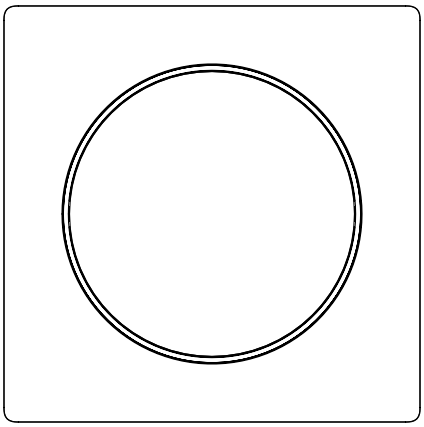
FIBARO
HOME INTELLIGENCE

OPERATING
MANUAL

EN



FIBARO WALLI CONTROLLER

FGWCEU-201

v1.1

Table of contents

1: 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.

CAUTION!

Risk of Explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

Do not modify!

Do not modify this device in any way not included in this manual.

This product is intended for indoor use only in dry locations.

Do not use in damp or wet locations, near a bathtub, sink, shower, swimming pool, or anywhere else where water or moisture are present.

Not a toy!

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

2: Description and features

2.1: Description

FIBARO Walli Controller is a smart wall-mounted Z-Wave™ remote controller that can activate scenes or control other Z-Wave devices via associations.

2.2: Main features

- Can be used for controlling multiple types of devices, e.g. switches, dimmers, roller shutters.
- Pre-set configurations allow to easily adjust operation for specific type of controlled devices.
- Battery or VDC powered.
- Equipped with a built-in temperature sensor.
- Supports Z-Wave network Security Modes: S0 with AES-128 encryption and S2 Authenticated with PRNG-based encryption.
- Works as a Z-Wave signal repeater when VDC powered (all non-battery operated devices within the network will act as repeaters to increase reliability of the network).
- May be used with all devices certified with the Z-Wave Plus™ certificate and should be compatible with such devices produced by other manufacturers.

The device 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.

3: Specifications

Power supply	Battery and/or power supply unit
Battery type	ER14250 ½AA 3.6V (included)
Supply unit type	5–24V DC SELV power supply, LPS or NEC class 2 (not included)
Battery life	est. 2 years (with default settings and max. 10 pushes per day)
Operating temperature	0–40°C
Ambient humidity	0–90% RH without condensation
Radio protocol	Z-Wave (700 series chip)
Radio frequency band	868.0–868.6MHz; 869.7–870.0MHz
Max. transmitting power	+13dBm
Range	up to 50m outdoors up to 40m indoors (depending on terrain and building structure)
Dimensions (Height x Width x Depth)	86 x 86 x 20 mm
Compliance with EU directives	RoHS 2011/65/EU RoHS 2015/863 RED 2014/53/EU

i Radio frequency of individual device must be same as your Z-Wave controller. Check information on the box or consult your dealer if you are not sure.

4: First installation

You can install the device on any smooth surface using included adhesive tape or on a mounting box using screws.

The device will select the powering mode during adding to the Z-Wave network, prioritizing external power supply if connected. To change the mode after adding, you must remove it, change the installation accordingly, then add the device again.

The device features a built-in temperature sensor, for accurate temperature readings, install the device far from sources of heat (e.g. radiators, power supplies).

Do not use the double-sided adhesive tape when mounting the device on the electrical junction box.

4.1: Installing on a smooth surface with battery supply

1. Remove the button cover.
2. Remove the paper strip protecting the battery.
3. LED ring light means the device is powered.
4. Insert the button cover back.
5. Remove the mounting frame from the device.
6. Use the included double-sided adhesive tape to stick the mounting frame to the smooth and clean surface.
7. Push the device onto the mounting frame of the device, you should hear an audible click.

4.2: Installing on a mounting box with battery supply

1. Remove the mounting frame from the device.
2. Place the mounting frame onto the mounting box and secure it with screws (*).
3. Push the device onto the mounting frame of the device, you should hear an audible click.
4. Remove the button cover.
5. Remove the paper strip protecting the battery.
6. LED ring light means the device is powered.
7. Insert the button cover back.

* To ensure no contact with electrical wires in the box, mount the frame so that the power port is obscured by it.

