

**FIBARO**  
**RGBW CONTROLLER 2**

FGRGBW-442



## Table of contents

1: Important safety information	4
2: Description and features	5
2.1: Description	5
2.2: Main features	5
3: Specifications	6
4: Installation	7
4.1: Before installation	7
4.2: Connection with RGBW/RGB LED strip	9
4.3: Connection with one-color LED strips	10
4.4: Connection with halogen lights	10
4.5: Connection with 0-10V analog sensors	11
5: Adding to Z-Wave network	12
5.1: Adding manually	12
5.2: Adding using Smart Start	13
6: Removing from Z-Wave network	14
7: Operating the device	14
7.1: Operating the device using switches	14
7.2: Visual indications	16
7.3: Menu	16
7.4: Resetting to factory defaults	17
8: Activating scenes	17
9: Configuration	18
9.1: Associations	18
9.2: Advanced parameters	20
10: Z-Wave specification	32
11: Regulations	37

# 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.

## **Do not modify!**

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

## **Other devices**

 The manufacturer, Fibar Group S.A. will not be held responsible for any damage or loss of warranty privileges for other connected devices if the connection is not compliant with their manuals.

## **DANGER!**

 The device is powered with a secure voltage. Nevertheless, the user should be careful or should commission the installation to a qualified person.

## **DANGER!**

 To avoid risk of electrical shock, do not operate the device with wet or moist hands.

## **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 RGBW Controller 2** is a universal, Z-Wave Plus compatible RGB/RGBW controller.

FIBARO RGBW Controller 2 uses PWM output signal, allowing it to control LED, RGB, RGBW strips, halogen lights and other resistive loads. It can also measure active power and energy consumed by the load. Controlled devices may be powered by 12 or 24V DC.

Inputs support momentary/toggle switches and 0-10V analog sensors, like temperature sensors, humidity sensors, light sensors etc.

### 2.2: Main features

- Compatible with any certified Z-Wave or Z-Wave Plus controller.
- Allows for controlling:
  - » RGB/RGBW LED strip,
  - » one-color LED strips,
  - » halogen lights,
  - » other compliant resistive loads.
- Allows for connecting to inputs:
  - » switches/buttons,
  - » 0-10V analog sensors or potentiometers.
- Active power and energy metering.
- 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 (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	12V/24V DC $\pm$ 10%
Rated load current	6A for channel, 12A total for all outputs
Power output	144W combined for 12V 288W combined for 24V
Inputs	4 inputs, 0-10V (configurable pull-up) or binary
Outputs	4 outputs, PWM
PWM frequency	244Hz
Overvoltage category	OVC I
Rated impulse voltage	330V
Maximum length of wires	2m
Operating temperature	0–40°C (32–104°F)
Shipping and storage temperature	-40–60°C (-40–140°F)
Radio protocol	Z-Wave (500 series chip)
Radio frequency	868.4 / 869.85 MHz EU 908.4 / 916 MHz US 919.8 / 921.4 MHz ANZ 869.0 MHz RU
Transmit power	EIRP max. +2dBm
Range	up to 50m (164 ft) outdoors up to 40m (131 ft) indoors (depending on terrain and building structure)
Recommended wire cross-section area	0.2–2.0mm <sup>2</sup> (24–14 AWG) (depending on load current)
Dimensions (Length x Width x Height)	42.35 x 36.90 x 17.5 mm (1.67" x 1.5" x 0.69")
Compliance with EU directives	RoHS 2011/65/EU RED 2014/53/EU
Device type	Type 1.C Action
Pollution degree	2
Software class	Class A
Maximum phase to ground voltage of the supply source	Supplied by external SELV source up to 24V DC
Protection against electric shock class	Class III control
Classification of installation and use	Independently, Flush Mounted operating control (lighting control)
Supply Connection	Permanent connection

 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.

 The maximum load for one channel is 6 A. Do not exceed this value as it can permanently damage the device.

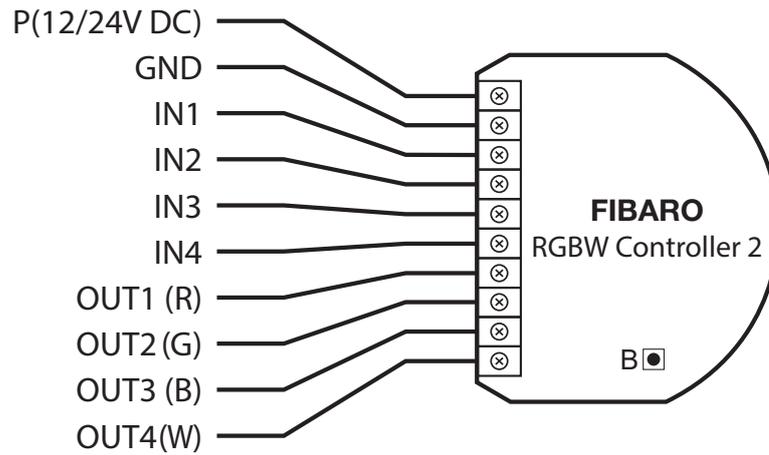
## 4: Installation

### 4.1: Before installation



**Connecting the device in a manner inconsistent with this manual may cause risk to health, life or material damage.**

- The purpose of control is operating control (lighting control) for LED, RGB, RGBW strips, halogen lights and other resistive loads.
- The construction of control: independently mounted control for flush mounting.
- Connect only in accordance with one of the diagrams.
- The device is powered with secure voltage; nevertheless, the user should be extra careful or should commission the installation to a qualified person.
- **Do not** connect devices which are not compliant with the specification.
- Every connected device should be compliant with the relevant safety standards.
- RGBW Controller 2 and the load connected to its output must be powered by 12VDC or 24VDC stabilized power supply (SELV) with short circuit protection. Connecting higher voltage or voltage not matching the load's voltage may cause damage to the device.
- Connecting long RGBW/RGB/LED strips may cause voltage drops, resulting in lower light brightness further from R/G/B/W outputs. To eliminate this effect it is recommended to connect few shorter strips in parallel connection instead of one long strip connected serially.
- RGBW Controller 2 has 0-10V inputs. There is no 0-10V output. Output is controlled by PWM at 244Hz.
- We recommend using momentary switches for comfortable light control.
- Field-installed conductors must be separated from uninsulated or bare live parts of a different circuit

