FGCD-001 Fibaro Co Sensor User Manual

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FIBARO®

FGCD-001 Fibaro Co Sensor

Important safety information

Read this manual before attempting to install the device!
Failure to observe recommendations included in this manual may be dangerous or cause a violation of the law. The manufacturer, Fibar Group S.A. will not be held responsible for any loss or damage resulting from not following the instructions of operating manual.

General carbon monoxide information
Carbon monoxide (CO) is a colourless, odourless, and tasteless poison gas that can be fatal when inhaled. It is produced when liquid, solid, or gas fuel is burned.

Symptoms of carbon monoxide poisoning
The early symptoms of carbon monoxide poisoning can be confused with flu-like symptoms: headache, dizziness and nausea. Breathing carbon monoxide causes these symptoms even in healthy people. It can also cause sleepiness, vision problems (including blurred vision), ringing in the ears, aching arms and legs, irregular breathing, fatigue and confusion. At very high levels, it causes loss of consciousness and death. Some external factors, eg. exposure to high concentration of basic (non-acidic) gases, silicone vapors, hydrogen sulfide or sulfuric acid gas, organic vapors, contact with water, dust and oil mist, or dew condensation may affect the reliability of the device operation. This device may not protect from long-term exposure to low levels of carbon monoxide which can also lead to neurological symptoms. The device is not a substitute for appropriate ventilation and exhaust systems.

WARNING: apparatus may not prevent the chronic effects of carbon monoxide exposure. The apparatus will not fully safeguard individuals at special risk. This product is not a toy. Keep away from children and animals!

- Risk of malfunction as a result of tampering with the device.
- The device should be installed below the ceiling level.
- 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.
- Do not paint the device.
- The device should be cleaned with a slightly damp cloth or moistened tissue.
- Replace the device before date on the front or if sensor error is detected.

- Risk of explosion if battery is replaced by an in correct type. Dispose of used batteries according to the instructions.
- If there is any question as to the cause of an alarm, it should be assumed that the alarm is due to a dangerous level of carbon monoxide and the dwelling should be evacuated.

General information about the FIBARO System

FIBARO is a wireless smart home automation system, based on the Z-Wave protocol. All of available devices can be controlled through a computer (PC or Mac), smartphone or tablet. Z-Wave devices (non-battery powered) are not only receivers, but can also repeat the signal, increasing the Z-Wave network's range. It gives advantage over traditional wireless systems that require direct link between transmitter and receiver, as a result the construction of the building could affect network's range negatively. Every FIBARO network has its unique identification number (home ID). Multiple independent networks can exist in the building without interfering. Transmission security of FIBARO System is comparable to wired systems. Z-Wave technology is the leading solution in smart home automation. There is a wide range of Z-Wave devices that are mutually compatible, independently of manufacturer. Itgives the system the ability to evolve and expand over time. For more information visit: **www.fibaro.com**.

Description and features

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.

Main features of FIBARO CO Sensor:

- compatible with any Z-Wave or Z-Wave Plus Controller
- supports protected mode (Z-Wave network security mode) with AES-128 encryption
- wall-mounted
- battery-powered
- completely wireless
- alarm signalled with a built-in siren and LED diode
- built-in temperature sensor

NOTE
This device may be used with all devices certified with the Z-Wave Plus certificate and should be compatible with such devices pro-duced by other manufacturers.

NOTE
FIBARO CO Sensor is a Security Enabled Z-Wave Plus product and a Security Enabled Z-Wave Controller must be used in order to fully utilize the product.FIBARO CO Sensor is a fully compatible Z-Wave Plus device.

