hardware Platform	ZM5202
EAN	0019962009204
IP Class	IP 20
Battery Type	1 * CR2032
Device Type	Simple Remote Control
Generic Device Class	Portable Controller
Network Operation	Portable Controller
Firmware Version	01.00
Z-Wave Version	03.63
Certification ID	ZC10-15050016
Z-Wave Product Id	0115.0100.0103

Supported Command Classes

- Scene Controller Conf
- Association Grp Info
- Device Reset Locally
- Central Scene
- Zwaveplus Info
- Configuration
- Manufacturer Specific
- Powerlevel
- Battery
- Wake Up
- Association
- Version

- Security

Controlled Command Classes

- Basic
- Central Scene
- Switch Multilevel
- Switch All
- Scene Activation
- Multi Channel

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 adding 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.

Support and Contact

Should you encounter any problem, please give us an opportunity to address it before returning this product. Most questions regarding Z-Wave wireless communication standard can be answered through the international users community such as www.z-wave.info and others. If your question can't be answered there, please use www.popp.eu/support or contact us by email: info@popp.eu

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Declaration of Conformity

Popp hereby declares this device complies with the essential requirements and other relevant prescriptions of Directive 1999/5/EC R&TTE. The complete CE declaration can be found on: www.popp.eu/ce.

All questions regarding this declaration of conformity can be directed to the following address: Popp c/o BID GmbH, Neuer Wall 63, 20148 Hamburg, Germany



Disposal Guidelines

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 health and well-being.