**Notes for diagrams:**

**P** – 12/24V DC power supply connector

**GND** – ground connector

**IN1** – input connector for controlling OUT1 output

**IN2** – input connector for controlling OUT2 output

**IN3** – input connector for controlling OUT3 output

**IN4** – input connector for controlling OUT4 output

**OUT1** – output connector controlled by IN1 input (red LED color recommended)

**OUT2** – output connector controlled by IN2 input (green LED color recommended)

**OUT3** – output connector controlled by IN3 input (blue LED color recommended)

**OUT4** – output connector controlled by IN4 input (white LED color recommended)

**B** – service button (used to add/remove the device)

## 4.2: Connection with RGBW/RGB LED strip

We recommend connecting LED strip channels in the same order as on the diagram (R - OUT1, G - OUT2, B - OUT3, W - OUT4).

If you want to connect RGB strip, use the same diagram, but do not connect OUT4 channel.

1. Disconnect the power.
2. Connect with the diagram below:

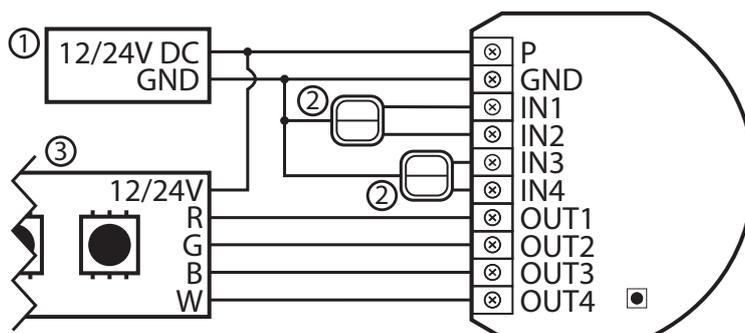


Diagram 1: Example connection with RGBW LED strip  
(1 - power supply, 2 - switch, 3 - RGBW LED strip)

3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.

**i** The device works in RGBW mode by default, to enable HSB mode change parameter 150 to 1.

### 4.3: Connection with one-color LED strips

1. Disconnect the power.
2. Connect with the diagram below:

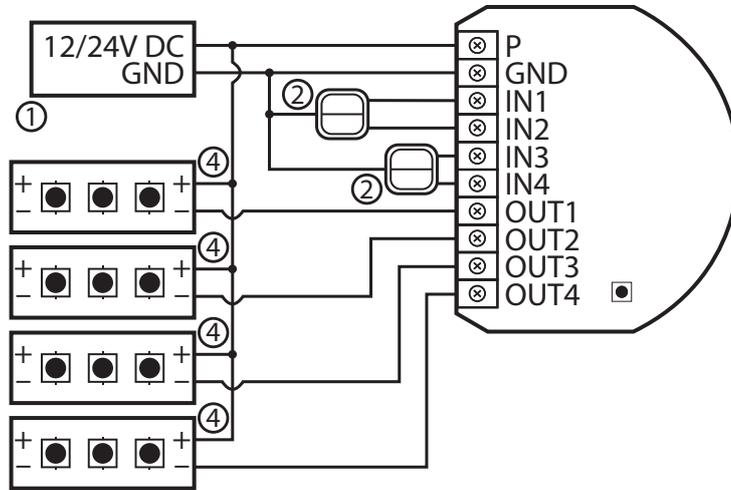


Diagram 3: Example connection with 4 one-color LED strips  
(1 – power supply, 2 – switch, 4 – one-color LED strip)

3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.

### 4.4: Connection with halogen lights

1. Disconnect the power.
2. Connect with the diagram below:

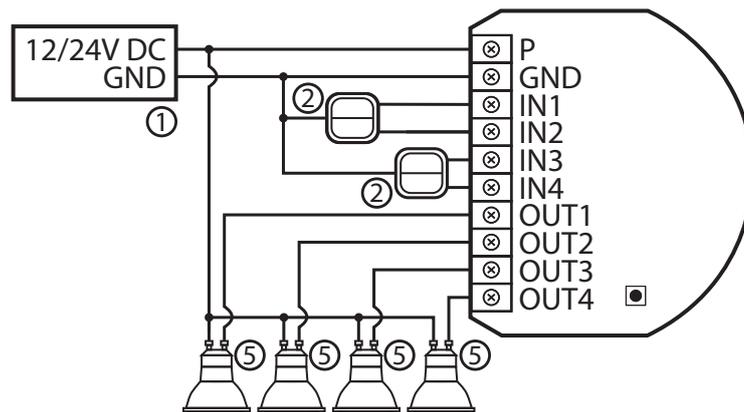


Diagram 4: Example connection with 4 halogen lights  
(1 – power supply, 2 – switch, 5 – halogen light)

3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.

## 4.5: Connection with 0-10V analog sensors

The 2-wire analog sensor requires pull-up resistor.

You can connect up to 4 analog sensors to IN1/IN2/IN3/IN4 terminals.

