



FIBARO

FIBARO CO Sensor

SKU: FIBFGCD-001



Quickstart

This is a **secure CO Detector for Europe**. To run this device please insert fresh **1 * CR123A** batteries. Please make sure the internal battery is fully charged.

1. Turn the cover counter-clockwise.
2. Take off the cover.
3. Remove the paper strip protecting the battery.
4. Proper powering up will be confirmed with a short beep.
5. Add the device (as described in "Adding/removing the device") if you want to use it in the Z-Wave network.

Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use this equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment or batteries in a fire or near open heat sources.

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.

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

FIBARO CO Sensor is an ultra-light, compact, battery-powered carbon monoxide detector, designed to be placed on a wall. Its high sensitivity allows to detect the presence of the carbon monoxide (CO) gas at the early stage in order to prevent carbon monoxide poisoning. Alarm is signalled with a built-in siren, blinking LED indicator and by sending commands to Z-Wave network devices. Additionally, the device is equipped with a temperature sensor.

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.

1. Press and hold the button.
2. Release the button when LED indicator glows white.
3. Click the button when LED indicator glows yellow.
4. After few seconds the device will be reset (confirmed by red LED indicator).

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.

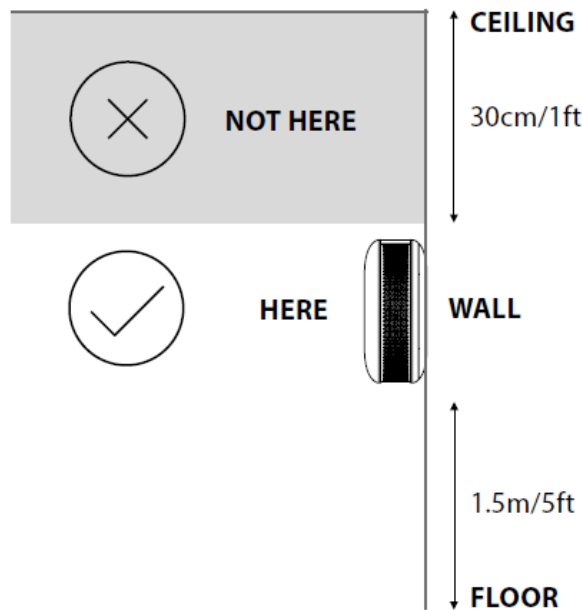
Installation

READ BEFORE INSTALLATION AND HEED ALL THE WARNINGS!

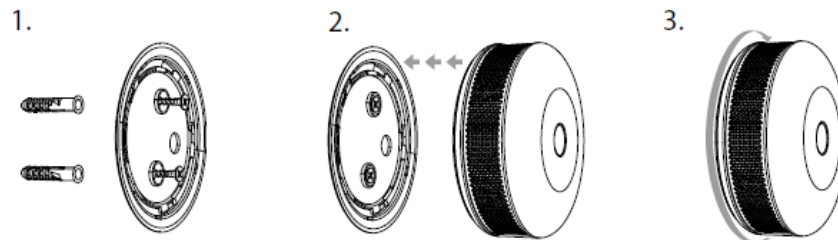
- The device should be installed below the ceiling level.
- The device should be installed on the wall, at least 30 cm (1 ft) away from the corners.
- The device should not be installed: in a bathroom, next to heat sources, within range of kids, obstructed from possible carbon monoxide sources, in direct sunlight.
- The device should be installed by a qualified installer.
- Do not paint the device.
- The device should be cleaned with a slightly damp cloth or moistened tissue.

Note: Recommended height of installation is dependant on the purpose of the room and height at which head typically is.

Place of installation:



Installation on the wall:



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

1. Place the device within direct range of the Z-Wave controller.
2. Set the main Z-Wave controller in (security/non-security) adding mode (see the controller's manual).
3. Quickly, triple click the button located on the casing.
4. Wait for the device to be added into the system.
5. Successful adding will be confirmed by the Z-Wave controller's message

Exclusion

1. Place the device within direct range of the Z-Wave controller.
2. Set the main Z-Wave controller in remove mode (see the controller's manual).
3. Quickly, triple click the button located on the casing.
4. Wait for the removing process to end.
5. Successful removing will be confirmed by the Z-Wave controller's message.

Menu allows to perform Z-Wave network actions. In order to use the menu:

1. Press and hold the button for 3 seconds
2. You should hear a short signal while the LED diode blinks white.
3. Release the button.
4. Wait for the device to indicate desired menu position with a colour:
 - **White** - confirm the start of the firmware update process
 - **Green** - send the current state of CO Alarm
 - **Magenta** - Z-Wave network's range test
 - **Yellow** - the device reset
5. Press the B-Button to confirm selection.

Self-test:

1. Press and hold the button.
2. The LED indicator will glow white and you will hear a short beep.
3. Release the button when you hear the first alarm sequence.
4. Move away from the device to protect your hearing.

Note: If the self-test procedure does not result in emitting sound and red light signal, replace the device.

