



POPE004001

Secure Z-Wave Smoke Sensor plus siren functionality

Firmware Version : 1.0

Quick Start

S This device is a combination of a Z-Wave sensor (smoke sensor) and a Z-Wave actuator. Pressing the button (3) for one second includes and excludes the device. The smoke sensor is powered either by an internal battery or an **optional external integrated power supply**. It supports secure communication and will, without further configuration, notify other smoke sensors and sirens of the same type when an alarm occurs.

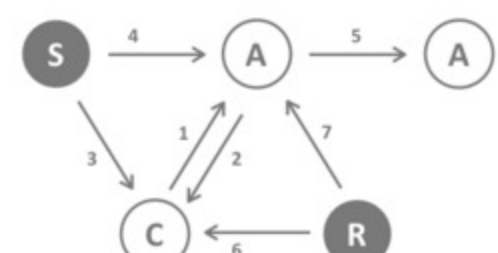
Please refer to the chapters below for detailed information about all aspects of the products usage.

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

This product combines a certified stand-alone smoke detector with an insertable Z-Wave module. The smoke detector is certified by the VdS and DIN EN 14604 and satisfies all legal requirements. The smokebox is made of steel and antistatic plastic.

A button on the device can be used to test the smokebox, the electronics and the battery. In addition the device has an integrated test functionality to make manual tests with Aerosol unnecessary. The battery warning gets send for at least 30 days. During this time the smoke sensor stays fully functional.

A button on the Z-Wave module is designed to test the smokebox and sends the battery and smoke alarm to the Z-Wave controller. The smoke sensor can also be used as Z-Wave siren; for that the Z-Wave controller sends an on or off command to the siren. The radio module uses either the smoke sensors integrated 9V battery or can be powered by an external 12V power supply.

According to the VdS 3515 (smoke sensors with radio communication) this device will relay all alarms to all other smoke sensors in the Z-Wave network to create a house-wide alarm. This connection of the smoke sensors is fully automatic and needs no further configuration. The smoke sensors and the controller communicate via an secure protocol to prevent manipulation.

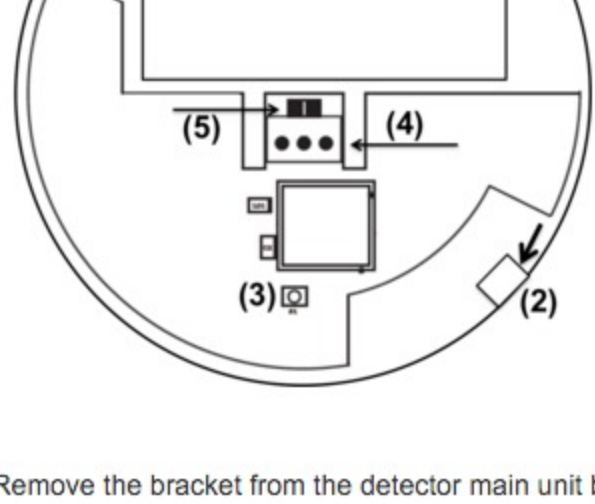
Batteries

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!

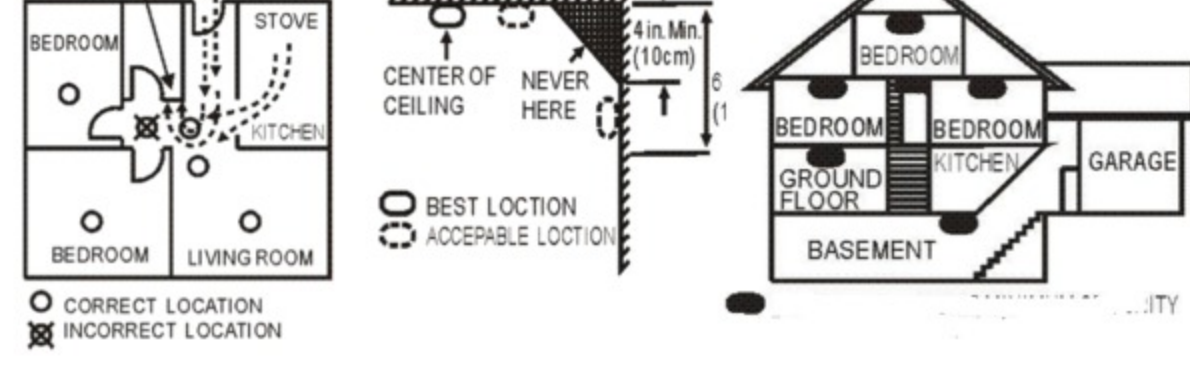
Battery Type: 1 * 9-V-Block

Installation Guidelines

Please refer to the installation guide of the smoke sensor for information about how and where the smoke sensor should be installed. The installation guide complies with the norm DIN EN 14676.