1. Disconnect power.
2. Connect with the diagram below:

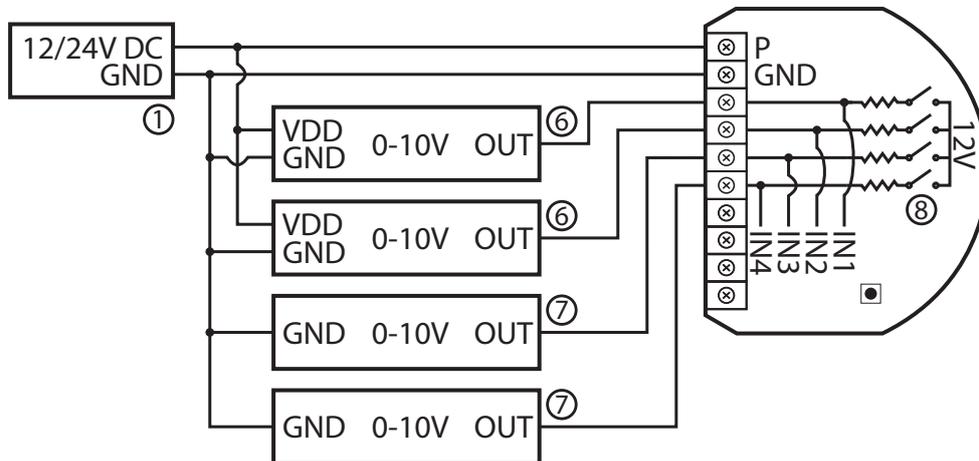


Diagram 5: Example connection with 4 0-10V analog sensors

(1 – power supply, 6 – 3-wire 0-10V analog sensor,  
7 – 2-wire 0-10V analog sensor, 8 – configurable pull-up resistors)

3. Verify correctness of connection.
4. Power the device.
5. Add the device to the Z-Wave network.
6. Change values of parameters:
  - Connected to IN1:
    - » Does not require pull-up: change parameter 20 to 0
    - » Requires pull-up: change parameter 20 to 1
  - Connected to IN2:
    - » Does not require pull-up: change parameter 21 to 0
    - » Requires pull-up: change parameter 21 to 1
  - Connected to IN3:
    - » Does not require pull-up: change parameter 22 to 0
    - » Requires pull-up: change parameter 22 to 1
  - Connected to IN4:
    - » Does not require pull-up: change parameter 23 to 0
    - » Requires pull-up: change parameter 23 to 1

## 5: Adding to Z-Wave network

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

 Full DSK code is present only on the box, make sure to keep it or copy the code.

### 5.1: Adding manually

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

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

## 5.2: Adding using Smart Start

**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:
  - **Green** – successful (non-secure, S0, S2 Unauthenticated),
  - **Magenta** – successful (Security S2 Authenticated),
  - **Red** – not successful.

 In case of problems with adding the device, please re-set 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. Power the device.
2. Set the main controller into remove mode (see the controller's manual).
3. Quickly, three times click the service button.
4. LED will start blinking yellow, wait for the removing process to end.
5. Successful removing will be confirmed by the Z-Wave controller's message and red LED colour.

## 7: Operating the device

### 7.1: Operating the device using switches

#### **Controlling connected loads in RGBW mode (default)**

Input can control output only with the same number (e.g. switch connected to IN1 controls load connected to output OUT1). Perform following actions on inputs to change state of the connected load:

- 1xclick – change to the opposite one (ON/OFF)

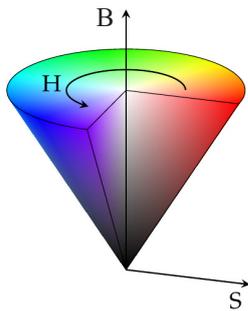
**i** A single click switches between the OFF state and the last non-OFF state. It means it may set the colour back, but the light may not light up as it doesn't change the brightness.

- 2xclick – set colour to 100%
- hold/release – dimm/brighten colour

## Controlling connected loads in HSB mode

HSB mode is enabled by setting parameter 150 to 1. Inputs correspond to different components in HSB colour space: IN1 – Hue, IN2 – Saturation, IN3 – Brightness and IN4 input controls OUT4 output. Perform following actions on inputs to change values of the components:

- 1xclick when value is 0 – restore last set value
- 1xclick when value is not 0 – set value to 0
- 2xclick – set value to max
- hold/release – increase/decrease value



When you hold the button connected to IN1, you revolve around the cone on the H (Hue) axis.

When you hold the button connected to IN2, you change the saturation (S).

When you hold the button connected to the IN3, you change the brightness (B).

**i** Remember that if the saturation is too low, you may not notice any changes while holding IN1.

**i** More information about the behaviour of the button and HSB mode can be found in our knowledge base.

## Other actions

- 1,2,3xclick/hold/release – activate scene in the controller for specific action (requires prior configuration)

## 7.2: Visual indications

The built-in LED light shows current device status.

### After powering the device:

- Green – device added to a Z-Wave network (without Security S2 Authenticated)
- Magenta – device added to a Z-Wave network (with 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

### Menu:

- Blinking green – entering the menu (added without Security S2 Authenticated)
- Blinking magenta – entering the menu (added with Security S2 Authenticated)
- Blinking red – entering the menu (not added to a Z-Wave network)
- Green – reset energy consumption memory
- Yellow – reset to factory defaults

## 7.3: Menu

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

1. Press and hold the service button to enter the menu, device blinks to signal adding status (see 7.2: Visual indications).
2. Release the service button when device signals desired position with colour:
  - **GREEN** - reset energy consumption memory
  - **YELLOW** - reset to factory defaults
3. Quickly click the service button to select, 2 blinks of the same colour will confirm the selection.

## 7.4: 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 to factory defaults does not reset energy consumption memory.

**i** 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.

1. Press and hold the service button to enter the menu.
2. Release service button when the device glows yellow.
3. Quickly click the service button to confirm.
4. After few seconds the device will be restarted, which is signalled with the red colour.

