

OPERATING MANUAL SMOKE SENSOR FGSS-001 v2.1 - v2.3

Fibaro Smoke Sensor is a universal, Z-Wave compatible, optical smoke detector. The device can be battery (battery life approx. 3 years) or alternatively VDC powered (12 or 24 VDC). Smoke alarm is signaled by sound, LED diode blinking and through operating commands sent to the Z-Wave network devices. Additionally, smoke alarm may be sent to an alarm system or fire alarm system hub, through NC contact terminals opening.

Optical detector allows for detecting smoke at an early stage of fire, often before flames appear and temperature starts to rise significantly. Moreover the device has a built-in temperature sensor, which can also trigger the alarm once the specified temperature threshold is exceeded.

Fibaro Smoke Sensor is designed to be placed on a wall or ceiling. LED signaling diode signals fire, operating mode and may serve as the Z-Wave network range controller. Sensor is designed to operate in confined spaces, under normal conditions (lacking smoke, dust, condensed water vapor).

* Depending on the parameters settings.

SPECIFICATIONS

Power Supply:	12 - 24 VDC
Battery Type:	CR123A
Power Consumption (at VDC operation):	0,4W
Output terminals maximum current carrying capacity (SMOKE NC, TAMP NC):	25mA
Maximum voltage at output terminals (SMOKE NC, TAMP NC):	24V (AC or DC)
EU standards compliance:	EMC 2004/108/EC R&TTE 199/5/WE
Radio protocol:	Z - Wave
Radio frequency:	868,4 MHz EU; 908,4 MHz US; 921,4 MHz ANZ; 869,2 MHz RU;
Range:	up to 50m outdoors up to 30m indoors (depending on terrain and building structure)
Operational Temperature:	0 - 40°C
Measured Temperature Range:	-20 to 100°C
Temperature Measuring Accuracy:	0,5°C (within 0°C - 40°C range)
Dimensions (Diameter x Height):	65 x 28 mm

TECHNICAL INFORMATION

- Compatible with any Z-Wave network controller.
- May be connected to any alarm or fire prevention system, thanks to its potential free output terminal.
- Extremely easy installation - simply install it in location prone to fire.
- Battery or VDC powered.
- Tamper prevention.
- Alarm is signaled by sound, light (LED diode) and through operating command sent to the Z-Wave network controller.
- Fire detection through air temperature measuring.
- Possibility of triggering alarm based on just the air temperature threshold being exceeded.
- 3 levels of sensors sensitivity.
- Automatic efficiency test, performed each 5 seconds.
- Built-in "black box" - the device reports and records smoke and temperature measurement readouts.



NOTE
Read this manual before attempting to install the device. Failure to observe recommendations included in this manual may be dangerous or cause a law violation. The manufacturer, Fibar Group Sp. z o.o., can't be held responsible for any loss or damage resulting from the use inconsistent with this operating manual.



NOTE
Work at height, concerned with Fibaro Smoke Sensor installation, should be carried out taking special precautions, using tools and equipment in perfect working order. It's recommended to observe ladders, lifts, etc. stability. Power tools should be used observing producers safety recommendations.



NOTE
Maintenance inspections should be performed regularly, by an appropriately trained staff. Fibar Group Sp. z o.o. recommends the functional and visual checks to be performed at least once a month. Functional check should consist of performing self test (described below) and triggering a test smoke alarm.



NOTE
When handled unskillfully, used in environment conditions other than designed for, the device may not function properly. It's highly recommended to take all safety precautions to ensure inhabitants and property protection.



NOTE
Smoke detectors, because of the technical conditions (e.g. battery discharge, device failure, etc.) and specific character of the spaces they are used in, do not provide 100% fire detection certainty. They significantly raise the probability of fire detection. Smoke Sensors must be tested in accordance with this operating manual. Ventilation systems, chimneys and potentially dangerous devices also should be regularly inspected.

I. Z-WAVE NETWORK INCLUSION

There are two ways to include a Fibaro Smoke Sensor into the Z-Wave network:

- Automatically, using the auto inclusion function (available in constant current powering mode), or
- manually, using the B-button (option available in both powering modes - constant current and battery).