Indications and signals:

The CO Sensor is equipped with a LED diode and a buzzer, signalling menu position and status of the device.

What you hear	What you see	What it means	What to do
4 x BEEP every 5s	4 x RED BLINK every 5s	Detected presence of carbon monoxide which can kill you!	1. Open the windows 2. Move to fresh air! 3. Contact emergency services
1 x BEEP	1 x YELLOW BLINK every 30s	Low battery level	Replace the battery
1 x BEEP every 30s	–	Sensor error (does not detect carbon monoxide)	Reset the device, replace if no effect
2 x BEEP	2 x CYAN BLINK every 30s	End of lifespan	Reset the device, replace if no effect
3 x BEEP every 30s	1 x BLUE BLINK every 30s	Heat alarm	Be cautious of fire
1 x BEEP	1 x WHITE BLINK	Tamper alarm	Check the housing
–	1 x GREEN BLINK after button press	Device powered	–
1 x BEEP	1 x GREEN BLINK after powering	Added to Z-Wave	–
1 x BEEP	1 x RED BLINK after powering	Not added to Z-Wave	–
1 x BEEP	1 x MAGENTA BLINK every 10min	Out of range	Check the Z-Wave range
–	CYAN BLINKING	Firmware update	Wait for completion

Checking battery level:

FIBARO CO Sensor automatically warns about low battery with one yellow blink and a short beep, when battery level is low.

Replacing the battery:

1. Remove the device from the cover by turning it counter-clockwise.
2. Pull the paper strip to take out the battery.
3. Press and hold the button for at least one second.
4. Insert a new CR123A battery observing the polarities shown inside.
5. Attach the device to its cover by turning it clockwise and perform the test (as described in #5: Operating the device).

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: Click the button.

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	1	Lifeline - reports the device status and allows for assigning single device only (main controller by default).
2	5	CO Alarm - is assigned to the device status - devices in this group will be switched on/off when CO Alarm status changes.
3	5	CO Alarm - is assigned to the device status - devices in this group will receive notification when CO Alarm status changes. Useful for devices that can trigger alarms.
4	5	CO Level - is assigned to measured CO level - devices in this group will be switched on/off after exceeding the level of CO concentration specified in parameter 14.
5	5	Tamper Alarm - is assigned to the tamper - sends tamper alarm and cancellation frames to the associated devices.
6	5	CO Alarm BC - is assigned to the device status - devices in this group will be switched on/off when CO Alarm status changes. Provides backward compatibility with controllers not supporting Z-Wave+ protocol.
7	5	Tamper Alarm BC - is assigned to the tamper - sends tamper alarm and alarm cancellation frames to the associated devices. Provides backward compatibility with controllers not supporting Z-Wave+ protocol.

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 2: Z-Wave notifications

This parameter allows to set the actions which result in sending notifications to the Z-Wave network controller.

Size: 1 Byte, Default Value: 0

Setting	Description
0	both actions disabled
1	tampering (opened casing)
2	exceeding the temperature
3	both actions enabled

Parameter 3: LED diode indications

This parameter allows to set the actions which result in LED diode indications. This parameter does not apply to the most important actions, such as CO Alarm, Malfunction Alarm and Low Battery Alarm.

Setting	Description
0	all actions disabled
1	tampering (opened casing)
2	exceeding the temperature
3	lack of Z-Wave range

Parameter 4: Acoustic signals

This parameter allows to set the actions which result in acoustic signals. This parameter does not apply to the most important actions, such as CO Alarm, Malfunction Alarm and Low Battery Alarm.

NOTE: Parameter values may be combined, e.g. 1+2+4=7 means that all actions will be active.

Size: 1 Byte, Default Value: 0

Setting	Description
0	all actions disabled
1	tampering (opened casing)
2	exceeding the temperature
3	lack of Z-Wave range

Parameter 7: Associations in Z-Wave network security mode

Parameter defines how commands are sent in specified association groups: as secure or non-secure. Parameter is active only in Z-Wave network security mode. It does not apply to 1st "Lifeline" association group.

Parameter values may be combined, e.g. 1+2=3 means that 2nd & 3rd group are sent as secure.

Size: 1 Byte, Default Value: 63

Setting	Description
1	2nd group sent as secure
2	3rd group sent as secure
4	4th group sent as secure
8	5th group sent as secure
16	6th group sent as secure
32	7th group sent as secure

Parameter 10: Commands sent to 2nd association group (CO Alarm)

This parameter defines commands sent to devices associated in 2nd association group (CO Alarm). Values of specified commands may be set in parameters 11 and 12.

Size: 1 Byte, Default Value: 3

Setting	Description
1	BASIC ON
2	BASIC OFF
3	BASIC ON & BASIC OFF

Parameter 11: Value of BASIC ON command sent to 2nd association group

This parameter defines the value of BASIC ON command sent to devices in 2nd association group after the CO Alarm activation.

Size: 2 Byte, Default Value: 255

Setting	Description
0 - 99	Value
255	turn on

Parameter 12: Value of BASIC OFF command sent to 2nd association group

This parameter defines the value of BASIC OFF command sent to devices in 2nd association group after the CO Alarm cancellation.

