OPERATING MANUAL

ENG

FIBARO DOOR/WINDOW SENSOR
FGK-10x

CONTENTS

v1.0

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 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. Devices 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. It gives the system the ability to evolve and expand over time. For more information visit: www.fibaro.com.

#1: Description and features

FIBARO Door/Window Sensor is a wireless, battery powered reed sensor compatible with the Z-Wave standard. Changing the device's status will automatically send signal to the Z-Wave controller and associated devices.

Sensor can be used to trigger scenes and everywhere there is a need for information about opening or closing of doors, windows, garage doors, etc. Opening is detected by separating the sensor's body and the magnet.

In addition the FIBARO Door/Window Sensor supports one DS18B20 temperature sensor and has one potential free input.

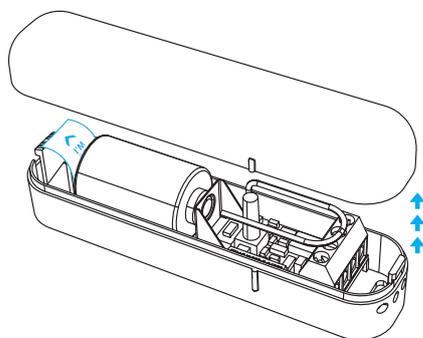**Main features of FIBARO Door/Window Sensor:**

- Compatible with any Z-Wave or Z-Wave+ Controller
- Supports protected mode (Z-Wave network security mode) with AES-128 encryption
- Door/window opening detected through separation of Sensor's body and a magnet
- Easily mounted on doors, windows, garage gates and roller blinds
- Battery powered
- Visual LED indicator signalling status of the device
- Compatible with the DS18B20 temperature sensor
- Potential-free input allowing to connect a button or binary sensor

FIBARO Door/Window Sensor is a fully compatible Z-Wave PLUS device.

| i | **NOTE**

This device may be used with all devices certified with Z-Wave certificate and should be compatible with such devices produced by other manufacturers.

| i | **NOTE**

FIBARO Door/Window 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.

#2: Basic activation

1. Open the cover

2. Remove the battery blocker

3. Close the cover

4. Add the device (see "Adding/removing the device" on page 6)
4. Install the device (see "Physical installation" on page 9)

> ℹ **NOTE**
>
> The antenna should be placed above the battery. Never cut, shorten or bend the antenna. Its length is suited to the band at which the system operates.

> ℹ **NOTE**
>
> Metal surfaces in close vicinity (e.g. metal switch boxes, metal door trims) may impair the reception capability.

#3: Adding/removing the device

i | **NOTE**

Adding in security mode must be performed up to 2 meters from the controller.

i | **NOTE**

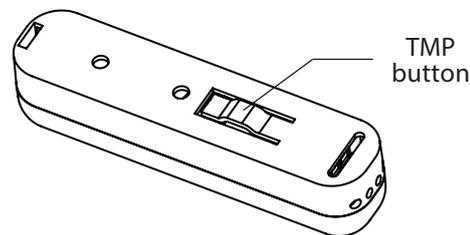In case the Sensor is not added, please reset the Sensor and repeat the adding procedure.

i | **NOTE**

Removing the device from the Z-Wave network restores all the default parameters of the device (except for parameter 20).

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

To add the device to the Z-Wave network:

1. Close the cover
2. Place the Door/Window Sensor within the direct range of your Z-Wave controller
3. Set the main controller into (security/non-security) add mode (see the controller's manual)
4. Quickly, three times press the TMP button