4.3: Installing on a mounting box with an external power supply

Prepare the power supply

1. Switch off the mains voltage (disable the fuse).
2. Using wire connectors, connect included power connector to the power supply (black to negative wire, red to positive wire).
3. Using wire connectors, connect the power supply to the mains.
4. Place the power supply inside the mounting box, leaving the power connector outside.

Assemble the device

5. Remove the mounting frame from the device.
6. Push the power connector through hole in the mounting frame.
7. Place the mounting frame onto the mounting box and secure it with screws.
8. Plug the power connector into the device.
9. Push the device onto the mounting frame of the device, you should hear an audible click.
10. Switch on the mains voltage.
11. LED ring light means the device is powered.
12. Remove the button cover.
13. Remove the paper strip protecting the battery if you want to use it as emergency power source, remove the battery otherwise.
14. Insert the button cover back.

5: Adding to Z-Wave network

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

The device will select the powering mode during adding to the Z-Wave network, prioritizing external power supply if connected. To change the mode after adding, you must remove it, change the installation accordingly, then add the device again.

5.1: Adding manually

To add the device to the Z-Wave network **manually**:

1. Set the main controller in (Security/non-Security Mode) add mode (see the controller's manual).
2. Quickly, three times click one of the buttons.
3. If you are adding in Security S2 Authenticated, input the underlined part of the DSK (label on the box).
4. LED will start blinking yellow, wait for the adding process to end.
5. Adding result will be confirmed by the Z-Wave controller's message and the LED frame:
   - **Green** – successful (non-secure, S0, S2 non-authenticated),
   - **Magenta** – successful (Security S2 Authenticated),
   - **Red** – not successful.

5.2: Adding using SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. SmartStart product will be added automatically within 10 minutes of being switched on in the network range.

To add the device to the Z-Wave network **using SmartStart**:

1. To use SmartStart your controller needs to support Security S2 (see the controller's manual).
2. Enter the full DSK string code to your controller. If your controller is capable of QR scanning, scan the QR code placed on the label on the box.
3. Power the device.
4. Wait for the adding process to start (up to few minutes), which is signalled with yellow LED blinking.
5. Adding result will be confirmed by the Z-Wave controller's message and the LED frame:
   - **Green** – successful (non-secure, S0, S2 non-authenticated),
   - **Magenta** – successful (Security S2 Authenticated),
   - **Red** – not successful.

i In case of problems with adding the device, please reset the device and repeat the adding procedure.

6: Removing from Z-Wave network

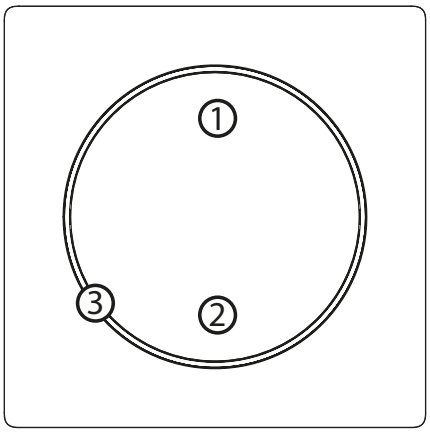
Removing (Exclusion) – Z-Wave device learning mode, allowing to remove the device from existing Z-Wave network. Removing also results in resetting the device to factory defaults.

To **remove** the device from the Z-Wave network:

1. Set the main controller into remove mode (see the controller's manual).
2. Quickly, three times click, then press and hold one of the buttons for 12 seconds.
3. Release the button when the device glows green.
4. Quickly click the button to confirm.
5. LED will start blinking yellow, wait for the removing process to end.
6. Successful removing will be confirmed by the Z-Wave controller's message and red LED colour.

7: Operation

7.1: Controls



1. First/▲ button,
2. Second/▼ button,
3. LED ring.

7.2: Operating modes

Scene Controller

This mode is enabled by default or by setting parameter 20 to 0.

In this mode, the device can activate scenes in the Z-Wave controller by sending scene ID and attribute of a specific action (using Central Scene Command Class). Associations do not work in this mode.