Size: 2 Byte, Default Value: 0

Setting	Description
0 - 99	Value
255	turn on

Parameter 13: Commands sent to 4th association group (CO Level)

This parameter defines commands sent to devices associated in 4th association group (CO Level). Values of specified commands may be set in parameters 16

Setting	Description
1	BASIC ON
2	BASIC OFF
3	BASIC ON & BASIC OFF

Parameter 14: CO level required for sending BASIC ON command to 4th association group

This parameter defines the minimum level of CO concentration which exceeding will result in starting the timer set in parameter 15.

NOTE: Parameter 14 value must be at least 5 ppm higher than parameter 17 value.

Size: 2 Byte, Default Value: 40

Setting	Description
20 - 400	CO concentration level in ppm

Parameter 15: Time required for sending BASIC ON command to 4th association group

This parameter defines the time during which the level of CO concentration should remain above the value set in parameter 14 to send the BASIC ON command to 4th association group.

Size: 2 Byte, Default Value: 0

Setting	Description
0	immediate sending of BASIC ON command
1 - 2880	(30s - 24h, in 30s steps)

Parameter 16: Value of BASIC ON command sent to 4th association group

This parameter defines the value of BASIC ON command sent to devices in 4th association group after exceeding the CO level set in parameter 14 through the time set in parameter 15.

Size: 2 Byte, Default Value: 255

Setting	Description
0 - 99	Value
255	turn on

Parameter 17: CO Level required for sending BASIC OFF command to 4th association group

This parameter defines the maximum level of CO concentration below which falling will result in starting the timer set in parameter 18.

Parameter 17 value must be at least 5 ppm lower than parameter 14 value.

Size: 2 Byte, Default Value: 25

Setting	Description
10 - 400	CO concentration level in ppm

Parameter 18: Time required for sending BASIC OFF command to 4th association group

This parameter defines the time during which the level of CO concentration should remain below the value set in parameter 17 to send the BASIC OFF command to 4th association group.

Size: 2 Byte, Default Value: 0

Setting	Description
0	immediate sending of BASIC OFF command
1 - 2880	(30s - 24h, in 30s steps)

Parameter 19: Value of BASIC OFF command sent to 4th association group

This parameter defines the value of BASIC OFF command sent to devices in 4th association group after falling below the CO level set in parameter 17 through the time set in parameter 18.

Size: 2 Byte, Default Value: 0

Setting	Description
0 - 99	Value
255	turn on

Parameter 20: Temperature reporting time interval

Time interval (in seconds) between consecutive reports of temperature (done by built-in temperature sensor). Short time interval means more frequent communication, which results in shortened battery life.

Size: 2 Byte, Default Value: 0

Setting	Description
0	no periodical reports

Parameter 21: Temperature reporting hysteresis

This parameter defines a minimum change in temperature resulting in a report being sent to the main Z-Wave controller.
Size: 1 Byte, Default Value: 2

Setting	Description
1 - 20	(0.5°C - 10°C, each 0.5°C)

Parameter 22: Threshold of exceeding the temperature

This parameter defines the temperature level, which exceeding will result in sending actions set in parameters 2, 3 and 4.
Size: 1 Byte, Default Value: 55

Setting	Description
1 - 85	(1°C - 85°C, each 1°C)

Parameter 23: CO meter activation

This parameter activates reporting the value of CO concentration level to the main Z-Wave controller.
Size: 1 Byte, Default Value: 1

Setting	Description
0	disabled
1	enabled

Parameter 25: CO level reporting hysteresis

This parameter defines a minimum change in CO concentration level which results in sending a new value to the main Z-Wave controller.
Size: 1 Byte, Default Value: 2

Setting	Description
2 - 6	(10 ppm - 30 ppm, each 5 ppm)

Parameter 26: Threshold of CO meter activation

This parameter defines the CO concentration level, which exceeding will result in sending a new value to the main Z-Wave controller, according to parameter 25 settings. Adjusting the value allows to get the accurate data in case of danger and helps to save the battery in normal conditions.
Size: 2 Byte, Default Value: 30

Setting	Description
10 - 255	ppm

Technical Data

Dimensions	65x28 mm
Weight	41 gr
Hardware Platform	ZM5202
EAN	5902020528838
IP Class	IP 20
Battery Type	1 * CR123A
Device Type	CO Detector
Firmware Version	03.00
Z-Wave Version	04.26
Certification ID	ZC10-17055584
Z-Wave Product Id	0x010f.0x1201.0x1000
Frequency	Europe - 868,4 Mhz
Maximum transmission power	5 mW

Supported Command Classes

- Basic

- Sensor Multilevel
- Crc 16 Encap
- Association Grp Info
- Device Reset Locally
- Zwaveplus Info
- Configuration
- Alarm
- Manufacturer Specific
- Powerlevel
- Firmware Update Md
- Battery
- Wake Up
- Association
- Version
- Multi Channel Association
- Security
- Sensor Alarm

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 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.