## 8: Activating scenes

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.

In order for this functionality to work, connect momentary or toggle switch to the IN1-IN4 inputs and set parameters 20-23 to 2, 3 or 4 (depending on type of switch).

### Scene IDs for inputs

Input	Scene ID
IN1	1
IN2	2
IN3	3
IN4	4

### Attributes for actions

Action	Attribute
Switch clicked once	Key Pressed 1 time
Switch clicked twice	Key Pressed 2 times
Switch clicked thrice	Key Pressed 3 times
Switch held*	Key Held Down
Switch released*	Key Released

\* Not available for toggle switches.

## 9: Configuration

### 9.1: 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).

**i** Commands send to 2nd–10th association groups reflect inputs operation according to device configuration, e.g. turning the first channel on using input will send frame responsible for the same action.

**The device provides the association of 10 groups:**

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

**2nd association group – “RGBW Sync”** allows to synchronize state of other FIBARO RGBW Controller devices (FGRGBW-442 and FGRGBWM-441) - do not use with other devices.

**3rd association group – “On/Off (IN1)”** is used to turn the associated devices on/off reflecting IN1 operation.

**4th association group – “Dimmer (IN1)”** is used to change level of associated devices reflecting IN1 operation.

**5th association group – “On/Off (IN2)”** is used to turn the associated devices on/off reflecting IN2 operation.

**6th association group – “Dimmer (IN2)”** is used to change level of associated devices reflecting IN2 operation.

**7th association group – “On/Off (IN3)”** is used to turn the associated devices on/off reflecting IN3 operation.

**8th association group – “Dimmer (IN3)”** is used to change level of associated devices reflecting IN3 operation.

**9th association group – “On/Off (IN4)”** is used to turn the associated devices on/off reflecting IN4 operation.

**10th association group – “Dimmer (IN4)”** is used to change level of associated devices reflecting IN4 operation.

**i** Association groups 2-10 can be triggered only from buttons connected to IN1-IN4 and will not work for 0-10V sensors.

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.

### Association groups mapping

Root	Endpoint	Association group in endpoint
Association Group 1	Endpoint 1-9*	Association Group 1
Association Group 2	Endpoint 1	Association Group 2
Association Group 3	Endpoint 2	Association Group 2
Association Group 4	Endpoint 2	Association Group 3
Association Group 5	Endpoint 3	Association Group 2
Association Group 6	Endpoint 3	Association Group 3
Association Group 7	Endpoint 4	Association Group 2
Association Group 8	Endpoint 4	Association Group 3
Association Group 9	Endpoint 5	Association Group 2
Association Group 10	Endpoint 5	Association Group 3

\* max nodes supported: 0

### Basic commands mapping:

Command	Root	Endpoints	
		1-5	6-9
Basic Set	= EP1	Switch Multilevel Set	-
Basic Get	= EP1	Switch Multilevel Get	Sensor Multilevel Get
Basic Report	= EP1	Switch Multilevel Report	Sensor Multilevel Report

### RGBW mode: commands sent to association groups for parameter 150 set to 0

	1,2 click	Hold	Release
Input 1	Basic Set: 3rd, Multilevel Set: 4th, Switch Color Set: 2nd	Multilevel Start Level Change: 4th	Multilevel Stop Level Change: 4th, Switch Color Set: 2nd
Input 2	Basic Set: 5th, Multilevel Set: 6th, Switch Color Set: 2nd	Multilevel Start Level Change: 6th	Multilevel Stop Level Change: 6th, Switch Color Set: 2nd
Input 3	Basic Set: 7th, Multilevel Set: 8th, Switch Color Set: 2nd	Multilevel Start Level Change: 8th	Multilevel Stop Level Change: 8th, Switch Color Set: 2nd
Input 4	Basic Set: 9th, Multilevel Set: 10th, Switch Color Set: 2nd	Multilevel Start Level Change: 10th	Multilevel Stop Level Change: 10th, Switch Color Set: 2nd

### HSB mode: commands sent to association groups for parameter 150 set to 1

	1,2 click	Hold	Release
Input 1, 2, 3	Switch Color Set: 2nd	-	Switch Color Set: 2nd
Input 4	Basic Set: 9th, Multilevel Set: 10th, Switch Color Set: 2nd	Multilevel Start Level Change: 10th	Multilevel Stop Level Change: 10th, Switch Color Set: 2nd

## 9.2: 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:

<b>1.</b>	<b>Remember device status before the power failure</b>
<p>This parameter determines how the device will react in the event of power supply failure (e.g. power outage or taking out from the electrical outlet).</p> <p>After the power supply is back on, the device can be restored to previous state or remain switched off. The sequence is not remembered after the power returns. After power failure, the last color set before the sequence will be restored.</p>	
<b>Parameter size</b>	1 B
<b>Default value</b>	0
<b>Available values</b>	<p>0 - device remains switched off</p> <p>1 - device restores the state from before the power failure</p>
<b>20.</b>	<b>Input 1 - operating mode</b>
<p>This parameter allows to choose mode of 1st input (IN1). Change it depending on connected device.</p>	
<b>Parameter size</b>	1 B
<b>Default value</b>	2 (momentary switch)
<b>Available values</b>	<p>0 – Analog input without internal pull-up (Sensor Multilevel)</p> <p>1 – Analog input with internal pull-up (Sensor Multilevel)</p> <p>2 – Momentary switch (Central Scene)</p> <p>3 – Toggle switch: switch state on every input change (Central Scene)</p> <p>4 – Toggle switch: contact closed – ON, contact opened – OFF (Central Scene)</p>