Button	Action	Scene ID	Attribute
1st button	Clicked once	1	Key Pressed 1 time
	Clicked twice	1	Key Pressed 2 times
	Clicked thrice	1	Key Pressed 3 times
	Held	1	Key Held Down
	Released	1	Key Released
2nd button	Clicked once	2	Key Pressed 1 time
	Clicked twice	2	Key Pressed 2 times
	Clicked thrice	2	Key Pressed 3 times
	Held	2	Key Held Down
	Released	2	Key Released

Double Button

This mode is enabled by setting parameter 20 to 1.

In this mode the device works as two separate buttons and it uses associations to control other Z-Wave devices (groups 2-5). You can control multiple devices of different type in this mode. Every button can control different group of devices.

1st button – controls 2nd and 3rd group:

- Click – alternately ON with last level / OFF,
- 2xClick – send pre-set level (set in parameter 152),
- Hold – alternately increasing/decreasing level until released.

2nd button – controls 4th and 5th group:

- Click – alternately ON with last level / OFF,
- 2xClick – send pre-set level (set in parameter 153),
- Hold – alternately increasing/decreasing level until released.

Single Button

This mode is enabled by setting parameter 20 to 2.

In this mode the device works as one logical button and it uses associations to control other Z-Wave devices (groups 2-3). You can control multiple devices of different type in this mode.

1st and 2nd button work in the same way:

- Click – alternately ON with last level / OFF,
- 2xClick – send pre-set level (set in parameter 152),
- Hold – alternately increasing/decreasing level until released.

Switch Controller

This mode is enabled by setting parameter 20 to 3.

In this mode the device uses associations to control Z-Wave binary switches (group 6).

- Click 1st – ON,
- Click 2nd – OFF.

Dimmer / Roller Shutter Controller

This mode is enabled by setting parameter 20 to 4.

In this mode the device uses associations to control Z-Wave dimmers and rollers shutters (group 6).

1st button – turns ON and increases level:

- Click – ON with last level,
- Hold – increasing level until released,
- 2xClick – send pre-set level (set in parameter 152).

2nd button – turns OFF and decreases level:

- Click – OFF,
- Hold – decreasing level until released.

Roller Shutter Step-By-Step Controller

This mode is enabled by setting parameter 20 to 5.

In this mode the device uses associations to control Z-Wave roller shutter controllers (group 6) in Step-By-Step mode (alternately sends commands for movement and stopping).

1st button – opens and stops:

- Click – open/stop,
- 2xClick – send pre-set level (set in parameter 152).

2nd button – closes and stops:

- Click – close/stop,
- 2xClick – stop.

Venetian blinds Step-By-Step Controller

This mode is enabled by setting parameter 20 to 6.

In this mode the device uses associations to control Z-Wave Venetian blinds (with slats) controllers (groups 6-7) in Step-By-Step mode (alternately sends commands for movement and stopping).

1st button – opens and stops:

- Click – open/stop,
- 2xClick – send pre-set level (set in parameter 152),
- Hold – opening slats until released.

2nd button – closes and stops:

- Click – close/stop,
- 2xClick – stop,
- Hold – closing slats until released.

7.3: Powering modes

External supply mode

In external supply mode, the device indicates commands status and can receive indications from the Z-Wave controller (using Indicator CC), including Identification.

Device configuration is updated immediately.

To enable the external supply mode, make sure that the external supply is connected and powered, then add the device to the Z-Wave network (remove beforehand if already added).

Battery mode

In battery mode, the device indicates commands status, but cannot receive indications from the Z-Wave controller (using Indicator CC), except for Identification.

The device needs to be woken up to change its configuration.

The battery level (in percent) is measured during every power up and periodically every 24h, the measured value is reported to the controller during every power up and when it changes by at least 5%.

To enable the battery mode, make sure that device is powered only using the battery, then add the device to the Z-Wave network (remove beforehand if already added).

7.4: Temperature sensor

The device is equipped with a built-in temperature sensor. It measures the ambient temperature and reports it to the controller only when it changes by at least 0.1°C, but not more often than every 10 minutes. It is recommended to use battery or 12V DC power supply for reliable temperature measurement.

7.5: Waking up

When on battery power, the device needs to be woken up to receive information about the new configuration from the Z-Wave controller, like parameters and associations. By default the device is woken up automatically every 6 hours.

