FIB_FGMS-001 Motion Sensor, Temperature Sensor, Light Sensor, Accelerometer

Firmware Version : 2.4

Quick Start

S This device is a Z-Wave Sensor. Inclusion, Exclusion and Wake Up are confirmed by triple clicking the B-Button inside the case.

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

Product description

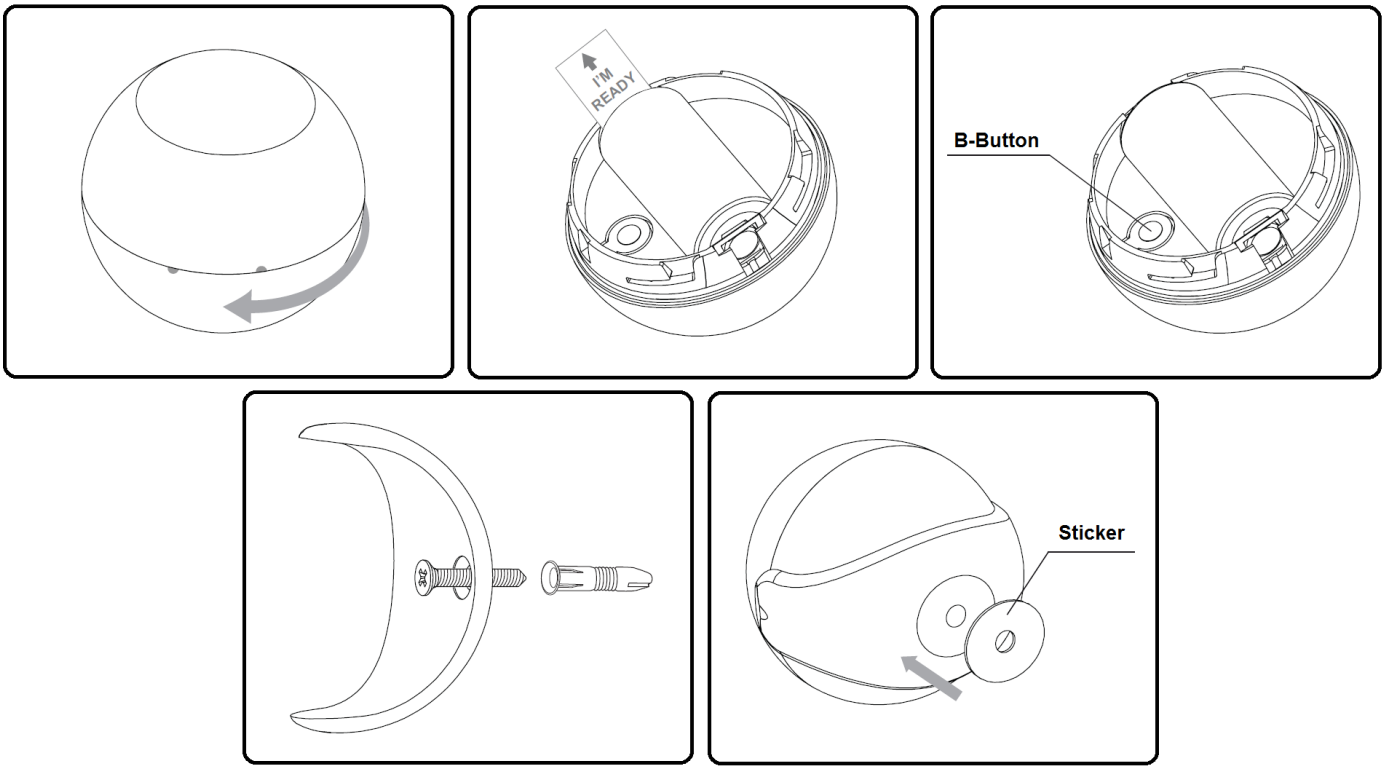
The Fibaro Motion Sensor is a universal Z-Wave multi-sensor. Along with detecting motion the device measures the temperature and light intensity. The sensor has a built-in accelerometer to detect any tampering of the device. The Fibaro Motion Sensor is battery powered device and designed to be installed qickly and easily on any surface. The LED indicator signals motion, temperature level, operating mode and can be used to see if device is within the Z-Wave network. The motion sensor can be used for lighting scenes and security monitoring systems.

Installation Guidelines

INSTALLATION POSITION

Fibaro Motion Sensor has to be installed in a corner of the room or perpendicularly to the doors. Actual range of the sensor can be influenced by environment conditions. Should false motion alarms be reported, check for any moving objects within the sensor's detection area, such as trees blowing in the wind, cars passing by, windmills. False motion alarms may be caused by moving masses of air and heat as well. If the

device keeps on reporting false alarms, despite eliminating all of the above-mentioned factors, install the device in another place.



