



# POP 004308 Smoke Detector

Firmware Version : 1.0



## Quick Start

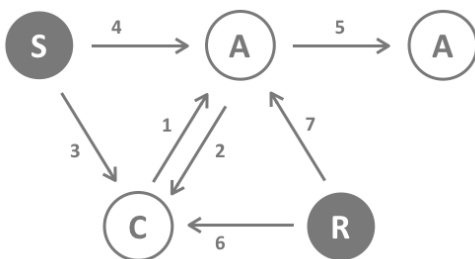
**S** This device is a wireless Z-Wave sensor. Exclusion, Inclusion are confirmed by hitting the programm button for 1 sec when the sensor is removed from the mounting ring and the tamper switch is released. A wakeup is performed hitting the programm button for 1 sec when the sensor is not removed from the mounting ring and the tamper switch is not released.

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 Z-Wave compatible smoke detector from Popp detects reliably emerging fires in your house and safes life and estate of your family. Recognizing fires primary works free of radioactivity with the help of a photoelectric sensor, which reacts on smoke particle concentrations between 1.31 % and 2.28 %.

Additionally, the smoke detector contains a temperature sensor, which is used parallely for detecting fires, avoiding false alarm and at the same time measuring the temperature in the room.

According to the guidelines, the smoke detector warns via a light signal and a siren. This siren has a defined volume of 0.11 to 0.165 dB/m.

The device comes along with a modern design. It is easy to install and easy for professional installers to open for cleaning. A lock prevents the installation of the device without battery. The automatic self-calibration and self-test increase the reliability of the device. After the installation a manual system test can be done by pushing the key button on the device. The smoke detector has a wireless connection to the Z-Wave network. The measured values of the temperature sensor, the humidity sensor and the current battery level can be read out by a Z-Wave controller. A regular status report of the sensor enables a comfortable centralized management of many devices. It generates different alarm signals that either are received and evaluated by a central Z-Wave controller or can control switching actions of other Z-Wave devices (e.g. turning on/ off the light) directly:

Fire alarm (displayed locally by light and audio)

Battery level warning, when the battery power level drops below 20% (shown locally by light and short audio)

Tamper protection if the device is removed from the bracket

Fall above or below a temperature range (thresholds can be programmed wirelessly via Z-Wave)

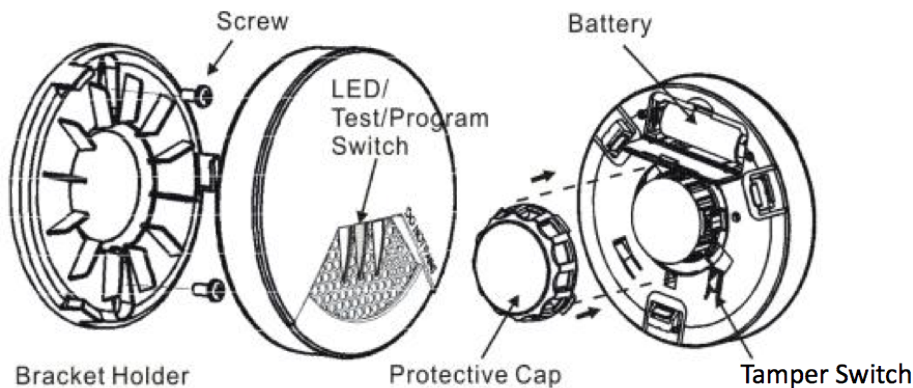
Fall above or below a humidity range (thresholds can be programmed wirelessly via Z-Wave)

## 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 \* CR123A

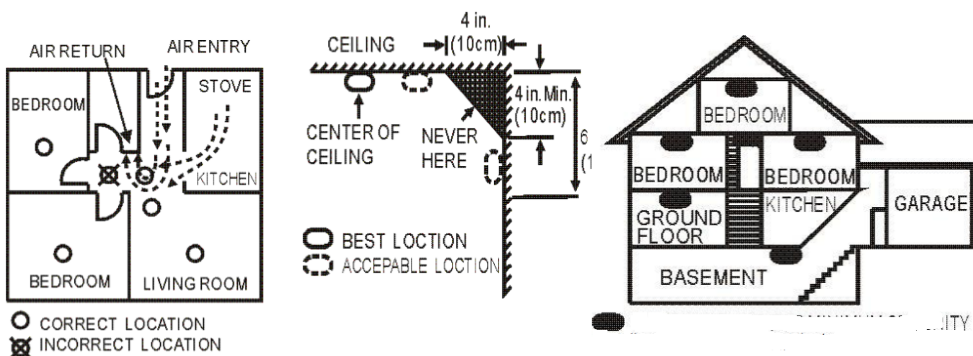
## Installation Guidelines



Remove the bracket from the detector 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.

Open the battery cover to insert the batteries, and then replace the cover. Fix the detector with bracket by rotating it clockwise.