You can wake up the device manually using first menu position (white).

7.6: Visual indications

The built-in LED light shows current device status.

After powering the device:

- Green – device added to a Z-Wave network (non-secure, S0, S2 non-authenticated),
- Magenta – device added to a Z-Wave network (Security S2 Authenticated),
- Red – device not added to a Z-Wave network.

Update:

- Blinking cyan – update in progress,
- Green – update successful,
- Red – update not successful.

Command status:

The device displays last command status in response to clicking/holding a button.

- Green for 2 seconds – command acknowledged,
- Red for 2 seconds – command not acknowledged.

Identification:

The Z-Wave controller can identify this device by signalling with LED ring (using Indicator CC).

Custom indications:

In external supply mode, the user can use the LED ring to display custom indications. Using the Z-Wave controller user can specify on which half of the ring to indicate, number of blinks and timing (using Indicator CC). Brightness and colour of the indications is specified in parameters 13, 150 and 151.

7.7: Menu

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

1. Quickly, three times click, then press and hold one of the buttons.
2. After 3 seconds LED ring signals adding status:
    - Blinking green – entering the menu (added as non-secure, S0, S2 non-authenticated)
    - Blinking magenta – entering the menu (added as Security S2 Authenticated)
    - Blinking red – entering the menu (not added to a Z-Wave network)
3. The LED ring will turn off for 3 seconds, then start signalling menu positions.
4. Release the button when device signals desired position with colour:
    - **WHITE** – wake up the device
    - **GREEN** – start learning mode (add/remove)
    - **MAGENTA** – test Z-Wave range
    - **CYAN** – show battery level
        - » Green – 50-100%
        - » Yellow – 16-49%
        - » Red – 1-15%
    - **YELLOW** – reset to factory defaults

5. Quickly click the button to confirm.

7.8: Resetting to factory defaults

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

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. To remove the device properly, follow the removing procedure described in "Removing from Z-Wave network" on page 11.

1. Quickly, three times click, then press and hold one of the buttons for 21 seconds.
2. Release the button when the device glows yellow.
3. Quickly click the button to confirm.
4. After a few seconds the device will be restarted, which is signalled with red LED colour.

8: Configuration

8.1: Associations

Association (linking devices) – direct control of other devices within the Z-Wave system network.

Associations allow:

- reporting the device status to the Z-Wave controller (using Lifeline group),
- creating simple automations by controlling other devices without participation of the main controller (using groups assigned to actions on the device).

The device provides the association of 7 groups:

1st association group – "Lifeline" reports the device status and allows for assigning single device only (main controller by default).

2nd association group – "On/Off (1)" is used to turn the associated devices on/off.

3rd association group – "Dimmer (1)" is used to change level of associated devices.

4th association group – "On/Off (2)" is used to turn the associated devices on/off.

5th association group – "Dimmer (2)" is used to change level of associated devices.

6th association group – "Multidevice" is used to control different type of devices.

7th association group – "Slats" is used to move slats of Venetian blinds.

The device allows to control 5 regular or 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.

Commands sent to association groups in Double Button Mode (parameter 20 set to 1)

	1 click	2 click	Hold	Release
Button 1	Basic Set: 2nd group	Basic Set: 2nd group	Multilevel Start Change: 3rd group	Multilevel Stop Change: 3rd group
Button 2	Basic Set: 4th group	Basic Set: 4th group	Multilevel Start Change: 5th group	Multilevel Stop Change: 5th group

Commands sent to association groups in Single Button Mode (parameter 20 set to 2)

	1 click	2 click	Hold	Release
Button 1 and 2	Basic Set: 2nd group	Basic Set: 2nd group	Multilevel Start Change: 3rd group	Multilevel Stop Change: 3rd group

Commands sent to association groups in Switch Controller Mode (parameter 20 set to 3)

	1 click	2 click	Hold	Release
Button 1 (on)	Basic Set: 6th group	–	–	–
Button 2 (off)	Basic Set: 6th group	–	–	–

Commands sent to association groups in Dimmer / Roller Shutter Controller Mode (parameter 20 set to 4)