TMP button

5. Wait for the adding process to end
6. 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 from the Z-Wave network:

1. Close the cover
2. Place the Door/Window Sensor within the direct range of your Z-Wave controller
3. Set the main controller into remove mode (see the controller's manual)
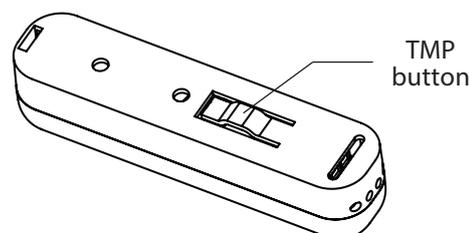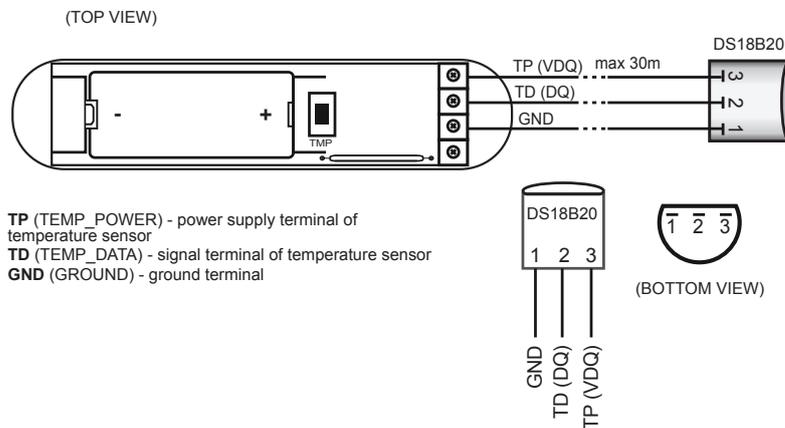4. Quickly, three times press the TMP button

TMP button

5. Wait for the removing process to end
6. Successful removing will be confirmed by the Z-Wave controller's message

#4: Temperature sensor

The DS18B20 temperature sensor may be installed anywhere where temperature readouts are necessary. If adequately protected, the DS18B20 sensor may be installed in humid conditions, under water, sealed in concrete or placed under the floor.

To activate the device with temperature measurement functionality:

1. Open the cover

2. Connect the temperature sensor to terminals of the device according to the diagram:

(TOP VIEW)

TP (VDQ)   max 30m
TD (DQ)
GND

DS18B20

TP (TEMP_POWER) - power supply terminal of temperature sensor
TD (TEMP_DATA) - signal terminal of temperature sensor
GND (GROUND) - ground terminal

DS18B20

1 2 3

(BOTTOM VIEW)

GND
TD (DQ)
TP (VDQ)

3. Add the device (see "Adding/removing the device" on page 6)

4. Install the device (see "Physical installation" on page 9)

⚠ **CAUTION**

Connected the device in accordance with the wiring diagram. Incorrect wiring may be dangerous or result in the device break-down.

⚠ **CAUTION**

Connecting devices and sensors other than DS18B20 is not allowed.

ℹ **NOTE**

Connecting/disconnecting the temperature sensor to/from previously added Door/Window Sensor, requires removing and re-adding the device to the Z-Wave network.

#5: Button or external sensor

Door/Window Sensor is equipped with a potential-free input. It allows to change device state using the external button or sensor through GND signal.

If the Door/Window Sensor will be used only as a binary sensor, do not install the magnet.

To activate the device as a binary sensor:

1. Open the cover

2. Connect the button or external sensor to terminals of the device according to diagram:

(TOP VIEW)

GND (GROUND) - ground terminal
IN - potential-free input

MOMENTARY SWITCH

3. Add the device (see "Adding/removing the device" on page 6) if the device is not already added

4. In case of connecting external sensor modify advanced parameter no. 20 to match type of the sensor, then remove and re-add the device to the network

5. Install the device (see "Physical installation" on page 9)

#6: Physical installation

To install the Door/Window Sensor:

1. Stick the included self-adhesive pads to the bottom of the device and magnet

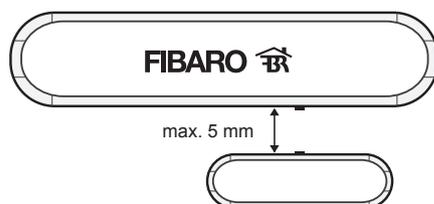2. Peel off the protective layer of the sticker

3. Stick the device onto the door/window frame

4. Stick the magnet onto the moving part of the door/window, no further than 5mm from the sensor

Positioning of the Sensor and the magnet:

Correct postioning of the magnet in relation to the Sensor:

#7: Operating the device

Tamper (TMP) button:

FIBARO Door/Window Sensor is equipped with a tamper switch with two buttons.