- Remove the bracket from the detector main unit by rotating it counter-clockwise.
- Place the bracket where you are going to install the detector. In each of keyhole slots, draw a mark to locate plastic anchor and screw. Using a 3/16-inch (5mm) drill bit, drills two holes at the marks and insert plastic anchor, and attached the bracket by using the screws.
- Plug the wireless module into the base device so that the three pins (3) in the center connect to the wireless interface. The battery compartment must be accessible.
- Open the battery compartment (1) to activate the battery, and then close the cover.
- The optional external power supply will connect to the connector (5). The internal battery must stay inside the detector even when the external power supply is connected.
- Mount the smoke detector to the mounting ring. Make sure the hooks of the detector are placed between the hook and the twist stopper (2) of the mounting base (arrows in image above). Then turn about 15 % clockwise. (Hint: If the detector hook is not placed right between the two mounting ring structures the detector can't be mounted to the ring).



Please follow the recommendations about amount as position of the sensor in your home as given above. Avoid to place the sensor into the angle of walls, prefer positions in the middle of the room.

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 inclusion or exclusion 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.

A single click on the button (3) includes the device. If the button is pressed for at least 2 seconds the inclusion will be done without the (*Security Command Class*). A single click on the button will exclude the device.

Operating the device

In case smoke is detected by the smoke detector the device will sound, the red LED will blink and the wireless module will issue a Z-Wave alarm command to the main controller and other associated devices. A low battery will be indicated on short siren noise plus the Z-Wave controller will be informed using Battery Low warning commands.

Note: All communication of the wireless module is performed with application level security if the device was included securely and all communication partners support secure communication as well. In case a non-secure device is associated for switching on smoke alarm, the smoke detector will detect this and change its communication style with this very device to non-secure. This process happens one time and will take about 20 seconds. This delay will happen on first communication only.

The siren can be used for other alarm indication. For this reason the device will be shown at Graphical user interface as a simple on/off switch. Turning on this switch start the siren, turning it off will stop the noise. The generic siren alarm has a different acoustic pattern than the permanent sound caused by smoke. The configuration parameters 1 and 2 define the style of the sound.

Automatic radio meshing of the smoke sensor

Thanks to Z-Wave the smoke sensor can communicate fully automatic. In case of an alarm (smoke or battery) the device will send a notification to all other smoke sensors in the network. The receiving smoke sensor transmit the alarm to other smoke sensors until all smoke sensors have received the alarm.

It is possible to wirelessly turn off the siren on all repeating smoke detectors but not on the detector that originally sent the alarm. You must find and remove the reason for the smoke detector to buzz.

Factory reset

To do a factory reset press the button on the bottom of the device for at least 10 seconds.

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 simple click on the button (3) sends a NIF.

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:

Group ID	Description
1	Lifeline (max. nodes in group: 4)
2	Alarm Reports (max. nodes in group: 4)
3	Switching Command when Alarm (max. nodes in group: 4)

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 be needed to be given as negative values too.

Siren alarm sequence interval (Parameter Number 1, Parameter Size 2)

The additional siren is creating a different acoustic signal differentiate from the smoke alarm. This sound is partly on and partly off. This parameter defines the total length of the interval in seconds.

Value	Description
3 — 129	seconds (default 10) (Default 10)

Siren alarm tone length (Parameter Number 2, Parameter Size 1)

The additional siren is creating a different acoustic signal differentiate from the smoke alarm. This sound is partly on and partly off. This parameter defines the total length of the sound versus silence within this interval.

Value	Description
1 — 99	seconds (default 8) (Default 8)

Value of On-Command (Parameter Number 3, Parameter Size 1)

Value	Description
0 — 99	(default 99) (Default 99)

Value of Off-Command (Parameter Number 4, Parameter Size 1)

Value	Description
0 — 99	(default 99) (Default 99)

Status of automated meshing of smoke alarms (Parameter Number 5, Parameter Size 1)

This smoke detector can automatically inform other smoke detectors of same type about smoke alarms. They will then also turn on the siren. This function is a requirement of wireless networked smoke detectors

Value	Description
0	inactive
1	active (default) (Default)

Status of automated meshing of battery alarms (Parameter Number 6, Parameter Size 1)

This smoke detector can automatically inform other smoke detectors of same type about battery alarms. They will then also turn on the siren. This function is a requirement of wireless networked smoke detectors.

Value	Description
0	inactive
1	active (default) (Default)

Command Classes

Supported Command Classes

- Basic (version 1)
- Binary Switch (version 1)
- Binary Sensor (version 2)
- Binary Switch Group Information (version 1)
- Device Reset Locally (version 1)
- Z-Wave Plus Information (version 2)
- Configuration (version 1)
- Alarm (version 5)
- Manufacturer Specific (version 2)
- Powerlevel (version 1)
- Firmware Update Meta Data (version 3)
- Battery (version 1)
- Association (version 2)
- Version (version 2)

Controlled Command Classes

- Basic (version 1)

Technical Data

IP Rating	IP 20, VdS-Number: C208090, CPD Number: 0789-CPD-20474
Battery Type	1 * 9-V-Block
Frequency	868.42 MHz
Wireless Range	up to 100 m outdoor, 40 m in buildings
Explorer Frame Support	No
SDK	
Device Type	Slave with routing capabilities
Generic Device Class	
Specific Device Class	
Routing	No
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 announces that 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 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 unsorted 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.