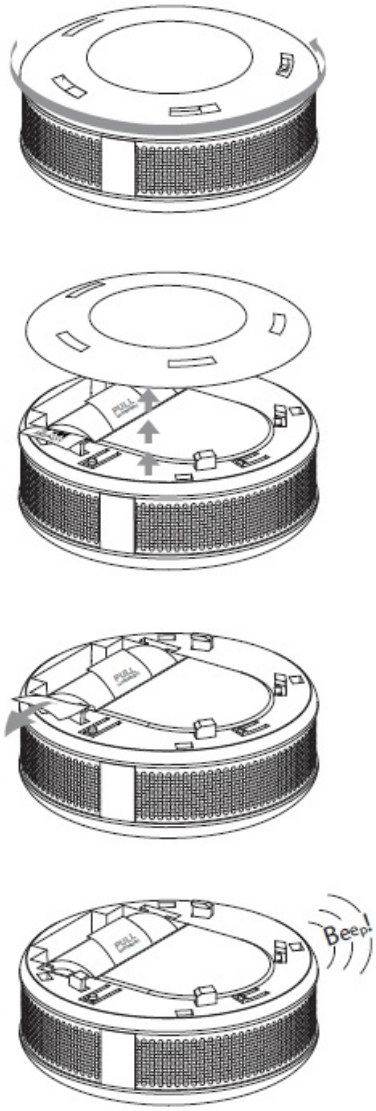
Basic activation

NOTE

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

- FIBARO CO Sensor may operate as a stand-alone carbon monoxide de-tector or may be used in cooperation with Z-Wave Controller (eg. FIBARO Home Center) as a part of smart home system.

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.
6. Mount the cover on a wall.
7. Attach the device to its cover.
8. Turn the device clockwise to close it.

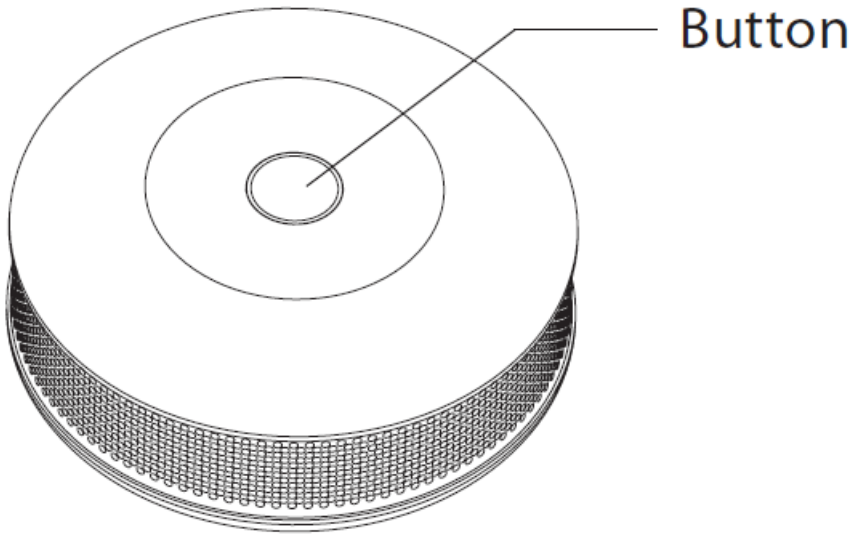
Adding/removing the device

Adding (Inclusion) – Z-Wave device learning mode, allowing to add the device to existing Z-Wave network.

To add the device:

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.

Removing (Exclusion) – Z-Wave device learning mode, allowing to remove the device from existing Z-Wave network.

To remove the device:

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.

NOTE
When powered, the device will indicate Z-Wave status with colour of LED:

- Green – the device is already added to the Z-Wave network.
- Red – the device is not added to any Z-Wave network.

NOTE

- In case the device is not added, please reset the device and repeat the adding procedure.
- When changing the Sensor's location, it's recommended to wake up the device and reconfigure the Z-Wave network by clicking the button.
- Removing the device from the Z-Wave network restores all the default parameters of the device.