First TMP button is located inside the device, pressed by the closed cover. Second TMP button is located at bottom of the device, pressed by the surface on which the device is mounted.

For the tamper switch to work one of the buttons must always be pressed!

When one of the buttons is released, the tamper alarm will be send to the controller and associated devices.

Additionally, tamper button allows to control the device directly.

Controlling the Door/Window Sensor with FIBARO Home Center controller:

After adding the Sensor to the FIBARO System, it will be represented by one or two icons in Home Center interface.

Sensor without connected DS18B20 sensor or used with a button connected to IN input (without magnet), will be represented by a single icon.

In case of connecting DS18B20 temperature sensor, the additional temperature sensor icon will be displayed.

Waking up the Door/Window Sensor:

FIBARO Door/Window Sensor needs to be woken up to receive information about the new configuration from the controller, like parameters and associations.

To wake up the sensor manually, click one of the TMP buttons (while the other button is pressed).

Resetting the Door/Window Sensor:

Reset procedure deletes EEPROM's memory, including all information on the Z-Wave network and the main controller.

1. Open the cover
2. Remove the battery
3. Install the battery while holding both TMP buttons
4. Release the TMP button within 5 seconds
5. Visual indicator will blink 3 times to confirm launching of reset procedure
6. Wait around 30s for the resetting process to end, do not remove the battery
7. Visual LED indicator will blink 6 times to confirm the reset

Replacing the battery:

Life of the battery included with the device is from 12 to 24 months (on default settings).

In FIBARO Home Center controller current battery level is displayed in the interface. If a battery icon turns red, it means the battery needs replacement.

Visual indications:

FIBARO Door/Window Sensor is equipped with a LED diode, signalling sensor's operating modes and alarms. In addition the visual indicator may inform of the Z-Wave network range.

| i | **NOTE** |

Opening the casing may result in triggering an alarm. To avoid it, remove the associations for the 5th group.

| i | **NOTE** |

Resetting the device is not the recommended way of removing the device from the Z-Wave network. Use 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 6.

| ⚠ | **CAUTION** |

There is a risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Dispose of used batteries according to the environmental laws in your country..

#8: Association

NOTE

Association allows direct transfer of control commands between devices, is performed without participation of the main controller and requires associated device to be in direct range.

Association (linking devices) - direct control of other devices within the Z-Wave system network e.g. Dimmer, Relay Switch, Roller Shutter or scene (may be controlled only through a Z-Wave controller).

FIBARO Door/Window provides the association of five groups:

1st Association Group – "Lifeline" reports the device status and allows to assign single device only (the main controller by default - the device reports its status to the main controller).

2nd Association Group – "Control" is assigned to the device status (reed sensor and IN input) - sending BASIC SET control frames to the associated devices.

3rd Association Group – "Alarm" is assigned to the device status - sending alarm frames to the associated devices. Its value may be modified via advanced parameters.

4th Association Group – "Sensor ZW3" is assigned to the device status (reed sensor and IN input) - sending BASIC SET control frames to the associated devices. This group provides backward compatibility with controllers not supporting Z-Wave+.

5th Association Group – "Tamper ZW3" is assigned to the TMP switch - sending alarm frames to the associated devices in case a TMP button is released. This group provides backward compatibility with controllers not supporting Z-Wave+.

FIBARO Door/Window Sensor in 2nd to 5th group allows to control 5 regular and 5 multichannel devices per an association group, with the exception of "LifeLine" that 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 delayed.