<b>21.</b>	<b>Input 2 - operating mode</b>
This parameter allows to choose mode of 2nd input (IN2). Change it depending on connected device.	
<b>Parameter size</b>	1B
<b>Default value</b>	2 (momentary switch)
<b>Available values</b>	<p>0 – Analog input without internal pull-up (Sensor Multilevel)</p> <p>1 – Analog input with internal pull-up (Sensor Multilevel)</p> <p>2 – Momentary switch (Central Scene)</p> <p>3 – Toggle switch: switch state on every input change (Central Scene)</p> <p>4 – Toggle switch: contact closed – ON, contact opened – OFF (Central Scene)</p>
<b>22.</b>	<b>Input 3 - operating mode</b>
This parameter allows to choose mode of 3rd input (IN3). Change it depending on connected device.	
<b>Parameter size</b>	1B
<b>Default value</b>	2 (momentary switch)
<b>Available values</b>	<p>0 – Analog input without internal pull-up (Sensor Multilevel)</p> <p>1 – Analog input with internal pull-up (Sensor Multilevel)</p> <p>2 – Momentary switch (Central Scene)</p> <p>3 – Toggle switch: switch state on every input change (Central Scene)</p> <p>4 – Toggle switch: contact closed – ON, contact opened – OFF (Central Scene)</p>

<b>23.</b>	<b>Input 4 - operating mode</b>
This parameter allows to choose mode of 4th input (IN4). Change it depending on connected device.	
<b>Parameter size</b>	1B
<b>Default value</b>	2 (momentary switch)
<b>Available values</b>	<p>0 – Analog input without internal pull-up (Sensor Multilevel)</p> <p>1 – Analog input with internal pull-up (Sensor Multilevel)</p> <p>2 – Momentary switch (Central Scene)</p> <p>3 – Toggle switch: switch state on every input change (Central Scene)</p> <p>4 – Toggle switch: contact closed – ON, contact opened – OFF (Central Scene)</p>
<b>30.</b>	<b>Alarm configuration - 1st slot</b>
<p>This parameter determines to which alarm frames and how the device should react. The parameters consist of 4 bytes, three most significant bytes are set according to the official Z-Wave protocol specification.</p> <p>X – channels summarized: 1/2/3/4 channel are equal to values 1/2/4/8.</p> <p>Y – sequence number: 1-10 (parameter 157).</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	[0x00, 0x00, 0x00, 0x00] (disabled)
<b>Available values</b>	<p><b>1B</b> [MSB] – Notification Type</p> <p><b>2B</b> – Notification Status</p> <p><b>3B</b> – Event/State Parameters</p> <p><b>4B</b> [LSB] – action:</p> <p><b>0x00</b> – no reaction, <b>0x0X</b> – turn off selected channel, <b>0x1X</b> – turn on selected channel, <b>0x2X</b> – blink selected channel, <b>0x3Y</b> – activate alarm sequence</p>

<b>31.</b>	<b>Alarm configuration - 2nd slot</b>
<p>This parameter determines to which alarm frames and how the device should react. The parameters consist of 4 bytes, three most significant bytes are set according to the official Z-Wave protocol specification.</p> <p>X – channels summarized: 1/2/3/4 channel are equal to values 1/2/4/8. Y – sequence number: 1-10 (parameter 157).</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	[0x05, 0xFF, 0x00, 0x00] (Water Alarm, any notification, no action)
<b>Available values</b>	<b>1B</b> [MSB] – Notification Type <b>2B</b> – Notification Status <b>3B</b> – Event/State Parameters <b>4B</b> [LSB] – action:
	<b>0x00</b> – no reaction, <b>0x0X</b> – turn off selected channel, <b>0x1X</b> – turn on selected channel, <b>0x2X</b> – blink selected channel, <b>0x3Y</b> – activate alarm sequence
<b>32.</b>	<b>Alarm configuration - 3rd slot</b>
<p>This parameter determines to which alarm frames and how the device should react. The parameters consist of 4 bytes, three most significant bytes are set according to the official Z-Wave protocol specification.</p> <p>X – channels summarized: 1/2/3/4 channel are equal to values 1/2/4/8. Y – sequence number: 1-10 (parameter 157).</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	[0x01, 0xFF, 0x00, 0x00] (Smoke Alarm, any notification, no action)
<b>Available values</b>	<b>1B</b> [MSB] – Notification Type <b>2B</b> – Notification Status <b>3B</b> – Event/State Parameters <b>4B</b> [LSB] – action:
	<b>0x00</b> – no reaction, <b>0x0X</b> – turn off selected channel, <b>0x1X</b> – turn on selected channel, <b>0x2X</b> – blink selected channel, <b>0x3Y</b> – activate alarm sequence

33.	Alarm configuration - 4th slot
<p>This parameter determines to which alarm frames and how the device should react. The parameters consist of 4 bytes, three most significant bytes are set according to the official Z-Wave protocol specification.</p> <p>X – channels summarized: 1/2/3/4 channel are equal to values 1/2/4/8. Y – sequence number: 1-10 (parameter 157).</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	[0x02, 0xFF, 0x00, 0x00] (CO Alarm, any notification, no action)
<b>Available values</b>	<b>1B</b> [MSB] – Notification Type <b>2B</b> – Notification Status <b>3B</b> – Event/State Parameters <b>4B</b> [LSB] – action:
	<b>0x00</b> – no reaction, <b>0x0X</b> – turn off selected channel, <b>0x1X</b> – turn on selected channel, <b>0x2X</b> – blink selected channel, <b>0x3Y</b> – activate alarm sequence
34.	Alarm configuration - 5th slot
<p>This parameter determines to which alarm frames and how the device should react. The parameters consist of 4 bytes, three most significant bytes are set according to the official Z-Wave protocol specification.</p> <p>X – channels summarized: 1/2/3/4 channel are equal to values 1/2/4/8. Y – sequence number: 1-10 (parameter 157).</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	[0x04, 0xFF, 0x00, 0x00] (Heat Alarm, any notification, no action)
<b>Available values</b>	<b>1B</b> [MSB] – Notification Type <b>2B</b> – Notification Status <b>3B</b> – Event/State Parameters <b>4B</b> [LSB] – action:
	<b>0x00</b> – no reaction, <b>0x0X</b> – turn off selected channel, <b>0x1X</b> – turn on selected channel, <b>0x2X</b> – blink selected channel, <b>0x3Y</b> – activate alarm sequence