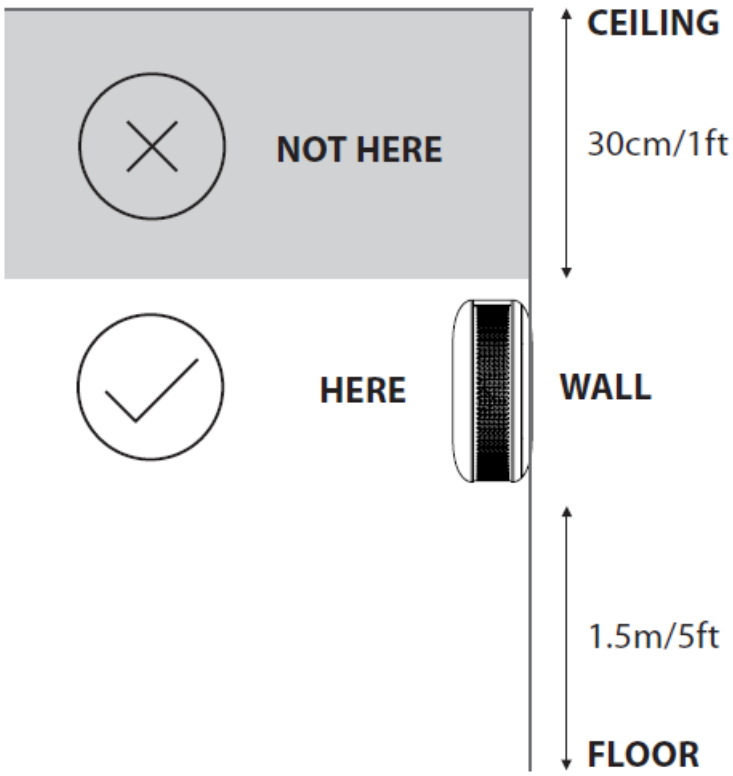
Physical installation

READ BEFORE INSTALLATION AND HEED ALL THE WARNINGS!

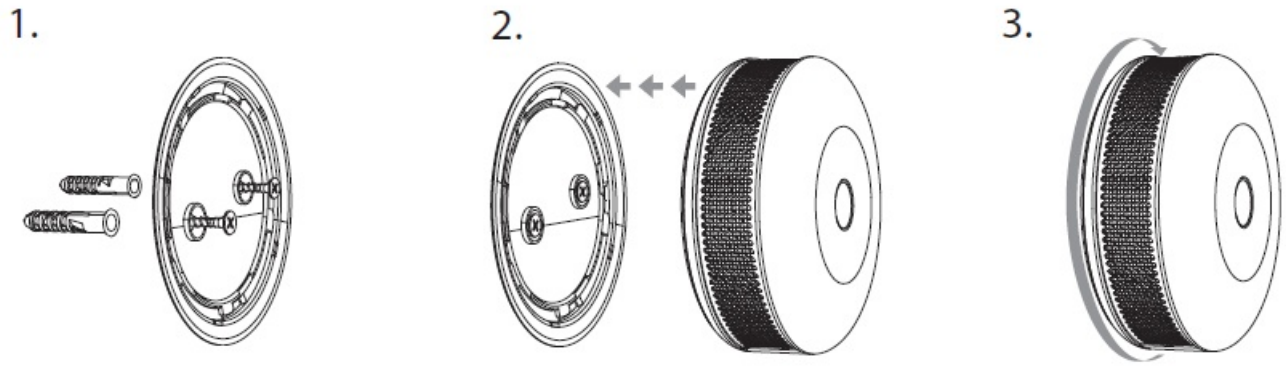
- The device should be installed below the ceiling level.

- 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 mois-tened tissue.

Place of installation



Installation on the wall:



1. Mount the cover on a wall.
2. Attach the device to its cover.
3. Turn the device clockwise to close it.

Operating the device

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 button to confirm selection.

Waking up the device:
The CO Sensor needs to be woken up to receive information about the new configuration from the Z-Wave controller, like parameters and associations. To wake up the sensor manually click the button located on the casing.

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.

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

Resetting the device to factory defaults:
Reset procedure allows to restore the device back to its factory set-tings, which means all information about the Z-Wave controller and user configuration will be deleted.

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

NOTE

- CO Sensor must be detached from the wall and battery level must be greater than 30% of its full capacity to perform the firmware update process.

CAUTION

- The alarm is very loud! Only the first alarm sequence is quieter.