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 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.

Exclusion, Inclusion are confirmed by hitting the programm button for 1 sec when the the sensor is removed from the mounting ring and the tamper switch is released.

## Operating the device

**Power-on Mode:** 1) Install the battery into the module 2) Close the bracket 3) the detector will take 2 to 4 sec. and emit a beep to confirm and start the burglar system. The detector will alarm once remove the bracket.

**Stand-by Mode:** The red LED flashes one time every 334 seconds.

**Alarm Mode** (It is the status when the alarm is triggered.): If a certain density of smoke is detected, an audible alarm with 3 beeps, break and 3 beeps will occur. The red LED will flash continuously and rapidly. Meanwhile, the smoke detector will send an alarm report (type: smoke alarm, state: alarm) to the user's controller and also the detector will send an alarm report (type: smoke alarm, state: No alarm).

**Error Mode:** If the smoke detector beeps three times and yellow LED flashes three times, it indicates the smoke detector is not working properly. Please require to repair or service.

**Low battery warning Mode:** The yellow LED will flash once every 43 seconds with a short "beep" sound.

**Testing Mode:** Test the alarm weekly by pushing the test switch for about 3 sec. until there are 3 beeps and red LED light on continuously. Then, the smoke detector will send an alarm report (type: smoke alarm, state: alarm) to the user's controller and also the detector will send an alarm report (type: smoke alarm, state: No alarm). Please note if the detector beeps three times and yellow LED flashes three times, it indicates the detector is not working properly. Please require to repair or service.

**Battery Power indicator:** The detector will report the current status of battery capacity to the user's controller.

**Self-Protection Mode:** If the detector is removed from bracket, the detector will send an alarm (type:smoke alarm, level:0xFF) to the Z-Wave Interface Controller, and the yellow LED will flash continuously and the detector will sound.

**Silence Mode:** The user could press the test switch to get into silence mode to turn off the alarm temporarily. The silence function will automatically turn into normal operation after 10 minutes if the smoke concentration around the detector is still at alarming level.

## 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.

A wakeup is performed hitting the programm button for 1 sec when the sensor is not removed from the mounting ring and the tamper switch is not released.

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.

Hitting the programm button will send out an 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	Controller, all Temperature and Humidity Changes (max. nodes in group: 5)
2	Switches Device when temperature reaches trigger level (max. nodes in group: 5)
4	Switches device when smoke was detected (max. nodes in group: 5)

## 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.

Send Unsolicited temperature report (Parameter Number 1, Parameter Size 1) Threshold temperature to send unsolicited report. 10 = 1 °C

Value	Description
0	Disabled (Default)
5 — 50	0.1 °C

Temperature shift (Parameter Number 2, Parameter Size 1) Threshold correction. For positive value 10 = 1 °C, for negative value  $x = 256 - (T^{\circ}\text{C} * 10)$ . Example, if need shift -2°C, value calculate:  $256 - (2 * 10) = 236$ .

Value	Description
0	Disabled (Default)
1 — 127	0.1 °C
127 — 255	0.1 °C

Inverts Switching Command on Association Group 2 (Parameter Number 5, Parameter Size 1)

Value	Description
0	At High send ON (Default)
255	At High send OFF

Inverts Switching Command on Association Group 4 (Smoke) (Parameter Number 7, Parameter Size 1)

Value	Description
0	on Smoke send ON (Default)
255	on Smoke send OFF

Send SensorBinary- Report to Group 1 (Parameter Number 8, Parameter Size 1) When Smoke is detected a Sensor Binary Report is sent out to Association Group 1

Value	Description
255	Send Alarm Smoke
0	Send Sensor Binary Report (Default)

Temperatur Trigger Low Value (Parameter Number 9, Parameter Size 1) Needs parameter ?1 to be set. Sets the temperature Low value, if the measurement is lower than this value, Basic OFF is sent in temperature association group(2). 255 -disable

Value	Description
255	Disabled (Default)
0 — 100	°C

Temperatur Trigger High Value (Parameter Number 10, Parameter Size 1) Needs parameter ?1 to be set. Sets the temperature High value, if the measurement is higher than this value, Basic ON is sent in temperature association group(2)

Value	Description
255	Disabled (Default)
0 — 100	°C

## Command Classes

Supported Command Classes

Basic (version 1)

Battery (version 1)

Wake Up (version 2)

Association (version 2)

Version (version 1)

Binary Sensor (version 2)

Configuration (version 1)

Alarm (version 3)

Manufacturer Specific (version 1)

Multilevel Sensor (version 5)

## Technical Data

Battery Type	1 * CR123A
Explorer Frame Support	Yes
SDK	4.55.00
Device Type	Slave with routing capabilities
Generic Device Class	Alarm Sensor
Specific Device Class	Routing Smoke Sensor
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 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.

## 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 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.