To add an association (using the Home Center controller):

1. Go to device options by clicking the icon:

2. Select the „Advanced" tab

3. Specify to which group and what devices are to be associated

4. Wait for the configuration process to end. Sending relevant information to devices added to associated groups may take even a few minutes

5. Wake up the device manually to speed up the configuration process

#9: Advanced parameters

FIBARO Door/Window Sensor allows to customize its operation to user's needs. Settings are available in the FIBARO interface as simple options that may be chosen by selecting the appropriate box.

In order to configure FIBARO Door/Window Sensor (using the Home Center controller):

1. Go to the device options by clicking the icon:

2. Select the „Advanced" tab

Wake up interval

Available settings: **0** or **3600-64800** (in seconds, 1h - 18h)

Default setting: **21 600** (every 6 hours)

FIBARO Door/Window Sensor will wake up after each defined time interval and always try to connect with the main controller. After a successful communication attempt, the sensor will update configuration parameters, associations and settings and will go into standby mode. After failed communication attempt (e.g. lack of Z-Wave range) the device will go into standby mode 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 frame automatically. Wake up may be still performed manually by a single TMP button click.

Longer time interval means less frequent communication and thus a longer battery life.

1. Operation mode

Parameter defines device operation mode.

Available settings:	0 - Door/Window Sensor or external alarm sensor		
	1 - external button		
Default setting:	0	Parameter size:	1 [byte]

2. Door/Window or alarm status

Parameter defines state of the sensor when the magnet is close. If the alarm sensor is connected, it determines the output type. Parameter inactive in external button mode (parameter 1 set to 1).

Available settings:	0 - door/window closed		
	1 - door/window opened		
Default setting:	0	Parameter size:	1 [byte]

⚠ **CAUTION**

Do not install the magnet if the device is not used as a Door/Window Sensor, as it might lead to the malfunction of the device.

3. Visual LED indications

This parameter defines events indicated by the visual LED indicator. Disabling events might extend battery life.

Available settings:	**0** - no indications		
	1 - indication of opening/closing status change (input IN)		
	2 - indication of wake up (1 x click or periodical)		
	4 - indication of device tampering		
Default setting:	**6**	Parameter size:	**1** [byte]

4. Range test after double click

Allows to enable activation of Z-Wave range test with double click of a TMP button.

Available settings:	**0** - disabled		
	1 - enabled		
Default setting:	**0**	Parameter size:	**1** [byte]

10. 2nd association group triggers

Parameter defines events which result in sending on/off commands to devices added to the 2nd association group. These commands are sent alternately to switch the devices on and off. Commands represent the values of BASIC SET command frames. Parameter is inactive in external button mode (parameter 1 set to 1).

Available settings:	**0** - switch after opening and closing		
	1 - switch after opening		
	2 - switch after closing		
Default setting:	**0**	Parameter size:	**1** [byte]

11. Commands sent to 2nd association group

Command frames sent to devices added to the 2nd association group.

Available settings:	**0** - ON		
	1 - OFF		
	2 - ON & OFF		
Default setting:	**2**	Parameter size:	**1** [byte]

12. Value of ON command frame sent to 2nd association group

The value of 0 turns OFF the device, 255 turns it ON. In case of associating the Dimmer or Roller Shutter module, values 1-99 allow to set an associated device to a specified level.

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

13. Value of OFF command frame sent to 2nd association group

The value of 0 turns OFF the device, 255 turns it ON. In case of associating the Dimmer or Roller Shutter module, values 1-99 allow to set an associated device to a specified level.

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

14. Time delay of ON command frame

Time period after which ON command frame will be sent.

Available settings:	**0-32400** - time in seconds		
Default setting:	**0**	Parameter size:	**2** [bytes]

15. Time delay of OFF command frame

Time period after which OFF command frame will be sent.

Available settings:	**0-32400** - time in seconds		
Default setting:	**0**	Parameter size:	**2** [bytes]

20. Type of sent alarm frames

Type of control frames transmitted to the main controller and 3rd association group "Alarm". If an external sensor is connected to IN input, it is possible to choose its functionality. Otherwise it is recommended to set this parameter to default value.