	1 click	2 click	Hold	Release
Button 1 (on)	Multilevel Set: 6th group	Multilevel Set: 6th group	Multilevel Start Change: 6th group	Multilevel Stop Change: 6th group
Button 2 (off)	Multilevel Set: 6th group	–	Multilevel Start Change: 6th group	Multilevel Stop Change: 6th group

Commands sent to association groups in Roller Shutter Step-By-Step Controller Mode (parameter 20 set to 5)

	1 click	2 click	Hold	Release
Button 1 (up)	Multilevel Start / Stop Change: 6th group	Multilevel Set: 6th group	–	–
But-ton 2 (down)	Multilevel Start / Stop Change: 6th group	Multilevel Stop Change: 6th group	–	–

Commands sent to association groups in Venetian Blinds Step-By-Step Controller Mode (parameter 20 set to 6)

	1 click	2 click	Hold	Release
Button 1	Multilevel Start Up / Stop Change: 6th group	Multilevel Set: 6th group	Multilevel Start Up Change: 7th group	Multilevel Stop Change: 7th group
Button 2	Multilevel Start Down / Stop Change: 6th group	Multilevel Stop Change: 6th group	Multilevel Start Down Change: 7th group	Multilevel Stop Change: 7th group

8.2: Advanced parameters

The device allows to customize its operation to user's needs using configurable parameters.

The settings can be adjusted via Z-Wave controller to which the device is added. The way of adjusting them might differ depending on the controller.

In the FIBARO interface parameters are presented as simple options in Advanced Settings of the device.

Available parameters:

13.	**LED frame – brightness**
Description	This parameter allows to adjust the LED frame brightness.
Parameter size	1B
Default value	100 (100%)
Available values	0 – LED disabled 1-100 (1-100% brightness)
20.	**Operation mode**
Description	This parameter defines operation of the device. Choose the mode depending on the type of the device you want to control remotely
Parameter size	1B
Default value	0 (scene controller)
Available values	0 – scene controller mode 1 – double button mode 2 – single button mode 3 – switch controller mode 4 – dimmer / roller shutter controller mode 5 – roller shutter controller mode (step-by-step) 6 – venetian blinds controller mode (step-by-step)

150.	LED ring – first button
Description	This parameter defines the colour of first button indicator (upper part of the LED ring) for indications using Indicator CC.
Parameter size	2B
Default value	1 (white)
Available values	0 – LED disabled 1 – White 2 – Red 3 – Green 4 – Blue 5 – Yellow 6 – Cyan 7 – Magenta 8 – Blinking red-white-blue
151.	**LED ring – second button**
Description	This parameter defines the colour of second button indicator (lower part of the LED ring) for indications using Indicator CC.
Parameter size	2B
Default value	1 (white)
Available values	0 – LED disabled 1 – White 2 – Red 3 – Green 4 – Blue 5 – Yellow 6 – Cyan 7 – Magenta 8 – Blinking red-white-blue

152.	1st button - double click value
Description	This parameter defines value of Basic Set or Multilevel Set frame (depending on selected mode) sent to associated devices after double click. This parameter is not relevant for Scene Controller Mode.
Parameter size	2B
Default value	99
Available values	0-99 or 255
153.	**2nd button - double click value**
Description	This parameter defines value of Basic Set or Multilevel Set frame (depending on selected mode) sent to associated devices after double click. This parameter is used only in Double Button Mode.
Parameter size	2B
Default value	99
Available values	0-99 or 255