SENSOR INSTALLATION

Open the casing by turning the two parts in opposite directions.
Insert the battery or remove the battery insulator.
Set the main controller into the learning mode.
Quickly, triple click the B-button - LED diode will glow blue.
Install the sensor's holder in desired location.
Reassemble the device (follow the markings).
Insert the Motion Sensor in its holder.

Note: Fibaro Motion Sensor cannot be pointed at any source of heat (e.g.radiators, fireplaces, cookers, etc.) or at any source of light (direct sunlight, lamps). It's not recommended to install the motion sensor in places prone to drafts. Sensor can be mounted using screw or the sticker.

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.

Make sure that your Z-Wave Controller is in the Inclusion-/Exclusion-Mode. Tripple click the Z-Wave button inside the case to confirm the process.

Operating the device

Fibaro Flood Sensor has four sensors built in - Motion Sensor, Temperature Sensor, Light Sensor and Accelerometer.

It is compatible with any Z-Wave controller. The sensors detect motion using a passive IR sensor, measures the temperature and measures the light intensity. It is easy to install on a wall or any surface. It is protected against tampering and theft - once vibrations are detected, the notification is sent to the main controller. The alarms of movement and temperature are signaled by blinking of LED diode. The accelerometer has also a simple earthquake detector mode.

By using association with Fibaro's devices the Fibaro Motion Sensor may control another Z-Wave network device, e.g. a Dimmer, Relay Switch, Roller Shutter, RGBW Controller, Wall Plug, or a scene. Fibaro Motion Sensor allows for the association of three groups. The Fibaro Motion Sensor allows for controlling 5 regular and 5 multichannel devices per an association group, out of which 1 field is reserved for the Z-Wave network main controller.

EARTHQUAKE DETECTOR MODE

Fibaro Motion Sensor can be configured to work as a simple earthquake detector, by setting the Parameter 24 value to 4. Reports with scale of the vibrations (dimensionless) will be sent at the time intervals specified in Parameter 22. First report will be sent immediately after vibrations have been detected. The minimum value of the vibrations, resulting in report being sent, can be defined in Parameter 20. Once the vibrations cease, reports will stop being sent.

Z-Wave Range Test

Fibaro Multi Sensor has a built in Z-Wave network range test for the main controller. Follow the instruction to test the main controller's range:

Press and hold the B-button for 2 to 4 seconds until the LED glows violet.
Release the B-button.
Press the B-button again, briefly.
LED will indicate the Z-Wave network's range (range signaling modes described below).
To exit Z-Wave range test, press the B-button breifly.

Z-Wave Range Tester signaling modes:

LED Indicator pulsing green - Fibaro Motion Sensor attempts to extablish a direct communication with the main controller. If a direct communication attempt fails, sensor will try to establish a routed communication, through other modules, which will be signaled by LED indicator pulsing yellow.

LED Indicator glowing green - Fibaro Motion Sensor communicates with the main controller directly.

LED Indicator pulsing yellow - Fibaro Motion Sensor tries to establish a routed communication with the main controller through other modules (repeaters).

LED Indicator glowing yellow - Fibaro Motion Sensor communicates with the main controller through the other modules. After 2 seconds the sensor will retry to establish a direct communication with the main controller, which will be signaled with LED blinking in green.

LED Indicator pulsing violet - Fibaro Motion Sensor does communicate at the maximum distance of the Z-Wave network. If connection proves successful it will be confirmed with a yellow glow. It's not recommended to use the sensor at the range limit.

LED Indicator glowing red - Fibaro Motion Sensor is not able to connect to the main controller directly or through another Z-Wave network device (repeater).

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.

Tripple click on the B-button inside the case will wake up the device.

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.

Tripple click on the B-button inside the case or a detection by one of the sensors will send a Node Information Frame.

LED Control

The Fibaro Motion Sensor is equipped with a LED diode for indicating sensor's operating modes and alarms. In addition the LED indicator may inform of the Z-Wave network range and the current temperature.

LED indicator signaling modes:

Motion Alarm's colour will vary depending on the temperature. The colour and the signaling mode can be set in parameter 80.
Tamper alarm is signaled with an alternating blinking in red - blue - white.
The Z-Wave Node Info command frame is signaled with glowing in blue. Node Info command frame is sent each time the device wakes up.

To enter MENU press and hold the B-button for 3 seconds. MENU levels will be signaled with the LED colours:

VIOLET - Z-Wave network range tester.

YELLOW - sensor reset.

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	is assigned to the device status - sending, the BASIC SET control frame to the associated devices having detected motion. (max. nodes in group: 5)
2	is assigned to the tamper alarm. Alarm frame will be sent to the associated devices once tampering is detected. (max. nodes in group: 5)
3	reports the device status and allows for assigning a single device only (the main controller by default - the device reports its status to the main controller). It’s not recommended to modify this association group. (max. nodes in group: 1)

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.