Available settings:	**0** - Door/Window Sensor (General Purpose Alarm)		
	1 - smoke sensor (Smoke Alarm)		
	2 - CO detector (CO Alarm)		
	3 - CO2 detector (CO2 Alarm)		
	4 - high temperature sensor (Heat Alarm)		
	5 - flood sensor (Water Alarm)		
Default setting:	**0**	Parameter size:	**1** [byte]

⚠ **CAUTION**

In order to activate new settings of parameter 20, it is required to remove and re-add the device to the main Z-Wave controller. This parameter is not reset during removal process.

30. Delay of tamper alarm cancellation

Time period after which a tamper alarm will be cancelled.

Available settings:	**0-32400** - time in seconds		
Default setting:	**5**	Parameter size:	**2** [bytes]

31. Reporting tamper alarm cancellation

Reporting cancellation of tamper alarm to the controller and 5th association group.

Available settings:	**0** - do not send tamper cancellation report		
	1 - send tamper cancellation report		
Default setting:	**1**	Parameter size:	**1** [byte]

50. Interval of temperature measurements

This parameter defines how often the temperature will be measured. The shorter the time, the more frequently the temperature will be measured, but the battery life will shorten.

Available settings:	**0** - temperature measurements disabled		
	5-32400 - time in seconds		
Default setting:	**300** (5min)	Parameter size:	**2** [bytes]

51. Temperature reports threshold

This parameter defines the change of temperature in comparison with last reported, resulting in temperature report being sent to the main controller.

Available settings:	**0** - temperature reports based on threshold disabled		
	1-300 - temperature threshold (0.1-30°C, 0.1°C step)		
Default setting:	**10** (1°C)	Parameter size:	**2** [bytes]

52. Interval of temperature reports

This parameter determines how often the temperature reports will be sent to the main controller.

Available settings:	**0** - periodic temperature reports disabled		
	5-32400 - time in seconds		
Default setting:	**0**	Parameter size:	**2** [bytes]

53. Temperature offset

The value to be added to the actual temperature, measured by the sensor (temperature compensation).

Available settings:	**-1000-1000** (-100-100°C, 0.1°C step)		
Default setting:	**0** (0°C)	Parameter size:	**4** [bytes]

54. Temperature alarm reports

Temperature alarms reported to the Z-Wave controller. Thresholds are set in parameters 55 and 56.

Available settings:	**0** - temperature alarms disabled		
	1 - high temperature alarm		
	2 - low temperature alarm		
	3 - high and low temperature alarms enabled		
Default setting:	**0**	Parameter size:	**1** [byte]

55. High temperature alarm threshold

If temperature is higher than set value, overheat notification will be sent and high temperature scene will be triggered (if activated).

Available settings:	**0-1000** (0-100°C, 0.1°C step)		
Default setting:	**540** (54°)	Parameter size:	**2** [bytes]

56. Low temperature alarm threshold

If temperature is lower than the set value, underheat notification will be sent and low temperature scene will be triggered (if activated).

Available settings:	**-300-700** (-30-70°C, 0.1°C step)		
Default setting:	**40** (4°)	Parameter size:	**2** [bytes]

70. Scene activation functionality

The device can trigger scenes using scene IDs assigned to different events.

To deactivate all scenes set the value to 0. To activate all scenes set the value to 3903.

Available settings:	**1** - [ID 10] opening door/window (single click)		
	2 - [ID 11] closing door/window (single click)		
	4 - [ID 12] holding		
	8 - [ID 13] releasing		
	16 - [ID 14] double click		
	32 - [ID 15] triple click		
	256 - [ID 50] high temperature - door/window opened		
	512 - [ID 50] high temperature - door/window closed		
	1024 - [ID 51] low temperature - door/window opened		
	2048 - [ID 51] low temperature - door/window closed		
Default setting:	**0** (none)	Parameter size:	**2** [bytes]

71. Alarm broadcast

Settings for broadcasting ON/OFF commands, sensor alarm and tamper alarm. Value other than 0 means alarms are sent in Broadcast Mode, to all devices only within the range of the device. They are not repeated by the mesh network.