Including a Fibaro Smoke Sensor into the Z-Wave network in auto inclusion mode:

- Make sure the Fibaro Smoke Sensor's power supply is disconnected and the device is placed within a direct range of the main controller. The sensor cannot have a battery installed.
- Set the main controller into the learning mode (see main controller's operating manual).
- Connect the power supply to the sensor to include it into the Z-Wave network in auto inclusion mode.
- Fibaro Smoke Sensor will be detected and included into the Z-Wave network.



NOTE
In case the device is not detected, include it manually (as described below) or reset the sensor and repeat the procedure.

In order to turn off the auto inclusion function, press the B-button once, after the Fibaro Smoke Sensor has been connected to power supply.

Manual Fibaro Smoke Sensor inclusion:

- Connect the Fibaro Smoke Sensor to power supply or install the battery. Make sure the device is located in Z-Wave network controller's direct communication range.
- Set the main controller into the learn mode (see main controller's operating manual).
- Quickly, triple click the B-button, located on Fibaro Smoke Sensor's enclosure.
- Fibaro Smoke Sensor will be detected and included in the Z-Wave network.

II. EXCLUDING FIBARO SMOKE SENSOR FROM THE Z-WAVE NETWORK

- Make sure the sensor is connected to power supply (battery or VDC adapter).
- Set the main controller into the learn mode (see main controller's operating manual)
- Quickly, triple click the B-button, located on Fibaro Smoke Sensor's enclosure.

III. SENSOR INSTALLATION



NOTE
It's recommended to install the sensor in a room's uppermost location, preferably on a ceiling, at least 40 cm from walls and other objects. Particular attention should be paid to any adjacent objects or devices which can impede smoke's access to the sensor's body. It's recommended to install Fibaro Smoke Sensor in all rooms prone to fire, and in between such rooms as well.

Installing Fibaro Smoke Sensor

- Include the device into the Z-Wave network (see p.1). Note the inclusion process may be performed ONLY in direct range of the main controller.
- If the sensor is to be VDC powered, drill holes in sensor's holder. Note the sensor may be connected to a wired alarm system controller or fire prevention system.
- Install the sensor's holder in desired location.
- If the sensor is to be VDC powered, connect wires observing diagram no.3. If the sensor is to be connected to an alarm system or fire prevention system, connect it observing the diagram no.4.

- Place Fibaro Smoke Sensor in the holder.
- If the sensor is already included in the Z-Wave network, wake it up by triple clicking quickly the B-button.
- Test Fibaro Smoke Sensor's operation using a dedicated optical smoke detectors diagnostic tool.
- Test the Z-Wave network range, checking whether the sensor communicates with main controller correctly.

INSTALLATION NOTES:

- When choosing an installation place, make sure the alarm sound will be easily audible in other rooms in the building.
- It's recommended to install the sensor in already decorated, painted rooms.
- It's recommended to install the sensor at least 1,5m from air conditioners.
- Do not install the sensor in insulated places. Keep at least 0,5m distance from light sources.
- Do not install the sensor in places prone to draughts.
- Do not install the sensor in places with high water vapor condensation, e.g. above stoves, ovens, kettles, etc.

IV. POWERING MODES

There are two powering modes for the Fibaro Smoke Sensor. By default it's powered by a factory included battery. Alternatively it can work with a constant current, after connecting a 12 / 24 VDC power supply to +12/24 and GND terminals (see diagram no.3). Powering mode configuration is carried out automatically, while sensor is being included into the Z-Wave network. When battery powered, a Fibaro Smoke Sensor communicates with the Z-Wave network main controller periodically. Detected alarms are sent immediately, but configuration parameters and associations settings only at specified wake up intervals, or at a manual wake up (B-button triple click). In DC powering mode, configuration and associations parameters are sent when necessary, and in addition sensor serves as a Z-Wave signal repeater.

Switching to a constant current powering mode:

- Exclude a sensor from the Z-Wave network.
- Disconnect the battery,
- Install the constant power connecting terminal, observing the diagram no.3.
- Connect a constant current power source (12 / 24 VDC) to +12 and GND terminals observing wiring diagram no.3.
- Include Fibaro Smoke Sensor into the Z-Wave network.