MOTION SENSOR'S SENSITIVITY (Parameter Number 1, Parameter Size 1) The lower the value, the more sensitive the PIR sensor.

Value	Description
137 — 127	

MOTION SENSOR'S BLIND TIME (INSENSITIVITY) (Parameter Number 2, Parameter Size 1) Period of time through which the PIR sensor is "blind" (insensitive) to motion. After this time period the PIR sensor will be again able to detect motion.

Value	Description
0 — 15	default 15 (= 8sec); The time of insensitivity should be shorter that the time period set in parameter 6. (Default 15)

PIR sensor's "PULSE COUNTER" (Parameter Number 3, Parameter Size 1) Sets the number of moves required for the PIR sensor to report motion. The lower the value, the less sensitive the PIR sensor. It's not recommended to modify this parameter settings.

Value	Description
0 — 3	default 1 (= 2 pulses) (Default 1)

PIR sensor's "WINDOW TIME" (Parameter Number 4, Parameter Size 1) Period of time during which the number of moves set in parameter 3 must be detected in order for the PIR sensor to report motion. The higher the value, the more sensitive the PIR sensor. It's not recommended to modify this parameter setting.

Value	Description
0 — 3	default 2 (= 12sec) (Default 2)

MOTION ALARM CANCELLATION DELAY (Parameter Number 6, Parameter Size 2) Period of time, after the motion alarm will be cancelled in the main controller and the associated devices. Any motion detected during the cancellation delay time countdown will result in the countdown being restarted. In case of small values, below 10 seconds, the value of parameter 2 must be modified (PIR sensor's "Blind Time").

Value	Description
32769 — 32767	default 30 (=30sec)

PIR SENSOR OPERATING MODE (Parameter Number 8, Parameter Size 1) determines the part of day in which the PIR sensor will be active. parameter influences only the motion reports and associations. Tamper, light intensity and temperature measurements will not be influenced.

Value	Description
0	PIR sensor always active (Default)
1	PIR sensor active during the day only
2	PIR sensor active during the night only

NIGHT / DAY (light intensity) (Parameter Number 9, Parameter Size 2) parameter defines the difference between night and day, in terms of light intensity, used in parameter 8.

Value	Description
32769 — 32767	default 200 (200 lux)

BASIC COMMAND CLASS FRAMES CONFIGURATION (Parameter Number 12, Parameter Size 1) parameter determines the command frames sent in 1-st association group, assigned to PIR sensor.

Value	Description
0	BASIC ON and BASIC OFF command frames sent in Basic Command Class. (Default)
1	only the BASIC ON command frame sent in Basic Command Class.

BASIC ON command frame value (Parameter Number 14, Parameter Size 1) value of 255 allows to turn ON a device. In case of the Dimmer, the value of 255 means turning ON at the last memorized state.

Value	Description
255	ON (Default)
0	OFF
1 — 99	%

BASIC OFF command frame value (Parameter Number 16, Parameter Size 1) command frame sent at the moment of motion alarm cancellation, after the cancellation delay time, specified in parameter 6, has passed.

Value	Description
255	ON
0	OFF (Default)
1 — 99	%

TAMPER SENSITIVITY (Parameter Number 20, Parameter Size 1) parameter determines the chages in forces acting on the Motion Sensor resulting in tamper alarm beig reported - g-force acceleration.

Value	Description
0 — 122	default 15 (= 0.224g) (Default 15)

TAMPER ALARM CANCELLATION DELAY (Parameter Number 22, Parameter Size 2) Time period after which a tamper alarm will be cacelled. Another tampering detected durig the countdown will NOT extend the delay.

Value	Description
32769 — 32767	default 30sec

TAMPER OPERATING MODES (Parameter Number 24, Parameter Size 1) parameter determines the behaviour of tamper and how it reports.

Value	Description
0	Tamper alarm is reported in Sensor Alarm command class / Cancellation is not reported. (Default)
1	Tamper alarm is reported in Sensor Alarm command class / Cancellation is reported in Sensor Alarm commad class after the time period set in parameter 22 (Tamper Alarm Cancellation Delay)
2	Tamper alarm is reported in Sensor Alarm command class / Cancellation is not reported. Sensor’s orientation in space is reported in Fibar Commad Class after the time period set in paramer 22.
3	Tamper alarm is reported in Sensor Alarm command class / Cancellation is reported in Sensor Alarm commad class after the time period set in parameter 22. Sensor’s orientation in space is reported in Fibar Commad Class after the time period set in paramer 22.
4	The maximum level of vibrations recorded in the time period set in parameter 22 is reported. Reports stop being sent when the vibrations cease. The reports are sent in Sensor Alarm command class. Value displayed in the “value” field (0 - 100) depends on the vibrations force. Reports to the association groups are sent using Sensor Alarm command class.