Available settings:	**0** - broadcasts inactive		
	1 - ON/OFF commands broadcast active		
	2 - sensor alarm broadcast active		
	4 - tamper alarm broadcast active		
Default setting:	**0** (inactive)	Parameter size:	**1** [byte]

⚠ **CAUTION**

Every activated scene may shorten the battery life.

ℹ **NOTE**

Values of parameter 70 may be combined, e.g. 1+2=3 means scenes for opening and closing are sent.

ℹ **NOTE**

Scenes with IDs 12 to 15 are active only if parameter 1 is set to 1. In this case scenes with IDs 1 and 2 are sent after a single click.

ℹ **NOTE**

Values of parameter 71 may be combined, e.g. 1+2=3 means ON/OFF commands and sensor alarm are sent in Broadcast Mode.

72. Associations in Z-Wave network Security Mode

This 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 group "Lifeline".

Available settings:	**0** - none of the groups sent as secure		
	1 - 2nd group "Control" sent as secure		
	2 - 3rd group "Alarm" sent as secure		
	4 - 4th group "Sensor ZW3" sent as secure		
	8 - 5th group "Tamper ZW3" sent as secure		
Default setting:	**15** (all)	Parameter size:	**1** [byte]

#10: Specifications

Power supply:	3.6V DC battery
Battery type:	ER14250 ½ AA
Inputs:	single, potential-free (IN)
EU directives compliance:	EMC 2004/108/EC R&TTE 1999/5/EC RoHS 2011/65/EU LVD 2006/95/EC
Radio protocol:	Z-Wave
Radio frequency:	868.4 or 869.8 MHz EU; 908.4 or 916.0 MHz US; 921.4 or 919.8 MHz ANZ; 869.0 MHz RU;
Range:	up to 50m outdoors up to 30m indoors (depending on terrain and building structure)
Operating temperature:	0-40°C
Supported temperature sensor:	single, DS18B20
Dimensions (L x W x H):	76 x 17 x 19 mm

(TOP VIEW)

TMP

TP (VDQ)

TD (DQ)

GND

IN

MAGNETIC SENSOR

TMP - button used for including/excluding the device and tamper detection
TP (TEMP_POWER) - power supply terminal of temperature sensor
TD (TEMP_DATA) - signal terminal of temperature sensor
GND (GROUND) - ground terminal
IN - potential-free input

#11: Guarantee

1. The Guarantee is provided by FIBAR GROUP S.A. (hereinafter „Manufacturer"), based in Poznan, ul. Lotnicza 1; 60-421 Poznan, entered in the register of the National Court Register kept by the District Court in Poznań, VIII Economic Department of the National Court Register, no. 553265, NIP 7811858097, REGON: 301595664.

2. The Manufacturer is responsible for equipment malfunction resulting from physical defects (manufacturing or material) of the Device during 12 months for business / 24 months for individual customers from the date of its purchase.

3. During the Guarantee period, the Manufacturer shall remove any defects, free of charge, by repairing or replacing (at the sole discretion of the Manufacturer) any defective components of the Device with new or regenerated components that are free from defects. When the repair proves impossible, the Manufacturer reserves the right to replace the device with a new or regenerated one, which shall be free from any defects and its condition shall not be worse than the original device owned by the Customer.

4. In special cases, when the device cannot be replaced with the device of the same type (e.g. the device is no longer available), the Manufacturer may replace it with a different device having technical parameters similar to the faulty one. Such activity shall be considered as fulfilling the obligations of the Manufacturer. The Manufacturer shall not refund money paid for the device.