BATTERY TIPS



Fibaro Smoke Sensor's battery life is up to approx. 3 years at optimum settings. The current battery level is displayed in the Home Center 2 interface. Red battery icon means that battery needs replacement. In order to avoid triggering tamper alarm while replacing the battery, 2-nd association group's associations must be deleted, and Sensor's parameters' configuration set to default. In addition, the device itself, apart from the main controller, monitors the battery level and emits a low battery warning. Low battery is signaled with a LED blinking yellow and an intermittent sound alarm (interval set in parameter 87). Fibaro Smoke Sensor can signal a low battery level for approx. 30 days.



NOTE
1. It's not possible to power the device from a battery and VDC power supply simultaneously. When using VDC power supply it's recommended to use another kind of an emergency power supply.
2. Home Center 2 checks the battery level once a day.

V. SMOKE DETECTION

Fibaro Smoke Sensor responds to physical presence of smoke. Smoke presence is required for the device to react. Fibaro Smoke Sensor performs a self test each 5 seconds (see section VII) and checks for smoke presence. Having detected smoke presence, the sensor checks 3 more times, at 1 second interval, whether the smoke is actually present. Once the smoke presence is confirmed, Fibaro Smoke Sensor triggers an alarm.

Smoke alarm is signaled by sending an appropriate alarm frame to devices and the Z-Wave controller, opening NC contact, and also by a constant sound signal and LED diode blinking red. Once the smoke alarm has ceased, the sensor checks 3 times, at 1 second interval, whether the smoke has actually disappeared before getting back to normal operation, i.e. performing a self test each 5 seconds and checking for smoke presence.



NOTE
As described in section V, Fibaro Smoke Sensor checks for smoke presence each 5 seconds. In addition, the device checks whether it's not damaged and tests the Z-Wave network communication at each wake up interval (see section VIII).



NOTE
Fibaro Smoke Sensor is a multiple use device, however, for greater safety, it's recommended to replace the device with a new one once a fire has actually occurred.

VI. DETECTING FIRE THROUGH TEMPERATURE ALARM

Apart from detecting smoke presence, Fibaro Smoke Sensor can detect fire by recording a rapid temperature rise. Temperature alarm threshold is user defined (parameter 81). Temperature alarm is signaled by the LED signaling diode blinking red and an intermittent sound signal.



NOTE
Parameter 81 value is set to 54°C by default. Any modification can result in Fibaro Smoke Sensor operating contrary to valid safety regulations of your country.

DIAGRAMS DESCRIPTION:

+12V - constant power supply terminal, 12/24VDC
-GND - ground terminal
SMOKE NC - potential free, smoke sensor connecting terminals (for wired systems)
TAMP NC - potential free, tamper connecting terminals (for wired systems).

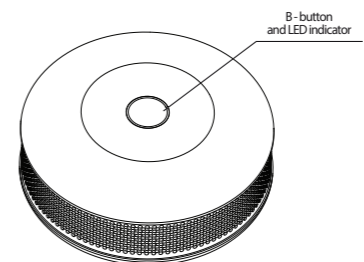


Fig. 1 - Fibaro Smoke Sensor top view.

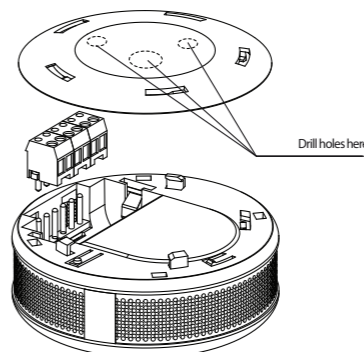


Fig. 2 - Constant current or alarm system hub connecting terminals installation.

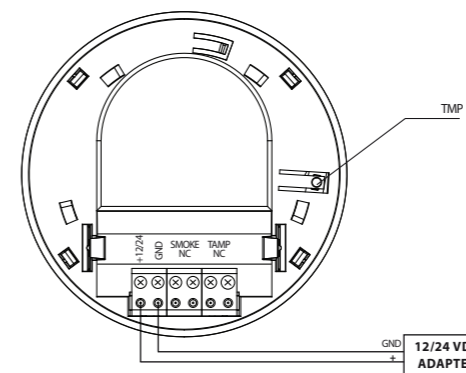


Diagram 1 - DC Power adapter connection.