NOTE

- Resetting the device is not the recommend-ed way of removing the device from the Z-Wave network. Use the reset procedure only if the primary controller is missing or inoperable. Certain device removal can be achieved

by the procedure of removing described in “Adding/removing the device” on page 7.

Visual indications & acoustic signals

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

Device status indications:

What you hea r	What you see	What it means	What to do
4 x BEEP **every 5s**	**4 x RED BLINK** **every 5s**	**Detected pres- ence of ca rbon monoxide which ca n 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 battery
2 x BEEP every 60s	2 x yELLOW BLINK every 60s	Sensor error, DOES NOT DETECT CAR BON MONOXIDE	Reset device, replace if no effect
3 x BEEP every 60s	3 x yELLOW BLINK every 60s	End of lifespan	Reset 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 housing
—	1 x GREEN BLINK every 60s	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	Out of range	Check Z-Wave
—	CyAN BLINKING	Firmware update	Wait for completion

NOTE

- Replace the device before date on the front or if sensor error is detected.

Battery

FIBARO CO Sensor can be powered with CR123A (included) battery. Estimated battery life with device on default settings is 3 years (test-ed with Panasonic Industrial Lithium).

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).

CAUTION

- Using batteries other than specified may result in explosion. Dispose of properly, observing environ-mental protection rules.
- Use only type of battery specified in this manual and keep proper polarity!

Associations

- **Association (linking devices**) – direct control of other devices with-in the Z-Wave system network e.g. Dimmer, Relay Switch, Roller Shut-ter or scene (may be controlled only through a Z-Wave controller).
  The device provides the association of six groups:
- **1st association group** – “Lifeline” reports the device status and allows for assigning single device only (main controller by default).
- **2nd association group** – “CO Alarm” is assigned to the device status – devices in this group will be switched on/off when CO Alarm status changes.
- **3rd association group** – “CO Alarm” is assigned to the device sta-tus – devices in this group will receive notification when CO Alarm status changes. Useful for devices that can trigger alarms.
- **4th association group** – “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.
- **5th association group** – “Tamper Alarm” is assigned to the tamper – sends tamper alarm and cancellation frames to the associated devices.
- **6th association group** – “CO Alarm BC” is assigned to the device status – devices in this group will receive sensor alarm frames when CO Alarm status changes. Provides backward compatibility with con-trollers not

supporting Z-Wave Plus protocol.

- **7th association group** – “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 Plus protocol. The CO Sensor in 2nd to 7th group allows to control 5 regular or multi-channel devices per an association group. “Lifeline” group is reserved solely for the controller and hence only 1 node can be assigned. It is not recommended to associate more than 10 devices in general, as the response time to control commands depends on the number of associated devices. In extreme cases, system response may be de-layed. To add an association (using the Home Center controller):

1. Go to Settings 
2. Go to Devices.
3. Select the appropriate device from the list.
4. Select the Associations tab.
5. Define to which group and which devices to associate.
6. Save the changes.
7. Press the button to wake up the device or wait until the auto-awa-ken time has elapsed.

NOTE

- Association ensures direct transfer of control commands between devices, is performed without participation of the main controller and requires associated device to be in the direct range.
- 2nd and 4th associa-tion groups use BASIC CC, but the device does not repond to GET commands.

Notification report:
The device uses Notification Command Class to report different events to 1st association group (Lifeline).

Notification Type	Triggering Event
CO Alarm	1. Carbon monoxide detected, unknown location 2. Carbon monoxide test 3. Replacement required
Heat Alarm	Overheat detected, unknown location
Home Security	Tampering, product covering removed
Power Management	Replace battery soon
System	System hardware failure

Advanced parameters

The CO Sensor allows to customize its operation to user’s needs. The settings are available in the FIBARO interface as simple options that may be chosen by selecting the appropriate box. In order to configure the CO

Sensor (using the Home Center controller):

1. Go to Settings
2. Go to Devices.
3. Select the appropriate device from the list.
4. Select the Parameters tab.
5. Change values of selected parameters.
6. Save your changes.
7. Press the button to wake up the device or wait until the auto-awa-ken time has elapsed.