<b>35.</b>	<b>Duration of alarm signalization</b>
This parameter determines the duration of alarm signaling (flashing mode and/or alarm sequence).	
<b>Parameter size</b>	2B
<b>Default value</b>	600 (10min)
<b>Available values</b>	0 – infinite signalization 1-32400 (1s-9h, 1s step)
<b>40.</b>	<b>Input 1 - sent scenes</b>
This parameter defines which actions result in sending scene ID and attribute assigned to them. Parameter is relevant only if parameter 20 is set to 2, 3 or 4. Actions can be summed up, e.g. 1+2+4+8=15 and entered as a value for the parameter.	
<b>Parameter size</b>	1B
<b>Default value</b>	15
<b>Available values</b>	1 – Key pressed 1 time 2 – Key pressed 2 times 4 – Key pressed 3 times 8 – Key hold down and key released
<b>41.</b>	<b>Input 2 - sent scenes</b>
This parameter defines which actions result in sending scene ID and attribute assigned to them. Parameter is relevant only if parameter 21 is set to 2, 3 or 4. Actions can be summed up, e.g. 1+2+4+8=15 and entered as a value for the parameter.	
<b>Parameter size</b>	1B
<b>Default value</b>	15
<b>Available values</b>	1 – Key pressed 1 time 2 – Key pressed 2 times 4 – Key pressed 3 times 8 – Key hold down and key released

<b>42.</b>	<b>Input 3 - sent scenes</b>
<p>This parameter defines which actions result in sending scene ID and attribute assigned to them. Parameter is relevant only if parameter 22 is set to 2, 3 or 4.</p> <p>Actions can be summed up, e.g. 1+2+4+8=15 and entered as a value for the parameter.</p>	
<b>Parameter size</b>	1B
<b>Default value</b>	15
<b>Available values</b>	1 – Key pressed 1 time 2 – Key pressed 2 times 4 – Key pressed 3 times 8 – Key hold down and key released
<b>43.</b>	<b>Input 4 - sent scenes</b>
<p>This parameter defines which actions result in sending scene ID and attribute assigned to them. Parameter is relevant only if parameter 23 is set to 2, 3 or 4.</p> <p>Actions can be summed up, e.g. 1+2+4+8=15 and entered as a value for the parameter.</p>	
<b>Parameter size</b>	1B
<b>Default value</b>	15
<b>Available values</b>	1 – Key pressed 1 time 2 – Key pressed 2 times 4 – Key pressed 3 times 8 – Key hold down and key released
<b>62.</b>	<b>Power reports - periodic</b>
<p>This parameter determines in what time intervals the periodic power reports are sent to the main controller. Periodic reports do not depend of power change (parameter 61).</p>	
<b>Parameter size</b>	2B
<b>Default value</b>	3600 (1h)
<b>Available values</b>	0 - periodic reports are disabled 30-32400 (30-32400s) - report interval

<b>63.</b>	<b>Analog inputs reports and output change on input change</b>
<p>This parameter defines minimal change (from the last reported) of analog input voltage that results in sending new report and change in the output value. Parameter is relevant only for analog inputs (parameter 20, 21, 22 or 23 set to 0 or 1).</p>	
<b>Parameter size</b>	2B
<b>Default value</b>	5 (0.5V)
<b>Available values</b>	0 - reporting on change disabled 1-100 (0.1-10V, 0.1V step)
<b>64.</b>	<b>Analog inputs reports - periodic</b>
<p>This parameter defines reporting period of analog inputs value. Periodical reports are independent from changes in value (parameter 63).</p> <p>Parameter is relevant only for analog inputs (parameter 20, 21, 22 or 23 set to 0 or 1).</p>	
<b>Parameter size</b>	2B
<b>Default value</b>	0 (periodical reports disabled)
<b>Available values</b>	0 - periodical reports disabled 30-32400 (30-32400s, 1s step)
<b>65.</b>	<b>Energy reports - on change</b>
<p>This parameter determines the minimum change in consumed energy that will result in sending new energy report to the main controller. Energy reports are sent no often than every 30 seconds.</p>	
<b>Parameter size</b>	2B
<b>Default value</b>	10 (0.1 kWh)
<b>Available values</b>	0 - reports are disabled 1-500 (0.01 - 5 kWh) - change in energy
<b>66.</b>	<b>Energy reports - periodic</b>
<p>This parameter determines in what time intervals the periodic energy reports are sent to the main controller. Periodic reports do not depend of energy change (parameter 65)</p>	
<b>Parameter size</b>	2B
<b>Default value</b>	3600 (1h)
<b>Available values</b>	0 - periodic reports are disabled 30-32400 (30-32400s) - report interval