9: Z-Wave specification

Generic Device Class: GENERIC_TYPE_WALL_CONTROLLER

Specific Device Class: not used

Supported Command Classes

	Command Class	Version	Secure
1.	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]	V2	
2.	COMMAND_CLASS_ASSOCIATION [0x85]	V2	YES
3.	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]	V3	YES
4.	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]	V3	YES
5.	COMMAND_CLASS_INDICATOR [0x87]	V3	YES
6.	COMMAND_CLASS_TRANSPORT_SERVICE [0x55]	V2	
7.	COMMAND_CLASS_VERSION [0x86]	V3	YES
8.	COMMAND_CLASS_MANUFACTURER_SPECIFIC [0x72]	V2	YES
9.	COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A]	V1	YES
10.	COMMAND_CLASS_POWERLEVEL [0x73]	V1	YES
11.	COMMAND_CLASS_SECURITY [0x98]	V1	
12.	COMMAND_CLASS_SECURITY_2 [0x9F]	V1	
13.	COMMAND_CLASS_SUPERVISION [0x6C]	V1	
14.	COMMAND_CLASS_CONFIGURATION [0x70]	V4	YES
15.	COMMAND_CLASS_FIRMWARE_UPDATE_MD [0x7A]	V5	YES
16.	COMMAND_CLASS_CENTRAL_SCENE [0x5B]	V3	YES
17.	COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]	V11	YES
18.	COMMAND_CLASS_APPLICATION_STATUS [0x22]	V1	
19.	COMMAND_CLASS_PROTECTION [0x75]	V1	YES
Only in battery mode			
20.	COMMAND_CLASS_WAKE_UP [0x84]	V2	YES
21.	COMMAND_CLASS_BATTERY [0x80]	V1	YES

Wake Up CC (only in battery mode)

Min. Interval Seconds	0 – off, 3600 [s] = 1 [h]
Max. Interval Seconds	43200 [s] = 12[h]
Default Interval Seconds	21600 [s] = 6 [h]
Interval Step Seconds	3600
Default NodeID	255
Additional Sending Frame	Menu – white position

Indicator CC - available indicators

Button 1 Indicator – 0x43 – only in always on (external supply) mode

Button 2 Indicator – 0x44 - only in always on (external supply) mode

Indicator ID – 0x50 (Identify)

Indicator CC - available commands

Command	Indicator ID	Property ID	Value	Other
SET	All	0x03	0x00 – 0xFF	
SET	All	0x04	0x00 – 0xFF	
SET	All	0x05	0x00 – 0xFF	
GET	All	–	–	Device send Indicator Report
SUPPORTED GET	All	–	–	Device send Supported Report

Indicator CC - properties

Property ID	Description	Values and requirements
0x03	On/Off Periods	Starts toggling between ON and OFF Used to set the duration of an On/Off period. Available values: • 0x00 .. 0xFF (0 .. 25.5 seconds) If this is specified, the On/Off Cycles MUST also be specified.

0x04	On/Off Cycles	Used to set the number of On/Off periods. Available values: • 0x00 .. 0xFE (0 .. 254 times) • 0xFF (indicate until stopped) If this is specified, the On/Off Period MUST also be specified.
0x05	On time within an On/Off period	Used to set the length of the On time during an On/Off period. It allows asymetic On/Off periods. Available values • 0x00 (symmetric On/Off period – On time equal to Off time) • 0x01 .. 0xFF (0.1 .. 25.5 seconds) Example: 300ms ON and 500ms OFF is achieved by setting On/Off period (0x03) = 0x08 and On time within an On/Off Period (0x05) = 0x03 This value is ignored if On/Off periods is not defined. This value is ignored if On/Off periods value is less than this value.

Protection CC

Protection Command Class allows to prevent local control using buttons.

Type	State	Description	Hint
Local	0	Unprotected - The device is not protected, and may be operated normally via the user interface.	Inputs control radio
Local	2	Buttons cannot send control frames e.g Basic, Switch Multilevel, other functionality is available (menu)	Inputs do not control radio

Setting state value 1 will be rejected by the device.

Sensor Multilevel CC

Sensor Type	Scale	Size	Precision	Description
Temperature	Celsius (C)	2B	1	Air temperature

10: Regulations

Legal Notices

All information, including, but not limited to, information regarding the features, functionality, and/or other product specification are subject to change without notice. Fibar Group S.A. reserves all rights to revise or update its products, software, or documentation without any obligation to notify any individual or entity.

FIBARO and Fibar Group logo are trademarks of Fibar Group S.A. All other brands and product names referred to herein are trademarks of their respective holders.

Declaration of conformity

Hereby, Fibar Group S.A. (with its registered office in Wysogotowo, ul. Serdeczna 3, 62-081 Wysogotowo) declares that the device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.manuals.fibaro.com

WEEE Directive Compliance

Device labelled with this symbol should not be disposed with other household wastes. It shall be handed over to the applicable collection point for the recycling of waste electrical and electronic equipment.