Wake up interval

- **Available settings:** 0 or 3600-43200 (in seconds, 1h – 12h)
- **Default setting:** 21 600 (every 6 hours) The CO Sensor will wake up at each defined time interval and always try to connect with the main controller. After successful communication attempt, the device will update configuration parameters, associations, settings and then will go into Z-Wave communication standby. After failed communication attempt (eg. no Z-Wave range) the device will go into Z-Wave communication standby and retry to establish connection with the main controller after the next time interval. Setting wake up interval to 0 disables sending Wake Up notification to the controller automatically. Wake-up may be still performed manually using the button. Longer time interval means less frequent communication and thus longer battery life.

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

Available settings:	**0** – both actions disabled **1** – tampering (opened casing) **2** – exceeding the temperature **3** – both actio ns enabled		
Default setting:	**0**	Parameter size:	**1** [byte]

NOTE

- Entering invalid value of parameter will result in response with an Application Rejected frame and not setting the value.

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.

Available settings:	**0** – all actions disabled **1** – tampering (opened casing) **2** – exceeding the temperature **4** – lack of Z-Wave range		
Default setting:	**0**	Parameter size:	**1** [byte]

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.

Available settings:	**0** – all actions disabled **1** – tampering (opened casing) **2** – exceeding the temperature **4** – lack of Z-Wave range		
Default setting:	**0**	Parameter size:	**1** [byte]

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 net-work security mode. It does not apply to 1st “Lifeline” association group.

Available settings:	**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		
Default setting:	**63**	Parameter size:	**1** [byte]

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.

Available settings:	**1** – BASIC ON **2** – BASIC OFF **3** – BASIC ON & BASIC OFF		
Default setting:	**3** (ON & OFF)	Parameter size:	**1** [byte]

NOTE

- Parameter 3 values may be combined, e.g. 1+2+4=7 means that all actions will be active.
- Parameter 4 values may be combined, e.g. 1+2+4=7 means that all actions will be active.
- Parameter 7 values may be combined, e.g. 1+2=3 means that 2nd & 3rd group are sent as secure.

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

Available settings:	**0-99** or **255**		
Default setting:	**255** (turn on)	Parameter size:	**2** [bytes]

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.

Available settings:	**0-99** or **255**		
Default setting:	**0** (turn off)	Parameter size:	**2** [bytes]

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 and 19.

Available settings:	**1** – BASIC ON **2** – BASIC OFF **3** – BASIC ON & BASIC OFF		
Default setting:	**3** (ON & OFF)	Parameter size:	**1** [byte]

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.

Available settings:	**25-400** – CO concentration level in ppm		
Default setting:	**40** (40 ppm)	Parameter size:	**2** [bytes]

Time required for sending BASIC ON command to 4th associ-ation group
This parameter defines the time during which the level of CO con-centration should remain above the value set in parameter 14 to send the BASIC ON command to 4th association group.

Available settings:	**0** – immediate sending of BASIC ON command **1-2880** (30s – 24h, in 30s steps)		
Default setting:	**0**	Parameter size:	**2** [bytes]

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.

Available settings:	**0-99** or **255**		
Default setting:	**255** (turn on)	Parameter size:	**2** [bytes]

NOTE

- Setting parameters 11-12 to appropriate value will result in: 0 – turning associated devices off 1-99 – forcing level of associated devices 255 – setting associated devices to the last remembered state or turning them on
- Parameter 14 value must be at least 4 ppm higher than parameter 17 value.
- Setting parameter 16 to appropriate value will result in: 0 – turning associated devices off 1-99 – forcing level of associated devices 255 – setting associated devices to the last remembered state or turning them on.
- Parameter 17 value must be at least 4 ppm lower than parameter 14 value.

CO Level required for sending BASIC OFF command to 4th association group
This parameter defines the level of CO concentration below which falling will result in sending the BASIC OFF command to 4th association group.