<b>150.</b>	<b>Inputs - LED colour control mode</b>
This parameter determines how connected switches control LED strips.	
<b>Parameter size</b>	1B
<b>Default value</b>	0 (RGBW mode)
<b>Available values</b>	0 – RGBW mode (every input controls output with the same number, IN1-OUT1, IN2-OUT2, IN3-OUT3, IN4-OUT4)
	1 – HSB and White mode (inputs works in HSB color model, IN1-H (Hue), IN2-S (Saturation), IN3-B (Brightness), IN4-White (OUT4))
<b>151.</b>	<b>Local control - transition time</b>
This parameter determines time of smooth transition between 0% and 100% when controlling with connected switches.	
<b>Parameter size</b>	2B
<b>Default value</b>	3 (3s)
<b>Available values</b>	0 – instantly
	1-127 (1s-127s, 1s step)
	128-254 (1min-127min, 1 min step)
<b>152.</b>	<b>Remote control - transition time</b>
This parameter determines time needed to change the state between current and target values when controlling via Z-Wave network.	
<b>Parameter size</b>	2B
<b>Default value</b>	3 (3s)
<b>Available values</b>	0 – instantly
	1-127 (1s-127s, 1s step)
	128-254 (1min-127min, 1 min step)

<b>154.</b>	<b>ON frame value for single click</b>
<p>This parameter defines value sent to devices in association groups. The parameters consist of 4 bytes, each byte reserved for separate channel, from least significant (IN1) to most significant (IN4). Applicable for Basic Set and Switch Multilevel Set commands.</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	4294967295 (0xFF FF FF FF – 255 for all channels)
<b>Available values</b>	<b>For every byte:</b> 0-99, 255
<b>155.</b>	<b>OFF frame value for single click</b>
<p>This parameter defines value sent to devices in association groups. The parameters consist of 4 bytes, each byte reserved for separate channel, from least significant (IN1) to most significant (IN4). Applicable for Basic Set and Switch Multilevel Set commands.</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	0 (0x00 00 00 00 – 0 for all channels)
<b>Available values</b>	<b>For every byte:</b> 0-99, 255
<b>156.</b>	<b>ON frame value for double click</b>
<p>This parameter defines value sent to devices in association groups. The parameters consist of 4 bytes, each byte reserved for separate channel, from least significant (IN1) to most significant (IN4). Applicable for Basic Set and Switch Multilevel Set commands.</p>	
<b>Parameter size</b>	4B
<b>Default value</b>	0 (0x63 63 63 63 – 99 for all channels)
<b>Available values</b>	<b>For every byte:</b> 0-99, 255

157.	<b>Start programmed sequence</b>
Setting this parameter will start programmed sequence with selected number. User can define own sequences via controller. While the sequence is active, the menu is unavailable.	
<b>Parameter size</b>	1B
<b>Default value</b>	0 (sequence inactive)
<b>Available values</b>	0 – sequence inactive 1-5 – user-defined sequence 6 – Fireplace sequence 7 – Storm sequence 8 – Rainbow sequence 9 – Aurora sequence 10 – Police (red-white-blue) sequence

## 10: Z-Wave specification

### Supported Command Classes:

	Command Class	Version	Secure
1.	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]	V2	
2.	COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]	V4	YES
3.	COMMAND_CLASS_ASSOCIATION [0x85]	V2	YES
4.	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]	V3	YES
5.	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]	V2	YES
6.	COMMAND_CLASS_VERSION [0x86]	V2	YES
7.	COMMAND_CLASS_MANUFACTURER_SPECIFIC [0x72]	V2	YES
8.	COMMAND_CLASS_MULTI_CHANNEL [0x60]	V4	YES
9.	COMMAND_CLASS_TRANSPORT_SERVICE [0x55]	V2	
10.	COMMAND_CLASS_CRC_16_ENCAP [0x56]	V1	
11.	COMMAND_CLASS_SUPERVISION [0x6C]	V1	
12.	COMMAND_CLASS_SECURITY [0x98]	V1	
13.	COMMAND_CLASS_SECURITY_2 [0x9F]	V1	
14.	COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A]	V1	YES
15.	COMMAND_CLASS_APPLICATION_STATUS [0x22]	V1	
16.	COMMAND_CLASS_POWERLEVEL [0x73]	V1	YES
17.	COMMAND_CLASS_FIRMWARE_UPDATE_MD [0x7A]	V4	YES
18.	COMMAND_CLASS_CONFIGURATION [0x70]	V1	YES
19.	COMMAND_CLASS_PROTECTION [0x75]	V2	YES
20.	COMMAND_CLASS_NOTIFICATION [0x71]	V8	YES
21.	COMMAND_CLASS_COLOR_SWITCH [0x33]	V3	YES
22.	COMMAND_CLASS_METER [0x32]	V3	YES
23.	COMMAND_CLASS_CENTRAL_SCENE [0x5B]	V3	YES
24.	COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]	V11	YES
25.	COMMAND_CLASS_BASIC [0x20]	V1	YES

**Multichannel Command Class:**

<b>MULTICHANNEL CC</b>	
<b>ROOT (Endpoint 1)</b>	
<b>Generic Device Class</b>	GENERIC_TYPE_SWITCH_MULTILEVEL
<b>Specific Device Class</b>	SPECIFIC_TYPE_COLOR_TUNABLE_MULTILEVEL
<b>Command Classes</b>	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]
	COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]
	COMMAND_CLASS_ASSOCIATION [0x85]
	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]
	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]
	COMMAND_CLASS_SUPERVISION [0x6C]
	COMMAND_CLASS_SECURITY [0x98]
	COMMAND_CLASS_SECURITY_2 [0x9F]
	COMMAND_CLASS_APPLICATION_STATUS [0x22]
	COMMAND_CLASS_PROTECTION [0x75]
	COMMAND_CLASS_NOTIFICATION [0x71]
	COMMAND_CLASS_COLOR_CONTROL [0x33]
COMMAND_CLASS_METER [0x32]	
<b>Description</b>	Color Controller
<b>Endpoint 2, 3, 4 and 5</b>	
<b>Generic Device Class</b>	GENERIC_TYPE_SWITCH_MULTILEVEL
<b>Specific Device Class</b>	SPECIFIC_TYPE_POWER_SWITCH_MULTILEVEL
<b>Command Classes</b>	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]
	COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]
	COMMAND_CLASS_ASSOCIATION [0x85]
	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]
	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]
	COMMAND_CLASS_SUPERVISION [0x6C]
	COMMAND_CLASS_SECURITY [0x98]
	COMMAND_CLASS_SECURITY_2 [0x9F]
COMMAND_CLASS_APPLICATION_STATUS [0x22]	
<b>Description</b>	EP2 controls directly Output 1 [Red] EP3 controls directly Output 2 [Green] EP4 controls directly Output 3 [Blue] EP5 controls directly Output 4 [White]