5. The holder of a valid guarantee shall submit a guarantee claim through the guarantee service. Remember: before you submit a guarantee claim, contact our technical support using telephone or e-mail. More than 50% of operational problems are resolved remotely, saving time and money spent to initiating guarantee procedure. If remote support is insufficient, the Customer shall fill the guarantee claim form (using our website - www.fibaro.com) in order to obtain claim authorization. When the guarantee claim form is submitted correctly, the Customer shall receive the claim confirmation with a unique number (Return Merchandise Authorization -RMA).

6. The claim may be also submitted by telephone. In this case, the call is recorded and the Customer shall be informed about it by a consultant before submitting the claim. Immediately after submitting the claim, the consultant shall provide the Customer with the claim number (RMA-number).

7. When the guarantee claim form is submitted correctly, a representative of the Authorised Guarantee Service (hereinafter as „AGS") shall contact the Customer.

8. Defects revealed within the guarantee period shall be removed not later than 30 days from the date of delivering the Device to AGS. The guarantee period shall be extended by the time in which the Device was kept by AGS.

9. A faulty device shall be provided by the Customer with complete standard equipment and documents proving its purchase.

10. Parts replaced under the guarantee are the property of the Manufacturer. The guarantee for all parts replaced in the guarantee process shall be equal to the guarantee period of the original device. The guarantee period of the replaced part shall not be extended.

11. Costs of delivering the faulty device shall be borne by the Customer. For unjustified service calls, the Service may charge the Customer with travel expenses and handling costs related to the case.

12. AGS shall not accept a complaint claim only when:

- the Device was misused or the manual was not observed,

- the Device was provided by the Customer incomplete, without accessories or nameplate,

- it was determined that the fault was caused by other reasons than a material or manufacturing defect of the Device

- the guarantee document is not valid or there is no proof of purchase,

13. The Manufacturer shall not be liable for damage to property caused by defective device. The Manufacturer shall not be liable for indirect, incidental, special, consequential or punitive damage, or for any damage, including, inter alia, loss of profits, savings, data, loss of benefits, claims by third parties and any property damage or personal injuries arising from or related to the use of the Device.

14. The guarantee shall not cover:

- mechanical damage (cracks, fractures, cuts, abrasions, physical deformations caused by impact, falling or dropping the device or other object, improper use or not observing the operating manual);

- damage resulting from external causes, e.g.: flood, storm, fire, lightning, natural disasters, earthquakes, war, civil disturbance, force majeure, unforeseen accidents, theft, water damage, liquid leakage, battery spill, weather conditions, sunlight, sand, moisture, high or low temperature, air pollution;

- damage caused by malfunctioning software, attack of a computer virus, or by failure to update the software as recommended by the Manufacturer;

- damage resulting from: surges in power supply and/or telecommunication network, improper connection to the grid in a manner inconsistent with the operating manual, or from connecting other devices not recommended by the Manufacturer.

- damage caused by operating or storing the device in extremely adverse conditions, i.e. high humidity, dust, too low (freezing) or too high ambient temperature. Detailed permissible conditions for operating the Device are defined in the operating manual;

- damage caused by using accessories not recommended by the Manufacturer

- damage caused by faulty electrical installation of the Customer, including the use of incorrect fuses;

- damage caused by Customer's failure to provide maintenance and servicing activities defined in the operating manual;

- damage resulting from the use of spurious spare parts or accessories improper for given model, repairing and introducing alterations by unauthorized persons;

- defects caused by operating faulty Device or accessories.

15. The scope of the guarantee repairs shall not include periodic maintenance and inspections, in particular cleaning, adjustments, operational checks, correction of errors or parameter programming and other activities that should be performed by the user (Buyer). The guarantee shall not cover natural wear and tear of the Device and its components listed in the operating manual and in technical documentation as such elements have a defined operational life.

16. If a defect is not covered by the guarantee, the Manufacturer reserves the right to remove such defect at its sole discretion, repairing the damaged or destroyed parts or providing components necessary for repair or replacement.

17. This guarantee shall not exclude, limit or suspend the Customer rights when the provided product is inconsistent with the purchase agreement.