Available settings:	**10-400** – CO concentration level in ppm		
Default setting:	**25** (25 ppm)	Parameter size:	**2** [bytes]

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.

Available settings:	**0-99** or **255**		
Default setting:	**0** (turn off)	Parameter size:	**2** [bytes]

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

Available settings:	**0** – no periodical reports **10-1440** (5min – 12h, in 30s steps)		
Default setting:	**0**	Parameter size:	**2** [bytes]

Temperature reporting hysteresis
This parameter defines a minimum change in temperature resulting in a report being sent to the main Z-Wave controller.

Available settings:	**1-20** (0.5°C – 10°C, each 0.5°C)		
Default setting:	**2 (**1°C)	Parameter size:	**1** [byte]

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.

Available settings:	**1-85** (1°C – 85°C, each 1°C)		
Default setting:	**55** (55°C)	Parameter size:	**1** [byte]

CO meter activation
This parameter activates reporting the value of CO concentration level to the main Z-Wave controller.

Available settings:	**0** – disabled **1** – enabled		
Default setting:	**1** (enabled)	Parameter size:	**1** [byte]

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.

Available settings:	**2-6** (10 ppm – 30 ppm, each 5 ppm)		
Default setting:	**2** (10 ppm)	Parameter size:	**1** [byte]

NOTE

- Setting parameter 19 to appropriate value will result in: 0 – turning associated devices off 1-99 – forcing level of associated devices 255 – setting associat-ed devices to the last remembered state or turning them on.
- Values received by the controller may be used for graphs of CO concentration level.
- Parameter 25 is close-ly related to parame-ter 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.

Available settings:	**10-255** (ppm)		
Default setting:	**30** (30 ppm)	Parameter size:	**2** [bytes]

Specifications

Power supply: Battery life:	CR123A 3.0V battery (included) 3 years on default settings
Lifespan under typical conditions:	(tested with Panasonic Industrial Lithium) 8 years
CO concentration measurement range:	0 – 450 ppm
Measuring accuracy:	±10ppm / ±5%
Alarm response times on default settings:	50ppm 60-90min 100ppm 10-40min 300ppm <1.5min
Alarm siren sound level: Operating temperature: Operating humidity:	85 dBA at 3 meters (10 feet) 0 – 50°C 10-95%RH without condensation
Conformity with Eu requirements:	RED 2014/53/Eu RoHS 2011/65/Eu, 2015/863. EN 50291-1:2018
Radio protocol: Radio frequency:	Z-Wave (500 series chip) 868.0–868.6 MHz (Eu) 869.7–870.0 MHz (Eu) 915.0–928.0 MHz (ANZ, BR)
Range:	up to 50m outdoors up to 40m indoors (depending on terrain and building structure)
Dimensions (d x h): Type of apparatus:	65 x 28 mm Type B

CAUTION

- Using batteries other than specified may result in explosion. Dispose of properly, observing environmental protection rules.

NOTE

- Replace the device before date on the front or if sensor error is detected.
- Radio frequency of individual device must be same as your Z-Wave controller. Check the information on the box or consult your dealer if you arenot sure.

Regulations

Warning
This product is not a toy. Keep away from children and animals!

Information according REACH
The included Panasonic CR123A battery contains 1,2-Dimethoxyethane substance. Normal use of the device does not expose the user to a given substance.

Declaration of conformity
Hereby, Fibar Group S.A. declares that the device is in compliance with Directives 2014/53/EU and 2011/65/EU, 2015/863. The full text of the EU declaration of conformity is available at the following internet ad-dress: www.manuals.fibaro.com

WEEE Directive Compliance
Device labelled with this symbol should not be disposed of with other household wastes. It shall be handed over to the applicable collec-tion point for the recycling of waste electrical and electronic equip-ment.

Documents / Resources

	FIBARO FGCD-001 Fibaro Co Sensor [pdf] User Manual FGCD-001 Fibaro Co Sensor, FGCD-001, Fibaro Co Sensor, Co Sensor

References

- Home Automation - Smart Home | FIBARO
- FIBARO Manuals | Smart home automation devices