<b>Endpoint 6, 7, 8 and 9</b>	
<b>Generic Device Class</b>	GENERIC_TYPE_SENSOR_MULTILEVEL
<b>Specific Device Class</b>	SPECIFIC_TYPE_ROUTING_SENSOR_MULTILEVEL
<b>Command Classes</b>	COMMAND_CLASS_ZWAVEPLUS_INFO [0x5E]
	COMMAND_CLASS_ASSOCIATION [0x85]
	COMMAND_CLASS_MULTI_CHANNEL_ASSOCIATION [0x8E]
	COMMAND_CLASS_ASSOCIATION_GRP_INFO [0x59]
	COMMAND_CLASS_SUPERVISION [0x6C]
	COMMAND_CLASS_SECURITY [0x98]
	COMMAND_CLASS_SECURITY_2 [0x9F]
	COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]
	COMMAND_CLASS_APPLICATION_STATUS [0x22]
<b>Description</b>	EP6 reports the Voltage measured on Input 1 EP7 reports the Voltage measured on Input 2 EP8 reports the Voltage measured on Input 3 EP9 reports the Voltage measured on Input 4

#### **Notification Command Class:**

The device uses Notification Command Class to report different events to the controller (“Lifeline” group).

<b>ROOT (Endpoint 1)</b>			
<b>Notification Type</b>	<b>Event</b>	<b>Status</b>	<b>Parameter</b>
Power Management [0x08]	Over-current detected [0x06/V3]	0xFF – enable (non-changeable)	—
System [0x09]	System hardware failure with manufacturer proprietary failure code [0x03]	0xFF – enable (non-changeable)	Device Over-heat [0x01]

**Protection CC:**

Protection Command Class allows to prevent local (via inputs) or remote control of the outputs.

Type	State	Description	Hint
Local	0	Unprotected - The device is not protected, and may be operated normally via the user interface.	Inputs connected with outputs.
Local	2*	No operation possible – state of outputs cannot be changed by any of the Inputs	Inputs disconnected from outputs.
RF	0	Unprotected - The device accept and respond to all RF Commands.	Outputs can be controlled via Z-Wave.
RF	1	No RF control – command class Basic, Switch Multilevel and Color Switch are rejected, every other command class will be handled	Outputs cannot be controlled via Z-Wave.

\* only Central Scene Notifications can be triggered in this state.

**Meter CC:**

Meter Type	Scale	Rate Type	Precision	Size
<b>ROOT (Endpoint 1)</b>				
Electric [0x01]	Electric_kWh [0x00] (default)	Import [0x01]	2	4B
Electric [0x01]	Electric_W [0x02]	Import [0x01]	1	2B

**Sensor Multilevel CC:**

<b>Endpoint 6, 7, 8 and 9</b>				
<b>Sensor Type</b>	<b>Scale</b>	<b>Precision</b>	<b>Size</b>	<b>Description</b>
VOLTAGE	V	1	2B	Analog input 1-4

**Lifeline reports:**

<b>ROOT</b>
COMMAND_CLASS_DEVICE_RESET_LOCALLY [0x5A]
DEVICE_RESET_LOCALLY_NOTIFICATION [0x01]
COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]
SWITCH_MULTILEVEL_REPORT [0x03]
COMMAND_CLASS_COLOR_SWITCH [0x33]
COLOR_SWITCH_REPORT [0x04]
COMMAND_CLASS_CENTRAL_SCENE [0x5B]
CENTRAL_SCENE_NOTIFICATION [0x03]
COMMAND_CLASS_METER [0x32]
METER_REPORT [0x02]
COMMAND_CLASS_NOTIFICATION [0x71]
NOTIFICATION_REPORT [0x05]
COMMAND_CLASS_CONFIGURATION [0x70]
CONFIGURATION_REPORT [0x06]
<b>Endpoint 1</b>
COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]
SWITCH_MULTILEVEL_REPORT [0x03]
COMMAND_CLASS_METER [0x32]
METER_REPORT [0x02]
COMMAND_CLASS_NOTIFICATION [0x71]
NOTIFICATION_REPORT [0x05]
COMMAND_CLASS_COLOR_SWITCH [0x33]
COLOR_SWITCH_REPORT [0x04]
<b>Endpoints 2-5</b>
COMMAND_CLASS_SWITCH_MULTILEVEL [0x26]
SWITCH_MULTILEVEL_REPORT [0x03]
<b>Endpoints 6-9</b>
COMMAND_CLASS_SENSOR_MULTILEVEL [0x31]
SENSOR_MULTILEVEL_REPORT [0x05]

# 11: Regulations

## **This device complies with Part 15 of the FCC Rules**

Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

## **Industry Canada (IC) Compliance Notice**

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes d'exemption de licence RSS d'Industry Canada. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

## **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. Fibaro 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.

Product is covered by one or more claims of patents found at <http://sipcollc.com/patent-list/> and <http://intusiq.com/patent-list/>.

### **Declaration of conformity**

 Hereby, Fibar Group S.A. 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](http://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.