TAMPER ALARM BROADCAST MODE (Parameter Number 26, Parameter Size 1) parameter determines whether the tamper alarm frame will or will not be sent in broadcast mode. Alarm frames sent in broadcast mode may be received by all of the devices within communication range.

Value	Description
0	Tamper alarm is not sent in broadcast mode. (Default)
1	Tamper alarm sent in broadcast mode.

ILLUMINATION REPORT THRESHOLD (Parameter Number 40, Parameter Size 2) parameter determines the change in light intensity level resulting in illumination report being sent to the main controller.

Value	Description
32769 — 32767	values 1 - 65535 lux; 0 = reports are not sent; default 200 lux

ILLUMINATION REPORTS INTERVAL (Parameter Number 42, Parameter Size 2) Time interval between consecutive illumination reports.

Value	Description
32769 — 32767	value 1 - 65535; 0 = no reports are sent

TEMPERATURE REPORT THRESHOLD (Parameter Number 60, Parameter Size 1) parameter determines the change in level of temperature resulting in temperature report.

Value	Description
129 — 127	(0.1 - 25.5°C; 0 = reports are not sent)

INTERVAL OF TEMPERATURE MEASURING (Parameter Number 62, Parameter Size 2) parameter determines how often the temperature will be measured.

Value	Description
32769 — 32767	1 - 65535 seconds; 0 = temperature will not be measured

TEMPERATURE REPORTS INTERVAL (Parameter Number 64, Parameter Size 2) parameter determines how often the temperature reports will be sent.

Value	Description
32769 — 32767	1 - 65535 sec; 0 = reports are not sent

TEMPERATURE OFFSET (Parameter Number 66, Parameter Size 2) value to be added to the actual temperature, measured by the sensor (temperature compensation).

Value	Description
32769 — 32767	0 - 100 (0 to 100°C); or 64536 - 65535 (-100 to -0.10°C)

LED SIGNALING MODE (Parameter Number 80, Parameter Size 1) parameter determines the way in which LED diode behaves after motion has been detected

Value	Description
0	LED inactive.
1	LED colour depends on the temperature. Set by parameters 86 and 87.
2	Flashlight mode - LED glows in white for 10 seconds.
3	White.
4	Red
5	Green
6	Blue
7	Yellow
8	Cyan
9	Magenta
10	LED colour depends on the temperature. Set by parameters 86 and 87. (Default)
11	Flashlight mode - LED glows in white through 10 seconds.
12	White
13	Red
14	Green
15	Blue
16	Yellow
17	Cyan
18	Magenta
19	LED colour depends on the temperature. Set by parameters 86 and 87.
20	White
21	Red
22	Green
23	Blue
24	Yellow
25	Cyan
26	Magenta

LED BRIGHTNESS (Parameter Number 81, Parameter Size 1) parameter determines the brightness of LED when indicating motion.

Value	Description
0 — 100	1 - 100%; 0 = brightness determined by the ambient lighting - see parameters 82 and 83 (Default 50)

LOW AMBIENT ILLUMINATION LEVEL (Parameter Number 82, Parameter Size 2) ambient illumination level below which LED brightness is set to 1%. parameter is relevant only when the parameter 81 is set to 0.

Value	Description
0 — 32767	0 to value of parameter 83 (Default 100)

upper AMBIENT ILLUMINATION LEVEL (Parameter Number 83, Parameter Size 2) ambient illumination level above which LED brightness is set to 100%. parameter is relevant only when the parameter 81 is set to 0.

Value	Description
0 — 32767	value of parameter 82 to 65535 (Default 1000)

MINIMUM TEMPERATURE for Blue Light (Parameter Number 86, Parameter Size 1) Minimum temperatur resulting in blue LED illumination. parameter is relevant only when parameter 80 has been properly configured.

Value	Description
0 — 100	0 to value of parameter 87 (Default 18)

MAXIMUM TEMPERATURE for Red Light (Parameter Number 87, Parameter Size 1) Maximum temperatur resulting in red LED illumination. parameter is relevant only when parameter 80 has been properly configured.

Value	Description
0 — 127	value of parameter 86 to 255 (Default 28)

LED INDICATING TAMPER ALARM (Parameter Number 89, Parameter Size 1) Indicating mode resembles a police car (white, red and blue).

Value	Description
0	LED does not indicate tamper alarm.
1	LED indicates tamper alarm. (Default)

Technical Data

IP Rating	
Battery Type	1 * CR2
Explorer Frame Support	Yes
SDK	4.55.00
Device Type	Slave with routing capabilities
Generic Device Class	Binary Sensor
Specific Device Class	Routing Binary Sensor
Routing	No
FLiRS	No
Firmware Version	2.4