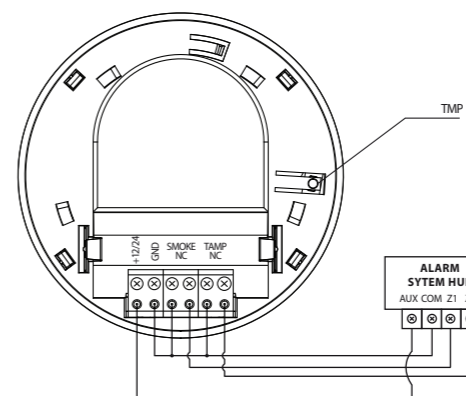


Diagram 2 - Alarm system hub connection.

VII. MALFUNCTION DETECTION

Fibaro Smoke Sensor can automatically detect a malfunction. As described in section V, Fibaro Smoke Sensor performs a self test each 5 seconds. If a malfunction is detected, e.g. damaged smoke chamber, intermittent sound alarm will start, LED diode will blink red and alarm will be sent to the Z-Wave network controller and associated devices.

Once a malfunction has been detected, it's recommended to:

- check a power supply operation (replace battery or check VDC adapter's voltage),
 - check whether a light source is not pointed directly at the Smoke Sensor.
- If a malfunction is constantly reported, it's recommended to replace a Fibaro Smoke Sensor with new one.
Self test may be triggered manually:
- Make sure the device is being powered.
 - Press and hold the B-button until the LED glows white and short alarm sounds.
 - Keep holding the B-button. After additional 3 seconds Fibaro Smoke Sensor will check smoke chamber operation.

LED indicator colour changing to green and sound signal mean the positive result. If the LED indicator changes its colour to red, it means malfunction.



NOTE
When the self test is triggered manually, Fibaro Smoke Sensor sends the command frame to the Z-Wave network controller and to the 1st Association group devices. After 3 seconds from releasing the B-button, the alarm cancelling command frame will be sent and the procedure will be finished.



NOTE
Any service or repair must be carried out by the manufacturer.

VIII. DETECTING LACK OF Z-WAVE RANGE

When included in the Z-Wave network, Fibaro Smoke Sensor tests the network communication. Z-Wave network communication test is performed in both, constant current and battery powering modes, at each temperature report. By default, once the ambient temperature changes by 2°C, according to parameters 10 and 12 settings. In addition, in battery mode, Z-Wave network communication test is performed at device polling. In constant power mode, Z-Wave network communication test is performed in time intervals defined by parameter 80 settings. Lack of the Z-Wave network communication is signaled with an intermittent alarm sound and LED blinking pink.

Once a Fibaro Smoke Sensor has reported no Z-Wave network communication, it's recommended to wake up the device by triple clicking the B-button. If it doesn't stop the alarm, Z-Wave networks operation and the main controllers operation need to be verified. Fibaro Smoke Sensor will cancel the Z-Wave network communication alarm once it communicates with the network after manual or automatic wake up.



NOTE
It's not recommended to deactivate the Z-Wave network communication test.

IX. SENSOR'S SENSITIVITY LEVEL CONFIGURATION

There are 3 sensitivity levels of the optical smoke detector used in Fibaro Smoke Sensor. By default, the detector is set to the middle sensitivity level. Sensitivity level depends on the parameter 82 settings.



NOTE
It's not recommended to change Fibaro Smoke Sensor's sensitivity level.

X. FIBARO SMOKE SENSOR RESET

Fibaro Smoke Sensor reset erases the EPROM memory, including all information on the Z-Wave network and the main controller.

Fibaro Smoke Sensor reset procedure:

- Make sure the device is powered.
 - Press and hold the B-button for 3 seconds. LED will glow white.
 - Short signal will sound.
 - Release the B-button.
 - Wait until the LED glows yellow, signaling entering the 4th menu level.
 - Press the B-button briefly to confirm menu level choice.
- Successful reset will be confirmed with the LED changing colour to red and fading. At the same time, short signal will sound, same as at the power connection.



NOTE
Device reset will not remove it from the Z-Wave network main controller's memory. Before resetting the device, it must be excluded from the Z-Wave network.

XI. OPERATING THROUGH THE Z-WAVE NETWORK

Fibaro Smoke Sensor has a built in smoke detector and a temperature sensor, which makes it a multi channel device. In Home Center 2 menu it will be presented as two devices, depending on the main controller software version*:

